

Local Government & Community Development Department



Punjab Cities Program

Gap Analysis

of

Municipal Services infrastructure & service delivery

in

Bahawalnagar City



Punjab Municipal Development Fund Company

Section-1 City Background

1.1. District Status

Bahawalnagar is the capital city of Bahawalnagar District situated in the south east region in the Punjab Province of Pakistan. The town of Bahawalnagar is the head quarter of the district and tehsil as well. Old name of Bahawalnagar was Rojanwali/Ubbha. It was named Bahawalnagar in 1904 after Bahawal Khan-V, the ruler of the Bahawalpur state comprising the present districts of Bahawalpur, Bahawalnagar and Rahim Yar Khan.

1.2. Location

Bahawalnagar is 192 miles south of Lahore and about 120 miles east of Bahawalpur. River Sutlej passes on the northern side at a distance of about 6 miles. Bahawalnagar District is composed of five sub-divisions Bahawalnagar, Minchanabad, Haroonabad, Chishtian & Fort Abbas. Bahawalnagar District spreads between latitudes of 29°-57' 'to 30°-0' North, and the longitudes of 73"-14' to 73"-16' East. The city coordinates are 30°-0' North latitude, and 73°-16' East longitude.

1.3. The Climate

Climate of the district varies from hot to very hot in summer and cold in winter especially in December and January. During the months of July and August, the weather is humid whereas spring is pleasant. Summer season starts in April and continues till September. June is the hottest month with mean maximum and minimum temperature of about 41 and 28 degree Celsius respectively. Winter season starts from November and lasts till February. Mean maximum and minimum temperature recorded during the month of January is about 20 and 4 degree Celsius respectively. Light rainfalls during winter season especially in the months of January and February is succeeded by a spell of pleasant spring weather. Monsoon starts in the first week of July. The average annual rainfall is about 204 millimeters.

1.4. Demographic status

The population census report of year 2017 has not been published by Government of Pakistan. However the provisional data available for this census shows the population of 194,042 persons for the city within municipal limits. A land scan process was done to estimate the population of entire inhabited areas of city in close approximation which was found to be 203,286 persons in the year 2017 with an annual growth rate of 4.43 % and it is expected to rise to 313,542 persons in the year 2027. A large and thick inhabitation has developed outside the municipal limits of the city and the municipal limits need to be extended.

1.5. Data collection

The formats for the data collection about the municipal services were designed and sent to the Municipal Committee. After receipt of these formats, the city was visited to;

- 1) Verify and correct the data provided by the municipal committee.

- 2) Update the descriptive maps of all the services by consultation with MC staff & Public Health Engineering staff.
- 3) Identify the required improvements and extension of the municipal services infrastructure.
- 4) Identification of Public Private Partnership projects already executed
- 5) Identify the capacity of the key officers to undertake the PPP projects and collaborative projects with other government agencies and MCs
- 6) Public opinion surveys regarding the delivery of municipal services.

1.6. Situation analysis and Gap analysis

Situation analysis of the existing municipal services infrastructure and the quality of service delivery was done. Gap analysis was done to identify the problems, bottlenecks and shortcomings in the infrastructure itself and its operation & maintenance for each municipal service along with the correction/updating of descriptive maps which has been described in the following sections.

Section-2 Water supply system

2.1. Existing situation

Ford Wah canal is flowing at the Western periphery of the city and Sadiqia Canal flowing at the Eastern periphery of the city. The canal is unlined and recharging the ground water in narrow belts on both sides with fresh water. The city has marginally fresh ground water near to the canal but the subsoil water of most of the city is brackish and unfit for human consumption. Skimming tube wells have been installed on the left bank of this canal to harness fresh subsoil water from the shallow aquifers being recharged by the canals. Water from these tube wells is being pumped into ground storage constructed at different locations of the city wherefrom it is again pumped into the overhead reservoirs and fed to the distribution system or pumped directly into the distribution system.

2.2. Water sources & pumping stations

2.2.1. The existing water sources

There are two major sources developed by Municipal Committee for water supply system to city on Fordwah Canal and Sadiqia Canal. Originally 10 tube wells have been installed on Sadiqia Canal and all are operative. All 10 tube wells installed by PHED along Sadiqia canal is working and maintained by MC Bahawalnagar. The source is sufficient but transmission pipe lines and distribution system need to be extended. The major area under this zone is Model Town. The storage capacity of Model Town water work is sufficient with two nos. GST and one no. OHR. The supply of water is direct pumping from GST and OHR is not being used. There is no water management by domestic water meters. Water is contaminated in almost this zone due to substandard connections and leakage of pipe lines. New water work is required to supply water in Medina town and allied areas. It is proposed to feed water from Sadiqia canal water source.

46 Nos. tube wells are installed along the Fordwah canal to supply water. These tube wells are divided in to Fordwah new & Fordwah old. 10 Nos. are abandoned and 36 are operational. One OHR is operational at main water works. Water shortage and contamination is a major problem of water supply due to lack of water management. Old pumping machinery need to be replaced and new boring of tube wells is also required. Distribution system up gradation & extension is required. Further replacement of old transmission pipe line is also required.

Repair of civil works at pump houses and intermediate pumping stations required because of MC maintenance constraints.

2.2.2. Newly installed water sources

In order to address the issue of water shortage, MC Bahawalnagar is executing a new scheme comprising of 6 new tube wells of 0.5 cusec capacity on the left bank of Fordwah canal. After installation of these tube-wells the present situation of the total source capacity is given below;

Total Source capacity

Zone	No. of tube wells	Capacity each (cusecs)	Total capacity (cusecs)	No of tube wells		Present working hours per day	Daily water production (mgd)		
				in working order	Abandoned		Present with 20 hours pumping	Possible with 14 hours pumping	
Sadiqia Source	10	0.5	05	10	0	20	2.26	1.58	
Fordwah Source	46	0.5	23	36	10	20	8.14	5.70	
New Source	06	0.5	03	Installation of tube wells is in progress by MC					
Grand total	56	-	28	46	10	-	10.40	7.28	
Present population of the city							194,042	Persons	
Possible water production per capita per day							37.50	Gallons	

The quantity of water per capita per day will be adequate for the city after installation of new source if the water wastage is controlled by consumer metering. Further machinery of tube wells are very old and required to be replaced or repaired keeping in view the discharge. No bulk water meter installed on any tube well to measure the discharge.

2.2.3. Scope of the ongoing scheme

Scope of the scheme being executed by MC Bahawalnagar is described below;

Scope of work of the scheme being completed by MC Bahawalnagar

Total cost of the scheme Rs. 25.0 Million		
1	Tube wells 0.5 cusec capacity	6 Nos.
2	Pumping Machinery for tube wells	6 Sets
3	Pump House for tube-wells (12'x12')	6 Nos.
4	Installation of valves on Transmission mains	20 Nos.
5	External Electrification	6 jobs
6	Repair of old turbines at Sadqia Canal source	1 Job

The scheme is in progress and is being executed by MC Bahawalnagar.

2.3 Intermediate Pumping stations:

Water pumped from tube wells is stored in ground storage tanks constructed in the intermediate pumping stations in the city from where it is further pumped into the overhead reservoirs or directly in the distribution system. Five intermediate pumping stations are located in the city. The description of these pumping stations is given below;

Intermediate Pumping stations

S.N.	Water works	Total No. of pumps	Capacity each (cusecs)	Total capacity (cusecs)	Working hour per day	Year of construction	No of pumping units requiring repair
1	Sadiqia water work	3	3.0	9.0	3	2015-16	3
2	Old Model Town	2	1.5	3.0	3	1975	2

3	Shahzad Nagar	3	3.0	9.0	3	1983& 2007	2
4	Quraish Colony	2	2.0	4.0	3	1975& 2007	1
5	Boys Degree College	2	2.0	4.0	3	2007	2
	Total active capacity	12	--	29.0			10

2.4 Storage Capacity:

Storage has been constructed in the form of ground storage tanks (GST) and overhead reservoirs (OHR) as it is not possible to feed the OHRs directly from tube-wells because of long lengths of transmission mains and high pumping head involved. The status of the ground as well as overhead storage is given below;

Table-3 Detail of storage capacity city

S.N.	Water works	No. of GSTs	Capacity (gallons)	No. of OHRs	Capacity (gallons)	Year of construction	Replacements required
1	Sadiqia water works	1	100,000	1	50,000	2014-15	OHR non-operational
2	Old Model Town	1	200,000	1	50,000	1975	OHR only used for water filtration plant
3	Shahzad Nagar	1	100,000			2007	GST Operational
		2	50,000	1	50,000	1983	GST Operational
4	Quraish Colony	1	100,000	2	50,000	1975&2007	OHRs non-operational
5	Boys Degree College	1	100,000	-	-	2007	Operational
6	Khadimabad	-	-	1	50,000	1983	Abandoned
7	Main Water Works	-	-	1	100,000		Operational
8	City water Works	-	-	1	50,000		Abandoned
9	Hafizabad			1	50,000		Abandoned
	Total	7	650,000	9	450,000		

2.5 Problems and gaps in the system

2.5.1 Water shortage

Acute water shortage exists in the entire city and especially in the below mentioned areas.

1- Gorgani Street	2- Yawer Street	3- Paracha Street	4- Gandha Nala
5- Marghat	6- Mohallah Telian Wala	7- Islam Nagar	8- Ameer Kot
9- Inner City	10- Nazir Colony		

Reasons for water shortage

- These parts of the city are located away from the water works. Long transmission mains were involved in providing water to these areas. This resulted in acute water shortage in these areas.
- Wastage of water due to non-provision of water tabs is also the cause of water shortage in summer season.

2.5.2 Un Served Areas (shown in light pink color in the map)

Most of the area is covered by the facility except for few areas. The demand for the water supply system comes up strongly from these areas because the subsoil water is not fresh. Therefore the residents of this area are also demanding fresh water supply system. The un-served inhabitations are given below;

Unserviced areas

1. Aziz town	2. Mauza Choghata	3. Raja Colony	4. Basti Nazir wali
5. Shahid Basti	6. Basti Munirabad	7. Kachiabadi	8. Basti Hafizabad
9. Hussainabad	10. Sabzazar Colony		

These areas are inside the municipal limits and are not being provided with water supply distribution system.

a) Contaminated water zones: (shown in light blue color in the map)

The pipe lines in the areas shown below were laid in the year 1986 and onward were of cast iron, asbestos cement and PVC type. The streets in these areas are very narrow (5-10 feet) and subsequently sewer lines were also laid in these streets which damaged most of these pipelines.

1-Rafiq Shah Chowk area	2-Mohallah Tailian	3-Tehsil road area
4-Urdu bazar area	5-City Chowk area	6-Fawara chowk
7-Bhatti chowk	8- Basti Pachwa	

Causes of contamination

- Main source of contamination is old and substandard consumer connections because of rusted and perforated GI service pipe resulting in ex-filtration and infiltration. Substandard PVC or lawn piping used in the consumer connections also causes pipe bursting and ultimate water contamination.
- Old and rusted main pipes are also leaking and producing contamination in the system. These pipes need replacement.
- The sluice valve chambers are filled with dirt and water and are one of the main sources of water contamination. This is due to non-packing of the valves stuffing boxes which is part of a routine maintenance.

- Non-cleaning and non-disinfection of the reservoirs develop bacteria and ultimately contaminate the system.
- Unfortunately the disinfection of the water is not regular. Either it is done in intervals or the disinfectant quality and dosage are not up to the mark which do not inject required amount of chlorine in the system and the contamination remains in place.

2.6 Water supply hours and consumer connections

Water Supply hours				Consumer connections			
Morning	Midday	Evening	Total	Domestic	Commercial	Industrial	Total
02	02	02	06	16144	206	Nil	16350

2.7 Total coverage of the city

The total coverage of the city is 65%.

2.8 Tariff structure

The consumer connections are not metered and hence water wastage should be predominant over here. The tariff comprises of flat rates not even levied according to the area of houses. The water rates are given below;

Tariff Rates per month		
Domestic	Commercial	Industrial
Rs. 100	Rs. 200	Nil

2.9 Required rehabilitation of the old water supply system

Under mentioned components of the existing system need rehabilitation. Component wise details are given below

2.9.1 Tube wells

Repair & Replacements of pumping machinery for Tube wells

Type of Pump	Discharge each (cusec)	Replacement of Tube well with pumping units	Replacement of pumping units with motors	Repairs of pumping machinery	Replacement of outlived Transformers
Deep well turbine pumps	0.5	7 Nos*	18 Nos**	5 Nos***	20 Nos

* These tube-wells were installed in the year 1972 and have reduced their discharge. Therefore they need replacement.

**These pumping units were installed in the year 2007 and have outlived their life. The repair is costly and the original efficiency cannot be achieved.

***The repairs will include all electrical and mechanical items and PCC pump foundations along with painting of all the installations

2.9.2 Repair of Pump Houses:

Water works	Total Nos	Size (Ft.)	Type of repair
Tube wells	51	12'x12'	White washing, painting and renovation etc.

2.9.3 Repairs and replacement in intermediate pumping stations:

Replacements	New GST of 100,000 Gln. required in Khadimabad
	New GST of 100,000 Gln. required in city water works
Repairs	Major repairs of; <ul style="list-style-type: none">• 7 Nos. OHRs need to be made operational.• Major repairs of OHRs.• Replacement of rising mains of OHR,s• Repair of 8 Nos. GST at different IPS in the city.• Repair of civil work in intermediate pumping stations is also required

2.9.4 Distribution system:

65% of the city area is equipped with the distribution system after completion of the ongoing scheme. However distribution system in the left over portion of the city will be required to be laid along with construction of storage. The areas include all the unserved areas in north & south zone as described above.

2.9.5 Repairs & replacement of other components

These components include;

- Repair/ replacement of Hypo-chlorinators = 58Nos.
- Repair/ replacement of motor control unit = 58Nos.
- Replacement of underground piping & saddles of sub-standard consumer connections = 8000 Nos.
- Repair of sluice valves at different locations=58 Nos.
- Repair of reflux valves at different locations=58 Nos.

2.9.6 Power Factor Improvement

After Energy Audit report, the power factor on all the tubewells and pumping stations will be assessed. If it would be less than 0.9 then power factor improvement equipment of required capacity will be installed to improve the power factor and eliminate the penalties being paid by MC due to less power factor.

2.9.7 Water wastage & Water management

Lot of water wastage is occurring in the water supply system in below given ways;

- a) Some consumer connections have no taps.

- b) Some consumers keep the taps open in all water supply hours although they do not need water.
- c) Most of the overhead tanks of the consumers have no float valve and when their tank is full, the water flows down to the drains continuously during the supply hours.

The water wastage requires excessive water production and high electricity consumption. It is exerting a large pressure on the municipal budget. Large savings in the electricity bills and ultimately the O&M cost, can be affected by reducing the water wastage at the consumer ends. It will save lot of water and water shortage can be addressed by conservation of water being wasted at present. The best and efficient way to save water and reduce O&M cost is the *consumer metering*.

Installation of consumer meters on 16350 Nos consumer connections is required.

2.10 O&M Charges and revenue recovery

The operation & maintenance charges and the revenue recovered during the last five year are given below;

Year	2013-14	2014-15	2015-16	2016-17	2017-18	Total for five years
O&M charges (million Rs)	45.069	49.135	37.043	55.061	44.238	230.55
Revenue recovery (million Rs)	6.721	14.084	14.796	13.946	15.516	65.06
Recovery % as compared with O&M exp.	14.91%	28.66%	39.94%	25.33%	35.07%	28.22 %
Subsidy injected (million Rs)	38.348	35.051	22.247	41.115	28.722	165.483

The above mentioned data shows a very weak billing and recovery system of the water revenue which is required to be improved by capacity building of the recovery staff.

2.11 Manpower deployment

Slot	Sanctioned strength	Existing strength	Vacant post	Manpower on daily wages	Total man power deployed	Additional MC demand
Supervisor W.S.S	1	1	0	0	1	0
Foreman W.S.S	1	1	0	0	1	0
Tube-well operators	50	45	5	0	45	9
Chowkidars	1	1	0	0	1	0
Electricians	1	1	0	0	1	1
Plumbers	5	4	1	0	4	0
Oil Man	2	2	0	0	2	0
Total	61	55	6	0	55	10

Additional demand has been put forward by the MC for the new installations.

2.12 Service delivery

1. Water supply is intermittent and total 6 hours per day. The quantity of water being produced presently is not enough even in the served areas because of lesser supply hours which need to be increased to at least 12 hours a day.
2. Quite a large area is being supplied with contaminated water due to leaking pipes and substandard consumer connections. After replacement of damaged pipelines is being done in these areas, the water contamination will be eliminated.
3. Un-served areas which is not being covered by the scheme. Separate scheme for these areas needs to be planned & implemented.
4. All existing substandard consumer connections should be replaced by HDPE service piping only in the underground with HDPE pipe saddles. The numbers of registered consumer connections is 16144 domestic and & 206 commercial. Numbers of illegal connections do exist in the system which is required to be detected and regularized.
5. None of the consumer connection is metered and it is proposed to meter all the consumer connections to;
 - MC should reduce the water wastage to conserve fresh water and to save the electricity cost being incurred on production of water and pumping the waste water from sewerage systems.

Section-3 Sewerage system

3.1. Existing situation

3.1.1. Coverage

The city is equipped with sewerage system in 60% area. The city has been divided in to four areas called as Zones with respect to the drainage. The short description of each of the zones has been given as under;

3.1.2. Zone-A:

The Disposal works of this system is located in Madina town and the waste water from this disposal works is being pumped through a force main 24" dia and being used for broad irrigation. In zone-A the outfall sewer line of 42" diameter has been laid and waste water is finally disposed for broad irrigation without treatment. Old disposal station has been replaced with new one in 2018 and existing 36" dia out fall sewer connected with 42" dia new sewer line. However old disposal is still working.

3.1.3. Zone-A2:

There are two disposal works in this zone called Hassanabad & Karmanwala disposal works. Hassanabad disposal works collects waste water from Sadat Colony, Hassanabad, jail road and Muslim colony through 27" dia outfall sewer. Waste water from Hassanabad disposed of to Karmanwala disposal work through a force main 16" dia. from where it is finally disposed of into seepage drain through a force main 18" dia.

3.1.4. Zone-B:

This zone also has two disposal stations called Madni Colony & Model town disposal works. Model town disposal was designed to dispose of the small area and laterally 24" dia RCC pipe line was laid to dispose of the waste water through Madni colony disposal. Presently 24" dia RCC pipe line has been choked and area becomes flooded. Waste water from model town disposal works is being discharged into seepage drain through 8" dia forced main.

3.1.5. Zone-C:

The Disposal works of this system is located in Islam nagar and the waste water from this disposal works is being pumped through 24" dia force main into seepage drain. The waste water is collected from Faisal colony, Canal colony, Mochipura, Qaimabad, Nazir colony & Islam nagar. The main out fall sewer is 36" RCC pipe for collection of waste water from above mentioned areas.

3.1.6. Sewers

Total length of sewers

The length of sewers as per information given by the Municipal Committee, are given below; these are approximate lengths and may vary if actually measured at site;

Approximate lengths of sewers

Sewer dia. (inch)	9	12	15	18	21	24	27	Total length in Km
Length in feet	15.0	10.0	1.0	3.0	2.0	3.0	2.0	
Sewer dia (inch)	30	33	36	42				41.0 Km
Length in feet	1.0	1.0	2.0	1.0				

3.2. New sewerage system under construction by PHED

Salient features of the sewerage scheme being constructed by PHE Department along with present progress are given below;

Administratively approved cost	Rs 399.59 million
Cost of Technical Sanction	Rs 421.20 million
Expenditure to date	Rs 194.50 million
The scheme could not be completed even by the end of 2019 due to thin funding.	

Scope of work and up to date progress of this scheme is given below;

Description of work	Unit	Quantities as per estimate	Current Status as in Feb. 2019
Screening Chamber	No.	1	In progress
Collecting wells	Nos.	2	
Pump house	No.	1	
Submersible pumps 3 cusec	Sets.	7	
Forced main GRP 36" i/d	Rft.	1,200	
RCC sewers			
12" dia	Rft.	9,712	7,832
15" dia	Rft.	4,203	0
18" dia	Rft.	3,178	2,593
21" dia	Rft.	5,368	0
24" dia	Rft.	1,947	0
27" dia	Rft.	3,261	687
36" dia	Rft.	1,262	1480
42" dia	Rft.	60	105

3.2.1. Pumping / disposal stations

All zones are being served by pumping stations. The details of each one is given below;

Location	Nos of collect. Tanks	Nos of pumps	Discharge each (cusecs)	Total discharge (cusecs)	Motor BHP	Working status	Force main /S. carrier			Ultimate disposal
							Size (inch)	Length (ft)	Condition	
6	7	8	9	10	11	12	13	14	15	16
Madina Town (new)	02	07	3.0	21.0	25	Yes	24	1800	good	Broad irrigation
Madina Town (old)	02	04	3.0	3.0	40	Only 01 No. working	3'x2'	1000	bad	Broad irrigation
Hussain abad	02	04	2.0	8.0	40	In progress	16	4140	good	IPS
Karman wala	02	04	2.0	8.0	20	In progress	18	5700	good	Seepage drain
Madni Colony	2	04	3.0	12.0	60	Working	20	5600	Fair	Seepage drain
Model Town	1	1	1.5	1.5	20	Poor	8	4600	bad	Seepage drain
Islam Nagar	2	5	3.0	15.0	40	Yes	24	1500	good	Seepage drain

3.3. The main issues and problems in the system

The main problems and bottlenecks confronted by the city are given below;

3.3.1. Choked & surcharging sewers

Some of the sewers have been choked or damaged and are resulting in surcharging and overflowing thus damaging public as well as private property. These sewers will require replacement. The detail is given below;

S.N.	From	To	Approximate Length in feet	Dia in inches	Problems	Solution
1	Model Town	Madni Colony	4,500	24"	Choked	Replaceable
2	Melad Chowk	Mubarik gate chowk	13,120	18"	Defective	Replaceable

3.3.2. Areas flooded with waste water

Under mentioned areas are usually flooded with waste water;

1. Islampura	2. Nazir Basti	3. Quaid e Azam chowk
4. Ranjah wala Khu	5. Regran colony	

Reasons for flooding

- Main reason for flooding of these areas is the surcharging of sewer because of crown failures.
- Another reason lies in the fact that these areas are located at the remote end of the system and any problem in the branch or main sewers has maximum effects on these areas.

3.3.3. Problems in the pumping stations

Presently under mentioned components of these disposal stations need repairs or replacement;

- Repair of sullage pumping units = 5 Nos.
- Repair of screens & penstocks = 5 Nos each.
- Repair of collecting tanks, screening chambers, pump houses, staff quarters, boundary wall at 6 Nos disposal stations

3.3.4. Provision of winch machines

- 1) Number of sewers are being silted up and choked because of non desilting of the sewers. Manual desilting of manholes is being done by MC but it is not so effective unless the silt from the barrel of the pipes is removed. For this purpose 2 No sewer desilting winch machines are required to eliminate the flooding of sewer line.
- 2) MC is not de-silting the collecting tanks due to which the sewer lines are being choked. Hence winch machine for the de-silting of collecting tanks will be required to keep the collecting tanks free of silt.
- 3) Similarly the sullage carriers are not being de-silted properly by MC because of dearth of labor and cleaning machinery. These are also responsible for flooding of waste water in the city. Hence at least 01 No back-hoe machine for the de-silting of sullage carriers is required.

3.3.5. Sucker & jetting machines

01 No sucker and 01 No jetting machines are being used by MC to remove blockades and cleaning of sewers. The sucker and jetting machines are quite old and require repairs along with supply of required pressure pipe for jetting machine.

3.3.6. Un-served areas

The following areas of the city have not been provided with sewerage system as yet.

1-Farooqabad Colony	2-Model Town(partly)	3-Basti Nazir wali	4-Islampur Sharqi
5-Farooqabad west	6-Tibba Maqsoodpura	7-Sabzazar Colony	8-Fateh Kot Chowk
9-Hassanabad Colony	10-Allah Ho Akbar Chowk	11-Khadimabad (partly)	12-Minchanabad road

13-Bagarwala ghali	14-Langah Colony	15-Officer Colony	16- Canal officer colony
17-Jorana Basti	18-Basti Hafizabad	19-Quraish Colony	20-Abadi Jattu wala Khu
21-Kachi abadi	22- Basti Munirabad		

Extension of the facility to the above mentioned un-served areas is needed serving the entire population of the city. The approximate lengths and the location of sewers to be laid for providing the service are given below;

Location of sewers	Diameter (inches)	Approx. Length (Feet)
Mohallah Taylian, Hafizabad, Hussainabad & Aziz town, Madni Colony, Tiba Maqsood Pura	9"	150,000
	12"	50,000
	15"	10,000
	24"	1500

3.4. Waste water treatment

Waste water from all zones either discharged into seepage drain or being used for broad irrigation of the lands. No treatment facility is available at all discharge points which is polluting the streams and lands. Waste water treatment plants are required be constructed to lower down the BOD level as per National Environmental Quality Standards (NEQS).

3.5. Provision of gully grating chambers and manhole covers:

No gully grating chambers have been provided in the sewerage systems to trap the silt and the floating materials. As such all these materials are flowing into the sewers and are the main reason for chocking the sewers. The gully grating chambers to connect the surface drains and storm water with the sewers are required to be provided in the entire sewerage system.

Manhole covers at many places are missing and MC is not attending these complaints because of money constraints. Hence MC will need to replace the missing manhole covers along with some base frames. MC should keep adequate number of manhole covers in stock to replace the covers immediately after these are damaged or stolen.

3.5.1. Consumer connections

No consumer sewer/drain connection survey in the city has been conducted by this time. Hence the exact number of these connections cannot be estimated at this stage.

3.5.2. Tariff structure

The liquid waste user charges are not collected by MC Bahawalnagar. Liquid waste tariff has not been approved by the House, as per MC Officials.

3.5.3. Operation & maintenance cost vs revenue recovery

The operation & maintenance cost of the sewerage system for the last five years along with the revenue recovery is given below;

O&M Expenditure vs Revenue Recovery (million Rs) (includes manpower, electricity, repairs/replacement & supplies)						
Year	2013-14	2014-15	2015-16	2016-17	2017-18	Total for 5 years
O&M expenditure	4.864	5.264	6.349	6.872	9.121	32.47
Revenue earned	0	0	0	0	0	0
Subsidy given	4.864	5.264	6.349	6.872	9.121	32.47

The service charges have not been levied for the liquid waste management so the collection of the revenue is not being given any attention neither by the key officers nor by the public representatives.

3.5.4. Manpower deployed

The manpower deployed for the operation & maintenance of the system is given below;

Slot	Sanctioned strength	Existing strength	Vacant post	Manpower on daily wages	Total man power deployed	Additional MC demand
Pump operators	6	4	2	0	4	0
Sewer men	30	12	18	18	30	10
Total	36	16	20	18	34	10

MC is demanding additional manpower because of increase in population as they are serving those areas in the city which are not included within the municipal boundary.

3.4. Service delivery level

The service delivery is not satisfactory. All zones are facing poor service delivery because of;

- The area lying in remote end of the system are being silted up because of water stagnancy and very low velocity of water.
- In 40% of the city area no sewerage facilities have been provided.
- The city has main and branch sewers on main roads and streets but most of the streets are not equipped with lateral sewers. These areas are being served with surface drains discharging into the sewers without gulley grating chambers which is allowing all the silt and the floating materials in the sewers. This forms the main reason for chocking of sewers and flooding of the roads and streets.
- MC Bahawalnagar has no capacity for de-silting the sewers with winches. Service delivery in areas with healthy sewerage system is good but it is poor in the areas which are subjected to sewer surcharging and flooding as well as those areas where sewerage system does not exist.

3.5. Remedy to the main issues

Interventions described below are required to be implemented for relieving the flooded areas.

- a) Rehabilitation or replacement of chocked sewers.
- b) Rehabilitation of the disposal/pumping stations.
- c) Laying the facility in the unserved areas.
- d) Construction of waste water treatment plants.

Section-4 Solid waste management

4.1 Existing situation

4.1.1 Available resources

a) *Equipment & machinery*

Under mentioned collection and transportation machinery is available with MC to handle the solid waste.

S.No	Equipment/machinery	Total Nos. available	In working condition	Repairs required
1	Tractor trolleys	4	4	4
2	Tractor trolleys	6	6	6
3	Arm rolls	4	4	3
4	4-5 m3 containers	65	65	30
5	Front blade tractors	1	1	1
6	Front end loaders	2	2	2
7	Water bowsers	2	2	0
8	Mechanical sweepers	2	2	2

Solid waste system in city Bahawalnagar was improved in 2012 under PMSIP. Under this project equipment and machinery was provided for collection and transportation of waste to land fill site. Further dumping site was also constructed to dump the waste at 7.55 km distance from the city Centre. The Solid Waste Management system in the city still required to be improved.

b) **Manpower Deployed**

The manpower deployed for collection, transportation and disposal of the solid waste is given in the table below. As indicated by MC Officers, this manpower is not sufficient to serve the entire city at the given standards. Additional manpower required by the MC is also given here. Actual requirement will be identified after detail design and implementation of the project.

Slot	Sanctioned strength	Existing strength	Vacant post	Manpower on daily wages	Total man power deployed	Additional MC demand
Sanitary workers	231	180	51	30	210	50
Vehicle drivers	18	5	13	0	5	0
Supervisors	11	8	3	0	8	0
Senior Sanitary inspectors	1	0	1	0	0	0
Asst. Sanitary inspectors	2	2	0	0	2	0
Cooli Tractor	12	9	3	0	9	0

Spray Cooli	2	2	0	0	2	0
Water Carrier	16	15	1	0	15	0
Total	293	221	72	30	251	50

The city has un-satisfactory solid waste management system. Limitation in resources is described as under

4.2 Reasons for poor service

- MC is facing shortage of vehicle drivers and other staff.
- The equipment and machinery is sufficient to serve the entire city but maintenance of machinery mechanism is poor.
- Landfill site is available for dumping of solid waste but waste is not properly dumped and covered.
- The waste is being openly dumped in landfill site without compaction and provision of covers which is creating all sort of hazards.

4.3 Un-served and partially served areas

The entire city is not served with solid waste collection and disposal. 70% area of the city is fully served, 10% is partially served and 20% is un-served as marked on the map. In partially served areas service is rendered intermittently depending upon availability of manpower and transportation machinery. The detail of these areas is given blow;

a) Partially served areas

No regular service is rendered in the under mentioned areas. The main complaints are attended by sending the machinery & labor once or twice a week.

1-Quaid e Azam Chowk	2-Ranjah wala Khu	3-Model town
4-Farooqabad west	5- Farooqabad west	6-Bhari Colony
7-Islamnagar		

b) Unserved areas

Under mentioned areas are still unserved;

1-Basti Nazir wali	2-Tibba Maqsoodpura	3-Sabzazar Colony
4- Allah ho Akbar chowk	5-Hussanabad	6-Fateh kot chowk
7-Bagarwala Gali	8- Hafizabad	9-Jattu wala Khu
10-Basti Munirabad		

4.4 Solid waste Generation & Disposal

The solid waste management efficiency along with present dumping sites are given below;

Total waste generated per day		Total waste collected (Tons)		% Efficiency of disposal	Name of dumping sites
Cubic meters	Tons	Cubic meters	Tons		SiteNo-1
156	78*	122	63	80%	Landfill site developed under PMSIP in 2012 and is operational.
Distance from city center (Km)				7.5 KM	
Open dumping= O Landfill= LF				LF	

*Assumed density of loose solid waste = 500 KGs per cubic meter

4.5 Landfill Site development

Sanitary landfill site on Arifwala road is available. The operation and maintenance of SLF is not being done properly by MC. Waste is not being dumped in layers and earth cover is not being provided by MC Bahawalnagar. Civil works in landfill site required to be repaired.

4.6 Vehicle parking Area:

MC has built-up parking area at present and vehicles are parked in the parking area. Vehicle washing and service arrangements, small office and other allied facilities already available in vehicle parking area.

4.7 Levying of sanitation fees

No sanitation fee has been levied by MC and the entire expenditure given below is being met from MC's own resources and the PFC share being given by Provincial government.

4.8 Solid waste management financials (million Rs.)

The annual expenditure incurred by MC for last 5 years is given below which includes manpower, energy, repairs, supplies etc.)

Year	2013-14	2014-15	2015-16	2016-17	2017-18
O&M Expenditure (million Rs)	8.371	8.786	12.196	12.335	13.612

MC will have to levy the sanitation fee to meet the expenditure on solid waste management or at least to lower down the subsidy presently being injected.

4.9 Service delivery

At the average, the service delivery level is not good with 77% efficiency. Some portion of the city is either un-served or partially served because of shortage of sanitary staff and machinery & equipment. The efficiency is much better than other MC,s in Punjab

Section-5 Roads

5.1 City Roads Hierarchy

The main roads in the city and emerging from the city have under mentioned hierarchy;

S.No	Name of the road	Owner department
1	Bahawalnagar- Arifwala Road	Punjab Highway Department
2	Bahawalnagar- Minchinabad Road	Punjab Highway Department
3	Bahawalnagar- Chishtian Road	Punjab Highway Department
4	Bahawalnagar- Haroonabad Road	Punjab Highway Department
5	All other roads in the city	Municipal Committee roads

All these roads have been marked on the map of the city in different colors

5.2 Existing situation

Some of the primary roads in MC Bahawalnagar are in good condition & few main roads need rehabilitation, resurfacing and widening & improvement. Further many of the secondary roads/streets require either rehabilitation or new construction. The detail of the problem roads is given below;

5.3 Problem roads

The detail of all these roads is given on the next page. A total of 54 roads in the city need rehabilitation out of which 6 roads need widening & improvement, 48 roads require resurfacing of roads.

S.N.	Name of Roads	Existing Surface	Length (Km)	Condition
1	City School Chowk to Thana City via Imam Bargah	TST	0.45	poor
2	Jamia Masjid Nadir Shah Bazar via Mubark Gate	TST	0.55	poor
3	Circular Road to Bukhara Hotal Chowk via Theka Afeon	TST	0.45	poor
4	Imam Bargah Aftab Manzil To Chowk Band Gali Peer Gee	TST	0.22	poor
5	Gali No. 07 Mosmiat to 22 Ft Road via Mosimat office	TST	0.76	poor
6	Waheed Arshad Chowk to Degree College Madni Colony Watto Chowk	TST	0.98	poor
7	Madni Colony Gali No. 14 to Mohal Chowk Degree College Road via Abadi Tiba Maqsood pura	TST	0.64	poor
8	Mubark Gate Chwok to Chishtian Phatk via Takia Mohsin Shah	TST	0.51	poor
9	Noori Street AC office Chowk to Disposal Islam Nagar	TST	0.64	poor
10	Masjid Ehlhadis Chowk to Naik Wali Chaki	TST	0.22	poor

11	Colony High School Chowk To Store Wali Gali via WAPDA scarp	TST	0.58	poor
12	Graveyard Quresh Colony to Nehr Officer Colony with roads faisal colony	TST	0.27	poor
13	Main Road Modal Town Dr Mushtaq to Rao Munawr Block Y House No. 132	TST	0.26	poor
14	Link road Ali Ahmad Mahar to Abdur Rehman House	TST	0.11	poor
15	Peer Sabir Chishti House No. 172 to Ch House House No. 166	TST	0.11	poor
16	House Asim Khan to House Sarfraz Chohan	TST	0.15	poor
17	Degree College main road	TST	0.30	poor
18	Link road millat rice factory to kat rajey wali	TST	0.40	poor
19	Disposal road Madina Town from Chishtian Road to Slaughter House	TST	0.30	poor
20	Circular Road to Khalid Cloth House Ganda Nala Road	TST	0.35	poor
21	Old election office street behind Azmat Flying Coach to Street Ishaq Babu	TST	0.80	poor
22	UBL Chowk Minchinabad Road to WAPDA Rest House, Tower Road	TST	0.40	poor
23	Shop Syed Aslam Shah to Ara Machine Street Faisal Colony	TST	0.50	poor
24	Quresh Colony Road to Gate Grave Yard East & West	TST	1.00	poor
25	Khadim Abad Road behind Chaki Allah Dad Road to House Yousaf Abassi	TST	0.20	poor
26	Khadim Abad Road Shamoan House to House Hafiz Yaseen	TST	0.30	poor
27	Haji Aslam street to house shabrati behind Masjid Khadim Abad	TST	0.30	poor
28	Haroon Abad Road Disposal Road to Street Ishaq Bhatti	TST	0.55	poor
29	Street Malik Liaqat Shahzad Nagar	TST	0.30	poor
30	Masjid Anwar e Madina to House Bashir Contractor Z-Block Model Town	TST	0.35	poor
31	Muslim colony road in front of Jail to Chowk Hussain Abad	TST	0.35	poor
32	Loharan Wala Chowk to College Road Sadat Colony	TST	0.20	poor
33	Street Sajid Mehmood Sadat Colony	TST	0.20	poor
34	Degree College Road to House Amjid Pirzada Sadat Colony	TST	0.30	poor
35	Loharan Wala Chowk to Masjid Zia ur Rehman	TST	0.20	poor
36	Street Khalil Patwari Sadat Colony	TST	0.30	poor
37	Street Mustafa Gill Sadat Colony	TST	0.20	poor
38	Petion Wali Gali Dhaban Bazar to House Rasheed Sukhera	TST	0.20	poor
39	Mandi Hussain Abad Road	TST	0.40	poor
40	Street Sh. Jamil Mohajir Colony	TST	0.20	poor

41	Urdu Road to Attiq Medical Store Tehsil Bazar	TST	0.30	poor
42	Degree College Road to Tagar House Gulberg Colony	TST	0.50	poor
43	Quresh Colony Phatak to Khalid Maqbol Park to link Chishtian Road	TST	0.30	poor
44	Gala Mandi Eastern Gate towards House Seith Khalid Iqbal	TST	0.20	poor
45	Street No. 04 Shahzad Nagar	TST	0.25	poor
46	Street No. 05 Shahzad Nagar	TST	0.20	poor
47	Street No. 06 Shahzad Nagar	TST	0.20	poor
48	Street No. 01 Muslim Colony	TST	0.13	poor
49	Govt. Boys High school Road	TST	1.5	poor
50	Khlid Maqbool Park Road	TST	1.0	poor
51	Gao Shalah Road	TST	1.0	poor
52	Haronabad Road	TST	1.0	poor
53	Mohajr Colony	TST	0.5	poor
54	Minchinabad Road	TST	1.5	poor

5.4 Required interventions

5.4.1 Widening & improvement of roads

The roads given in the table below are in poor condition. The traffic intensity has increased on these roads and their widening and improvement is required.

Sr. #	Name of road	ROW Ft	Length Km	Pavement width	
				Existing Ft	Proposed Ft
W1	Govt. Boys High school Road	70	0.6	10	24
W2	Khlid Maqbool Park Road	25	1.0	10	24
W3	Gao Shalah Road	30	1.0	15	24
W4	Haronabad Road	24	1.0	10	20
W5	Mohajr Colony	60	0.5	10	20
W6	Minchinabad Road	30	1.5	12	24

5.4.2 Resurfacing of roads

The below given roads have developed potholes and broken edges and need resurfacing.

S. No.	Repairs & Replacement	Existing Surface	Length (Km)
R1	City School Chowk to Thana City via Imam Bargah	TST	0.45
R2	Jamia Masjid Nadir Shah Bazar via Mubark Gate	TST	0.55
R3	Circular Road to Bukhara Hotal Chowk via Theka Afeon	TST	0.45

R4	Imam Bargah Aftab Manzil To Chowk Band Gali Peer Gee	TST	0.22
R5	Gali No. 07 Mosmat to 22 Ft Road via Mosimat office	TST	0.76
R6	Waheed Arshad Chowk to Degree College Madni Colony Watto Chowk	TST	0.98
R7	Madni Colony Gali No. 14 to Mohal Chowk Degree College Road via Abadi Tiba Maqsod pura	TST	0.64
R8	Mubark Gate Chwok to Chishtian Phatk via Takia Mohsin Shah	TST	0.51
R9	Noori Street AC office Chowk to Disposal Islam Nagar	TST	0.64
R10	Masjid Ehlahadis Chowk to Naik Wali Chaki	TST	0.22
R11	Colony High School Chowk To Store Wali Gali via WAPDA scarp	TST	0.58
R12	Graveyard Quresh Colony to Nehr Officer Colony with roads faisal colony	TST	0.27
R13	Main Road Modal Town Dr Mushtaq to Rao Munawr Block Y House No. 132	TST	0.26
R14	Link road Ali Ahmad Mahar to Abdur Rehman House	TST	0.11
R15	Peer Sabir Chishti House No. 172 to Ch House House No. 166	TST	0.11
R16	House Asim Khan to House Sarfraz Chohan	TST	0.15
R17	Degree College main road	TST	0.30
R18	Link road millat rice factory to kat rajey wali	TST	0.40
R19	Disposal road Madina Town from Chishtian Road to Slaughter House	TST	0.30
R20	Circular Road to Khalid Cloth House Ganda Nala Road	TST	0.35
R21	Old election office street behind Azmat Flying Coach to Street Ishaq Babu	TST	0.80
R22	UBL Chowk Minchinabad Road to WAPDA Rest House, Tower Road	TST	0.40
R23	Shop Syed Aslam Shah to Ara Machine Street Fasisal Colony	TST	0.50
R24	Quresh Colony Road to Gate Grave Yard East & West	TST	1.00
R25	Khadim Abad Road behind Chaki Allah Dad Road to House Yousaf Abassi	TST	0.20
R26	Khadim Abad Road Shamoon House to House Hafiz Yaseen	TST	0.30
R27	Haji Aslam street to house shabrati behind Masjid Khadim Abad	TST	0.30
R28	Haroon Abad Road Disposal Road to Street Ishaq Bhatti	TST	0.55
R29	Street Malik Liaqat Shahzad Nagar	TST	0.30

R30	Masjid Anwar e Madina to House Bashir Contractor Z-Block Model Town	TST	0.35
R31	Muslim colony road in front of Jail to Chowk Hussain Abad	TST	0.35
R32	Loharan Wala Chowk to College Road Sadat Colony	TST	0.20
R33	Street Sajid Mehmood Sadat Colony	TST	0.20
R34	Degree College Road to House Amjid Pirzada Sadat Colony	TST	0.30
R35	Loharan Wala Chowk to Masjid Zia ur Rehman	TST	0.20
R36	Street Khalil Patwari Sadat Colony	TST	0.30
R37	Street Mustafa Gill Sadat Colony	TST	0.20
R38	Petion Wali Gali Dhaban Bazar to House Rasheed Sukhera	TST	0.20
R39	Mandi Hussain Abad Road	TST	0.40
R40	Street Sh. Jamil Mohajir Colony	TST	0.20
R41	Urdu Road to Attiq Medical Store Tehsil Bazar	TST	0.30
R42	Degree College Road to Tagar House Gulberg Colony	TST	0.50
R43	Quresh Colony Phatak to Khalid Maqbol Park to link Chishtian Road	TST	0.30
R44	Gala Mandi Eastern Gate towards House Seith Khalid Iqbal	TST	0.20
R45	Street No. 04 Shahzad Nagar	TST	0.25
R46	Street No. 05 Shahzad Nagar	TST	0.20
R47	Street No. 06 Shahzad Nagar	TST	0.20
R48	Street No. 01 Muslim Colony	TST	0.13

Section-6 Parks and open spaces

6.1. Existing situation

6.1.1. Inventory of existing parks

Inventory of parks owned by MC Bahawalnagar with complete details is given below;

S.#	Name of Park	1	2	3
		Sutluj park	Khalid Maqbool park	Amir Jan park
1	Location	Eidgah road	Quraish colony	Near DHQ hospital
2	Area of park in acres	5.50	6.0	2
3	Watering & irrigation			
a	Tube well	Yes	No	No
b	Water supply from municipal system	Yes	No	Yes
c	Underground water tank	No	No	Yes
d	Pumping unit	Replacement	No	No
e	Distribution pipe lines	No	No	No
f	Valves	No	No	Yes
g	Sprinkler system	No	No	Required
4	Landscaping & plantation			
a	Grass beds	Yes	No	Yes
b	Flower beds	yes	No	No
c	Hedges	Yes	No	No
d	Plants	Yes	No	Yes
5	Park Lights			
a	Poles and masts	Replacement	No	Yes
b	Cables	Replacement	No	No
c	Brackets and lights	Replacement needed (LED)	No	Yes
d	Bulbs and tubes	Replacement needed (LED)	No	No
e	Control units	Replacement	No	No
6	Structures			
a	Buildings	No	No	Yes
b	Fountains & water fall structure	No	No	No
c	Walkways	Yes	No	No
d	Bridges & culverts	No	No	No
e	Boundary wall & gate	Yes	No	Yes

f	Toilets	New toilets needed	No	New toilets needed
g	Lakes & brooks	-	No	No
7	Mechanical equipment			
a	Pumping units	No	No	No
b	Swings	No	No	Required
c	Children games	No	No	No
d	Fixtures	No	No	No
e	Benches	New needed	No	Required
8	Sanitation & water supply			
a	Litter bins	Yes	No	No
b	Toilet fixtures	Rehabilitation required	No	Rehabilitation required
c	Sewerage system	Rehabilitation required	No	Rehabilitation required
d	Vegetation cuttings & disposal	Yes	No	Yes
e	Drinking water	Yes	No	Yes
f	Water pipes	Yes	No	Yes

6.2. Rehabilitation of the existing parks

Some of the facilities in these parks are working in good condition but some of these are in poor condition and need to be rehabilitated. On the other hand some important facilities are missing and need to be provided. The detail of all the required interventions in these parks for their upgrading are given blow;

S.N.	Name of Park	Area in acres	Details of rehabilitation and extension of facilities
1	Sutluj park	5.5	1) Improvement of the water supply pipe lines. 2) Provision of sprinkler lawn watering system. 3) Construction of Fountain. 4) Replacement of park lights by LED lights. 5) Provision of benches 6) Construction of toilets 7) Provision of swings and children outdoor games.
2	Khalid Maqbool Park	6.0	The park is provided with gate and damaged boundary wall only. No other facilities of the parks are required to be constructed.
3	Amir Jan Park	2.0	1) Improvement of the water supply pipe lines. 2) Provision of sprinkler lawn watering system. 3) Construction of Fountain. 4) Replacement of park lights by LED lights. 5) Provision of benches

			6) Rehabilitation of toilets 7) Provision of swings and children outdoor games.
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6.3. Open spaces to parks

The city has only one open space in Model town. Municipal Committee desires to convert the open space in to park because of congestion in the existing parks. Detail of open space for conversion in to parks is given below:

Conversion of open spaces to Parks/Play-ground

S.No	Name of open space	Model Town	MC Colony
1	Location	Model Town	Near MC Colony
2	Area in acres	02	1.5
3	Present land use	Nil	Nil
4	Water table depth & quality	Water table depth = 20 ft Quality-brakish	Water table depth = 20 ft Quality-brakish
5	Does MC intend to convert it into park?	Yes	Yes
6	Does MC intend to convert it into playground or stadium?	No	No
7	If no what are bottlenecks	-	-
8	Will the space attract visitors if converted to park?	Yes	Yes

6.4. O&M expenditure and revenue recovery

Year	2013-14	2014-15	2015-16	2016-17	2017-18
O&M expenditure	0.875	1.288	0.956	0.069	0.263
Revenue earned	0	0	0	0	0

Section-7 Street Light

7.1. Existing situation

Some roads in the city have been provided with street light. The detail of lights provided on roads is given below;

S.N.	Name of road	Total light Nos.	Operative Light Nos.
1	Jamia Tul Zahra to Jail Road	5	2
2	Police Line chowk Jaild Road to Circular Road via Urdu Road (Jail Road)	32	15
3	Jail Road to Tehsil Bazar Road via Markezi Imam Bargah	7	2
4	Commercial College Chowk to Rafiq Shah Chowk(Baldia Road)	18	3
5	Aziz Street	9	6
6	Circular Road main	12	2
7	Circular Road To ZA syed Chowk via Baba Ali	5	0
8	Line Police Chowk to Minchinabad Chowk	20	7
9	Satluj Park Chowk to Mubark Gate via Tehsil Baazara (Tehsil Road)	32	3
10	Eid Gah Road	26	3
11	Minchinabad Chowk to Mizayl Chowk via DC office Road (DCO Office Road)	29	10
12	Mizayl Chowk to Shaheen Chowk (Arifwala Road)	17	0
13	Rashid Pump to Railwah Chowk Via Quresh Colony Chishtian Phatak	32	0
14	Bahawli Chowk to Sultn Pump Haroonabad Road	32	0
15	Haroonabad Road to House Haji Hassan	16	3
16	Modal Town to Haroonabad road	11	2
17	Bank Chowk North & South Side	15	0
18	Karmanwala Chowk to Mohal Chowk (via Bahawali Chowk) 100 watt LED Light	200	200

7.2. Replacement of luminaries

Street lights were provided by MC Bahawalnagar on the roads but MC could not replace the out of order street light due to financial constraints even the other accessories are still available. The lights equipped with sodium luminaries, energy savers and defected LED lights are required to be replaced by quality LED lights for saving the energy cost. The replacement of light with cable and photoelectric switches are required.

S.N.	Replacement of street light	Total Qty. to be replaced
R1	Jamia Tul Zahra to Jail Road	5
R2	Line chowk Jaild Road to Circular Road via Urdu Road	32

R3	Jail Road to Tehsil Bazar Road via Markezi Imam Bargah	7
R4	Commercial College Chowk to Rafiq Shah Chowk	18
R5	Aziz Street	9
R6	Circular Road main	12
R7	Circular Road To ZA syed Chowk via Baba Ali	5
R8	Police Line Chowk to Minchinabad Chowk	20
R9	Satluj Park Chowk to Mubark Gate via Tehsil Baazara	32
R10	Eid Gah Road	26
R11	Minchinabad Chowk to Mizayl Chowk via DC office Road	29
R12	Mizayl Chowk to Shaheen Chowk	17
R13	Rashid Pump to Railwah Chowk Via Quresh Colony Chishtian Phatak	32
R14	Bahawli Chowk to Sultn Pump Haroonabad Road	32
R15	Haroonabad Road to House Haji Hassan	16
R16	Modal Town to Haroonabad road	11
R17	Bank Chowk North & South Side	15

7.3. Requirement of new street lights

New requirement of street lights will be assessed after the detailed survey of the energy audit and financial constraints. However, these are very busy roads and require installation of new street lights.

Provisions of New Street Lights		
S. N.	Name of road/street	Length (Km)
N1	Govt colony high school road	1.0
N2	Quraish colony qabristan Road	0.3
N3	Shoukat Hospital road	1.2
N4	Chishtian road	0.4
N5	Rice mill road	0.7
N6	Girls college to Madina town	1.0
N7	Urdu road to Masjid Fardus	0.5
N8	Baldia road to Qasim road	0.7

N9	Baldia road to circular road	0.4
N10	Mohajr colony road	0.5
N11	Main masjid Mohajr colony road	0.5
N12	Jamia Masjid Muhajir colony main road	1.0
N13	Waheed Arshad chowk to Jail road	1.0
N14	Imam Bargah road Mohajir Colony	0.5
N15	Shahzad nagar road	1.5
N16	Gao Shalah road	0.5
N17	SD Shad road	0.5
N18	Election office road	1.3
N19	Harronabad road to Model town	1.5
Total length in Km		15.0

7.4. Expenditure on street lights

Under mentioned expenditure on the Operation & Maintenance of the existing street lights has been incurred by MC Bahawalnagar during the last 5 years. This includes the energy cost, manpower cost and cost of repairs and replacements.

(All figures in million Rs)

Year	2013-14	2014-15	2015-16	2016-17	2017-18
O&M Expenditures	1.497	1.790	0.642	0.142	0.405

Section-8

Public Private Partnership projects & Collaborative Projects executed by MC

8.1. Planning & Execution of PPP projects

As informed by Chief Officer no project in the Public Private Partnership Mode & Collaborative Mode has ever been executed by the Municipal Committee or defunct TMA Bahawalnagar. As such the key officers and staff have no experience as well as capacity for planning estimation and execution of such projects.

Section-9

Budgetary provisions on development of services infrastructure and O&M Cost

9.1. Development expenditure

The expenditure incurred on the development projects from year 2013-14 to the current financial year & source of financing is given below

(All figures in million Rs)

Description	2013-14	2014-15	2015-16	2016-17	2017-18
Expenditure on Development Projects	5.002	1.059	0.530	2.300	22.065
Source of Financing of Development Projects	Own source revenue				
	ADP grants				
	PFC share				
9.2. Expenditure on O&M of services and revenue generated					
Description	2013-14	2014-15	2015-16	2016-17	2017-18
<u>Water supply</u>					
Total O&M cost	45.069	49.135	37.043	55.061	44.238
Revenue earned	6.721	14.084	14.796	13.946	15.516
% revenue earned vs O&M charges	14.91	28.66	39.94	25.33	35.07
Subsidy injected	38.348	35.051	22.247	41.115	28.722
<u>Sewerage/drainage</u>					
Total O&M cost	4.864	5.264	6.349	6.872	9.121
Revenue earned	Nil	Nil	Nil	Nil	Nil
Subsidy injected	4.864	5.264	6.349	6.872	9.121
<u>Solid waste management</u>					
O&M cost	8.371	8.786	12.196	12.335	13.612
Revenue earned	Nil	Nil	Nil	Nil	Nil
Subsidy injected	8.371	8.786	12.196	12.335	13.612
<u>Parks</u>					
O&M cost	0.875	1.288	0.956	0.069	0.263
Revenue earned	Nil	Nil	Nil	Nil	Nil
Subsidy injected	0.875	1.288	0.956	0.069	0.263
<u>Slaughter houses</u>					
O&M cost	1.028	1.126	1.205	1.321	1.423
Revenue earned	0.299	0.752	0.703	0.734	1.101
<u>Street Light</u>					
O&M cost	1.497	1.790	0.642	0.142	0.405

Section-10

Manpower deployment & shortage

The manpower deployed by MC Bahawalnagar in various Municipal Services is given below.

MC is experiencing manpower shortage in some of the services which is also explained herein.

S. No.	Description	Sanctioned Regular strength	Actual Regular deployment	Regular Vacant Slots	Employed on daily basis	Shortage of regular personnel	Additional requirement
A	Office manpower						
1	Key officers (BPS-17 & above)	9	5	4	0	4	0
2	Sub engineers	3	2	1	0	1	0
3	Support staff (BPS-16 & below)	107	87	20	0	20	0
	Total office manpower (A)	119	94	25	0	25	0
B	Municipal services						
1	Water supply	61	55	6	0	6	10
2	Sewerage	36	16	20	18	20	10
3	Solid waste management	293	221	72	30	72	50
4	Parks	26	19	7	0	7	0
5	Roads	0	0	0	0	0	0
6	Street lights	3	2	1	0	1	0
7	Slaughter houses	4	4	0	0	0	0
	Total municipal services (B)	423	317	106	48	106	70
	Grand Total (A+B)	542	411	131	48	131	70

Section-11

Summary public opinion surveys regarding the municipal service delivery

S. No.	Name of Service	Total persons interviewed	Opinion of the persons interviewed				Average consumer opinion
			Poor (Nos)	Fair (Nos)	Good (Nos)	Excellent (Nos)	
1	Water supply quantity	9	4	3	2	0	Fair
2	Water supply quality	9	6	2	1	0	Poor
3	Sewerage	9	4	4	1	0	Fair
4	Drain cleaning	9	5	3	1	0	Poor
5	Street sweeping	9	3	2	4	0	good
6	Solid waste collection & disposal	9	3	3	3	0	good
7	Condition Parks & play grounds	9	3	6	0	0	Fair
8	Slaughter house functioning	9	2	7	0	0	Fair
9	Street light functioning	9	3	5	1	0	Fair
10	General condition of roads	9	2	3	4	0	Good
11	Complaint attending capability	9	4	1	4	0	Good

Survey of Public general view over service delivery

S. No	Name of person interviewed	Muhallah or colony	Water supply		Sewerage	Drain cleaning	Street sweeping	Solid waste collection & disposal	Roads	Parks & play grounds	Slaughter houses	Street light	Complaint addressal
			Quantity	Quality									
1	M. Arshad Farooq	Jhangir Kot	Fair	Poor	Poor	Poor	Good	Fair	Good	Fair	Poor	Fair	Good
2	Ahmad Raza	Quresh Colony	Poor	Poor	Poor	Poor	Poor	Poor	Good	Fair	Fair	Poor	Poor
3	Ghulam Mustafa	Firdos Street	Good	Poor	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Good
4	Nazir Ahmad	Hassanabad	Poor	Poor	Fair	Poor	Fair	Poor	Poor	Fair	Fair	Fair	Fair
5	Khalid Jawed	Maqsood abad	Good	Fair	Poor	Poor	Good	Fair	Good	Poor	Fair	Poor	Poor
6	Kashif Ali	Model town	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Fair	Fair	Poor
7	Shakeel Khan	Munirabad	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor	Fair	Good	Good
8	Fazal Ahmad	Muhajir colony	Poor	Fair	Poor	Fair	Poor	Good	Poor	Fair	Fair	Fair	Good
9	Abbas Shah	Mohallah Tailian	Poor	Poor	Good	Fair	Poor	Poor	Fair	Poor	Poor	Poor	Poor