Local Government & Community Development Department

Punjab Cities Program

Gap Analysis

of

Municipal Services infrastructure & service delivery

in

Wazirabad City

Punjab Municipal Development Fund Company

Section-1 City Background

1.1. District Status

Wazirabad is an industrial city located in Gujranwala District and is known as city of cutlery because number of cutlery industries are located in and around this city. The city of Wazirabad is the administrative headquarters of Wazirabad Tehsil, a subdivision under the control of district Gujranwala. The city itself is subdivided into 5 Union Councils.

The town dates back to year 1760 when it was first taken over by Charat Singh. Maharja Ranjit Singh occupied the town in 1809 and Avitabile was appointed as the Nazim of the city. During British rule Wazirabad was the headquarters of the old Wazirabad District, broken up in 1852, and was the site of a cantonment which was moved to Sialkot in 1855. The municipality was created in 1867. The population according to the 1901 census was 18,069.

1.2. Location

Wazirabad is situated on the banks of the Chenab River nearly 100 kilometers north of Lahore on the Grand Trunk Road. It is 45 kilometers from Sialkot, 30 kilometers from the district capital - Gujranwala and about 12 kilometers from Gujrat. The city is located at a distance of 190 Kilometers from Islamabad on the Grand Trunk Road. It has 32°26′ North latitude and 74° 07′ East longitude and elevation of 230 meters (755 feet) above mean sea level.

1.3. The Climate

Wazirabad has a hot semi-arid climate, and changes throughout the year. During summer (May to September), the temperature reaches 36–44 °C. The coldest months are usually November to February, when the temperature can drop to an average of 7 °C. The highest-precipitation months are usually July and August, when the monsoon reaches in Punjab. During the other months, the average rainfall is about 628 millimeters. The driest months are usually November to April, with little rainfall.

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 128,060 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 228,958 persons in the year 2017 with an annual growth rate of 1.89 % and it is expected to rise to 276,104 persons in the year 2027. Some 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 in consultation with MC staff & Public Health Engineering Department local 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

The city is divided into two zones Eastern Zone & Western Zone divided by Lahore-Rawalpindi GT Road.

Both zones, served, un-served, contaminated and water shortage areas have been marked on the map attached with the report.

2.2 The water source & storage

2.2.1 Zone I (Eastern Zone):

Around 25% of the area of the Eastern Zone is unserved. Rest of the area is served with water supply facility. The system in this zone comprises of 11 tube wells, one OHR and a network of distribution system. The locations and year of installation of these tubewells have been given in the table below;

Sr. No	**Location**	**Year of installation**	**Designed Capacity** (cusecs)	**Present status**
01	Mohallah Shero TW-1	1980	1.5	Functional
02	Mission High School	1986	1.5	do
03	Near Phatik Nizamabad	1989	1.0	do
04	Lala Zar Colony	1996	1.0	do
05	Mohallah Shero TW-2	1997	1.0	do
06	College Road	1998	1.0	do
07	Islamabad More	2003	1.0	do
08	Mohallah Saithan Nizamabad	2011	1.5	do
09	Cheema Colony	2011	1.5	do
10	Near Zia-e-Madina CNG Sialkot Road	2011	1.0	do
11	Near Hawa Memorial Hospital	2011	1.5	do
	Total designed capacity		**13.50**	

Water is being supplied through direct pumping mostly. Some areas have contamination issues as marked on the map in blue color. Water shortage also exists in some areas of this zone as marked on the map in yellow color.

2.2.2 Zone II (Western Zone):

Around 70% of the area of the Western Zone is unserved. Four tubewells are operational. No OHR has been constructed in this zone and water is being supplied through direct pumping. The detail of tubwells along with year of installation is give below;

Sr. No	Location	Year of installation	Designed Capacity (cusecs)	Present status
1	Allaahad	1989	1.0	Functional
2	Spal Colony	2000	1.5	do
3	Qudratabad	2011	1.5	do
4	Thatthi Araian	2011	1.5	do
Total designed capacity			**5.5**	

Most of the areas of this zone are facing water contamination issues as marked on the map in blue color.

2.2.3 Total Source capacity

Zone	No. of tube wells	Designed Capacity (cusecs)	Total capacity (cusecs)	No of tube wells		Present working hours per day	Present daily water production (MGD)	Possible water production with 14 working hours/day (MGD)
				Functional	Abandoned			
Zone-I (Eastern zone)	6	1.0	6.0	6	-	10	3.038	4.305
	5	1.5	7.5	5	-			
Total	**11**	**-**	**13.5**	**11**	**-**			
Zone- II (Western zone)	1	1.0	1.0	1	-	10	1.238	1.733
	3	1.5	4.5	3	-			
Total	**4**	**-**	**5.5**	**4**	**-**			
Grand total	**15**	**-**	**19**	**15**	**-**	**-**	**4.276**	**6.038**
Total population within municipal limits in year 2017							128,060	persons
Growth rate							1.89%	
Total projected population within municipal limits in year 2019							132,946	Persons
Per capita water production with 10 working hours per day*							32	GPCD
Per capita possible water production with 14 working hours per day*							45	GPD

*Assuming that all tubewells are yielding designed discharge

The per capita water production given above shows supply of adequate water to the consumers. The water shortage in the eastern zone shows either huge wastage of water or reduction of discharge of some tubewells in the water shortage areas which will be diagnosed at the stage of detailed design of the system under PCP.

2.3 Problems and gaps in the system

Under mentioned problems and bottlenecks are faced by the consumers in this water supply system;

2.3.1 Water shortage zones:

Piped water supply system is existing in the under mentioned parts of the city but these areas are subjected to sever water shortage

1- Nizamabad Colony	2- Madina Colony
3- Sethan Nizamabad	4- Allah Jaway colony

Reasons for water shortage

- Due to rapid development and congestion existing source capacity in these areas may not adequate.
- Water supply hours maintained by the MC may not be enough in these areas. Increase in water supply hours may address the water shortage.
- Water wastage and unequal distribution of water is another reason for water shortage wherein the consumers near to the tube-wells waste lot of water by keeping the taps open whereas the consumers at remote end of the distribution system do not get water.

2.3.2 Un-served areas: (shown in pink color in the map)

Due to expansion of the city, the newly developed areas are not supplied with the water. Under mentioned areas of the city have still not been provided with the facility of water supply.

1- Mohalla Rasool Nagar	2- Naseer Colony	3- Shadman Town
4- Gulshan Colony	5- Saddar	6- Pothohar Wali
7- Mohammad Nagar	8- Khasry	9- Ismail pura
10- Purani Darson factory area	11- Railway Colony	12- Haider colony
13- Kotla piran		

2.3.3 Contaminated water zones:

The areas given below are being supplied with contaminated water and required steps to eliminate the contamination of water are required to be taken up.

1- Haji pura	2- Daska chowk	3- Mohalla Dogran
4- Lalazar Colony	5- Spal colony	6- Mohalla Allahabad

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.

2.4 Water supply hours and consumer connections

Water is being supplied to the city in the below given timings.

Water Supply hours				Consumer connections			
Morning	**Midday**	**Evening**	**Total**	**Domestic**	**Commercial**	**Industrial**	**Total**
4	2	4	10	8,024	37	Nil	8,061

The water supply hours are a little short and the water shortage prevails at remote ends of the distribution system because of unequal distribution of water in the absence of consumer metering.

2.5 Total coverage of the city

The total area coverage of water supply in the city is approximately 60%. Out of served area 15 % area falls under water shortage and 40 % under the water contamination.

2.6 Tariff structure

The consumer connections are not metered and hence water wastage must 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. 200	Rs. 525	Nil

2.7 Required rehabilitation of the system

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

2.7.1 Tube wells and pumping machinery

a) Repair/Replacements of tubewells & pumping machinery

- Tubewell installed in Mohalla Saithan is yielding brown color water and is contaminated due to unknown reasons. Hence the tubewell as well pumping machinery is required to be replaced.

- Tubewell at Mohalla Mission high school is pumping sand so it also is required to be replaced.
- Further, pumping machinery of four tubewells Guru Kotha , Hawa Memorial Hospital , Lala Zar Colony , and Nizamabad Phattak need replacement due to very low efficiency of the tubewells as per Energy Audit of the system.

Type of Pump	Discharge each (cusec)	Replacement of tube wells	Replacement of pumping units	Repairs of pumping machinery
Deep well turbine pumps	1.5	02	04	-

b) Power Factor Improvement

As per energy audit report, the power factor at undermentioned seven tubewells is less than 0.8 and power factor improvement Equipment needs to be installed on these tubewells to improve the power factor and elimination of penalties.

S.N.	Location of tubewells	Size of the Power factor improvement equipment
1	Mohalla Sherro TW-2,	5.0 kVAR
2	Mor Islamabad	2.5 kVAR
3	Cheema colony	10.0 kVAR
4	Zia-e-Madina	7.5 kVAR
5	Darson factory,	2.5 kVAR
6	Hawa Memorial hospital	10.0 kVAR
7	Mohalla Saithan	5.0 kVAR

2.7.2 Repair of Pump Houses:

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

2.7.3 Overhead reservoirs

The repairs required are given below,

Location	Nos.	Capacity each (Gallons)	Operational Status	Type of repairs required
Sheru mohallah OHR	1	50,000	Operational	Minor repairs required such as plaster, gauge repair and paint etc.
Total	**1**	50,000		

2.7.4 Distribution system:

- The unserved areas should be equipped with the distribution system. Efforts should be made to feed the new distribution system with the existing tubewells. However in case of non-availability of enough water from the existing tubewells, new tubewells may be installed as per requirement and to meet the maximum day demand.

- Old and rusted MS & cast iron pipe lines are also leaking and producing contamination in the system. These pipes need replacement.
- Fixing of dead ends, shifting of water supply lines out of manholes & installation of PVC pipes in the missing links are required at many places in the city.

2.7.5 Repairs & replacement of other components

These components include;

- Replacement of hypo-chlorinators = 15 Nos.
- Replacement of MCU's = 12 Nos.
- Repair/Replacement of sluice valve, non-return valve and air valves and chambers. = 55 Nos.
- Installation of bulk water meters = 15 Nos.
- Installation of water pressure gauges = 15 Nos.
- Replacement of underground piping & saddles of approximately 4000 sub-standard consumer connections. The actual number of connections to be replaced will be identified during investigations for the preparation of feasibility report by the planning & design consultants.

2.7.6 Repair of water filtration plants

8 Nos. filtration plants are being maintained by the Municipal Committee, all of which require repair of certain important components to supply potable water to the inhabitants of the city.

2.8 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.

2.9 Installation of consumer meters.

The only and the effective way of water preservation and reduction of O&M cost is the consumer metering. Hence all the 8061 consumer connections are required to be metered. This will result in equal distribution of water, addressal of water shortage and supply of adequate water at good terminal pressure to all the consumers in the city. The

concept of 24/7 water supply can also be practiced if consumer metering is accomplished.

2.10 O&M Charges and revenue recovery

The operation & maintenance charges and the revenue recovery affected during the last five years in million PKR is given below;

Year	2013-14	2014-15	2015-16	2016-17	2017-18	Total subsidy in five years
O&M charges (million Rs)	34.81	38.31	38.22	30.3	45.52	**177.1**
Revenue recovery (million Rs)	10.00	12.80	12.20	13.60	17.80	**66.40**
Recovery % as compared with O&M exp.	29%	33%	43%	45%	39%	**37%**
Subsidy injected (million Rs)	**24.81**	**25.51**	**26.02**	**16.70**	**27.72**	**110.70**

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 and taking the elected representatives in confidence.

2.11 Manpower deployment

Slot	Sanctioned strength	Existing strength	Vacant post	Manpower on daily wages	Total man power deployed	Additional MC demand
Tube-well operators	10	10	-	-	10	-
Chowkidars	5	5	-	-	5	-
Electricians	3	3	-	-	3	-
Plumbers	3	3	-	-	3	-
Plumber helpers	-	-	-	-	-	-
Water Superintendent	1	1	-	-	1	-
Total	22	22	-	-	22	-

2.12 Service delivery & recommendations

1. Water supply is intermittent and total 10 hours per day. The quantity of water being produced presently is quite enough but water shortage in some areas may be due to reduced discharge of tubewells or water wastage which needs to be identified. The increase of supply hours in these areas may solve the problem to some extent.
2. Quite a large area is being supplied with contaminated water due to leaking pipes and substandard consumer connections. Replacement of the substandard and rusted consumer connections & old/rusted pipe lines and taking the pipe lines and consumer service pipes out of the waste water drains is required for reduction of water contamination.
3. Some of the area is un-served due to lack of distribution system. Water supply facility for these areas needs to be planned & implemented.

4. Service piping and saddles of all existing substandard consumer connections in the underground should be replaced by HDPE piping and saddles.
5. Illegal connection should be detected by consumer surveys and regularized.
6. None of the consumer connection is metered and it is proposed to meter all the consumer connections to conserve water, reduce O&M cost, address water shortage and supply of adequate quantity of water to every consumer.

3.1. Existing situation

3.1.1. Coverage

The city has 65% coverage of Sewerage System but only the main and branch sewers have been laid and the lateral sewers have been provided in small area of the city. Some areas are served by the surface drains discharging into the sullage carriers, or main sewers. The sewerage system is equipped with two disposal stations.

3.1.2. Drainage zones.

The city has been divided in 3 zones in respect of the waste water drainage. Each zone with its coverage is described below;

a) Drainage Zone-A

This zone consists of the western part of the city. The liquid waste of this zone is collected through a 42" main sewer in to Railway Colony disposal works, and is then disposed off into Nullah Palkhu though a drain. The detail of the sewers of the zone has been marked on the map.

b) Drainage Zone-B

This zone consists of the middle part of the city. The liquid waste of this zone is collected and disposed off into Nullah Palkhu by two main sewers of 33" & 18" under gravity. The detail of the sewers of the zone has been marked on the map.

c) Drainage Zone-C

This zone consists of the eastern part of the city. The liquid waste of this zone is collected through a 30" main sewer in to Cheema Colony disposal works, and is then disposed off into Nullah Palkhu though a drain. The detail of the sewers of the zone has been marked on the map.

3.1.3. Sewer lengths

The length of old 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 existing sewers

Sewer dia. (inch)	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**Total length in Km**
Length in Km	1.25	3	2.45	2.45	1	1	2	
Sewer dia (inch	**30**	**33**	**36**	**42**	**48**	**54**	**66**	**17.25 Km**
Length in Km	1	-	1	2.1	-	-	-	

3.2. Existing pumping / disposal stations

The details of each pumping station already working in the city is given below;

Location	Nos of collect. Tanks	Nos of pumps	Discharge each (cusecs)	Total discharge (cusecs)	Motor BHP	Working status	S. carrier			Ultimate disposal
							Size	Length (ft)	Cond.	
Railway colony	1	3	4.5	13.5	50	Fair	2.5'x3'	100'	Fair	Nullah palkhu
Cheema colony	1	3	4.5	13.5	50	poor	2.5'x3'	1200'	Poor	Nullah palkhu

3.3 Gaps in the system and the requirements

Under mentioned repairs and replacement in the components of the existing sewerage systems are required to be taken for efficient functioning of the system.

3.3.1 Problems in the pumping stations

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

Location of disposal works	Year of constr uction	Required rehabilitation
Railway colony	2013	Replacement of sluice valves. Repairs of screening chambers (railing + manhole cover + screen repairs+ penstock) Repair of pump house. Construction of new operator room. New generator required. Repair of approach road through a length of 700 Rft Repair of staff quarter. Replacement of electric wiring and motor feeders
Cheema colony	1985	Repair of 3 Nos sullage pumping units Replacement of suction & delivery pipes of all pumping units & sluice valves. Repair of 1 Nos pump houses. Replacement of force main 60 ft. Repair of collecting tanks (plaster + railing) Repairs of screening chambers (plaster + railing + manhole cover + screen repairs+ penstock). Repair of the sullage carrier (10,000'). Replacement of MCU. Installation of power factor improvement equipment. Repair of approach road in a length of 150 Rft. Repair of staff quarter. New generator required.

3.3.2 Reduction of pumping cost by laying of gravity sewers

Both of the disposal works need to pump water for disposal in the Palkhu Nallah but it is possible to discharge water into this Nallah by gravity if the last manholes of the disposal works are connected with Nallah through gravity sewers. As under;

a) Railway colony disposal works = 42" sewer with 300 Rft length
b) Cheema Colony disposal works = 30" dia sewer through 18 Rft length

By doing so waste water and storm water will be discharge through gravity and no pumping will be required throughout the year which will save millions of rupees annually.

3.3.3 Provision and repair of sewers & sullage carriers cleaning machines

1) For de-silting of sewers lines 2 Nos. winch machines are required to eliminate the flooding of sewer line.
2) MC is not desilting the collecting tanks due to which the sewer lines are being choked. Hence 01 No winch machine for the de-silting of collecting tanks will be required to keep the collecting tanks free of silt.
3) Similarly the sullage carrier are not being desilted 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 Nos back-hoe machines for the de-silting of sullage carriers is required and the repair of 01 No. existing back-hoe is also required.
4) Sucker machine in MC also needs repairs.

3.3.4 Areas flooded with waste water

Under mentioned areas of the city are usually subjected to waste water flooding because of sewer surcharging and overflowing.

1- Mohalla Nizamabad	2- Jinnah colony road area	3- Mohalla Sheroo
4- Mohalla Haji pura		

3.3.5 Un-served areas

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

1- Mohalla Jalalpur Nizamabad	2- Mohalla Nabi Buksh	3- Mohalla Rasool nagri Nizamabad
4- Naseer colony	5- Shadman town	6- Khasry
7- Purani darson factory area	8- Thatha faqeer Ullah	9- Bhattike
10- Railway colony	11- Mohammad nagar	12- Arain colony
13- Allah jaway colony	14- Ismail pura	15- Sikandar pura
16- Mohammad pura		

3.3.6 Replacement of sewers

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

Location of sewer	Size of sewer (inch)	Length (Ft)	Problem	Solution
Mohalla Nizamabad	12”	1,200	Semi-choked	Replaceable/ desilting
Mohalla Sheroo	15”	2,000	Semi-choked	do
Jinnah Colony road	12”	2,500	Semi-choked	do
Model colony to Daska chowk	12”	2,000	Semi-choked	do
Mohalla Haji Pura	15”	4,000	Semi-choked	do

Efforts should be made by MC to desilt all these sewers. However only sewers which cannot be de-silted, should be replaced

3.3.7 Provision of gully grating chambers & manhole covers

Gulley grating chambers are missing in some areas of the sewerage systems. These are provided to trap the silt and the floating materials. As such all these materials are flowing into the sewers and are contributing to the chocking of the sewers. Extreme shortage of manpower for cleaning of sewers is the main reason for the choking of main and lateral sewers. The gulley grating chambers to connect the surface drains with the sewers are to be provided in many areas of the 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.

3.4. Waste water treatment

Waste water from all the disposal works is being discharged in the storm water/seepage drains without treatment. Waste water treatment plants are required to be constructed to lower down the BOD level as per National Environmental Quality Standards (NEQS).

3.5. 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. However approximately 6000 Nos. drainage connections are available which only pay once at the time of issue of connection Rs.600.

3.6. Tariff structure

Sewer connections are not being charged, only 600 Rs fee is charged at the time of issuance of connection.

3.7. 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	6.67	7.31	7.09	4.72	8.15	33.95
Revenue earned	0.13	0.14	0.18	0.1	0.33	0.88
Percentage recovery vs O&M cost	2%	2%	3%	2%	4%	3%
Subsidy given	6.54	7.17	6.91	4.62	7.82	33.07

The service charges levied for the liquid waste management are very nominal and the collection of the revenue is not giving any attention neither by the key officers nor by the public representatives.

3.8. Manpower deployed

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

Pump operators	1
Baildars	-
Supervisors	-
Sewer men	-
Total	1

Seven regular post of sewer men exist with MC but these slots cannot be filled due to ban on recruitment which should be lifted to fill these slots. MC has deployed sanitary works from the solid waste discipline for sewer complaints. The sewers are slowly choking/dying and additional manpower should be sanctioned for the MC to clean and save these sewers.

3.9. Service delivery level

The service delivery is not satisfactory. Mc is 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 35% 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.

- 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.
- Shortage of staff exists due to which sewer cannot be cleaned properly.

3.10. 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 of alternate outfall sewers for gravity flow and eliminate pumping
d) Laying the facility in the unserved areas.
e) 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	Available	Nos. requiring repair
1	Tractor	4	4
2	Trolleys	3	1
3	Arm rolls	-	-
4	4-5 m3 containers	20	-
5	Compactor trucks	-	-
6	1.0 m3 containers	-	-
7	Front blade tractors	1	1
8	Front end loader	3	3
9	Water bowsers	2	1
10	Mechanical sweepers	1	1
11	Mini tippers	3	-
12	Hand carts type-I	50	-
13	Hand carts type-II	-	-
14	Steel bins	-	-
15	Loader Truck Mazda GAG/1061,1062	2	2

The existing machinery is neither sufficient nor cost effective and efficient giving rise to low efficiency of collection and disposal of the waste and as a result of that MC is facing higher waste management cost as well as complaints regarding the insanitary conditions in the city. Efficient and cost effective machinery is needed to increase the efficiency of collection and transportation for improving the sanitary conditions and lowering down the operational and maintenance costs.

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
Total manpower	145	134	11	3	11	11

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

4.2 Reasons for poor service

a) MC is facing shortage of vehicle drivers and other staff.
b) The equipment and machinery is neither efficient nor adequate to serve the entire city
c) No landfill site is available for dumping of solid waste. Currently solid waste is being dumped on the railway land along the GT road at a distance of 5 kilometers from the city near Chenab River, which is totally unhygienic.
d) The waste is being openly dumped without compaction and provision of covers which is creating all sort of hazards say; pollution of underground water, vector and vector borne diseases, obnoxious smell and highly insanitary conditions

4.3 Un-served and partially served areas

The entire city is not served with solid waste collection and disposal. 40% area of the city is fully served, 30% is partially served and 30% 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 below.

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	Mohallah Peer Mithan	2	Mohallah Kotla Peeran	3	Cheema Colony
4	Railway Colony	5	Saddar Area	6	Gulshan Colony
7	Purani Darson Factory Area	8	Spal Colony	9	Allahabad
10	Hussain Villas	11	Basti Qudrat-abad	12	Yousaf Town
13	Thathi Area	14	Mohallah Jalalpura		

b) Unserved areas

Under mentioned areas are still unserved;

1	Mohallah Nabi Baksh	2	Mohallah Rasool Nagri	3	Allahabad 2
4	Anasari Town	5	Naseer Colony	6	Shadman Town
7	Arain Colony	8	Pothohar Wali	9	Bhattike
10	Mohammad Nagar	11	Haider Colony		

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 with distance in Km from the city center
					SiteNo-1
Cubic meters	**Tons**	**Cubic meters**	**Tons**		Near Chenab river
110	55	66	33	60%	Present dumping
Distance from city center (Km)					5 KM
Open dumping= **O** Landfill= **LF**					O

4.5 Landfill development

Approximate area of 10 acres will be required for the next 10 years for construction of landfills for safe and sanitary disposal of the solid waste of the city. Presently the waste is being dumped on the railway land along the GT road at a distance of 5 kilometers from the city near Chenab River. MC is trying to procure new land for landfill. The suitability of the landfill site will be determined after detailed surveys and design of the project by catering the requirement of the environmental standards in vogue in Punjab.

4.6 Vehicle parking Area:

In mohallah Sheru 2.5 kanal space is available to be converted in to proper parking area by construction of parking sheds, vehicles washing and service arrangements, small office and other allied facilities.

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)

Year	2013-14	2014-15	2015-16	2016-17	2017-18
O&M Expenditure	38.56	48.40	71.39	49.58	66.70
Sanitation fee/month per house hold	-	-	-	-	-
Subsidy injected	38.56	48.40	71.39	49.58	66.70

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 60% efficiency. Some portion of the city is either un-served or partially served because of shortage of sanitary staff and machinery & equipment whereas the existing machinery and equipment is inefficient having costly operation and maintenance.

The solid waste is being dumped on the railway land along the GT road at a distance of 5 kilometers from the city near Chenab River, which is totally unhygienic because no proper landfill site is available. This is creating hazards like obnoxious smell, sub soil water pollution and breeding of vectors causing water borne and vector diseases. Apart from that this is also creating insanitary conditions resulting in frustration in the citizen.

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	G.T road through city	National Highway road
2	Wazirabad bypass for G.T road	do
3	Wazirabad pindi bhatian road	Punjab Highway road
4	Wazirabad Sialkot road	do
5	Wazirabad Daska road	do
6	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 Jhelum are in good condition & few roads need rehabilitation. Further many of the secondary roads/streets require rehabilitation. The detail of inventory of roads is given below;

Sr. No	Name of Road		TST, asphalt or concrete pavers	Paved width (ft)	Approx length (Km)	Condition
	From	To				
1	J.S Bank	Barket Pura Dhounkal Road	TST+RCC	10ft	1.68km	Poor
2	Punjab Bank of Pakistan	Nizamabad	Asphalt	16ft	0.90km	Poor
3	Chowk Haji Pura	Dhounkal Road	TST	12ft	0.60km	Poor
4	Chowk Haji Pura	Chowk Goru Kottha	Tuff Pavers	20ft	0.30km	Good
5	Chowk Goru Kottha	Sialkot Road	Asphalt	15ft	1.00km	poor
6	Pipple Chowk	Islamabad More	Asphalt	20ft	0.80km	Poor
7	Boys College	Pir Mittha	TST	12ft	1.5km	Poor
8	Mission School	Islamabad More	Tuff Pavers	18ft	0.70km	Good
9	Old sabzi Market	Bharoke Road	Asphalt	12ft	1.00km	Poor
10	Darson factory	Bharoke Road	TST	16ft	1.5km	Poor
11	Girls Gegree College	Nizamabad	Asphalt	16ft	0.30km	Poor
12	Chowk Haji Pura	Al Badar Factory	Asphalt	20ft	1.25km	Good
13	Sialkot Road	Nallah Palkhu	Tuff Pavers	20ft	1.5km	Good

14	Veterinary Hospital Circular Road	G.T Road	Tuff Pavers Concrete	16ft	1.5km	Poor
15	Gallah Mahndi Shah	Circular Road	Asphalt	12ft	0.40km	Good
16	Mission School	Circular Road	Tuff Pavers	18-20ft	0.60km	Good
17	Lahori Gate	Musaman Burj Main Bazar	Tuff Pavers	25ft	1.00km	Good
18	Daska Road	Sialkot Road	TST	12ft	1.00km	Poor
19	End Main Bazar	Peeran Kottha Road	TST	12ft	1.5km	Poor
20	HBL Bank	Double Railway Line	Concrete	15ft	0.5km	Poor
21	Double Railway Line	G.T Road	TST	16ft	1.5km	Poor
22	G.T Road	Bharoke Road Spal Colony Road	TST	12ft	0.75km	Good
23	G.T Road	Qudratabad	Concrete	16ft	1.5km	Good
24	Umar Marriage Hall	Shadman Town	Concrete	15ft	0.5km	Good
25	G.T Road	Naseer Colony	Soling	12ft	0.5km	Poor
26	Bharoke Road	Bone Crushing Mill	RCC	25ft	1.00km	Good
27	G.T Road	Bhattike	RCC	15ft	1.00km	Poor
28	G.T Road	Gulshan Majeed Colony	Concrete	12ft	0.5km	Good
29	Sialkot Road	Disposal Works Cheema Colony	Concrete	15ft	0.5km	Good
30	Sialkot Road	Pir Mittha Road	Tuff Pavers	20ft	0.5km	Good
31	Sialkot Road	Hawa Memorial Hospital	Tuff Pavers +Soling	15ft	0.40km	Good

5.3 Resurfacing of roads

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

Sr. No.	Name of road	ROW	Length	Width
		Ft	Km	Ft
R1	Punjab Bank to Nizamabad	20	0.9	16
R2	Chowk Guru Kotha to Sialkot Road	30	1	20
R3	Pipple Chowk to Islamabad mor	30	0.8	20
R4	Boys College to Pir Mittha	20	1.5	12
R5	Old Vegetable Market to Bharoke Road	20	1	12

R6	Darson factory to Bharoke Road	20	1.5	16
R7	Girls Degree College to Nizamabad	20	0.3	16
R8	Veterinary Hospital Circular road to G.T Road	20	1.5	16
R9	End Main Bazar to Peeran Kotla Road	20	1.5	12
R10	Double Railway line to G.T Road	20	1.5	16

5.4 Construction of new roads

Below given roads are located in the interiors of the colonies and muhallahs and presently have TST surface. In view of the flooding of roads by waste water or storm water, MC Jhelum desires to reconstruct these roads afresh with concrete pavers which has longer life and can be easily replaced after laying of other services.

Sr. No.	Name of road	Concrete Pavers		
		ROW	Width	Length
		Ft	Ft	Km
C1	Mohalla Sheesh Mahal Streets	20	16	1.0
C2	Arain Colony Streets	20	16	1.5
C3	Bhattike Town Streets	20	16	1.5
C4	Muhammad Nagar Streets	20	16	1.5
C5	Mohalla Qudrat Abad Streets	20	16	1.5
C6	Pak Town & Rahim Pura Streets	20	16	2.0
C7	Muhalla Rasool Nagri Streets	20	16	1.5
C8	Ghulam mohammad colony	20	16	1.5
C9	Haider colony	20	16	1.5

Section-6 Parks and open spaces

6.1 Existing situation

- MC Wazirabad has only one main park named as City Park. Four other small parks are available which are used as play land for the kids and one park is being used as food court.
- One open space is available for the construction of new park.
  The detail of the proposed provision of services is as follows.

6.2 Up-gradation of the existing parks

Sr. No.	Location	Area (Acre)	Required repairs and new provisions				
			Boundary wall	Concrete pavers	Water supply	Required Allied Facilities	
			Length to be repaired (Rft)	Length to be repaired (Rft)	Item Length /No's	Item	Length /No's
1	City Park	2	-	-	Up-gradation of Lawn water system	Toilets	New 3 Nos
						Play Land area	Additional play land equipment
						Staff Quarters	New 2 Nos
2	Molana Zafar Ali Khan Park	1.5	-	-	Up-gradation of Lawn water system	Play Land area	New play land equipment
						Lighting System	Up-gradation of system
3	Municipal Park	0.75	650 Rft	650 Rft-New	New system	Park lights	New required
						Play Land area	New play land equipment
						Toilets	2
						Benches	5
						Land scape preparation	required
						Cafeteria	New Construction
4	Umar park	0.75	-	Repair of pavers (100 Rft)	Up-gradation of Lawn water system	Benches	4 Nos
						Park lights	Up-gradation of system
5	Food Court park	0.5	-	-	Up-gradation of Lawn water system	Toilets	Repairs
						Play Land area	additional play land equipment

Part-B Conversion of open spaces to parks

Sr. No.	Location of open space	Area of open space (Acre)
1	Near New Vegetable Market G.T Road	3.0

Section-7 Street Light

7.1 Existing Situation

- Street light facility is available on only a very few roads in MC Wazirabad. Replacement of existing sodium lights with the LED lights is required for the two roads and provision of new street light facility is required for 16 roads.

7.2 Existing street lights on main roads

Street lights are available only on one main road in the city;

S.N.	Name of road	Length (Km)	No of Luminaries	Type
1	Allah Wala chowk to Old station chowk	1.0	40	LED (120 W)

7.3 Ward wise detail of existing street lights

LED bulbs, 100 W bulbs & energy savers are being used in different mohallas on the Wapda poles/walls, as detailed below.

Detail of street lights in interior streets of City							
Ward No	Area	Type of luminaries			Total	Operational	Non-Operational
		LED Bulb (12 W)	(100 W) Bulb	Energy Saver (24 W)			
1	Mohallah Mohammad Nagar	35	-	25	60	45	15
2	Mohallah Bhattike	30	-	30	60	40	20
4	Basti Qudrat-abad	5	10	10	25	15	10
5	Mohallah Allabad, Bazar no 2	10	-	15	25	12	13
11	Balochi Galla no 2, Public school Galla	50	15	30	95	60	35
12	Galli Sanyaryan wali, Galli Hannuman, Galli Ghurukotha	40	22	80	142	100	42
13	Galli Chiryan wali, Galli Sachran, Rail Galla	50	30	20	100	70	30
14	Galli Gurukotha, Galli Chawlian	40	60	130	230	200	30
15	Allabad bazar no 2 and allied steets	30	7	10	47	28	19
16	Galli Arayan, Koocha Goll Andazan, Koocha Lal Deewara	10	30	60	100	65	35
17	Galli Mashkian	5	5	10	20	15	5
19	Galli Gurukotha, Mohallah Sheikhan Mashraqi	30	30	90	150	70	80
20	Galli Kohlian, Galli Hannuman	20	50	80	150	115	35
21	Bakarian wala Galla, Mohallah Suleh Shah	8		20	28	25	3
22	Mohallah Suleh Shah	4	5	10	19	10	9
23	Mohallah Shah Sidaq, Sabzi mandi, Gallah Mandi	4	7	10	21	18	3

24	Mohallah Karimpura, Mohallah Jogian Syedan, Balochi Galla no 1	20	20	80	120	110	10
25	Kawan Wali Galli, Sheeshyan Wali Galli	25		90	115	100	15
26	Sheru Mohallah, Ghulam Mohammad Colony	50		21	71	48	23
27	Mohallah Sikandarpura	30	20	90	140	120	20
28	Mohallah Gondal Pura	2	10	15	27	10	17
29	Mohallah Islamabad Mor	15		10	25	20	5
30	Mohallah Hajipura, Daska Road	10	20	50	80	30	50
31	Mohallah Mian Sahib, Mohallah Wayan	60	30	60	150	90	60
32	Mohallah Sethan	10	4	30	44	30	14
33	Mohallah Sethan, Christian Colony	10	10	20	40	25	15
34	Mohallah Pakistan Tanry		4	15	19	5	14
35	Mohallah Rasool Nagri	13		15	28	15	13
				Total =	**2131**	**1491**	**640**

7.4 Repair/Replacement of existing lights

Sr. No.	Name of road/street	No of Luminaries	Proposed Replacement
R1	GEPCO office to Bab-e-Wazirabad city	80	LED
R2	From Telephone Excahnge to Graveyard Kashmirian Sialkot Road Wazirabad	72	LED
R3	Circular Road	29	LED
R4	Main Bazar	36	LED
R5	College Road	25	LED
R6	Model Colony Road	14	LED
R7	Jinnah Colony Road	5	LED
R8	Arif Shaheed Road	24	LED
R9	Allabad Bazar No-1	20	LED
R10	Main Bazar Qudratabad	20	LED
R11	Railway Bazar from Main Bazar to Railway Station	15	LED
R12	Musman Burj Road	5	LED
R13	From Chowk Waian wala to Dara Mughlan	25	LED
	Total	**370**	LED

Photo electric switches need to be installed with the main switches for the auto switching on and off of street lights.

7.5 Extension of facility (New street lights)

Sr. No.	Name of road/street	Length (Km)
N1	From JS Bank to Muhalla Baruat Pura (Dhaunkal road)	2.0
N2	Double Phatak Road	0.8
N3	Ahmad Nagar Road	1.0
N4	Main Bazar (from Lahori Gate to Mussamman Burj)	1.0
N5	From Musmman Burj to GT Road	0.5
N6	From GT road to Slaughter house	1.0
N7	Bhattike road	0.8
N8	Mohalla Sikandar pura, Gondal pura, Mohammad pura streets	0.8
N9	Daska Road	1.5
	Total	**9.4**

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 Wazirabad. 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	2015-17	2016-17	2017-18
Expenditure on Development Projects	106.528	114.190	118.2	119.4	89.8
Source of Financing	Own source revenue and Government Grants				
Expenditure on O&M of services and revenue generated					
Water Supply					
O&M cost	34.81	38.31	38.22	30.30	45.52
Revenue earned	10.00	12.86	12.16	13.70	17.77
%age revenue earned	28.74	33.57	31.81	45.20	39.04
Subsidy injected	24.81	25.45	26.06	16.60	27.75
Sewerage/drainage					
O&M cost	6.67	7.31	7.09	4.72	8.15
Revenue earned	0.13	0.14	0.18	0.10	0.33
%age revenue earned	1.95	1.88	2.57	2.18	4.05
Subsidy injected	6.80	7.17	6.91	4.62	7.82
Solid waste management					
O&M cost	38.56	48.40	71.39	49.58	66.70
Revenue earned	-	-	-	-	-
Subsidy injected	38.56	48.40	71.39	49.58	66.70
Repair & maintenance of Roads	-	-	-	-	-
Parks					
O&M cost	-	-	-	-	-
Revenue earned	-	-	-	-	-

Subsidy injected	2.54	3.6	3.06	2.86	4.12
Slaughter Houses					
O&M cost	0.54	0.81	0.98	0.98	1.91
Revenue earned	0.52	0.58	0.68	0.72	1.17
Subsidy injected	0.015	0.23	0.30	0.26	0.74
Street light					
O&M cost	72.35	84.85	117.15	77.34	116.12
Total Revenue generated	-	-	-	-	-
Total Subsidies injected	72.35	84.85	117.15	77.34	116.12

Section-10 Manpower deployment & shortage

The manpower deployed by MC Wazirabad as office staff is given below. The manpower deployed in the Municipal Services has been given in the respective sections.

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	5	5	-	-	-	-
2	Sub engineers	2	1	1	-	1	1
3	Support staff	263	149	114	70	114	114
	Total office manpower (A)	**271**	**155**	**115**	**70**	**115**	**115**
B	**Municipal services**						
1	Water supply	22	22	-	-	-	-
2	Sewerage	8	1	7	-	7	7
3	Solid waste management	145	134	11	3	11	11
4	Parks	6	6	-	-	-	-
5	Roads	-	-	-	-	-	-
6	Street lights	3	1	2	-	2	2
7	Slaughter houses	1	1	-	-	-	
	Total municipal services (B)	**185**	**165**	**20**	**3**	**20**	**20**
	Grand Total (A+B)	**456**	**320**	**135**	**73**	**135**	**135**