



## Final Year Project Showcase Batch 2018 Year 2022

<b>Department: Urban &amp; Infrastructure Engineering</b>		
<b>Programme: Urban &amp; Infrastructure Engineering</b>		
<b>1</b>	<b>Project Idea</b>	Assessment & Design of Water & Sewerage System for a Residential Society
<b>2</b>	<b>Process</b>	<ul style="list-style-type: none"> <li>a) As-built layout of the society along with existing water and sewerage network were generated on AutoCAD.</li> <li>b) Assessment of existing water and sewerage systems.</li> <li>c) Design of a new pressurized water and gravity powered sewerage network.</li> </ul>
<b>3</b>	<b>Outcome</b>	<ul style="list-style-type: none"> <li>a) The assessment of water lines concluded that, the lines were broken, or at the very least there was cross contamination, implying leakages.</li> <li>b) The assessment of sewerage lines concluded that the velocity was insufficient, implying inadequate slope.</li> <li>c) The new design recommended for the water supply network was achieving the required pressure at all the nodes (&gt; 0.6 Bars)</li> </ul> <p>The recommended new design was proposed for sewerage system to attain self-cleansing velocity (2ft/s<sup>2</sup>), in all the pipes</p>
<b>4</b>	<b>Evidence (Theoretical Basis)</b>	The aim of this project was to evaluate the current sewerage system and water distribution network of a residential society in the center of Karachi, according to current water demand and sewage generation. The next phase was to design a new network for both water supply and sewerage system, by propagating the population according to census data and use that to predict water demand and effluent generation. Finally, a self-cleaning, gravity powered sewerage system was designed so that effluents could be disposed without danger to human health or unacceptable damage to the natural environment, and a water distribution network that can supply pressurized flow throughout the network, to reduce infiltration and thereby diseases. The results concluded that both the sewerage and water supply networks have cracks and breakages, causing mass cross-contamination which became very apparent in water test results. To remedy that, a gravity powered sewerage network, with self-cleansing velocity and a sufficiently pressurized water distribution network were designed and recommended.
<b>5</b>	<b>Impact on Sustainability of Urban Regions or SDG-11 "Sustainable Cities and Communities"</b>	The outcome of this project shows that how communities and cities infrastructure can be benefited by adopting simple measure by adoption of Engineering practices. In this project a community location was facing problems of contaminated sewerage and drinking water, in one of the wealthier part of the city. The reason for such contamination is non planned growth resulting in taller buildings, more population but with more than 50 year old water and sewerage infrastructure. The recommendation of this project if adopted can help in sustainable development of area.
<b>6</b>	<b>Competitive Advantage or Unique Selling Proposition</b>	(Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the



	following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence	
<b>a</b>	<b>Attainment of any SDG</b> (e.g., How it is achieved and why it is necessary for the region)	<p>The target SDG for this project were :</p> <p><b>SDG#3: Good Health and Well being</b></p> <p><b>SDG#6 Clean Water and Sanitation</b></p> <p><b>SDG#11 Sustainable Cities and Communities</b></p> <p>The water and sewerage infrastructure of this residential society is around 60 years old, has surpassed its design life. Sewerage line have caved and clogged in multiple places, and complaints of cross-contamination, and even no water supply are now becoming common. Furthermore, one of the key features of this society is that it contains a “Food Street” in block A, which has a significant impact on sewerage infrastructure, as oil and grease are major contributors of sewer clogs. The report presented the design and ways to achieve desirable goals.</p>
<b>b</b>	<b>Environmental Aspect</b> (e.g., carbon reduction, energy-efficient, etc.)	The assessment concluded that both the sewerage and water supply have cracks and breakages, causing mass cross contamination, leading to unhealthy drinking water and ill- sanitary condition in the area.
<b>d</b>	<b>Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process</b>	<p>The new design recommended for the water supply network would be able to achieve the required pressure at all the nodes (&gt; 0.6 Bars)</p> <p>The new design for sewerage system would be able to achieve self-cleansing velocity (2ft/s<sup>2</sup>), in all the pipes</p>
<b>7</b>	<b>Target Market</b>	The recommendation of this project if applied will be helpful to the community residing in the area and will relieve them of reduce environmental pollution due to efficient sewerage and water supply system.
<b>8</b>	<b>Team Members</b> (Names along with email address)	<p>Hassan Ali, <a href="mailto:hasanaliakram@gmail.com">hasanaliakram@gmail.com</a></p> <p>Haider Aamir, <a href="mailto:haiderbhatti.ha@gmail.com">haiderbhatti.ha@gmail.com</a></p> <p>Taha Alam, <a href="mailto:tahaalam9900@gmail.com">tahaalam9900@gmail.com</a></p> <p>Abdul Muqet, <a href="mailto:amuqet30@gmail.com">amuqet30@gmail.com</a></p>
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