Kakinada Municipal Corporation

City Sanitation Plan (CSP)

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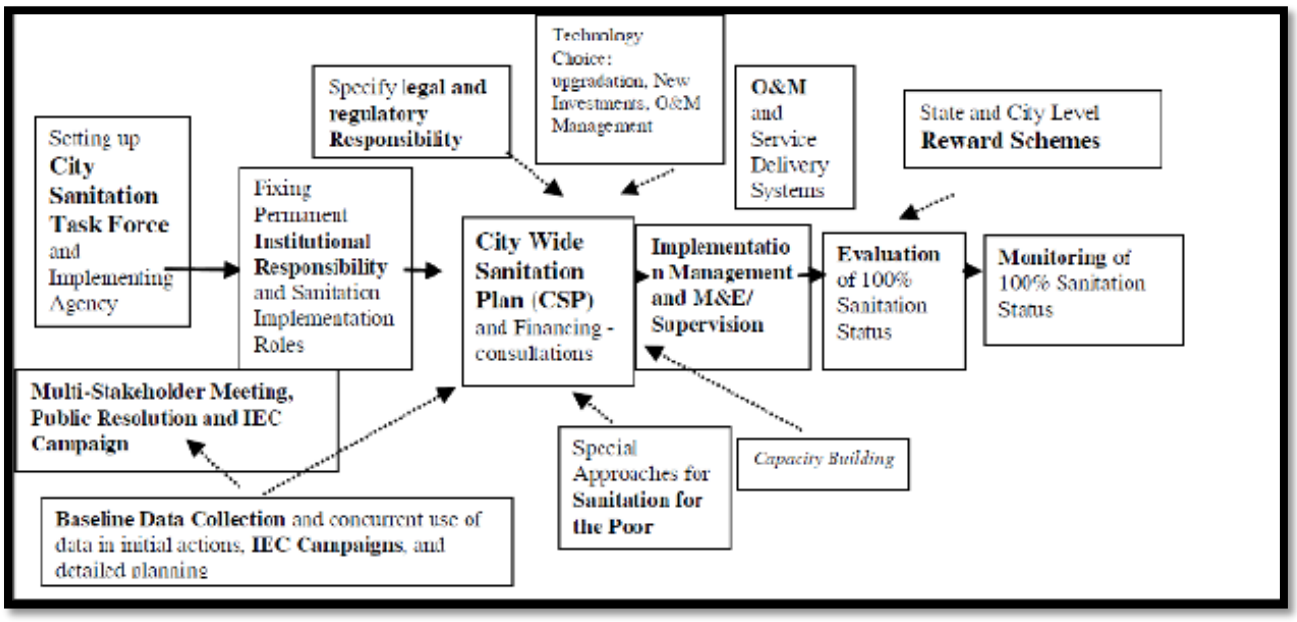
KAKINADA MUNICIPALCORPORATION

The Kakinada City was upgraded as Municipal Corporation in the year 2005. The Kakinada City is situated in East Godavari District of Andhra Pradesh and adjacent to the Bay of Bengal. The area of Kakinada City is 31.69 Sq.kms and comprises 50 Divisions. The Kakinada City has a population of 325985 and well connected by rail and road transport. The Kakinada port is one of the major ports in the country. The Ministry of Urban Development, Government of India selected the Kakinada City as "Smart City" during the 1st phase of Smart City Mission. As per the guidelines issued in the National Urban Sanitation Policy the Kakinada City has done a detailed assessment to prepare City Sanitation plan.

1. Introduction and Background

The Ministry of Urban Development, Government of India has framed National Urban Sanitation Policy to make all cities and towns to become "health, totally sanitized and livable". The City Sanitation Plan(CSP) is major component as per the guidelines issued in the National Urban Sanitation policy (NSUP). The main vision of the National Urban Sanitation Policy is that all Urban Local Bodies i.e cities and towns should become healthy, livable, totally sanitized and sustain good public health. In order to achieve the aforesaid goals the component of City Sanitation Plan has a major role to play. The Government of Andhra Pradesh in coordination with German International Cooperation has identified 10 ULBs in Andhra Pradesh to implement City Sanitation Plan (CSP).

Considering the local situations and its need, the Kakinada Municipal Corporation has followed the procedure depicted in the below figure while planning, implementing and evaluating a CSP.



2 City Sanitation Task Force (CSTF)

The Purpose of the City Sanitation Plan is to assist all the stake holders of Urban Local Bodies such as citizens, NGOs, Self Help Groups, community based organizations and commercial sector establishments to achieve the goal of totally sanitized cities. The preliminary activity of city sanitation plan is to constitute the City Sanitation Task Force Committee (CSTF).

2.1 Objectives of City Sanitation Task Force Committee

- To create awareness among the people about the sanitation.
- To make cities open defecation free.
- To provide overall guidance to the ULB for implementing city sanitation plan.
- To train and enhance capacity building of ULB and related personnel
- To monitor 100% sanitation involving multiple stake holders.

2.2 Thrust areas and Coverage

- Water Supply
- 100 % Toilet Access.
- Waste Water Management.
- Septage Treatment.
- Storm water Drainage System
- Solid Waste Management.

2.3 Preparation of City sanitation Plan

Earlier during the year 2015 the Kakinada Municipal Corporation has introduced the “cluster officer” system to monitor the overall development activities in general and sanitation in particular. Previously the sanitation wing was divided into circles and each circle is supervised by the concerned sanitary inspector for sanitation purpose. Since the circle system does not have any effect on improving the sanitary conditions, the “cluster officer” system was introduced.

Under this cluster officer system the Kakinada City was divided into 14 clusters and each cluster comprises officers from sanitary wing, Town Planning wing and Engineering wing respectively. With coordination from Engineering and Town planning departments the sanitation system was improved remarkably but not at its best. As per the guidelines issued by the Director of Municipal Administration, the Kakinada Municipal Corporation has constituted the City Sanitation Task Force (CSTF) as hereunder.

Members of (CSTF)

Sl. No	Name	Designation
1	Sri H.Arun Kumarr District Collector	Chairperson (Head of the CSTF)
2	Sri AleemBasha	Commissioner (Convener)
3	Dr. A.Mohana Krishna	Health Officer Kakinada (In charge) (Nodal Officer)
4	Sri S.Kalesha	Assistant City Planer Kakinada (Member)
5	Smt. K.Lakshmi	TLF president (Member)
6	Sri P.KasiVisweswara Rao	Shops & Establishment, Vice President chamber of commerce (Member)
7	Sri B. Navarohini	Superintending Engineer Mpl corporation Kakinada (Member)
8	Sri D.V.V.Subrahmanyam	Sanitary Supervisor (Member)
9	Sri Sk. Jilani	Sanitary Inspector (Member)
10	Sri G.Satteppa Naidu	Sanitary Inspector (Member)
11	SmtP.Rita	D.E.E. (Member)
12	Sri Sarat Chandra Mouli	Social Worker (Member)
13	Sri V.V.Ramana Murthy	Municipal Standing Counsel (Member)
14	Sri M.Sri Vijay	Nehru Educational Trust (Member)
15	Sri K.Venkateswara Rao	Contractor (Member)
16	Sri B.Koteswara Rao	SafaiKarmachari Union (Member)
17	SmtS.Surekha	DarithriRaksitha Committee (Member)
18	Sri Y.D.Ramarao	President of Tax payers Association (Member)

3 City Profile

Kakinada is a city and Municipal Corporation in the Indian state of Andhra Pradesh. It is also the headquarters of East Godavari district. Kakinada is also named as "Fertilizer City" (owing to the large concentration of fertilizer plants), "Pensioner's Paradise"(as it shares it calm and pleasant environment to the retired and old-age people) and "Second Madras" (as it have similar features of Chennai). Kakinada is part of a Special Economic Zone and a proposed 'Petroleum, Chemical and Petrochemical Investment Region (PCPIR)'. It is a hub to all the deep sea exploratory activity in the region due to its deep-water sea port and its proximity to the gas fields.

Kakinada has a tropical savanna climate. The weather is hot and humid for most of the year.. The city experiences an average annual rain fall between 110 and 115 centimeter. Kakinada is located at 16.57'N81.15E. It has an average elevation of 12 Meters and many areas of the city are below sea level. The average width of the city is around 6km but its length is around 15km. The present area under the Kakinada is about 31.69sq.km. The population density of the Kakinada city is about 10287 persons per sq.km according to 2011 census. The Kakinada city was divided into 50 Wards. There are 101 slums identified in the Kakinada City. The slum population is 1.46 lakh as per the census-2011 .Out of 101 slums, 63 are notified and 38 are non-notified slums.

Table 1: Ward data

Ward. No.	No. of Households	Population		
		Total	Male	Female
1	2186	6055	2970	3085
2	1928	6336	3135	3201
3	3118	6835	3510	3325
4	2018	6299	3123	3176
5	1867	6475	3152	3323
6	1894	5966	2921	3045
7	2566	5943	2964	2979
8	4128	6970	3481	3489
9	1625	6176	3107	3069
10	3100	7092	3387	3705
11	6050	7090	3487	3603
12	1800	7225	3390	3835
13	1000	6067	2994	3073

Ward. No.	No. of Households	Population		
		Total	Male	Female
14	1500	6025	2918	3107
15	1200	6803	3336	3467
16	1900	6265	3068	3197
17	1726	6407	3076	3331
18	2100	5868	2963	2905
19	1716	6374	3133	3241
20	1618	5928	2974	2954
21	1931	7225	3457	3768
22	1600	7039	3549	3490
23	1350	7175	3518	3657
24	1350	7220	3547	3673
25	1600	7220	3624	3596
26	1600	7213	3578	3635
27	1930	7217	3574	3643
28	1930	6743	3291	3452
29	1810	7217	3059	4158
30	1462	6591	3363	3228
31	1650	6417	3199	3218
32	1350	7124	3538	3586
33	1462	6802	3431	3371
34	1500	6675	3265	3410
35	1842	5849	2931	2918
36	1200	6569	3272	3297
37	1600	7171	3500	3671
38	1662	6146	2996	3150
39	1600	5894	2900	2994
40	1530	5955	2914	3041
41	1625	5909	2915	2994
42	2800	5963	2853	3110
43	2300	6335	3104	3231
44	1530	5940	2920	3020
45	1900	6002	2870	3132
46	1860	6146	2999	3147
47	3600	6408	3195	3213
48	2100	5888	2902	2986

Ward. No.	No. of Households	Population		
		Total	Male	Female
49	4500	6974	3307	3667
50	1800	6759	3284	3476
Total		**325985**	**159944**	**166042**

The Present population of Kakinada city is 325985 and also floating population is 7500 as per 2011 census.

Population projection	**Year**	**Years**	**Population**
''	**2011-2021**	**10 Years**	**359177**
''	**2021-2031**	**20 Years**	**396369**
''	**2031-2041**	**30 Years**	**425561**

Table 2: Slum data

Sl. No.	Slum Name	Location / Ward	Category (Notified, Recognize, Identified)	No. of Households	Total Population
1	Indira Colony	9	Notified	209	901
2	BalaVenkata Nagar	9	Notified	458	962
3	Dummula Peta	11	Notified	980	4900
4	Parlopeta	11	Notified	651	3255
5	Sanjay Nagar	11	Notified	625	2950
6	Yetimoga	13	Notified	1636	8892
7	Gogudanayyapeta	15	Notified	455	2248
8	Ramanayyapeta	1	Notified	112	520
9	Kondelupeta	2	Notified	62	371
10	Bonda gunta	2	Notified	41	180
11	Vadabaljipeta_ Pallipeta	3	Notified	322	1450
12	Godarigunta_Settibalijapeta	3	Notified	89	462
13	GodariguntaMpl Maternity Center	3	Notified	84	388
14	NookalammaManyam	6	Notified	230	329
15	Burma Colony	6	Notified	250	1085
16	Kotha Kakinada	7	Notified	345	1560
17	Godarigunta _Dalithawada	7	Notified	190	690
18	Jyothula Colony	8	Notified	260	1090
19	Recharlapeta_ Thotipeta	8	Notified	245	980
20	Recharlapeta_ KalaraPakalu	8	Notified	220	960
21	Gowarisankarpeta	15	Notified	108	473
22	Gowarisankarpeta	15	Notified	101	545
23	Gogudanayyapetapakalu	18	Notified	120	639

Sl. No.	Slum Name	Location / Ward	Category (Notified, Recognize, Identified)	No. of Households	Total Population
24	Gogudanayyapeta Near Jalaripakalu	18	Notified	158	716
25	Golilapeta	15	Notified	109	595
26	Kotisthambampeta	16	Notified	102	486
27	Peethala Tank	17	Notified	202	911
28	J.Ramaraopeta	20	Notified	249	1139
29	yallavarigaruvu	18	Notified	852	4065
30	Sammidivari Street	20	Notified	233	982
31	Gopala krishna Nagar Near peethla Tank	18	Notified	152	650
32	Indira Nagar	18	Notified	33	156
33	Turangi Behind Slanghter house	17	Notified	383	1843
34	Seetharama Murthy Nagar	20	Notified	175	850
35	Muggupeta	22	Notified	206	1067
36	AnnammaGati Center	22	Notified	137	681
37	Gayathri Nagar	22	Notified	150	761
38	JaganaikpurThotipeta	22	Notified	56	290
18	Near Andhra poliy technic	20	Notified	20	137
19	KesanavariDoddi	22	Notified	61	270
20	Arundhati Nagar	23	Notified	158	756
21	Padmanaba Nagar	24	Notified	114	583
22	Kunthidevipeta	24	Notified	154	688
23	Narasimha Road West	25	Notified	410	2056
24	Dallmill Area	25	Notified	224	1083
25	Narasimha Road East	25	Notified	264	1299
26	Nagarajupeta	26	Notified	251	1273
27	Bank peta	32	Notified	350	1750
28	Kameswari Nagar	36	Notified	250	1172
29	Ragampeta	32	Notified	386	1930
30	Kakinada Totipeta	32	Notified	81	495
31	Venkateswara Nagar Near Old Bus Stand	39	Notified	787	844
32	T.B.Hospital Back Side	39	Notified	181	812
33	Samalakata Road	40	Notified	375	1500
34	Cheedila pora-1	41	Notified	126	589
35	cheedila pora-2	43	Notified	221	831
36	Atchutapuram Railway Gate west	44	Notified	180	690
37	Dwaraka Nagar	45	Notified	435	1700
38	Eliwinpeta	40	Notified	450	1840
39	S.Atchuta puram-1	48	Notified	300	1500
40	S.Atchuta puram-2	48	Notified	300	1500
41	Gaigolupadusettibalijapeta	49	Notified	194	1025
42	GaigolupaduHarijanapeta	49	Notified	76	368
43	Indira Colony	9	Notified	209	901
44	BalaVenkata Nagar	9	Notified	458	962
45	Dummula Peta	11	Notified	980	4900
46	Parlopeta	11	Notified	651	3255
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Sl. No.	Slum Name	Location / Ward	Category (Notified, Recognize, Identified)	No. of Households	Total Population
50	Ramanayyapeta	1	Notified	112	520
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55	GodariguntaMpl Maternity Center	3	Notified	84	388
56	NookalammaManyam	6	Notified	230	329
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62	Recharlapeta_ KalaraPakalu	8	Notified	220	960
63	Gowarisankarpeta	15	Notified	108	473

The total population slums are 1.46 lakhs.

The population percentage of below poverty line is 44.92 %.

4 Water supply

The drinking water needs of Kakinada Municipal Corporation is mainly being met from 2 primary sources of raw water situated at Aratlakatta and Samalkot having a storage capacity of 1582 ML and 863 ML respectively. At present 4 water treatment plants (WTP) are being used for filtration of raw water having a total installed treatment capacity of 44.75 mld. The treated water is being distributed through 15 Elevated service level reservoirs having a storage capacity of 14107 kl. The present water supply is as follows.

❖ SAMBAMURTHY SUMMER STORAGE TANK
CAPACITY – 863 ML (190 MG)

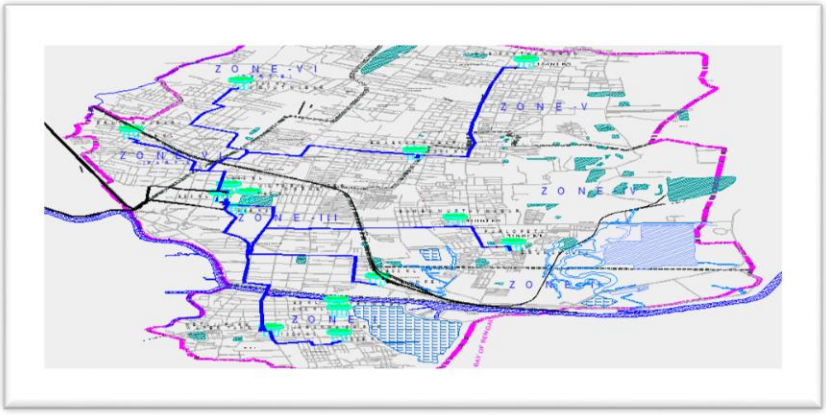
❖ ARATLAKATTA SUMMER STORAGE TANK
CAPACITY – 1582 ML (348 MG)

No.	Parameter	Calculation	Remarks
A	Current population of city with piped water supply	355000	
B	Current Treatment Capacity of WTP / Treated water supplied to the city	44.75 MLD	
C	Current technical / distribution losses	assume 20 %	
D	Actual treated water supplied	35.80 MLD	
E	Per capita water supply	100 LPCD	
F	Water requirement of the city [#]	135 LPCD	
G	Current required treatment capacity / water demand	10 MLD	

Table 3: Zonal level Water supply

Zone No	Zone name	Reservoir Type	Capacity (KL)	Wards served	No. of HH	No. of connections	Water Quality	Per capita supply (Adequate, Inadequate)	Frequency of water supply	Hours of supply	Pressure Adequate/ Inadequate	Remarks
I	Zone I	ELSR's	3606 (IHSDP ELSR)	13TH 26 D.No'S	21062	10531	Potable	90 to 105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction of 1600KL - 1no 1000 KL-1 no ELSR at APMDP is under process.

II	Zone II	ELSR's	-	12TH D.No'S	915	412	Potable	90 to 105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction of 1600KL and 1000 KL under process at Dummula peta.
III	Zone III	ELSR's	4815	27,28,29, 30 to 37 and 41&42	21109	10552	Potable	105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction 1600KL -1no 1000 KL-1 no ELSR at in VWW is under process.
IV	Zone IV	ELSR's	2000	Part of 3,4 and 5, 6 to 11	9710	3884	Potable	105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	
V	Zone V	ELSR's	2500	1 to 3 part of 4,5,6,7 part of 47	8775	3949	Potable	105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction of 1600KL, 1000 KL ELSR's under process.
VI A	Zone VIA	ELSR's	1186	40,41,43,44	4255	1702	Potable	105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction of 1000KL at Gandhi Nagar under process.
VI B	Zone VIB	ELSR's	1000	49,48,45,50,43 and part	6618	2647	Potable	90 to 105 LPCD	Two times in a day	3.50 hours	Inadequate at tail ends only	Construction of 1000KL ELSR at Gaigolupadu under process.



The Kakinada City has 32675 house service connections for supply of drinking water. The current per capita supply of drinking water is 100-109 lpcd. The average duration of supply is 3hrs per day. The financial information i.e., income through water supply is depicted here under. The Kakinada Municipal Corporation has put special focus on slums and providing house service connections is one of the prioritized item. The Municipal Council has also resolved to bear the cost of installation charges of drinking water pipe lines to the families

of below poverty line (BPL) and providing taps to the BPL families for Rs 200/- only. The present water charges are shown hereunder

I. One time connection charges:

	Amount[Rs]:-
Domestic (General)	Rs 6000/-
Domestic (BPL familes)	Rs 200/-
Commercial:	Rs12500/-
Industrial:	Rs25000/-

II. Monthly tariff :

1) Domestic:	Rs.100/-
2) Commercial:	Rs.300/-
3) Industrial:	Rs.500/-

Gaps &Issues

- **Water demand –**

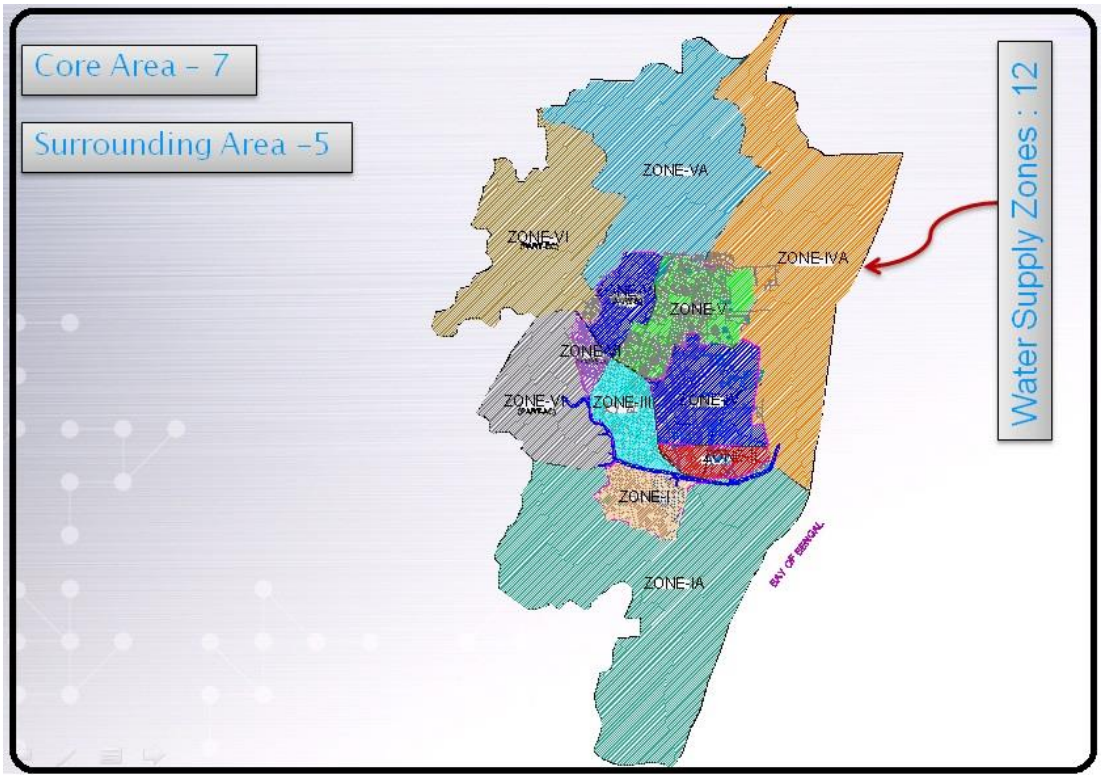
Table 4: Water demand forecasting

Type of Demand	**2011** [MLD]	**2026** [MLD]	**2041** [MLD]
Core Area Demand @ 135 lpcd	45.61	57.51	68.18
Floating	1.52	1.92	2.27
Industrial	2.42	4.88	11.44
Fire Fighting {100 * SQRT(P)}	1.84	2.06	2.25
15% Distribution Losses	7.71	9.96	12.62
Water Demand for Core Area	**59**	**76**	**97**

Demand for Surrounding Panchayats

Type of Demand	2011 [MLD]	2026 [MLD]	2041 [MLD]
Surrounding Panchayats @ 135 lpcd	23.71	29.90	35.45
Fire Fighting	0.42	0.48	0.52
15% Distribution Losses	3.62	4.56	5.39
Water Demand for Surrounding Panchayats	**28**	**35**	**41**
Total Water Demand	**87**	**111**	**138**

There will be a short fall of 30-33 MLD by 2041



Opportunities

The government of Andhra Pradesh has sanctioned 2 major water schemes to Kakinada City.

1. Andhra Pradesh Municipal Development Scheme (APMDP) in 2011
2. Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2016.

APMDP scheme

The Kakinada Municipal Corporation formulated comprehensive water supply improvement plan under APMDP scheme at an estimated cost of Rs 186.00 crores. The main objective of the scheme is to improve infrastructure facilities and also laying of HDPE pipelines. The major works taken up under this scheme are,

1. Construction of Elevated Level Service Reservoirs - 11
2. Laying of HDPE pipelines - 200 km
3. Construction of water treatment plants(WTP) - 01

Outcome of the Project

- Construction of 11 additional Elevated Level Service Reservoirs increasing storage capacity of treated from28.61 ML to 54.61 ML
- Filtration capacity increases from existing 45 MLD to 85 MLD.
- Laying of 200.kms of HDPE pipe lines for providing water supply
- 25000 additional house service connections can be provided.
  The project completes by 31-03-2017

AMRUT scheme

The Government of India introduced the scheme" Atal Mission for Rejuvenation and Urban Transformation "(AMRUT) for providing basic services like water supply, sewerage, urban transport etc, to improve the quality of life especially for the poor and the disadvantaged which is a National Priority.

Main Objectives:

- To ensure every household to have access to a Tap with assured supply of water and sewerage connection

- To develop greenery and well maintained open space
- To reduce pollution by switching to public transport
- Septage management and Storm water drainage

The Government of Andhra Pradesh has accorded administrative approval for an amount of Rs42.19 crs for water supply improvements. The main objective of the scheme is to provide house service connections and distribution lines wherever reservoirs and source is available.

Outcome of the Project

- Providing 12000 additional house service connections
- Providing distribution lines

The project completes by 31-03-2020

Table 5: Non-Revenue Water

Cost Recovery	2014	2013	2012	2011	2010
Operating Expenses (Rs.)	462.55	437.85	411.84	413.09	171.33
Operating Revenues (Rs.)	486.90	445.62	574.81	550.79	234.70
Cost Recovery (%)	95%	98%	72%	75%	73%

Main issues of Water Supply:

- Land acquisition and alienation of 184.00 .Acers is pending for construction of summer storage tank
- Metering of all domestic house service connections.
- Implementation of 24/7 water supply with smart water meters with performance based water management from source to consumers.

5 Access to Toilets

The Kakinada city covered by 60% of individual house hold toilets. Limited availability of community toilets and public toilets facilities was a major concern in the city.

Issues

Before Swachh Bharat Mission, open defecation was a major concern for Kakinada Municipal Corporation. Since there are 101 slums. the people residing in slums normally resorted for open defecation. The existing community toilets are also not used due to poor maintenance such as lack

of water supply, lighting etc. People are not motivated and also not willing to construct individual house hold toilets and prevailed on open defecation.

Opportunities

Under Swachh Bharat Mission, 3749 individual households have been constructed with the financial assistance from the government. With existing 30 Community Toilets, 5 additional Community Toilets constructed at an estimated cost of Rs 60.00 lakhs. All the existing community toilets put into use by renovating with an expenditure of Rs 24.00 lakhs. Public urinals have also installed at important commercial places incurring an expenditure of Rs 4.75 lakhs to eradicate public urination

The Kakinada City was declared as ODF city on 02-10-2016.

Table 6: Coverage of Toilets (Individual & Community)

WARD WISE IHHTS CONSTRUCTED UNDER SWACHH BHARAT MISSION

Sl. No.	Ward Number	No. of Beneficiaries Identified	No. of Beneficiaries In-Eligible	No. of Beneficiaries Eligible	No. of Households Sanctioned by MC	No. of Households IHHTs Completed
1	2	3	5	4	6	7
1	1	52	18	34	34	34
2	2	153	47	106	106	106
3	3	414	128	286	286	286
4	4	7	5	2	2	2
5	5	16	14	2	2	2
6	6	133	67	66	66	66
7	7	363	202	161	161	161
8	8	31	11	20	20	20
9	9	37	23	14	14	14
10	10	1766	237	1529	1529	1529
11	11	322	112	210	210	210
12	12	247	162	85	85	85
13	13	415	236	179	179	179
14	14	373	156	217	217	217
15	15	118	86	32	32	32
16	16	11	7	4	4	4
17	17	125	28	97	97	97
18	18	132	58	74	74	74
19	19	186	139	47	47	47

Sl. No.	Ward Number	No. of Beneficiaries Identified	No. of Beneficiaries In-Eligible	No. of Beneficiaries Eligible	No. of Households Sanctioned by MC	No. of Households IHHTs Completed
1	2	3	5	4	6	7
20	20	18	8	10	10	10
21	21	19	13	6	6	6
22	22	100	22	78	78	78
23	23	7	1	6	6	6
24	24	94	28	66	66	66
25	25	169	101	68	68	68
26	26	15	3	12	12	12
27	27	48	7	41	41	41
28	28	9	7	2	2	2
29	29	13	11	2	2	2
30	30	7	5	2	2	2
31	31	1	0	1	1	1
32	32	50	42	8	8	8
33	33	23	10	13	13	13
34	34	0	0	0	0	0
35	35	27	11	16	16	16
36	36	16	13	3	3	3
37	37	1	0	1	1	1
38	38	8	8	0	0	0
39	39	188	154	34	34	34
40	40	159	143	16	16	16
41	41	103	69	34	34	34
42	42	0	0	0	0	0
43	43	47	36	11	11	11
44	44	58	40	18	18	18
45	45	15	5	10	10	10
46	46	13	6	7	7	7
47	47	52	46	6	6	6
48	48	109	52	57	57	57
49	49	18	7	11	11	11
50	50	94	49	45	45	45
	TOTAL	**6382**	**2633**	**3749**	**3749**	**3749**

Community Toilets:

35 Community Toilets have been functioning to cater the needs of urban poor families who do not have sufficient space to construct individual house hold toilets. All the toilets were well maintained at an estimated cost of Rs 24.00 lakhs and provided with the basic amenities such as water facility, electricity etc.

Public Toilets:

13 No. of Public toilets are being maintained by KMC as well as private agencies at important public places.

Public Urinals;

Public Urinals installed at important commercial places to reduce pollution along the streets.

5.1 Issues

- Lack of Government sites to construct community toilet blocks
- Lack of Septage treatment Plants.
- Unhygienic disposal of human waste.

5.2 Gaps

Community and Public Toilet Blocks –

Due to rapid industrialization of areas in the surroundings of the Kakinada City and due to anticipated projection of population increase including floating population there is a need to provide community based as well as public toilets.

6. Waste-water Management

The drainage system in Kakinada city is open drainage system. People let out the waste water into the septic tanks and soak pits. Since there is no accurate data available with KMC, it is estimated that around 10-15 thousand properties let waste water into open drains. ,

Waste-water disposal arrangements – There is no scientific disposal system of human sludge. The KMC is operating 1 tanker with a capacity of 6 Kl and a couple of informal private service agencies are engaged in cleaning of septic tanks with 5- 6kl capacity tankers. The desludging in not done in scientific manner. The septage collected is being disposed into the remote open spaces without treatment creating health impacts as well as contamination of ground water.

Table 9: Waste water disposal arrangements

Ward	No. of Households	Waste water disposal arrangement for toilets (No.)							No. of Insanitary latrines
		Sewerage system	Septic tank		Soak pit	Pit Latrines	Open drains	Other	
			Connected to soak pit	Connected to open drain					
2	1928	-	-	-	-	-	7	-	-
6	1894	-	-	-	-	1	2	-	-
7	2566	-	-	-	-	6	0	-	-
9	1625	-	-	-	-	0	11	-	-
10	3100	-	-	-	-	8	0	-	-

Ward	No. of Households	Waste water disposal arrangement for toilets (No.)							No. of Insanitary latrines
		Sewerage system	Septic tank		Soak pit	Pit Latrines	Open drains	Other	
			Connected to soak pit	Connected to open drain					
15	1200	-	-	-	-	0	2	-	-
18	2100	-	-	-	-	0	1	-	-
19	1716	-	-	-	-	1	0	-	-
22	1600	-	-	-	-	0	92	-	-
23	1350	-	-	-	-	0	2	-	-
24	1350	-	-	-	-	1	16	-	-
25	1600	-	-	-	-	0	26	-	-
28	1930	-	-	-	-	1	4	-	-
29	1810	-	-	-	-	0	8	-	-
30	1462	-	-	-	-	0	17	-	-
31	1650	-	-	-	-	0	1	-	-
32	1350	-	-	-	-	3	14	-	-
36	1200	-	-	-	-	0	59	-	-
38	1662	-	-	-	-	0	15	-	-
39	1600	-	-	-	-	0	1	-	-
40	1530	-	-	-	-	0	56	-	-
41	1625	-	-	-	-	0	60	-	-
46	1860	-	-	-	-	0	5	-	-
49	4500	-	-	-	-	12	12	-	-
50	1800	-	-	-	-	1	2	-	-
33	1462	-	-	-	-	10	20	-	-
43	2300	-	-	-	-	0	25	-	-

6.1 Sewerage management

This Corporation is not having comprehensive sewerage system.

Table 10: Sewerage Treatment Plants

Sr. No.	Name of STP	Treatment process / technology	Installation year	Capacity (MLD)	Sludge Treatment facility available	Quantity of treated sewage / sludge reuse
Nil	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**

- Gaps & Issues

  The Kakinada Municipal Corporation does not have sewerage treatment plant. Approximately 62 MLD of waste water and 5 MLD of septage water generated daily.

Waste water generation –.

S. No.	**Parameter**	**Calculation**		**Remarks**
1	Current Year	325985	135x0.80	35.52 MLD
2	Short Term (5 Yrs)	380000	135x0.80	41.04 MLD
3	Intermediate Term (15Yrs)	380000	135x0.80	45.90 MLD
4	Long Term	380000	135x0.80	52.35 MLD

Sewage Treatment Plants (STPs) – Under smart city mission it is proposed to construct 140 KM sewerage network and 13 MLD STP at on estimated cost of Rs.264.81 crores in convergence with AMRUT funds.

Main issues of Sewerage management:

1. Sewerage water letting in to open drains
2. No underground drainage system
3. It is Proposed to set up decentralized STPs with funding from World Bank and JICA under Smart City Mission

6.2 Septage management

This Corporation is not having septage Management system. The present generation of fecal sludge is estimated at 97792 kgs/ day. As per the projections of population growth the daily generation of fecal sludge is estimated at 1-1.5 lakh kgs/day. Proposals are still under consideration for septage management

Gaps & Issues:

Septic Tanks –

- Conformity of the design of existing septic tanks in the city to IS 2470 (Part 1)-1985'
- Septic tanks are single chambered,
- Grey water is not entering the septic tanks,
- Septic tanks are accessible for cleaning,
- Design of septic tanks is not controlled through building / planning rules
- Absence of secondary treatment systems (eg. soak pits) for disposal of grey water & septic tank effluent.

Septage collection & conveyance –

Lack of data on private operators involved in desludging & transportation of septage,

- The private operators are not authorized and not regulated,
- Desludging of septic tanks is not carried out regularly (once in every 2-3 years),
- Desludging service is inadequate to meet existing / future demand,

Septage treatment & disposal / Reuse –

Absence of septage treatment facility,

- Unhygienic disposal of untreated septage

Main issues of Septage management:

1. Proposed Septage Management under AMRUT with an estimated cost of Rs 9.50 Crs

7. Solid Waste management

Gaps &Issues –

Primary collection –

Door to door Garbage collection is done in 91373 households in all 50 wards through Try cycles and push carts.

Table 11: Primary Collection of Solid waste

Sl. No	No. of HHs	Total waste generated (MT/day)	If Household Door to Door collection system is available							If Household Door to Door collection system is not available			Remarks
			No. of HHs covered	Qty. of waste collected (MT/day)	Source segregation (Yes/No)	Waste collection frequency	Waste collection charges (Rs./month)	Existing manpower (Nos.)	Equipments used (Nos.)	Method of disposal	Qty of waste disposed (MT/day)	Location of Disposal	
1	101014	174 M.T	1.06	189	No	Yes	Rs.20/- to Rs. 50/-	477 P 400 O	43 Vehicles	-	-	Port Area	There is no Dumping Yard

Household level composting – Very few households are practicing household level composting. It is also proposed to introduce incentives and support to household who practices household level composting. All roads in the city are swept daily. Night sweeping is also in place in Commercial areas.

Secondary collection – Secondary collection points are located at various locations in the city. Municipal Corporation vehicles transport garbage from these points dump locations. All the waste from secondary collection points is transported by using 26 Tractors, 5 Dumper Placers.

Table 12: Secondary Collection of Solid waste

Sl. No	Total population	Waste generated (MT/day)	If Community bins are available for secondary collection					If Community bins are not available for secondary collection			Remarks
			No. of community bins available	Location of bins	Capacity of bins (MT)	Collection frequency	System of collection (type and number of vehicle used)	Reason for unavailability of bins	Disposal arrangement	Location of disposal	
1	325985	174MT /day	130	Various Places	2 M.T	daily	26 tractors and 05 Dumper placers	-	-		Transported to dump yard in Port Area by through Tractors and Dumper placers

Conveyance (Transportation) to Treatment facility –

26 Tractors, 05 Dumper placers involved in the solid waste transportation in Kakinada from the primary collection points, street sweeping debris and secondary collection points.

Processing (Treatment) of Solid wastes – 1 M.Ton Organic Composting plant is established in 'revenue Colony to treat Vegetable waste.

Organic Compost Yard:-

Disposal of Solid waste – The solid waste collected from the source are being transported and dumping near uninhabitated areas.

The Swachch Andhra Corporation has prepared DPR for solid waste management projects through consultants. The DPR is appraised for Rs. 64.96 crores by the technical committee. The salient features of the project are Bio-methanization plant, Bio-mining etc .towards improvement in treatment & disposal of solid waste management.

7.1 Gaps & Issues

Solid waste generation – Solid Waste generated in Kakinada Municipal Corporation is calculated basing on the current year figures and forecasted for short term (5years) Intermediate term (15years) and long term (30 years)

Table 13: Calculation for Solid Waste Generation

No.	Parameter	Estimated Population	Approximate Solid Waste generation
1	Current population of city	3.25 Lakhs	174.72 M.T
2	Short term (5years)	3.80 Lakhs	203.68 M.T
3	Intermediate term (15years)	4.25 Lakhs	227.80 M.T
4	Long term (30years)	4.85 Lakhs	259.96 M.T

Door to Door garbage is collected in all the 50 wards. 35 vehicles (Tractors, Dumper Places & Tata Ace) transport the waste to dump location by side of Lorry serial office. Apart from this, Kakinada Municipal Corporation has one small composting unit of 1 TPD capacity which treats 1 M.ton of waste collected from Vegetable market.

- Lack of scientific landfill facility
- Lack of dump yard

Dumping Yard:-

8. Storm water management

Baseline status

The Kakinada City is characterized by flat topography and high water table. The existing drainage system is conventional and open drainage system. In the past years the storm water management is an area where proper focus was not paid. Due to this the Kakinada city inundates too often even when there are moderate rains.

The key issues and constraints

1. Open drains are not linked at all places
2. Drains are poorly maintained. Dumping of solid waste in drains and chocking/blockages is prevalent
3. There is need for an integrated drainage plan for the study to be planned in coordination with institutional arrangements for systematic cleaning and involvement / awareness programs among communities to prevent solid waste dumping and up keep through community level ownership and maintenance
4. Majority storm water drains width is nearly 0.5m

Table 14: Storm water drainage system

Zone / Catchment	Length of roads (km)	Constructed Drains				Natural Drains			Remarks
		Length (km)	Type (Surface, covered, etc.)	Functional status	Disposal arrangement	Length (km)	Functional status	Disposal arrangement	
I/1150 A/C		38.50		26.95	11.55	16.50	11.50	5.00	
II 1040 A/C		42.00		29.00	9.00	18.00	13.50	5.50	
III 1600 A/C		39.00		29.50	12.80	16.20	11.50	5.00	
IV 1500 A/C		42.00		29.00	12.00	18.00	12.00	5.40	
V 1200 A/C		44.00		31.00	13.00	17.00	11.00	5.20	
VI 1600 A/C		40.00		30.00	12.50	16.30	12.50	5.30	
TOTAL		**245.50**				**102.00**			

Table 15: Water logging / Flooding

Zone	Location / wards	Frequency (No. per year)	Reasons	Remarks
II	Sambamurthy Nagar, Venkat Nagar, Venkatewswara Nagar 4,11,8 wards	7-8 times	1. Lack of proper storm water drainage system. 2. Lack of out fall drains.	
III	J..Ramarao Peta - 20	10-11 times		
IV	Municipal Office - 35, Main Market -29	7-8 times		
V	Chidilapora, Treasury Colony , 41,44	2-3 times		

Storm water drainage system

8 No of storm water drain works are in progress under 13th finance grant at an estimated cost of Rs.8.82 Crs.

9 No of storm water drain works taken up under 14th Finance Commission grants at an estimated cost of Rs.11.38 Crs.

11 No.of Storm water drain works taken up with Municipal General funds at an estimated cost of Rs 4.29 Crs

Main issues of Storm water management:

6 Flat topography of Kakinada city

7 No proper out fall drains

8 Require pumping stations

9. Environmental management of water bodies

In Kakinada City there are 7 water bodies.

S. No	Survey No.	Location	Total Extent of Site in Acs.	Extent of Water Body in Acs	Status of the site	Remarks
1	**2**	**3**	**4**		**5**	**6**
1	84/1	Santha Cheruvu	5.352	2.330	Developed as park	Tank, School, Temple
2	1009/1	Ramarao Peta	37.60	12.610	Municipal Water Works & Tank with Park	Tank with Compound wall
3	1163	Pindala Cheruvu	1.200	0.660	Developed as park	Tank with Compound wall
4	R.S.No.82/1 of Ramanayyapeta	Ramanayyapeta Pitha Puram Road	28.33	18.890	Boat Club	Tank with Compound wall
5	1817	Near J.Ramaraopeta, Jagannaickpur	2.3699	2.300	Dhobi Khana	Tank with Compound wall
6	1072	Near M.S.N. Charties (Dobhi Khana)	2.1099	1.460	Dhobi Khana	Tank with Compound wall
7	979/1	Annamma Tank	5.2000	4.380	Developed as park	Tank with Compound wall

Gaps & Issues

- Water bodies are mainly for preserving rain water.

Raja Tank with Park (Ramarao Peta)

Extent of Water Body in Acs: 12.61

Annamma Tank

Extent of Water Body in Acs: 4.380

10. Institutional & Governance

Names of Institutions	Corresponding Act
Kakinada Municipal Council Represented by Special Officer, Kakinada	Hyderabad Municipal Corporation Act,1955
Andhra Pradesh Pollution Control Board	Water (Protection and Control of Pollution) Act,1974

Table 16: Institutional arrangements for all water and sanitation services

Urban Services	Institutions in charge of planning	Institutions in charge of implementation	Institutions in charge of O&M	Institutions in charge of collecting user charges
Water Supply	Superintending Engineer	KMC	KMC	KMC
Sewerage	Superintending Engineer	KMC	KMC	KMC
Septage Management	Superintending Engineer	KMC	KMC	KMC
Storm Water Drainage	Superintending Engineer	KMC	KMC	KMC
SWM	Superintending Engineer	KMC	KMC	KMC
Public Toilets	MHO	KMC	Private agency	Private agency

,

- Good citizen grievance redressal system,
- improper management of private service agencies
- e-governance,
- reforms leading to improved services such as M-bin system, Puraseva etc

Reforms in Sanitation due to implementation of G.O.Ms.No.279, Dt.31-12-2016

The Government of Andhra Pradesh has issued guidelines for out sourcing of work packages for Mechanical Road Sweeping, Residential and Commercial & Bulk waste collection and its management vide Go.Ms.No.279 dt.31.12.2015. As per the said guidelines, the following activities are to be taken up.

Mechanical Road Sweeping:

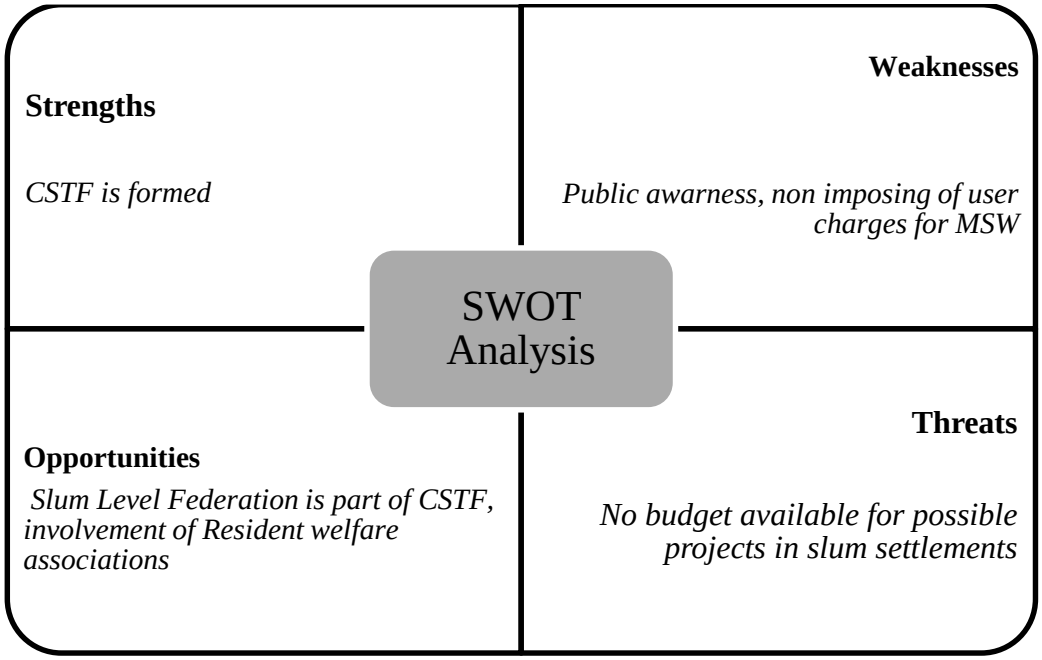
Mechanical Road Sweeping is to be taken up in Kakinada Municipal Corporation for a period of 3 years. In this regard the Council has approved vide C.R.No. 23, Dt. 20-05-2016 to take up Mechanical Road Sweeping of 12 main roads identified with an estimated amount of Rs. 1,99,99,266/- .

Residential Work Package:

The Municipal Corporation has surveyed entire city to outsource residential work package. 293 micro pockets were identified to outsource the work for a period of three years. 82 pockets were proposed to be outsourced for an amount of Rs.13.90 Crores and administrative sanction was accorded by the Government.

Commercial & Bulk waste collection and its management Work Package:

The Municipal Corporation has surveyed entire city to outsource residential work package. 2632 Commercial & Bulk waste generators were identified for out sourcing of work of collection of Commercial & Bulk waste collection and its management for a period of three years with an estimated amount of Rs..3.70 Crores. Administrative sanction was accorded by the Government.



Inclusiveness -

- Community participation,
- Involvement of women & urban poor in planning processes
- Sanitation services in slum settlements
- Provision for budget reserved for urban poor and women

Main issues of Institutional & Governance:

1. SHGs to be involved for Health &Hygiene activities.
2. Involvement of RWS, JB Committee, NGO's and Community Originations

11. Smart City Mission

Kakinada City was designated as "SMART CITY" under Smart City Mission launched by the Ministry of Urban Development, Government of India New Delhi as one among 20 cities. The SPV of Kakinada Smart City was registered in the name and style of **"Kakinada Smart City Corporation Ltd."** and incorporated on 07.03.2016 under Companies Act-2013.

The total out lay of the Mission is Rs.1993.03 crores with funding from GOI, GoAP, KMC, CSR, PPP and Smart City Component. Health, Waste water management, Water supply and Quality, Sanitation, Waste Management & Storm Water drainage are some of the Components of the Smart City Mission.

12. Municipal Finance

Revenue Income

The following is the Revenue receipts of Kakinada Municipal Corporation during the Last 4 years.

Table 17: Financial Analysis

	Particulars	**Amount** (Rs. in Lakhs)			
		2012-13	**2013-14**	**2014-15**	**2015-16**
A. Revenue Income					
1	Income from Taxes	2066.81	2043.96	2181.20	2290.26
2	Income from Non-Taxes	1756.81	2974.74	1824.77	1916.01

	Particulars	Amount (Rs. in Lakhs)			
		2012-13	2013-14	2014-15	2015-16
3	Income from Assigned Revenue	1116.07	684.06	1334.53	1401.26
	Total Revenue Income (1+2+3)	**4939.69**	**5702.76**	**5340.5**	**5607.53**
B. Capital Income					
4	Grants and Loans	2116.13	332.10	3867.25	4060.61
	Total Capital Income (4)	**2116.13**	**332.10**	**3867.25**	**4060.61**
	Total Income (1+2+3+4)	**7055.82**	**6034.86**	**9207.75**	**9668.14**
C. Revenue Expenditure					
5	General, Establishment and Other Revenue Expenditure	659.55	627.85	694.63	729.36
6	O&M of Sanitation including SWM	2431.52	2337.14	3255.41	3418.18
	Total Revenue Expenditure (5+6)	**3091.07**	**2964.99**	**3950.04**	**4147.54**
D. Capital Expenditure					
7	Capital Expenditure	433.1	919.08	2785.64	2924.92
	Total Capital Expenditure (7)	**433.1**	**919.08**	**2785.64**	**2924.92**
	Total Expenditure (5+6+7)	**3524.17**	**3884.07**	**6735.68**	**7072.46**
	Revenue Surplus/Deficit (1+2+3-5-6)	1848.62	2737.77	1390.46	1459.99
	Capital Surplus/Deficit (4-7)	1683.03	586.98	1081.61	1135.69
	Overall Surplus/Deficit (1+2+3+4-5-6-7)	3531.65	2150.79	2472.07	2595.68

a. Gaps & Issues

- Poor cost recovery from water supply, public toilets, waste water and solid waste management,
- Cost recovery will be improved to 100%
- lack of budget for efficient O&M of existing assets,
- dependency on state / central support for implementing / improving sanitation services,
- excessive expenditure for managing solid waste,
- high establishment cost for managing sanitation services,
- lack of incentive &punitive measures

Main issues of Municipal Finance:

1. Collections from water charges needs to be improved
2. Collection of user fees for SWM services
3. Levying penalities on littering establishments

13. Capacity Enhancement

The Engineering wing and Sanitary wing officials are to be imparted training on modern technologies regarding management of Solid Waste Management, Septage & Sewerage treatment,

Table 18: Capacity assessment

Institution/Department (Engineering, Sanitation, Poverty Alleviation, etc)	**Tasks to be performed**	**Permanent Staff**	**Contractual Staff**	**Gaps in Number**	**Gaps in Skills**
Engineering Section	Execution of works, supply of drinking water, maintenance of street lighting	58	32	-	Lack of latest innovations in water supply sector
Health Section	Maintenance of Sanitation, control of seasonal diseases, Food contamination & hygiene practices	453	400	-	Source segregation Disposal of solid waste

- lack of sufficient staff in various categories,
- lack of capacities (technical & managerial)
- lack of capacities for new technologies and innovative projects
- lack of capacity building strategy for improving sanitation services

Main issues

1. Introduction to implement new technological systems in the sanitation and water supply departments.
2. Imparting trainings to Engineering and Health Department employees to achieve 100% of goals.

14.Health and Hygiene

All precautionary measures were taken by Kakinada Municipal Corporation to prevent spread of epidemic related diseases.

- No prevalence of water borne diseases
- No epidemics (related to sanitation & hygiene practices) especially during monsoon.
- Public awareness increased on health & hygiene in low income groups,
- Coordination with existing NGOs, SHGs working on health & sanitation related issues

The Urban Community Development staff is creating awareness through SLFs on health and hygiene in low income groups. Apart from above activities, seasonal measures are being adopted by health wing of KMC for preventing health hazardous diseases.

Main issues for Health and Hygiene:

1. Indiscriminate disposal of garbage into municipal drains.
2. Lack of proper drainage system.
3. Indiscriminate disposal of used coconuts into open drains, open spaces

15. City-wide Key Issues

Key Issue 1	Lack of Dumping Yard
Rationale for this key issue	Since inception of the Urban Local body, there is no compost yard to this Corporation. It is very essential for a local body to have a land for treatment and disposal facilities under SWM. The District Collector was requested to allot 15 acres of land to this Corporation.

Key Issue 2	Septage management
Rationale for this key issue	Lack of Modern technology

Key Issue 3	Storm water drains
Rationale for this key issue	There is no proper drainage system. During course of heavy rains, the city experiences inundation. It is proposed to have a comprehensive drainage system to prevent city being inundated. Mean while construction of several storm water drains in the city is progress under various government schemes

Key Issue 4	O & M cost recovery
Rationale for this key issue	There is limited recovery of O & M cost from SWM. Hence it is proposed to levy user fee from waste generators. Also it is proposed to reduce non revenue water by giving water supply connections to urban poor.

Key Issue 5	Access to toilets
Rationale for this key issue	All the households those who are having space to construct toilets are provided with IHHTs (3749). Further for those who are not having site are tagged to Community toilets.

Key Issue 6	Institutional & Governance
Rationale for this key issue	Implementation of G.O.Ms No 279 for work out sourcing and implementing e-governance and e-office for transparency.

Key Issue 7	Municipal Finance
Rationale for this key issue	In order to implement activities under CSP, Finance plays a key role. It is very essential that all leakages shall be arrested for financial improvement.

Key Issue 8	Capacity Enhancement
Rationale for this key issue	Since lot of initiatives are coming and the Government is keen on running paper less work, all the employees shall have capacity building to enhance their working skills.

Key Issue 9	Health & Hygiene
Rationale for this key issue	It is very important aspect to be propagated in urban slums. All the households shall be educated on maintenance of Health & Hygiene through IEC activities. The services of SLFs and Community Organizers will be engaged.

16. City-wide Sanitation Vision

" To become clean and hygiene city where people love to live by ensuring 24x7 potable water supply and environmental friendly Solid and Waste Water management practices so as to raise the public health standards of people to international standards "

17. Goals corresponding to city wide key-issues

- Solid waste treatment and disposal
- Open defecation free city
- Protecting water bodies
- Dry waste collection centers.
- Poster & Litter free city

Table 19: EXAMPLES OF POTENTIAL GOALS

KEY ISSUE	GOAL
No coverage to sewerage system in peripheral areas and limited sewer connectivity in covered areas	*Achieve 100% sewer connections in a combined mode of centralized and decentralized system*
Prevalence of open defecation in certain low-income pockets	*Declared as OD free city on 02-10-2016*
Cost recovery levels in water supply and solid waste are very low against O&M cost	*Improve collection efficiency of solid waste and water charges*
Littering and waste dumping in storm water drains	*Make open drains and storm water drains litter free*
Regulation and oversight of onsite sanitation and septage management is inadequate	*Implement a septage management priority project with clear roles and responsibilities*
Mechanism for fines	*providing squads for fines collection*

SANITATION GOALS
24/7 garbage free roads
Public awareness in disposing waste
Collection of user fees and penalties for indiscriminate littering
Livable atmosphere in the cities
Stray Animals free city

18. Action Plan

Table 20: FORMAT FOR ACTION PLAN

Key Issue 1 :	**Waste-water is not properly managed (i.e. there is no proper collection, conveyance & treatment of waste-water), leading to unhygienic conditions & pollution of water bodies**					
Goal :	Ensure proper waste-water (sewage & septage) management (collection, conveyance, treatment & disposal) by 2020					
S. No.	Action Points	Year 1 (by16 Dec 17)	Year 2 (by 17Dec 18)	Year 3 (by18Dec19)	Year 4-5 (by 19Dec21)	Year 05-Oct
1	Explore (through study) if UGD system is feasible & practical for the city. If Not feasible until when ?	✓				
4	Ensure fully segregated municipal budget heads related to waste-water services	✓	✓			
5	Identification and nomination of Nodal department for Septage Management in the ULB	✓				
6	Explore feasibility for setting up a Septage Treatment Plant including identification of land & project design	✓				
7	Building capacities within ULB for Septage management	✓	✓			
8	Construction & Commissioning of Septage Treatment Plant (if applicable)	✓	✓	✓		
9	Organize a registry / association of informal / private desludging operators	✓	✓			
10	Prepare SOP / Operation Manual for septic tank emptying private operators	✓				
11	Prepare bye-laws for controlling illegal open disposal of septage by private desludging operators	✓				
12	Regularize user charges for emptying of septic tanks	✓				
13	Explore options (study) for treatment of grey water & overflow (effluent) from septic tanks	✓	✓			
14	Initiate project for treatment for grey water & overflow (effluent) from septic tanks in selected areas	✓	✓			

15	Initiate project for treatment for grey water & overflow (effluent) from septic tanks in entire town (in phased manner)				✓	✓
16	Explore reuse and recycle opportunities	✓				
17	Ensure reuse and recycle of atleast 20% of waste-water	✓	✓		✓	✓
18	Ensure no untreated waste-water enters the environment (water bodies / land) – 100% safe management of waste-water			✓		✓
19	Organize rigorous IEC activities for all stakeholders	✓	✓			
20	Organize citizen care unit for septage management within the ULB	✓				
Key Issue 2 :	**Prevalence of insanitary toilets and improper maintenance of Public and Community Toilets, leading to detrimental environmental and health hazards**					
Goal :	Ensure all existing and new toilets (IHHT, PT & CT) are sanitary and properly maintained (to cover the current and future demand) by 2019					
S. No.	Action Points	Year 1 (by16 Dec 17)	Year 2 (by 17 Dec 18)	Year 3 (by18 Dec19)	Year 4-5 (by 19 Dec 21)	Year 05-Oct
1	Carryout out an independent study to understand the environment and health hazards to the city due to improper waste-water management	✓				
2	Ensure 100% enforcement of 'The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013	✓				
3	Ensure provision of safe sanitation services for labourers as per 'The Andhra Pradesh Municipalities Act, 1965'	✓	✓			
4	Prepare bye-laws for ensuring all upcoming Gated colonies, Apartments, Commercial establishments, Institutions and Bus & Taxi stands plan for independent safe sanitation systems	✓				
5	Ensure ULB to give building permission only for all upcoming Gated colonies, Apartments, Commercial establishments, Institutions and Bus & Taxi stands with plans for independent safe sanitation systems.	✓	✓	✓		

6	Ensure all existing Gated colonies, Apartments, Commercial establishments, Institutions and Bus & Taxi stands upgrade to safe sanitation systems.	✓	✓	✓		
7	Try and test alternate safe sanitation systems (DRDO Bio-digester, Aerobic Bio-tanks, Decentralized Treatment units, etc.) in Govt. institutions	✓	✓	✓		
8	Plan for upscaling of alternate safe sanitation systems in Public / Community Toilets, Gated Colonies, Apartments, Commercial establishments, Institutions		✓	✓		
9	Plan & Initiate steps for reuse / recycle of treated waste-water in Public / Community Toilets, Apartments, Commercial establishments, Institutions, etc		✓	✓	✓	
10	Formation of committee / task force for ensuring proper operation & maintenance of public and community toilets	✓				
11	Ensure all community and public toilets have safe sanitation systems	✓	✓			
12	Ensure dedicated Municipal budget for proper O&M of Public and Community Toilets	✓	✓			
13	Procurement of mobile toilets by ULB for public during open public gatherings	✓				
14	**Plan and initiate steps (eg. spot fines) for controlling / discoursing open urination especially in public areas**	✓				
15	Prepare bye-laws for standardization & design of septic tanks (as per AP Buidling rules, 2012) for upcoming new constructions. Ensure septic tanks are planned & constructed as per bye-laws before allocating building permission by the ULB	✓				
16	Prepare registry (at ULB) of plumbers & masons skilled for construction of septic tanks	✓	✓			
17	Conduct training programmes for plumbers and masons regarding scientific designing of septic tanks	✓	✓			
18	Formation of dedicated committee / task force for ensuring safe sanitation in slum areas	✓				

19	Identification of all insanitary sanitation systems (single pit latrines, damaged / defunct / ill constructed septic tanks, pit latrines / soak pits in high ground water table areas etc.) in the city	✓	✓			
20	Explore possibility (through study) of upgradation of all insanitary sanitation systems to sanitary sanitation systems	✓	✓			
21	Upgradation of all insanitary sanitation systems to sanitary sanitation systems	✓	✓			
22	Explore CSR funding possibilities from Industry and Trade & Commerce associations for conversion of insanitary sanitation systems to safe sanitation systems		✓			
23	Involve Police department for lawful exercise / enforcement of bye-laws / Municipal Act	✓	✓	✓		
24	Organize rigorous IEC activities for all stakeholders.	✓	✓			
25	Take support from NGOs / CBOs/ SLFs, Ward Sabhas / Area Sabhas, RWAs, SLFs / TLFs, Industry and Trade & Commerce associations, NCC / NSS, Schools, town clubs and local Eminent personalities for IEC activities and regular monitoring	✓	✓			
26	Formalize partnership with local academic and professional institutes (Colleges, ITIs, etc.) for supporting the ULBs in achieving improved sanitation (waste-water & solid waste management)	✓	✓			
27	Ensure consistent improvement in all subsequent Swachh Sarvekshan ranking exercises. Bottom line being to be in the first 100 towns in the upcoming round.	✓	✓			
28	Mainstream Swachhata App rolled out by SBM, MoUD in the ULB / City	✓				
Key Issue 3 :	**Insufficient and inefficient Storm water management leading to unhealthy towns**					
Goal :	Ensure comprehensive and efficient Storm water management by 2019					

S. No.	Action Points	Year 1 (by16 Dec 17)	Year 2 (by 17Dec 18)	Year 3 (by18Dec19)	Year 4-5 (by 19Dec21)	Year 05-Oct

1	Prepare Master Plan for Storm water management	✓				
2	Mapping of existing Storm water drainage network	✓				
3	Identification of funds for retrofitting & augmentation of storm water drainage network	✓				
4	Prepare DPR for retrofitting & augmentation of storm water drainage network	✓				
5	Retrofitting of major drains	✓	✓			
6	Augmentation of storm water drainage network	✓	✓	✓		
7	Identification & Mapping of illegal Encroachment areas near drains	✓				
8	Plan and initiate steps for clearing of illegal Encroachment areas near drains	✓	✓			
9	Frame bye-laws for controlling littering in drains	✓				
10	In order to ensure that sweepers do not dispose solid waste into drains, same staff that is responsible for cleaning street to be made responsible for cleaning adjacent surface drains (upto a depth of 45-60 cm)	✓				
11	Establish a monitoring system for cleaning & desilting of storm water drains (especially pre-monsoon) Ensure regular de-clogging of bottleneck points	✓	✓			
12	Procurement of additional equipments / tools / vehicles (only if required) for desilting & de-clogging of storm water drains	✓	✓			
13	Ensure fully segregated Municipal budget for proper maintenance of Storm water drainage network	✓	✓			
14	Identification & Mapping of water-logging areas in the entire town	✓				
15	Plan and initiate steps for eliminating incidences of water-logging in the entire town	✓	✓			
16	Ensure zero incidences of water logging in the town	✓	✓	✓		

17	Initiate ground water recharge measures (eg. rainwater harvesting) in Govt. Institutions	✓	✓			
18	Upscale ground water recharge systems in Gated Colonies, Apartments, Commercial establishments, Institutions, etc.		✓	✓		
19	Explore (through study) options for ground water recharge (Source control options, Rain water harvesting, permeable pavements, retention & detention zones, etc)	✓				
20	Initiate steps for ground water recharge at town level (i.e. roads & streets)		✓	✓		
21	Identification of illegal untreated effluent outflows from local industries in storm water drains	✓				
22	Eliminate illegal untreated effluent outflows from local industries in storm water drains with support from PCB	✓	✓	✓	✓	
23	Ensure all surface water bodies (Cheruvus, streams , rivers) are pollution free	✓	✓	✓		
Key Issue 4 :	**Poor cost recovery and collection efficiency in water supply related services leading to poor services to the citizens / users**					
Goal :	Achieve at least 90% cost recovery and 90% collection efficiency in water supply related services by 2020					
S. No.	Action Points	Year 1 (by16 Dec 17)	Year 2 (by17 Dec 18)	Year 3 (by18 Dec 19)	Year 4-5 (by19 Dec 21)	Year 05-Oct
1	Ensure fully segregated municipal budget heads related to water supply services	✓				
2	Accounting practice enables proper monitoring (including clear identification of collection against specific bills) of billing and collections for each connection within the ULB	✓				
3	Ensure the operating revenues are collected in the same financial year, without allowing for dues to get accumulated as arrears (less than 10 %)	✓	✓			
4	Carry out Water & Energy Audit for Water supply services	✓	✓			
5	Carry out a study for Assessment of Non-Revenue Water (NRW) and developing strategy and implementation plans for reduction of NRW	✓				

6	Initiate steps for controlling NRW to 15-20 % especially reducing Apparent water losses (illegal water connections, water theft, metering inaccuracies)&Real water losses (leakages in the distribution networks)	✓	✓	✓	✓	
7	Ensure procurement of energy efficient (eg. solar) electro-mechanical equipments (pumps, motors) for future Govt. works	✓	✓	✓	✓	
8	Initiate steps for making WTP (Water Treatment Plant) more energy efficient	✓	✓	✓		
9	Initiate practice of using Water efficient fixtures in future procurement for Govt. works	✓	✓			
10	Promote use of Water efficient fixtures especially in PT/CT, Gated Colonies, Apartments, Commercial establishments, Institutions, etc		✓	✓		
11	Preach & practice use of waterless urinals in Pubic urinals, Commercial establishments, Institutions, Bus & Taxi stands	✓	✓	✓		
12	Identify innovation schemes (incentives, rebate) for payment of dues for water supply charges	✓	✓			
13	Initiate schemes / incentives for reducing water usage, reuse of treated waste-water & practicing rainwater harvesting	✓	✓	✓	✓	✓
14	Plan and initiate punitive measures for non-cooperation for water supply related services		✓	✓		
15	Mandatory installation of water meters for all non-residential users (Commercial establishments, Institutions and Industries)	✓	✓			
16	Explore feasibility and acceptability for water meters in residential areas (except slums)	✓	✓	✓		
17	Installation of water meters in residential areas (except slums) in phased manner (if possible)			✓	✓	
18	Ensure volumetric rate is charged for water supply services to all non-residential users (Commercials establishments, Institutions and Industries)	✓				

19	Prepare bye-law for differential rate for water usage and ensure adequate safeguards are included to take care of the interests of the vulnerable		✓			
20	Explore need for revision of user charges for all users (non-residential and residential)		✓			
21	Incrementally revise water supply user charges to improve cost recovery to 60%			✓		
22	Incrementally revise water supply user charges to improve cost recovery to 90%				✓	
23	Ensure atleast 60% collection efficiency	✓	✓			
24	Achieve atleast 90 % collection efficiency from residential users		✓	✓		
25	Achieve nearly 100 % collection efficiency from non-residential users (Commercial establishments, Institutions and Industries)		✓	✓		
26	If Municipal staff is insufficient for collection, explore possibility of outsourcing the activity of collecting water supply related charges to private operator through appropriate business model	✓	✓			
27	If possible & viable, outsource the activity of collecting water supply related charges to private operator for entire town in phased manner		✓	✓	✓	
28	Organize IEC campaign requesting cooperation from citizens for reducing wastage of water and payment of user charges	✓	✓			
Key Issue 5 :	**Lack of skills / capacities (technical and managerial) with the Municipal staff in all departments makes it challenging for the Municipality to perform day to day functions and keep pace with the increasing demand in services and developments in sanitation sector.**					
Goal :	Take-up upgradation of skills of all municipal staff as mainstream and regular activity, aimed at achieving better competency and efficiency					
S. No.	Action Points	Year 1 (by 16Dec 17)	Year 2 (by17 Dec 18)	Year 3 (by18 Dec 19)	Year 4-5 (by 19Dec 21)	Year 05-Oct

1	Establish a system for inventory (Documentation) of capacity building activities (trainings, workshops, conferences, exposure visit, etc.) undertaken / planned for all municipal staff including elected representatives Identification & nomination of Nodal officer for maintaining and regularly updating the above system	✓				
2	Identify staff members responsible for filing&updating all data sets collected under CSP, SLIP, Swachh Survekshan, GO 279, DPR	✓				
3	Conduct Training Needs Assessment for the Municipal staff		✓			
4	Explore avenues for capacity building with State under various programmes SBM, AMRUT, etc.	✓				
5	Conduct regular review meetings with new sanitary workers on their challenges and achievements every 3 months	✓				
6	Identify all new skills required of ULB staff members for new DPRs to be implemented		✓			
7	Identify local NGO to conduct training programme on community participation for ULB staff members	✓	✓			
8	Establish an internship/trainee programme for local Youth in the municipality.	✓				
9	Introduce incentives for municipal staff to achieve implementation of CSP action points (award, participation in training, newspaper article)	✓				
10	Launch a competition for local Youth/IT College/Start-up to design online application for ULB and train municipal staff		✓			
11	Monitor the progress with respect to capacity building & take appropriate actions as required		✓	✓		
Key Issue 6 :	**Lack of inefficient and unscientific solid waste management leading to unclean and unhealthy city**					

Goal :	Achieve Service Level Benchmarks (as defined by MoUD) in Solid waste management by 2020					
S. No.	Action Points	Year 1 (by 16Dec 17)	Year 2 (by17Dec 18)	Year 3 (by18 Dec 19)	Year 4-5 (by19 Dec 21)	Year 05-Oct
1	Prepare Action Plan for timely implementation of GO 279 -Definition of micro pockets -Identification of works to be carried out by municipal health workers and works which need to be outsourced -Tendering & selection of private parties for collection and transportation	✓				
2	Identification & possession of land for landfill facility, processing facility and material recovery facility (if applicable)	✓	✓			
3	Provide bins for source segregation to poor households	✓				
4	Ensure 100% source segregation in phased manner	✓	✓	✓		
5	Eliminate open dumping points in a phased manner	✓	✓			
6	Ensure personal protection equipments (uniforms, hand gloves, boots, masks, etc.) to workers handling solid waste	✓				
7	Frame bye-laws for -controlling littering & open dumping (spot fines) -banning of plastic carry bags as per the provision of plastic waste management rules 2016 -banning burning of solid waste -managing waste generated in public gatherings (marriages,etc.) -implementation of SWM rules, 2016	✓				
8	Involve Police Dept. for exercise/enforcement of bye-laws/Municipal Act	✓	✓	✓		

9	Plan for material recovery facility for sorting of recyclable material	✓	✓			
10	Ensure proper management of plastic waste	✓	✓	✓		
11	Set up E-waste collection centres	✓	✓			
12	Set up C&D waste collection centres	✓				
13	Prepare strategy for managing disposable waste (eg. discouraging disposal waste, involve disposable waste generators, etc.)	✓	✓			
14	Initiate steps for extended responsibility of manufactures of disposal products		✓	✓		
15	Initiate steps to make unused / inefficient compost plant fully functional	✓				
16	Try and test decentralized management of organic waste within premises of Govt. institutions	✓				
17	Plan for upscaling of decentralized organic waste management for Gated Colonies, Apartments, Commercial establishments and Institutions, etc.		✓	✓		
18	Explore support from NBCC (as per the request from SBM-MoUD) for Bio-mining / Bio-remediation or capping of old and abandoned dump site	✓				
19	Explore possibility of cooperation between ULBs & BSNL as per MoU between BSNL & MoUD for providing eSBM platform for SWM in ULBs.	✓				
20	Ensure revised master plan has land provisions for setting up processing facility & landfill site	✓				
21	Establish a system to recognize organizations of waste pickers & waste dealers & facilitate their participation in effective SWM Initiate registration of waste pickers & waste dealers	✓				
22	Fix user charges for all non-residential users (Commercial establishments, Institutions and Industries)	✓				
23	Fix user charges for residential users		✓			
24	Initiate steps for improving the cost recovery & collection efficiency for SWM services		✓	✓	✓	

25	Organize rigorous IEC activities for all stakeholders.	✓	✓			
26	Take support from NGOs / CBOs/ SLFs, Ward Sabhas / Area Sabhas, RWAs, SLFs / TLFs, Industry and Commerce associations, NCC / NSS, Schools, town clubs and local Eminent personalities for IEC activities and regular monitoring	✓	✓			
27	Formalize partnership with local academic and professional institutes (Colleges, ITIs, etc.) for supporting the ULBs in achieving improved sanitation (WW&SWM)	✓	✓			
28	Ensure consistent improvement in all subsequent Swachh Sarvekshan ranking exercises. Bottom line being to be in the first 150 towns in the upcoming round.	✓	✓			
29	Mainstream Swachhata App rolled out by SBM, MoUD in the ULB / city	✓				

19. Cost Estimates and Investment Plan for CSP

a. Budget Projections of ULB

Table 21: BUDGET PROJECTIONS

#	Particulars	**Amount** (Rs. in Lakhs)		
		2016-17	**2017-18**	**2018-19**
A.	**Revenue Income**			
1	Income from Taxes	2404.77	2525.01	2651.26
2	Income from Non-Taxes	2011.81	2112.40	2218.02
3	Income from Assigned Revenue	1471.32	1544.89	1622.13
	Total Revenue Income (1+2+3)	**5887.91**	**6182.30**	**6491.42**
B.	**Capital Income**			
4	Grants and Loans	4263.64	4476.82	4700.66
	Total Capital Income (4)	**4263.64**	**4476.82**	**4700.66**
	Total Income (1+2+3+4)	**10151.55**	**10659.12**	**11192.08**
C.	**Revenue Expenditure**			
5	General, Establishment and Other Revenue Expenditure	765.83	804.12	844.33
6	O&M of Sanitation including SWM	3589.09	3768.54	3956.97
	Total Revenue Expenditure (5+6)	**4354.92**	**4572.66**	**4801.30**
D.	**Capital Expenditure**			
7	Capital Expenditure	3071.17	3224.72	3385.96
	Total Capital Expenditure (7)	**3071.17**	**3224.72**	**3385.96**
	Total Expenditure (5+6+7)	**7426.08**	**7797.39**	**8187.26**
	Revenue Surplus/Deficit (1+2+3+4-5-6-7)	**1532.99**	**1609.64**	**1690.12**
	Capital Surplus/Deficit (4-7)	**1192.47**	**1252.10**	**1314.70**
	Overall Surplus/Deficit (1+2+3+4-5-6-7)	**2725.46**	**2861.74**	**3004.82**

b. Cost estimates for CSP

Table 22: Cost Estimates for CSP

Sl. No	Projects (taken from CSP Action Plan)	Description (All actions included in this project)	Cost in Rs.[Rs in Crores]			Source for funding (ULB own revenues, Grant under SBM, AMRUT, etc.)
			Short Term	Medium Term	Long Term	
1	Sewerage treatment	Identification of land-DPR Preparation- Administrative Approvals- Technical Evaluations-Awarding Contracts-Execution	53.00	212.00	450.00	KMC/AMRUT/JICA/ SMART CITY MISSION
2	Septage Management	DPR Preparation- Administrative Approvals- Technical Evaluations-Awarding Contracts-Execution	10.00	20.00	150.00	KMC/GoAP/
3	BIO-Methanisation	Segregation –conversion of organic material microbiologically under anaerobic conditions to biogas-DPRs- Tenders	10.80	26.20	-	SBM+PPP mode
4	BIO-Mining	Extracting valuable metals and manure from Solid Waste-Tendering-Execution	12.00	-	-	PPP MODE+SBM
5	Storm Water Drains	Administrative Approvals- Technical Evaluations-Awarding Contracts- -Execution	30.00	276.00		AMRUT/SMART CITY MISSION+KMC
6	Water Supply	Laying of distribution lines and providing House service connections --Execution	42.00	75.00	-	AMRUT/ KMC+WB
7	Solid Waste Management	Procurement of compactors, and other allied machinery.	7.11	-	-	SBM/ SMART CITY MISSION+KMC
		Modern Slaughter House	3.00	-	-	KMC/GoAP
		Construction of Cold Storage	5.00	-	-	GOI+SMART CITY MISSION
		Total	**172.91**	**609.20**	**600.00**	

20. Information, Education & Communication- Awareness generation implementation plan

Phase 1 (1-12 months) **Awareness Raising Phase**	**Phase 2 (12-24 months)** **Process Phase: Feedback**	**Phase 3 Compliance phase: (24-36 months)** **Consolidating gains and sustaining behavior Change**
This phase is aimed at generating high awareness and taking steps to build trust among stakeholders. 1. Health and Hygiene and Government programmes and processes-Goals of City Sanitation Plans for all stake holders 2.Policy resolutions for various concerns 3. Status of community toilets, solid waste management, water supply and drain cleaning. Setting goals and exploring all avenues of improvement including community participation and consultation with officials. 4. Regular upkeep & maintenance of water bodies 5. Industries and slaughter houses be made aware of the compliance waste management.	This phase is to enhance trust between stakeholders. Information and educational approaches are employed to stress the importance, among other things, of properly designed community toilets, septic tanks and periodic septic tank inspections and de-sludging every 3-5 years. Seeking feedback from the residents on status of community toilets their design, solid waste management practices etc. Imposition of user fee on commercial establishments for improved municipal services.	1. Offering awards and imposing penalties for undesirable behaviours. This phase is a continuing education and promotional phase. 2. Mobilized public opinion is important to push for compliance. Continue promotional activities to trigger the actual adoption of the practices being marketed. Building sustaining process to open channels of communication between NMC and citizens. Compliance should be sought from industries and slaughter houses. 3. Imposition of user fee on commercial establishments for improved municipal services.

Table 23: Example for preparing an external campaign

CAMPAIGN OBJECTIVE	***STOP LITTERING IN PUBLIC SPACES***
Possible location	*Commercial areas (markets, etc.)*
Target audience	*Families, women and children*
Current behavior	*Throwing plastic waste into the open areas, especially waste of products they just bought*
Desired behavior	*No littering in the areas*
Partners for campaign	*Vendors, market associations, ULB, RWA*
Communication Actions	*Display messages, organize street theatre at the market, organize, clean-up actions with children, etc.*
Communication Channels	*Board at shops, Personal interactions*
Monitoring systems	*Monthly monitoring day with vendors and buyers at markets taking pictures*
Sustainability	*Incentive system for street vendors*

Annexures:

- Minutes of Meetings of all CSTF Meetings
- Notification/council resolution on CSTF Formation
- Following maps:
    - Base map
    - Ward map
    - Land use map
    - CT & PT map
    - Door to Door Garbage Collection map