

The Infrastructure of Lahore

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Background

This paper is an effort to highlight the shortcomings in the existing water and sanitation system in the city of Lahore and the need for a new framework of Urban Planning and the Water Vision that needs to address these flaws. In Lahore, with the development of the social economy and the quickening of urbanization, it is more and more obvious that urban planning is important, complicated and formidable. However, the present state of urban planning has fallen short of the needs of the expanding city, which inevitably leads to confusion and generates more planning issues, which in turn prove to be harmful for the formation of a stable society and developing economy of Lahore. This paper, analyzes the Potable Water needs, Sewage Disposal and Storm Water Drainage of Lahore city, their inadequacies and the resulting deterioration of natural waterways. A dynamic and visionary change in the strategic infrastructure planning of the growing city of Lahore, in the context of strategic infrastructure planning, is proposed.

The geographic expanse of Lahore district has witnessed random and accelerating growth giving rise to congestion, commuting problems, improper provision of civic amenities to the citizens and environmental pollution.

An Overview of the Natural Topography of Lahore

Before drawing attention to the Water Vision for Lahore, it is important to take a quick tour of the history of Lahore in the light of its birth and expansion.

History reveals that the inception of every settlement in the world and especially in this region, was water dependant. Wherever water was available and accessible for human consumption, a settlement started to grow. Whether it was surface water or ground water, access to water made the people settle.

The River Ravi flowing along Lahore is nature's gift and a basic reason behind the inception of Lahore. The flow of the Ravi from North to South, recharged the subsoil water, which remained accessible through shallow wells to fulfill the domestic water consumption of people and so a small settlement grew to a city of more than 10 million.

Earlier Lahore

Potable water needs were met by open wells 30' to 40' deep. These wells trapped the seepage water of the River Ravi which was then collected at the upper layer of the soil.

 F. 1

Topography of
Lahore



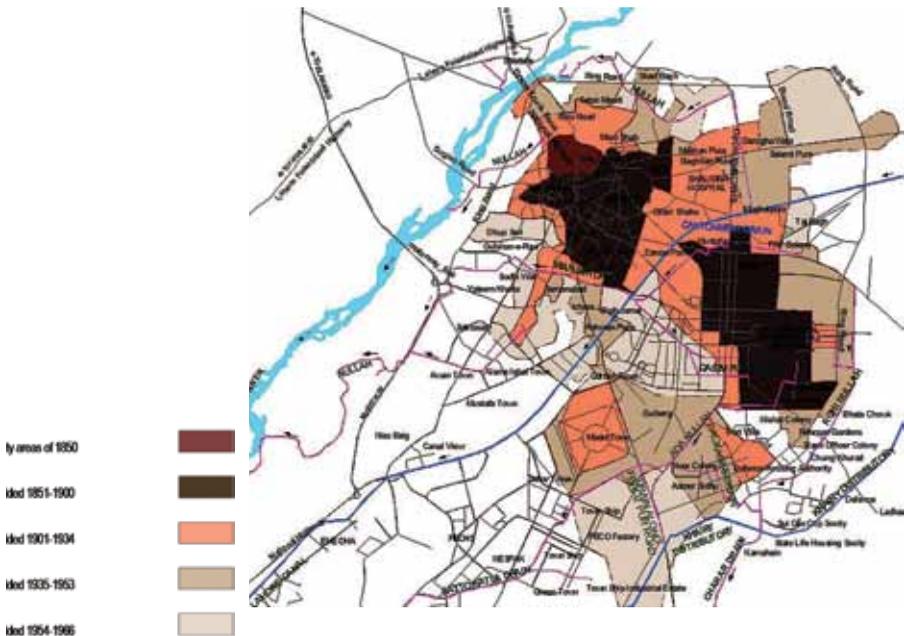
After use, the sewage was disposed off into open drains which ultimately lead to the River Ravi through the Chotha Ravi (the old route of the Ravi). In those days, care was taken to segregate soil and waste. Soil waste was collected separately and treated as solid waste and recycled at dumping sites for making manure. The best example can be seen at the Model Town, where solid waste was collected, transported and used in the Power House for the production of electricity. The remains of this system can still be found in the Model Town Society but not entirely in its original form.

The storm water of the city also used to pass through open drains and be discharged into a *Nullah* and ultimately disposed off into the Ravi. The earlier Lahoris knew the importance of ground water recharge, as it fulfilled their domestic water needs; thus they kept all

parks and green areas lower than the paved areas. *Dungi* (low-level) Grounds were present all over Lahore.

Development during Colonial Rule

As the city grew with the addition of a cantonment, the situation deteriorated. Open wells were replaced by hand pumps and open drains with soakage wells. The invaders brought their own idea of hygiene-management and discouraged the use of soil collection. All sorts of waste began to be dumped into the soils of Lahore through soakage wells, polluting clean and pure sub-soil seepage of the Ravi. The result is that clean water which used to be available at only 20 ft., and within reach of all the citizens, had now gone beyond 750 ft. depth.



F. 2
Spatial Growth of Lahore

The expansion of Lahore changed its original topography and the natural drainage paths were intercepted. Due to the new development, storm water which used to travel through the *Nullahs* could not flow along these natural drainage paths any more. The Cantonment, Samanabad, Gulberg, and systematic construction of roads along both sides of the Canal, split the city into halves.

Lahore – Today

To protect Lahore from the flood waters of the River Ravi, an embankment, called the Bund, was built during the Mughal Period to the North of Lahore. It continued along the river in a South-West direction. Later, as the city grew, the Bund too was enlarged, raised and lengthened, to provide the requisite protection. An aerial view of Lahore shows the Bund Road, now a part of the Ring Road, starting from Mahmood Boti in the North-West and ending at Thokar Niaz Baig, the South of Lahore. Unfortunately, while the Bund protected Lahore from floods of the Ravi, it changed the whole drainage pattern as it also blocked the natural flow of surface drainage. The builders of the Bund blithely ignored the drainage of the land. The Bund protected the city from the floodwaters of the river but condemned the city to drown in the monsoon rains.

Now the only drainage paths left for Lahore are the huge natural drains, namely the Mian Mir Drain, the Satokatla Drain and the Hudaira Drain. Unfortunately, the development of new housing colonies, where the road patterns are not in harmony with the surface drainage requirements of the city because of the height in road levels, has made things more complex and difficult. This is an indication of the lack of any co-ordination over the growth of Lahore at the city level. The result is that today, water cannot drain into the River Ravi without being pumped.

Raising road levels and the development of new areas seems to be a cyclic operation among planners/engineers and citizens. Planners propose the higher levels of roads to protect the roads from storm water and so depressions are created for storm water to remain collected.

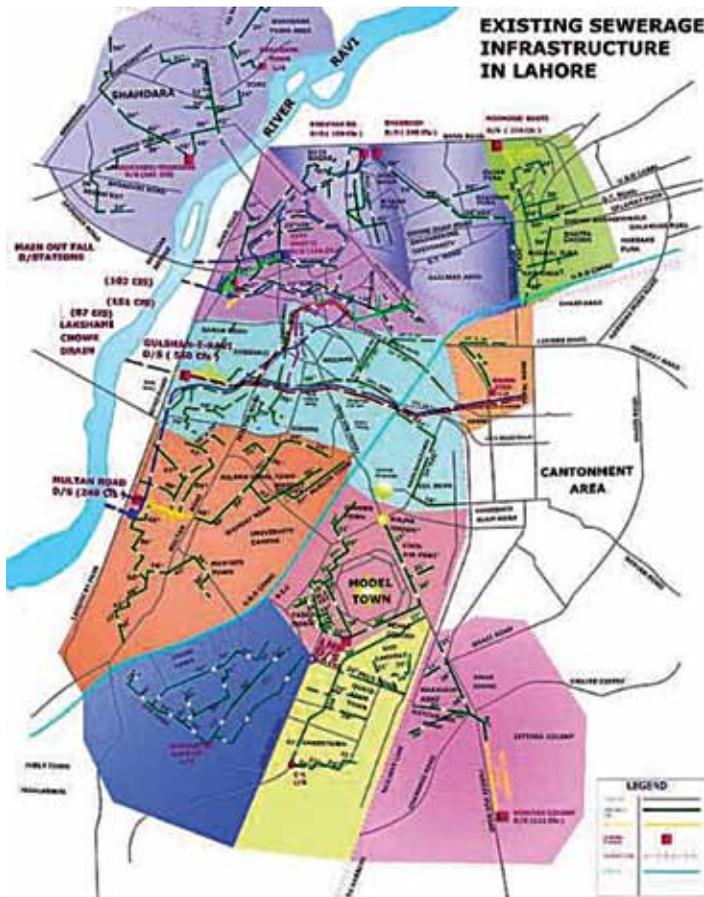
F.3

Main Drains and the Canal of Lahore



Citizens in turn, build their houses higher to avoid storm water from entering their houses. Also the value of the existing houses takes a plunge as they become open to likely flooding. This operation has been in practice for the last few decades and the results can be easily observed along the newly constructed Ferozpur Road. As the level of the house, relative to the road, lowered, water entered the houses with the slightest rain. People raised their floors and in consequence had to lift the roofs using hydraulic jacks at great expense leaving the Ferozpur Road in a depression again.

Today a lot of areas are in depression. Sewers are laid deeper and deeper and waste water is then lifted through pumps and drained into *Nullahs*. The end result is that as the storm water does not find a way to run off, every year during the monsoon water accumulates. The lesson to be learnt is that storm water is best drained through natural drainage of land.



F. 4
Existing Sewerage infrastructure in Lahore

The most critical parts of the city are the southern and central parts, which are always submerged during the monsoon. Central Lahore includes Lakshmi Chowk, General Post Office (GPO), Egerton Road, Cooper Road, Anarkali Chowk, Rehman Gallian, Ek Moria Pul, Lytton Road, Plaza Cinema, Nabha Road, Church Road, Mozang Road, Shadman, Shah Jamal, Waris Road, Galaxy Plaza, Park Lane Road, Chauburji, Lake Road, the Punjab University Ground, FCC, Riwarz Gardens, Sandha Road, Fazilia Colony, the Senior Superintendent Police Office and Dev Samaj Road. The posh areas of South Lahore that are affected are Gulberg, Faisal Town, Model Town, Johar Town, Township, Allama Iqbal Town, Firdous Market, Kalma Chowk, Centre Point, Gari Shahu, Muhammad Nagar, Bibi Pak Daman, Empress Road, the Railway Station, Akbar Chowk, Hussain Chowk, Barket Market, L-Block Gulberg, Tipu Block Garden Town, Model Town Link Road and Mini Market Gulberg.

WASA has enhanced the capacity of 11 disposal stations and 88 lift stations to discharge rainwater at the earliest. Around 543 dewatering sets are operational.

WASA remains busy round the clock with dewatering sets, transporting the stagnant storm water collected at depressed roads to drains in the outskirts of Lahore. These efforts are necessary because most of the green areas of Lahore are not being utilized to collect the storm water to be disposed through gravity-based flow. Green belts along roads should have been kept lower than road level to accommodate the storm water of the road. Rather than pumping the rainwater, transporting and then discharging it to far off areas via dewatering sets and water bowsers, it would be more efficient to divert the water to the green belts and parks beside the roads.

F. 5

WASA Sanitary Workers busy in dewatering a busy road in posh area of Gulberg



F. 6

Collected Storm water discharged to far off green area near a drain in WAPDA Town



Of the total area of Lahore city almost 20% of the area is identified as green areas that include playgrounds, parks, greenbelts, agricultural fields and unplanned open lands. House lawns and housing societies' plots are not included in the green areas. Very little storm water from the roads' runoff is able to enter these green areas basically because of the opposite direction of the slopes of the roads and the higher levels of the green areas in relation to the road levels.

F. 7

Green Areas of
Lahore City



The Way Forward

Unplanned urbanization has played havoc. The city continues to widen its boundaries without any proper strategic infrastructure planning. Then the population also has increased by leaps and bounds. Large parts of for residential localities are continuously being allowed commercial usage, increasing the demands on the already overloaded sewage and drainage. With such wild changes, the physical infrastructure should also be upgraded on a continuous basis as per the new demands. Upgrading an existing underground infrastructure is cumbersome, creates difficulties for the residents and is expensive. There is no option except to rationalize the surface drainage that does not require great digging.

Nature has gifted Lahore with a natural topography. The Ravi fulfills its water needs, while the drains help the sewage and storm water to exit out of Lahore. It is high time to get rid of water inundation.

The drains can be used for transporting treated water instead of raw sewage and industrial waste. There exist 11 sewage disposal stations and 4 drainage disposal stations busy pumping raw sewage and storm water into the 8 major drains of Lahore. Odor and sub-soil water pollution is a major contribution of these drains. At every disposal station, we should provide sewage treatment plants and stop throwing raw sewage into these drains.

Daily, 5600 tons of solid waste are collected from different parts of Lahore. About 300 vehicles transport this solid waste far out of the city but still Lahore is not clean. It can be easily arranged for this solid waste to be used for composting, production of methane and, alternately, producing power for sewage treatment plants. This could be a sustainable project.

Imagine Lahore free of garbage, free of sewage smell; imagine beautiful streams passing through the city. See Lahore from this angle and join in converting a vision into reality.