Executive Summary

Water Sewerage Authority: Feasibility Study
The aim of Mission Smart City is to efficiently utilize available Assets, Resources, and Infrastructure to enhance the quality of Urban Life and provide a clean and sustainable environment for living. The primary focus of this initiative is to develop and maintain core infrastructure and public services like providing adequate clean water supply, power supply, sanitation, disaster management, solid waste management, wastewater treatment, efficient urban mobility and public transportation, public healthcare system, education, affordable housing, robust IT connectivity, e-governance, safety, and social security.

The Government of Andhra Pradesh (“GoAP”) with the assistance of the Government of the United States of America (“USA”) Department of Commerce, United States Trade Development Agency (“USTDA”), and United States Export-Import (“EXIM”) Bank is keen on developing the city of Visakhapatnam as a Smart City under the 100 Smart Cities Project of the Government of India (“GoI”).

Infrastructure Challenges
The residents of GVMC receive limited water supply due to inadequate infrastructure in terms of water supply sources, treatment, distribution, collection, treatment, and disposal networks. The raw water sources are dependent upon monsoon, thus placing additional pressure on supply and usage during low-rainfall years. Metering along the network and / or at connections combined with progressive tariff structures, and enhanced focus on long-term planning for the raw water sources, conveyance, treatment, distribution as well as collection, treatment and safe disposal of treated wastewater can contribute to better water supply, efficiency of use, and long-term sustainability.

GVMC has initiated public sector participation in expanding the water supply to provide safe drinking water to its residents on a 24/7 basis, and strengthening the wastewater system, which currently covers approximately 50 percent of GVMC geographic area. Key challenges include the following:
- Increasing the coverage area
- Developing a comprehensive master plan for safe drinking water supply and wastewater system
- Fostering data creation on water and wastewater systems’ performance
- Developing an effective communication strategy
- Energy conservation
- Promoting rainwater harvesting
- Reuse of treated wastewater / effluent
- Safe disposal of treated sewage into water bodies.

Revenue Generation
The Revenue Department of GVMC is responsible for revenue generation by levying the Property Tax and Vacant Land Tax as well as its collection and dealing with Remunerative Enterprise and Water Charges. During Fiscal Year 2015-16, total estimated revenue receipts were INR 1406.34 crores. (See Figure 1)

Organizational Capacity
A Special Purpose Vehicle (“SPV”) has been established for the purposes of delivering key infrastructure projects under the Smart City initiative. The SPV, in coordination with GVMC and a Program Management Unit (“PMU”), is responsible for developing and implementing planned infrastructure projects. The PMU will provide advisory services on technical and financial aspects during the implementation of various smart city projects.
SWOT Analysis on Existing GVMC Operation
The discussion below summarizes major strengths, weaknesses, opportunities, and threats under the existing operational model of GVMC for the water and sewerage services. Key aspects of the SWOT analysis are listed below.

**Strengths**
- City Development Plan and comprehensive approach to infrastructure development across GVMC service area
- Inclusion of VUDA Master Plan and City Mobility Plan
- VISWCO provides water supply and treatment for industrial use
- Approximately 15 percent of total annual revenues generated are contributed from water supply services
- Proposal for 4 additional STPs to provide for 100 percent coverage under GVMC
- Identification of 30 urban infrastructure projects as candidates for potential EPC and/or PPP delivery
- Proposal to build 1,079 km of new water supply lines to reach 85 percent water supply coverage and to cater the growing per capita water demand of 150 LPCD

**Weaknesses**
- Prolonged process of fund allocation and utilization of available funds for the planned infrastructure projects
- Approximately 35 percent gap in water supply network

*Figure 1  Distribution of Revenue Sources FY 2015-16*
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- Loss of potential revenues due to lack of metering and monitoring infrastructure
- Unaccounted loss of water resource due to leakage
- Out of 436,300 households only 85,357 have a direct sewer-line connection
- Inadequate asset management and information collection system

Opportunities
- Potential to establish a separate entity responsible for water supply and sewerage services across greater Visakhapatnam, inclusive of all municipalities to drive operational improvements and cost-efficiencies
- Development of water supply and sewer infrastructure under AMRUT scheme
- Implementation of SCADA system and GIS for information-based live monitoring of service quality and to prevent water loss
- Creation of MIS system for financial performance and project progress monitoring
- SPV-driven implementation model for SMART infrastructure projects as well as leveraging international funding for infrastructure development

Threats
- Rapid growth in water demand for domestic and industrial purposes
- Regional inadequacy of raw water sources and lack of desalination infrastructure
- Unsustainable financial model for water supply and growing revenue loss
- Inadequate technology implementation to monitor supply network and leakages

There are distinct advantages and disadvantages to using each of these three governance models to provide water and wastewater services to the residents of greater Visakhapatnam metro region and adjoining jurisdictions.

The Independent Authority Model

The Independent Authority Model is mid-way between the ‘Business As Usual’ and the ‘Private Sector Service Provider’ models. Under this model, GVCM would establish an Independent Authority – a quasi-government entity – responsible for providing water and sewerage services in the greater Visakhapatnam metro area. The Authority will be responsible for performing all functions associated with ensuring that the current and future demand for services is met, including long-term planning of resources and ensuring financial stability of the Authority. In regards to the governance structure, the Authority could have a Board of Directors from GVCM and other local entities. Figure 2 presents the governance structure for an Independent Authority model for the water and sewerage services.

The proposed ‘Independent Water Authority’ model is widely used as the governance / organizational structure for delivering water and wastewater services across the world. In most cases, these independent authorities operate under an ‘Enterprise Fund’ basis and typically have a Board of Directors that provide guidance on policy matters and future direction in terms of meeting the needs of existing and future customers / service areas, rate-setting and planned investment.

As GVCM explores the feasibility of establishing an Independent Water and Wastewater Authority for the greater Visakhapatnam region and organizational performance and service delivery through innovation, expertise and technology and operational improvements, the ‘Independent Authority’ model offers the best elements of both with enhanced transparency in operations, access to public sector funding and financing and improved level of service.
Prior to the creation of Bangalore Water Supply and Sewerage Board (“BWSSB”), water supply services for the cantonment area was the responsibility of the Bangalore City Corporation (“BCC”) whereas the Karnataka Public Works Department (“KPWD”) was responsible for the rest of the Bangalore region.

On August 14, 1961 the entire water distribution system was transferred to BCC for its comprehensive operation and maintenance. After three years of public water supply under BCC, an independent board was constituted by the act of the Karnataka State Legislature on September 30, 1964. All services related to water supply were transferred to the newly created Board on December 1, 1964 and all sewage infrastructure followed suit within one month. BWSSB became one of the first exclusive Water Supply and Sanitation Utility authorities in India with an operational jurisdiction of the entire Bruhat Bengaluru Mahanagara Palike (“BBMP”), an area of roughly 800 sq. km.

The Chennai Metropolitan Water Supply and Sewerage Board (“CMWSSB”) was constituted in 1978 as a statutory body vested with the responsibility of planning, construction, operation, and maintenance of the water supply and sewage system in the Chennai Metropolitan Area (“CMA”). Though its operation is limited to the City Corporation’s boundaries, CMWSSB has extended its services to the surrounding urban local bodies and has initiated measures to provide services for the entire metropolitan area. CMWSSB’s mission is to enhance the health and quality of life of the citizens of Chennai by providing them with an adequate supply of safe, high quality drinking water and safe disposal of sewage / wastewater at a reasonable price, and to improve the environment in a sustainable manner.
adjoining jurisdictions, the analysis should be guided by the following principles:

- **Water as a product / service**
- **Full recovery of the cost of service**
- **Restructuring of the role of GVMC**
- **Increasing participation of the private sector**
- **Decentralization of governance**

Several major Indian cities like Bengaluru, Chennai, Hyderabad, and New Delhi have adopted an independent authority model for public services including water Supply and sewerage services. As such, GVMC should leverage these entities’ experience and lessons learned.

The Project Team understands that in order to establish an independent water and wastewater authority, the Government of Andhra Pradesh has to enact legislation establishing the proposed entity (including outlining its core roles, responsibilities, powers, governance structure, transfer of physical and financial assets / resources and liabilities, etc.). Further, the Act will need to contain an enforceable set of regulations or standard practices in terms of resource management, supply of water as a commodity, quality assurance of services, sustainable revenue model and standards of operational practice to ensure a sustainable water cycle.

Such a transition from the current GVMC functional structure to the proposed authority model will require the following considerations to ensure uninterrupted service, improved service quality, increased revenue generation, reduction in water loss, smooth transfer of all physical and financial assets and resources, and protected benefits (e.g., health, salary, pension, seniority, etc.) for current employees.

- **Legislation:** The proposed transformation of water and wastewater services in the greater Visakhapatnam metro area will require a legislation outlining the roles, responsibilities of the Authority and enforceability of the legislation. In other words, the Authority has to be properly constituted legally empowered to deliver its mission effectively and cost-efficiently.

- **Asset Management:** Responsibilities for maintaining / servicing all physical assets related to water supply and wastewater service (i.e., plants, mains, pumping stations, buildings, fleet, etc.) should be with the proposed Authority. The proposed Authority can perform these services using internal resources or contract with either GVMC or private sector contractors. Consideration should be given to the transfer of assets and liabilities associated with the water and wastewater services to the proposed Authority.

- **Administrative Hierarchy:** The Government of Andhra Pradesh will have to decide if the administrative control over the proposed Authority will be transferred to ULB / GVMC. It is assumed that all existing employees associated with the water and wastewater services will be transferred to the proposed Authority with the same salary, benefits, pension plan and seniority. However, these costs will be reflected in the cost of service and revenues collected under an ‘Enterprise Fund’ will be able to reimburse GVMC and / or the Government of Andhra Pradesh for any financial contributions made to the Authority.

- **Funding and Financing Sources:** The proposed Authority should have full access to various funding and financing sources that are currently available to GVMC. Consideration should be given to allow the proposed Authority to issue taxable and tax-free bonds to finance long-term capital improvement projects as well as access to various procurement methods (i.e.,
Case Study 4: Tampa Bay Water, Florida, the United States of America

Tampa Bay Water, formerly known as West Coast Regional Water Supply Authority, was created in 1974 by an inter-local agreement for the purpose of production and delivery of water for its six member governments. In 1998, the Authority was reorganized into Tampa Bay Water, a public sector utility board responsible for providing drinking water to three counties and three cities, including Hillsborough, Pasco and Pinellas counties and New Port Richey, St. Petersburg and Tampa cities. The reorganization was completed through governance, an agreement with its members to eliminate rate differentials in terms of water supply and provide environmental leadership in the production and delivery of water. Tampa Bay Water primarily supplies raw water at wholesale rates to the six administrative jurisdictions and the respective governments tap the resource for further distribution at the end-user network.

design-build, design-build-maintain, PPP/P3, others) to delivery planned projects and services.
The AECOM team, including partner firms IBM and KPMG, is carrying out the assignment “Smart City Master Planning + Sector Specific Smart City Infrastructure Plans for Visakhapatnam” on behalf of the Government of Andhra Pradesh (USTDA financing). With a view to promoting the development of Visakhapatnam ("Vizag") into a smarter city, the assignment includes baseline analysis, formulation of a development strategy and guidelines, preparation of a smart city master plan, and feasibility analysis of smart city projects. The work is being completed over three 5-month phases, as follows:

- **Phase I** – Baseline, Smart City Development Strategy and Action Planning for Two Smart City Projects (March 2016 – August 2016)
- **Phase II** – Preparation of the Smart City Master Plan
- **Phase III** – Implementation Plan and Feasibility Studies for Four Smart City Projects

**PROJECT BACKGROUND**

**CONTACT INFO**

For more information about this project, visit [www.smartVisakhapatnam.in](http://www.smartVisakhapatnam.in) or contact Raj Shelat at rajshelat@kpmg.com.