

#### 4.2.4.6 Hotels

##### 1.0 Subject Matter

(Present a brief historical background on the growth of sector – a bird’s eye view picture and analysis of the Sector using the information/ tables) provided in the annexure.

GIS based map depicting location of all the Hotels - District level

Type and total no. of Hotels in the State – (Refer Annexure: Table-1)

Time trend of the number (growth) of Hotels in the state and Water Demand & Supply (Refer Annexure: Table-2)

##### 2.0 Details of Water Availability, Supply, Demand, Withdrawal & Consumption for the Hotels

###### Water Supply & Demand for all the Hotels in the State

Time trend of total water demand and actual current water supplied to the Hotels along with growth of Hotels in the state.

Provide trend analysis (10-15 years) with breakup. (Refer Annexure: Table 2, 3a, 3b)

###### Total Freshwater Withdrawal and Actual Water Consumption by Hotels in the State

###### Comparative trend of Total Freshwater Withdrawal Vs Actual Water Consumption by Hotels in the State

State Water Budgeting: Refer Annexure: Table-3(e)

Hotels (district-wise)	Previous Year / Average Annual Demand (MCM)	Previous Year/ Average Annual Supply & Consumptive Use (MCM)		Demand for the present Water Year (MCM)
		Supply	Consumptive Use	
District 1				
District 2				
All Districts				
<b>GRAND TOTAL</b>	xxx	xxx	xxx	xxx

##### 3.0 Issues and Challenges

Illustrative issues and challenges may include

- Water demand and supply issues in the Hotel sector in the state, provide details
- Waste water disposal and associated surface and ground water contamination
- Capital investment related issues w.r.to wastewater treatment/recycle/reuse, water conservation interventions etc.
- Issues related to water pricing in Hotel sector
- Technology availability, affordability and efficiency related issues
- Issues related to monitoring and reporting of data

(Supporting data & analysis for above points may also be furnished)

##### 4.0 Problem Tree / Root cause Analysis: Cause, Effect and Interventions

##### 5.0 Governance / Management:

###### Statute / Law / Policy/ Regulations if any

- State level laws, policy and governance for the Hotel sector in the state on water access, consumption and wastewater discharge.
- Any specific fresh and waste water regulation/ guidelines in state, provide details.

- Has the state notified any regulations including for zero liquid discharge for the Hotels in the state? Provide details.

#### **Institutions governing / managing / monitoring the resources and Institutional structure.**

- Institutions governing / managing / monitoring the hotel industry water consumption and supply.

Governing body for Hotels sector	Water allocation & Monitoring authority	Waste water discharge monitoring
<i>E.g. Ministry of Tourism</i>	<i>E.g. CGWA/ Water resource department/ Urban or Rural body</i>	<i>e.g. State pollution Control Board</i>

#### **Schemes, Economics & Financing-**

Existing schemes and programs along with financial allocations, expenditure etc.

- Water Tariff and procurement cost (*Refer Annexure: Table 6(a) & 6(b)*)
- Expenditure on Water management (*Refer Annexure: Table 6(c) & 6(d)*)

#### **6.0 Measurement, Monitoring and Data Constraints/ Management**

##### **• Water & Wastewater Measurement:**

Shall specify measurement methods and technologies at Raw water source and Waste Water (generation, recycle/reuse & discharge) and Water Quality as per CPCB / SPCB

- **Monitoring** at State Government: Institution/ Agency/ Official responsible for Sustainable Water Management comprehensively for this Sector.
- **Data Management:** Should specify - Frequency of measurement, Frequency of Reporting to centralized agency, Water Quality Parameters monitored, how data is being used to improve Water Use Efficiency and ensure water quality parameters are within the prescribed norms etc.
- **Constraints** with respect to the measurement & monitoring: Example is provided below  
 No Designated/ responsible Official / team for Water management  
 Lack of measurement equipment & standard infrastructure  
 Unskilled manpower for Measurement & Monitoring  
 No centralized data base and analytical support etc

#### **7.0 Performance Indicators:**

a. **Benchmarks on water use** (*Refer Annexure: Table-10*)

b. **Status of various Performance Indicators– for comparison across Districts/ Plants/ Units/ Products etc.**

Category	Indicator	Bench Mark (as applicable)	District- 1	District- 2
<b>Water Quantity Measurement</b>	<b>Water Quantity</b>			
	% of hotels with water flow meters			
	% of hotels with water sources geotagged			
	% of hotels undertaken internal water audit in the last year			
	% of hotels undertaken external water audit in the last year			
<b>Water Conservation</b>	% of hotels undertaken Third party Water Audit in the last Year			
	% of hotels with water harvesting structures?			
	% reduction of total water demand compared to the previous year.			

#### **Performance Indicators**

Category	Indicator	Benchmark (as applicable)	District 1	District 2
<b>Water Use Efficiency</b> ( <i>Annexure- Table 7</i> )	Specific Water Consumption (SWC); <b>(Litres/guest nights)</b> ( <i>refer Annexure- 7(a),(b) &amp; (c)</i> )			

	Have specific water consumption norms/benchmarks established	Yes/No		
	% of hotels with specific water consumption within the norms/benchmarks/standards			
<b>Waste Water</b> (Annexure-Table 8)	% reduction in wastewater generation as compared to previous year			
<b>Water Quality</b> (Annexure-Table 9)	% of hotels with online water quality monitoring systems installed.			
	% of hotels having compliance with the wastewater quality discharge norms.			
	% of hotels discharging wastewater into open area/ earthen nallah /open drain/ municipal sewer?			
	% of hotels notified for violating effluent discharge norms for discharge in natural resources (surface/ground)			
<b>Economics</b>	Whether economic incentives are in place by state to encourage water efficiency & conservation?	Yes/No		
	Whether economic disincentive mechanisms like penalties etc. are in place by state to discourage water wastage & inefficient use?	Yes/No		
	Whether water use charges & tariff are revised regularly and are reflective of rational pricing mechanisms?	Yes/No		

**8.0 Reforms undertaken/ being undertaken/ proposed if any****9.0 Road map of activities / tasks proposed for**

- Better governance
- Better source / supply management
- Better demand management /improved Water Use Efficiency
- Water Quality
- Water Economics and Financing
- Sustainable Water budgeting with timelines and agencies responsible for each task/activity.

**ANNEXURE****1 Total number of Hotels in the State**

Total Number of Hotels in the State		
Type – Based on no. of rooms	No. of Hotels	No. of total rooms
Hotels with 0-100 rooms		
Hotels with 100 – 200 rooms		
Hotels with 200 above rooms		
<b>Total</b>		

## 2Growth Trend of Hotels over a period and Water Demand and Supply position

Hotels – Based on no. of rooms	Years					
	1990	1995	2000	2005	2010	2017
<b>No. of Hotels</b>						
Hotels with 0-100 rooms						
Hotels with 100 – 200 rooms						
Hotels with 200 above rooms						
<b>Total</b>						
<b>Water Demand and Supply</b>						
<b>Total Water Demand (MCM)</b>						
<b>Total Water Supply (MCM)</b>	<b>GW</b>					
	<b>SW</b>					
	<b>Total</b>					
<b>Demand-Supply Gap</b>						

## 3Water Budgeting

## 3(a) Demand, Supply (Withdrawals) &amp; Consumptive Use:

Hotels: (MCM) Present Water Year: 1 <sup>st</sup> June to 31 <sup>st</sup> May next year									
INSTITUTIONS (within the Basin/ Sub-basin A)	Previous Year/ Average Annual Demand	Demand for Present Water Year	Previous Year/ Average Annual Supply				Previous Year/ Average Annual Waste Water Generated	Previous Year/ Average Annual Consumptive Use	Remarks
			Rain Water	Surface Water	Ground Water*	<b>TOTAL SUPPLY</b>			
Unit 1									
Unit 2									
<b>GRAND TOTAL</b>									

\*GW Draft can be calculated from the number of GW abstraction structures & corresponding draft for each Industrial Use/ Process.

## 3(b) Source Wise: Previous Year/ Average Annual Water Supply

Hotels: (MCM)										
Source	Sub Source	Unit 1	Unit 2	Unit 3	Unit 4					TOTAL
Rain Water	Directly Harvested Rain Water									
<b>Total</b>										
Surface Water	Springs, Nallahs									
	Major Projects									
	Medium Projects									
	Minor Projects									
	Ponds, Tanks									
	Wetlands									
	Sea Water /Desalinated Water									
Inter Basin Transfer										
<b>Total</b>										

Ground Water* (Dynamic / Static)	Dug wells (Total No. x Draft)										
	Dug cum Bore well (Total No. x Draft)										
	Bore/Tube wells (Total No. x Draft)										
	Others etc										
<b>Total</b>											
<b>Treated Waste Water</b>											
<b>GRAND TOTAL</b>											

\*GW Draft can be calculated from the number of GW abstraction structures & corresponding draft for each Industrial Use/ Process.

### 3(c) Previous Year/ Average Annual Demand, Supply (Source wise) and Consumption for Basin/ Sub-basin A:

Source of Water	Demand of all Units in Basin/ Sub-basin A	Supply/ Withdrawal for all Units	Consumptive Use of all Units	Gap/Remarks		
Rain Water (Directly Harvested)						
Springs, Nallahs						
Major Projects						
Medium Projects						
Minor Projects						
Ponds, Tanks						
Wetlands						
Desalinated Water/ Sea water						
Inter-Basin Transfer						
Ground Water (Dynamic)						
Treated Waste Water						
<b>TOTAL (MCM)</b>						

### 3(d) Previous Year/ Average Annual Demand, Supply (Source wise) and Consumption for Whole State:

Source of Water	Demand of all Units in the State	Supply/ Withdrawal for all Units	Consumptive Use of all Units	Gap/Remarks		
Rain Water (Directly Harvested)						
Springs, Nallahs						
Major Projects						
Medium Projects						
Minor Projects						
Ponds, Tanks						
Wetlands						
Desalinated Water/ Sea water						
Inter-Basin Transfer						
Ground Water (Dynamic)						
Treated Waste Water						
<b>TOTAL (MCM)</b>						

## 3(e) Summary State Water Budget for Hotels

Hotels in state (district-wise)	Previous Year / Average Annual Demand (MCM)	Previous Year/ Average Annual Supply & Consumptive Use (MCM)		Demand for the present Water Year (MCM)
		Supply	Consumptive Use	
<b>All Districts</b>	xxx	xxx	xxx	xxx

## 4 Proportion of Water withdrawal and consumption by Hotels against total industries in the State

Hotels – Based on no. of rooms	Total Water Withdrawal by all Hotels (%) (Refer 4(a) below)	Total water withdrawal by all Industries in state	Total Water Consumption by all Hotels (%) (Refer 4(b) below)	Total water Consumption by all Industries in state
Hotels with 0-100 rooms				
Hotels with 100 – 200 rooms				
Hotels with 200 above rooms				
<b>Total</b>				

**4(a) Total Water Withdrawal/Abstraction by Hotels** in the State as percentage of Total water withdrawal by all the industries in the State

$$\text{Total water withdrawal by Hotel Sector (\%)} = \frac{(\text{Total water withdrawal by all Hotels in the State}) \times 100}{(\text{Total water withdrawal by all industries in the state})}$$

**4(b) Total Actual Water Consumption by Hotels** in the state as percentage of Total water consumption by all the industries in the State

$$\text{Total water consumption by Hotel Sector (\%)} = \frac{(\text{Total actual water consumption by all Hotels in State}) \times 100}{(\text{Total water consumption by all the industries in the state})}$$

## 4(c) Total Freshwater Withdrawal and Total Actual Water Consumption by all Hotels in the State

	CY -11	CY -10	CY -9	CY -8	CY -7	CY -6	CY -5	CY -4	CY -3	CY -2	CY -1	CY / 201 7
Total Fresh Water Withdrawal by all Hotels (MCM)												
Total Actual Water Consumption by all Hotels (MCM)												

**5 Total Water Withdrawal (Abstraction) and Actual Water Consumption as percentage of total renewable freshwater resources**

	CY-5	CY-4	CY-3	CY-2	CY-1	CY/ 2017
Total Fresh Water Withdrawal by all Hotels (%) (Refer 5(a) below)						
Total Actual Water Consumption by Hotels (%) (Refer 5(b) below)						

**5(a) Total Water Withdrawal/Abstraction by Hotels** in the State as percentage of Total available freshwater resources of the State

$$\text{Total water withdrawal by Hotel Sector (\%)} = \frac{(\text{Total water withdrawal by all the Hotels in the State}) \times 100}{(\text{Total available freshwater resources of the state})}$$

**5(b) Total Actual Water Consumption by Hotels** in the state as percentage of Total available freshwater resources of the State

$$\text{Total water consumption by Hotel Sector (\%)} = \frac{(\text{Total actual water consumption by all Hotels in State}) \times 100}{(\text{Total available freshwater resources of the state})}$$

**6 Water Economics & Financing:**

**6(a) Water Tariff (Rs./m<sup>3</sup>)**

Source	CY-5	CY-4	CY-3	CY-2	CY-1	CY/ 2017
GW						
Urban body						
Treated Waste Water for reuse						
Others						

**6(b) Procurement Cost of Water (in Rs)**

Year wise cost of procurement of Water				
CY-5	CY-4	CY-3	CY-2	CY-1

**6(c) Expenditure on Water including Treatment and Management-Time trend at State level**

	CY-5	CY-4	CY-3	CY-2	CY-1	CY/ 2017
Total Capex by Hotels on water treatment and management (Lakhs)						
Total O&M Expenditure by Hotels on water treatment and management (Lakhs)						
Total						
O&M Expense (%)						

**6(d) Expenditure by all the Hotels at district level for the Current Year- CY**

District	Capital Expenditure (Lakhs)	O&M Expenditure (Lakhs)	Total	O&M Expense (%)
District 1				
District 2				
District 3				

District 4				
Total				

**7 Water Use Efficiency:**

Water use efficiency in terms of Specific Water Consumption (SWC) viz. amount of water used/consumed per unit. In case of Hotels, it can be represented as the total volume of water used/consumed (litres) per guest nights.

**Specific Water Consumption (SWC) of Hotels:**

Specific Water Consumption; **(Litres/guest night)** = 
$$\frac{\text{Volume of water consumed by the Hotel, (litres)}}{\text{Total no. of guest nights}}$$

**7(a) Specific Water Consumption (Water consumption per guest night) for Current Year**

	Vol. of Water Consumed (litres)	Total no. of guest nights	SWC (Litres/guest night)
District 1			
District 2			
District 3			

**7(b) Average Water consumption per guest night of Hotels for the State – time trend (also represent through Graph)**

	CY-5	CY-4	CY-3	CY-2	CY-1	CY/ 2017
Average Water consumption per guest night of Hotels in State						

**7(c) Specific Water Consumption (Water consumption per guest night)**

**Trend of average Specific Water Consumption (Water consumption per guest night) of Hotels at district level**

Percentage of Hotels having specific water consumption within the norms/bench marks/standards (as applicable)

**8 Waste Water**

	Bench Mark (as applicable)	District 1	District 2	District 3
Total Waste Water Generated from Hotels (m <sup>3</sup> /annum)				
% Total quantum of wastewater discharged after recycling				
% of hotels with zero liquid discharge in place				

**9 Water Quality**

		Bench Mark (as applicable)	District 1	District 2	District 3
Water Quality	% of Hotels with online water quality monitoring systems installed.				



	% of Hotels with compliance of wastewater regulatory quality discharge norms.				
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Water Quality Time trend- Graphs: Compliance to Waste water discharge Quality norms (E.g. BOD / PH /COD / TSS etc.)

**10 Bench Marks/ Norms/ Standards and deviation from the norms/bench marks/standards currently for each industrial sector in state.**

**10(a) Benchmark for Water Consumption, Waste Water Generation etc.**

	Parameters	Unit	Indian Bench Mark	International Bench Mark
1	Specific Water Consumption	Liters/guest nights		
2	Waste Water generation	Litres/guest nights		
3	Waste Water discharged	Litres/guest nights		

**10(b) Existing benchmarks/norms in Hotel sector for reference**

Based on a joint report of IBLF & WWF-UK published in 2005, following benchmarks have been established for water consumption in hotels & resorts:

*Benchmarks for water use in guest rooms in litres per guest night  
(Based on IBLF & WWF-UK report)*

	Unit	Good	Fair	Poor
<b>Temperate</b>	litres/guest night	250	250-300	>300
<b>Mediterranean</b>	litres/guest night	270	270-320	>320
<b>Tropical</b>	litres/guest night	300	300-350	>350

As per a report published by CIRIA, London in the year 2006 on “**Water Key Performance Indicators and Benchmarks for offices and hotels**”, benchmarks have been split into 2 distinct types: those with a swimming pool and those without pool. They have been further split into the respective category of resort. Benchmark of hotels with & without swimming pools is shown below in Table.

*Benchmarks for hotels with swimming pools  
(Based on CIRIA, London report)*

Category	Hotel rating	Benchmarks (m3/bedspace/annum)		
		Best Practice	Typical	Above average
<b>Cat 1</b>	1 star	9	25	60
<b>Cat 2</b>	2 or 3 star	20	60	185
<b>Cat 3</b>	4 or 5 star	60	130	220
<b>Other</b>	No rating	40	90	170

*Benchmarks for hotels without swimming pools  
(Based on CIRIA, London report)*

Category	Hotel rating	Benchmarks (m3/bedspace/annum)		
		Best Practice	Typical	Above average
<b>Cat 1</b>	1 star	5	10	15
<b>Cat 2</b>	2 or 3 star	10	20	50
<b>Cat 3</b>	4 or 5 star	15	30	65
<b>Other</b>	No rating	10	30	70