# Heritage Management Plan & Project Development Proposal, Jodhpur

Volume 1A: Heritage Management Plan



#### Project Team:

Anurag Anthony, Anushnath Ravichandran, Chitra Iyer, Gilbert Nazareth, Krishna Patel, Krunal Parmar, Manvita Baradi, Meghna Malhotra, Munindra Joshi, Nilesh Prajapati, Rujul Joshi, Shipra Patel, Tushar Hajare and Vinay Patel.

This report was prepared as a part of Heritage Management Plan for the city of Jodhpur. This report should be read in conjunction with other documents prepared during the course of the assignment. The entire list of documents prepared includes the following

Volume 1A Heritage Management Plan

Volume 1B Toolkit

Volume 2A-I Tangible Assets
Volume 2A-II Tangible Assets
Volume 2A-III Tangible Assets
Volume 2B Intangible Assets

Volume 3 Local Economic Development of Sardar Market- Girdikot

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# Heritage Management Plan & Project Development Proposal, Jodhpur

Volume 1A: Heritage Management Plan

# Disclaimer

This document presents the Heritage Management Plan for Jodhpur based on the primary survey conducted by our team, information collected during our site visits and secondary information provided by the stakeholders and relevant organisations. During the course of the study and report preparation, we were provided with both written and verbal information. We also supplemented the study with photos and digital maps. Nothing has come to our attention to cause us to believe that the data or maps provided by various sources are not true or not correct. We believe this information to be authentic and therefore have not conducted an independent audit of the same. No investigation of the title of tangible and intangible assets has been made and matters of a legal nature relating to the title of the assets have not been considered.

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# Acronyms and abbreviations

ABPS Akhil Bhartiya Paryavaran Sanstha

AMRUT Atal Mission for Rejuvenation and Urban Transformation

CapEx Capital Expenditure
CHC City Heritage Cell

CLTC City Level Technical Cell

CSR Corporate Social Responsibility
DCR Development Control Regulation

DoLSG Department of Local Self Government

DoT Department of Tourism
DPR Detailed Project Report

FAR Floor Area Ratio
Gol Government of India

GoR Government of Rajasthan

HCP Heritage Conservation Plan

HMP Heritage Management Plan

ICOMOS International Council on Monuments and Sites

IEC Information Education Communication

INTACH India National Trust for Art and Cultural Heritage

JDA Jodhpur Development Authority

JHEA Jodhpur Handicraft Exporters Association

JNN Jodhpur Nagar Nigam MLD Million Liters Per Day

MMT Mehrangarh Museum Trust

MoT Ministry of Tourism

MT Metric Ton

NGO Non-governmental organization

NHAI National Highway Authority of India

NIFT National Institute of Fashion Technology

NIUA National Institute of Urban Affairs

NULM Deendayal Antyoday Yojana-National Urban Livelihood Mission

ODF Open Defecation Free
OpEx Operational Expenditure
O&M Operation and Maintenance

PHED Public Health Engineering Department
PT/CT Public Toilets/ Community Toilets

PWD Public Works Department

RGLC Rajeev Gandhi Lift Canal Water Supply Project
RVUNL Rajasthan Rajya Vidyut Utpadan Nigam Limited

RIFF Rajasthan International Folk Festival

RTDC Rajasthan Tourism Development Corporation

SBM Swachh Bharat Mission
SLB Service Level Benchmark
STP Sewage Treatment Plant
SWD Storm Water Drainage
SWM Solid Waste Management

TPD Ton Per Day

TRC Tourist Reception Centre
TVC Town Vending Committee
UBB Unified Building Byelaws
UD Urban Development

UIDSSMT Urban Infrastructure Development Scheme for Small and Medium Towns

ULB Urban local body

UMC Urban Management Consulting Pvt. Ltd.

WHC World Heritage City
WTP Water Treatment Plant

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# 1 About the Heritage Management Plan (HMP)

# 1.1 About the program

The National Institute of Urban Affairs (NIUA), New Delhi and Department of Local Self Government (DoLSG) Government of Rajasthan (GoR) has initiated a program across Rajasthan to Revitalize Historic Cities. In addition to the GoR, the program is supported by the World Bank-Cities Alliance and aims at revitalization of 40 historic cities. For this, it is proposed that a Heritage Management Plan (HMP) be prepared for each city under the program and a City Heritage Cell (CHC) be formed, that would implement the HMP in their respective cities. Jodhpur and Nawalgarh have been taken up as pilot cities under the program. Urban Management Consulting Pvt. Ltd. (UMC), Ahmedabad, has been appointed by the NIUA to prepare the HMP for Jodhpur.

# 1.2 Objectives of the project

The project has outlined clear objectives for making the program a success in Jodhpur. The objectives that defines them are as follows

- 1. **Inclusive urban revitalization** With a view of promoting job opportunities while improving the living conditions and attractiveness.
- 2. **Enhancement of its capacities and methodologies -** For planning, coordination, outreach and implementation of related investments.
- 3. **Strategic Framework** For the state of Rajasthan which shall guide the state in taking the agenda of inclusive revitalization forward.

# 1.3 Methodology

To convert the above outlined objectives, an HMP follows a goal-oriented approach. An HMP clearly differentiates itself from a Heritage Conservation Plan (HCP) in its primary intention and perspective. An HCP typically would conserve the heritage assets, often built structures. An HMP like a statutory development/ master plan, has an overarching vision enlisting all tangible and intangible heritage assets, prepares strategies and an action plan to strengthen the urban heritage. The nature of interventions by an HMP, range from, heritage structure conservation, to policy and economic planning for heritage areas. Sustainable management systems form a critical part of an HMP along with stakeholder engagement in planning, design, implementation and management of the heritage areas in public domain.

The step by step approach in preparation of the HMP as well as the project proposal are provided below

- A. Structure for preparation of the Heritage Management Plan
  - 1. Carry out an Existing Situation Analysis
  - 2. Identify existing institutions and recommend strengthening strategies for these institutions
  - 3. Create an inventory of the heritage assets
  - 4. Create a vision that aims at inclusiveness, attractiveness and sustainability
  - 5. Identify shelf of projects
  - 6. Develop Strategies for Heritage Management
  - 7. Investment Road Map, through convergence of various mission and schemes as well as private participation towards pooling maximum resources.

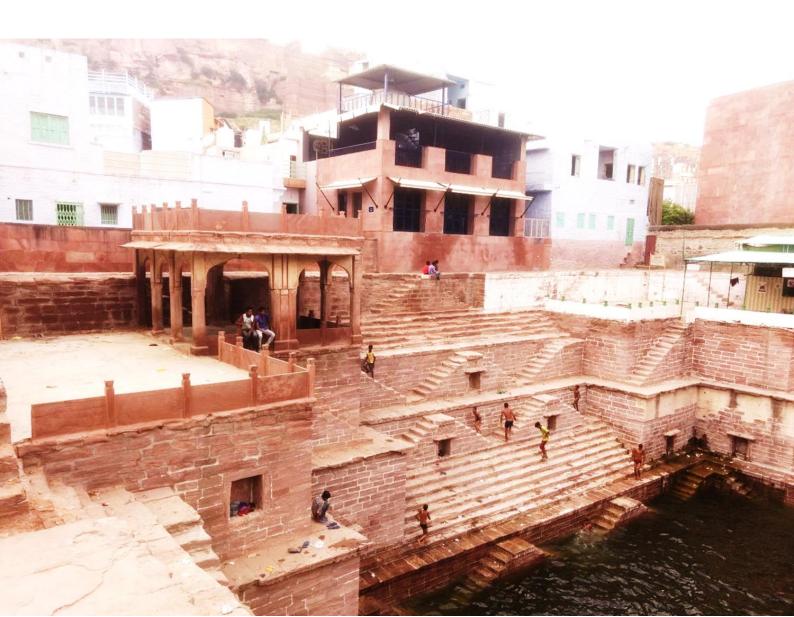
#### B. Project Proposal

- 1. Outline and identify a project from the prepared shelf of project
- 2. Prepare a detailed proposal for this identified project including costing
- 3. Outline the mechanisms for the funding and financing of this project in detail
- 4. Outline strategies for operations and maintenance of the project

#### 1.4 Vision for the town

Based on the site observations, literature, stakeholder consultations and expert opinions, the vision has been formed as:

"To establish supremacy of Jodhpur as an economically inclusive historic city which enriches its cultural and natural heritage while enhancing the quality of life for citizens and visitor's experience."





# 2 Context: Jodhpur

#### 2.1 Introduction

Jodhpur is a city in the Marwar region of the state of Rajasthan. It is the second largest city in the state and is at the centre of the economic, trade, social and cultural ecosystem of the region.

#### 2.2 Historical evolution and administrative rule

The area was part of the Gurjara - Pratihara Empire and until 1100 CE, it was ruled by a powerful Bargujar King. Jodhpur was founded in 1459 AD by Rao Jodha, who hailed from the nearby town of Mandore, that initially served as the capital of Marwar. The capital was transferred to present day Jodhpur city due to security reasons. The city started growing on the slopes of the hill and around the fort in a way that it respected the fort as the symbolic and physical centre. Brahmapuri was the first settlement of the city, located in the northwestern side of the extended ridge behind the hill. The built form follows the topography of the land and the flow of water.

The history of Jodhpur has been further divided into the administrative rules from 1459 to 1800 CE and discussed below. The administrative rule had a direct impact on the urban form and architecture of the city.

#### Phase 1: 1459 - 1600 CE

The first phase was the phase of foundation in the metaphorical sense, as it was the moment when Jodhpur was decided as the new capital of Marwar. Then was the phase of development of the city where the first city wall was constructed and all the political institutions and amenities were built in proximity to the fort. During 1500 -1572 there were frequent attacks by the Merta and then a treaty between Merta and Jodhpur led to the construction of new wall around the city by Rao Maldev during 1532 CE. From 1532 to 1544 CE, it was a golden period in the history of Marwar. In 1544 CE, Sher Shah attacked Jodhpur. Sher Shah constructed a mosque on the fort and a major trade route to Agra wa established. The grand *havelis* of the nobles, the modest residences, the Purohits and Mahajans emerged around the fort. The first settlers of the city were Pushkarnas, Chamars and Shirmali Brahmins. The first settled area was Brahmapuri. Historians mention that Pushkarna, Chamars and Bambis, were present when the fort's foundation was laid. From present distribution of the walled city one could summarize that the Pushkarnas settled in Khanda Phalsa area.

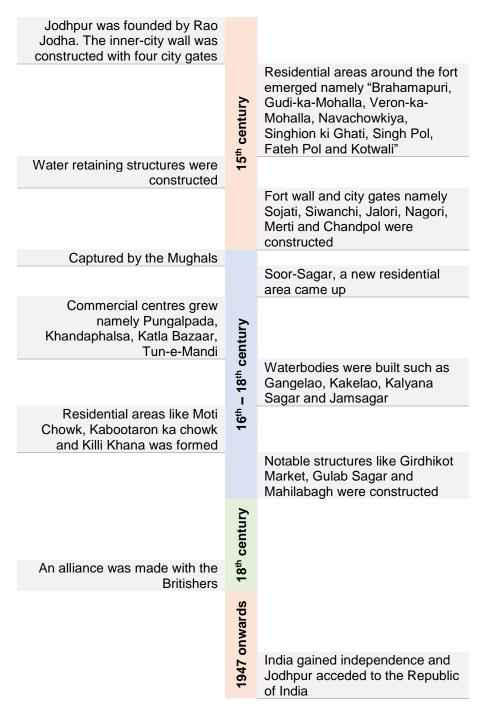
#### Phase 2: 1600 – 1700, the period of Islamic Dominance

The medieval Jodhpur witnessed the Mughal rule. Following attacks on Merta, Sinwana and Jodhpur in the previous phase, the Mughals became king makers and regulated the rulers of Jodhpur to mere pawns. Under the Mughal rule, new quarters came up on the periphery of the city. Many structures with influence of Mughal architecture were built in the city during this phase.

#### Phase 3: 1700 – 1800, reversion to Hindu rule

In 1707 CE, the Hindu rule started re-emerging in Jodhpur. This was the period when Jodhpur reverted back to the Rajputs upon Aurangzeb's death. A number of temples were built during this period and the city wall was extended. There was construction of two major tanks during this period, Gulabsagar and Fatehsagar. During the first two decades of the 18<sup>th</sup> century, a residential suburb (Mahamandir) developed to the northeast of the walled city.

Figure 1 Timeline of historical development of Jodhpur



#### Phase 4: 1818- present: British Dominance and Independent India

The city witnessed political turmoil during the 1700s and came out of it when an alliance was made with the Britishers in the year 1818 CE. The city grew rapidly within the fort wall. A

next ring of residences came up. The latter half of the 19<sup>th</sup> century was again the period of great building activity. In the late 19<sup>th</sup> century, there were many significant events such as establishment of municipality in year 1884 CE, introduction of railways in year 1885 CE, construction of new residency in year 1889 CE. The city started growing outside the city walls during this period. In the post-independence era residential colonies, administrative and industrial establishments, structures associated with public utility services, educational institutions and several features of urban function came into quick succession. This is a period of industrialization and planned development of the city and many buildings built during this period were influenced by the colonial architecture (Ghosh, 1992).

The city is now known as the "Sun City" for the sunny climate it has all the year round. Jodhpur is otherwise called the "Blue City" on account of the blue hues that finish a hefty portion of the houses in the historic city. The city has extended extraordinarily outside the historic core (earlier surrounded by a wall) during recent decades. Mehrangarh Fort, which contains the maharaja's palace and a historical museum, is built on an isolated rock eminence that dominates the city. The 4th-century ruins of Mandore, the ancient capital of Marwar, lie 10 km north of the Mehrangarh Fort. In addition to the fort, Jodhpur's other notable buildings include the Umaid Bhawan Palace, the home of Jodhpur's royal family, now part luxury hotel and part museum, and the white marble Jaswant Thada, a memorial to the 19th-century ruler Jaswant Singh II ("Jodhpur | India," 2017).



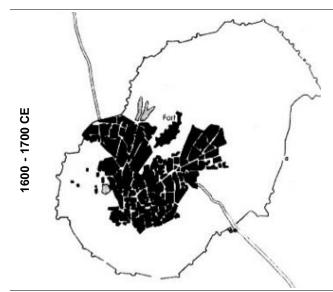
# 2.3 Regional setting

Figure 2 Historical evolution and growth of Jodhpur

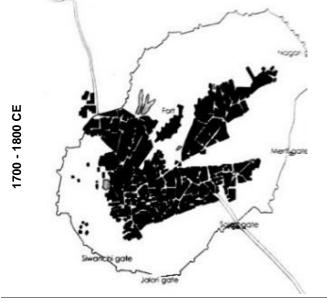
1459 - 1500 CE



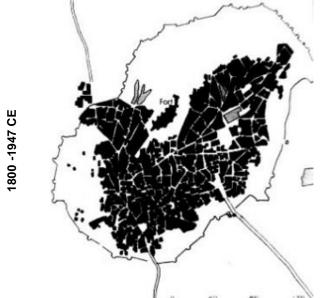
Rao Chunda and his grandson, Rao Jodha, shifted the capital from Mandore to Jodhpur in 1459 CE due to attacks by the Mughal army on Mandore. The present site offered better natural defense, had water sources and provided scope for future expansion. Rao Jodha decided to build the fort on Pachetia Hill and laid the foundation of Jodhpur city on 12th May 1459 CE. In its early stage the town grew around the base of the fort on an uneven terrain for about a century.



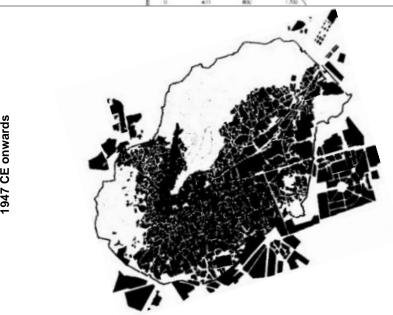
Inner city wall was constructed with four city gates. During the first phase, residential areas around the fort emerged in a semi-circular form, with residences of Rajput Nobles, Maharajas and Brahmins formed the inner rings while residences of lower cast formed the outer ring. Some of the areas developed during this period include Brahamapuri, Gudi-ka-Mohalla, Veeron-ka-Mohalla, Navachowkiya, Singhvio ki Ghati, Singh Pol, Fateh Pol and Kotwali.



A new residential area named Soorsagar came up in the north-western side. The town also extended in south-east and south-west directions in more compact manner than the earlier areas. In the early part of the century, many water bodies were built such as Ganglav, Kakelav, Kaylana Sagar and Jamsagar. During this period, various baories and jhalaras were constructed both inside and outside the walled city. Commercial centres grew namely Pungalpada, Khandaphalsa, Katla Bazaar and Tun-e-Mandi.



During the 19<sup>th</sup> century, Mahamandir - a residential suburb, developed 1 km northeast of the walled city. The city witnessed political turmoil which ended with an alliance made with the Britishers in the year 1818. Post this, a municipality was established in 1884, railways was introduced in Jodhpur in 1885, and a new residency constructed in 1889. During the reign of Maharaja Jaswant Singh, trade and commerce activity flourished with introduction of railway and many markets saw expansion and development.



Post-Independence period vast area of landscape beyond periphery were metamorphosed into townscape residential colonies, administrative setup and industrial establishment. Structures associated with the public utility services, educational institutions and several features of urban function came into quick succession.

# 2.4 Physiography & climate

Jodhpur covers a geographical spread of 22,000 sqkm. The district is situated at an altitude of about 250-300 meters above mean sea level. The city is situated just northwest of the Luni River on a sterile tract of land covered with high sand hills. The region is referred to as Marwar. Its north and northwest areas form part of the Thar (Great Indian) Desert. Since it lies close to the geographic focal point of the Rajasthan state, it fills in as an advantageous base for travel and draws in more tourists. It is a well-known tourism destination since it highlights numerous heritage palaces, forts and temples, set in the stark scene of the Thar Desert. Being in the desert region the climate is extremely dry and semi-arid, characterized by low rainfall, high temperature and high wind speed. The annual rainfall is around 18 inches (Shah, 2011).

## 2.5 Biodiversity

Jodhpur lies to the north west of the Aravallis. It is characterized by arid plains and shifting sand dunes of the Thar desert. The land is darted with scrub and thorny Babool. Camels,



# 4 Existing situation

#### 4.1 Status of historic core

The historic city of jodhpur was developed around six centuries before. The fort and the settlement were protected inside a huge wall with seven entrances. The settlement was dense and inter connected with narrow streets due to the area constrain.

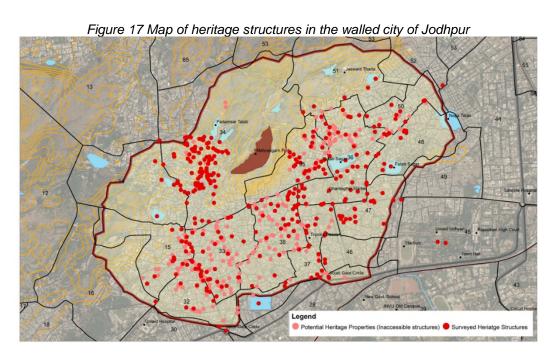
Due to lack of space inside the walls, people started moving outside the walls and is still spreading since. The importance of the wall reduced since the settlement no longer required a wall for defense, and many portions of it were demolished during the time. Even though the space is not restricted within walls, the predeveloped area is still highly dense with the same narrow streets. The streets who served the past does not meet today's requirements creating road block at many places on regular basis. Many of the buildings built in the past disappeared in the time, however there are some ancient structures those represent the history and culture of the city. The details of such assets and present condition are explained further in this section.

# 4.2 Heritage assets of Jodhpur

Jodhpur is rich in cultural and built heritage. With centuries of history behind, the city boasts of one of the most magnificent hill forts of Rajasthan. In addition to the fort, the city is home to exquisite palaces, *havelis*, stepwell, temples, mosques and institutional buildings. The rich culture of the city is reflected in skills renowned worldwide including music, art, dance, wood carvings, bangle making, handicrafts and jewelry. This section presents some of the built and cultural heritage of the city.

#### 4.2.1 Tangible heritage

Jodhpur city is known for the rich built heritage including the monuments such as the Mehrangarh Fort, Mandore Garden and boasts of the rich built heritage in the walled city.



UMC conducted a street to street survey to identify and list the potential heritage structures in the walled city. We have identified 474 structures potentially historic and dawning heritage architectural features. The map below shows the locations of documented heritage buildings in the walled city.

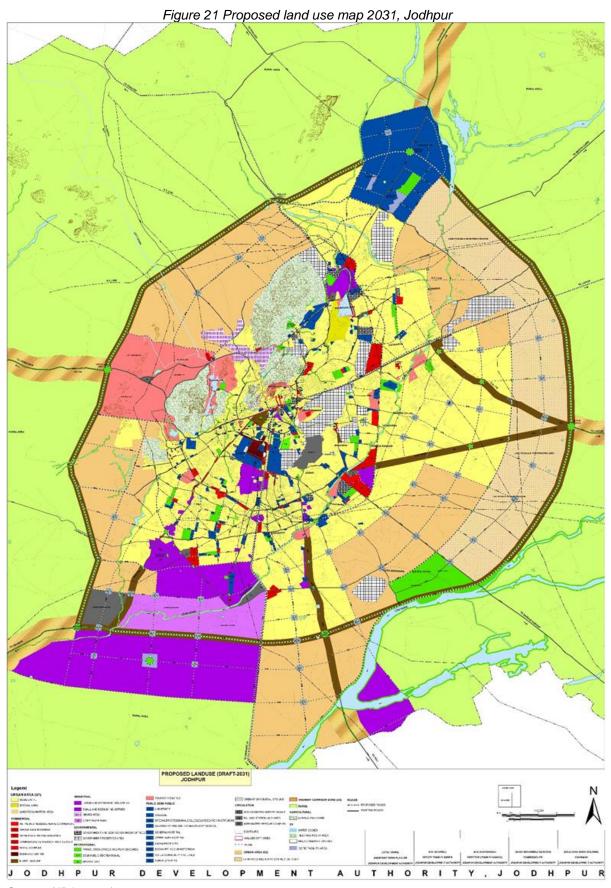
Some of the observations made during listing and documentation of the heritage structures are as follows-

- Architecture style: Majority of the heritage structures were constructed during Colonial Period. Even though, the dominant Architectural style is Rajputana.
- Architectural elements: The commonly found architectural building elements are *Jharokas*, Ornate motifs, Ornate cornice, Wall paintings/ frescos, Bird feeders, Ornate columns, Ornate brackets, Ornate door-window frames and lintels
- Modification: about 2/3<sup>rd</sup> of the structures have gone minimal modification and rest were severely modified. Major reasons for modification reported by the respondents are subdivision of properties, change of building use, vandalism by owners/ occupants, and structural strengthening.
- Willingness to conserve: Owners of half of the documented buildings are willing to conserve, while remaining half are not sure about it.

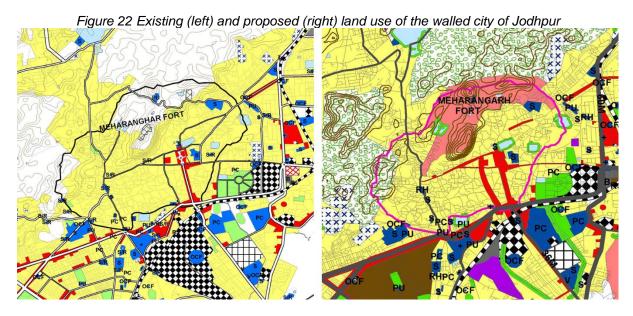
As per the provided guidelines for preparation of HMP (Table 4), all the structures are graded into four categories of Heritage Grade-I, Heritage Grade-II A, Heritage Grade-II B and Heritage Grade-III.

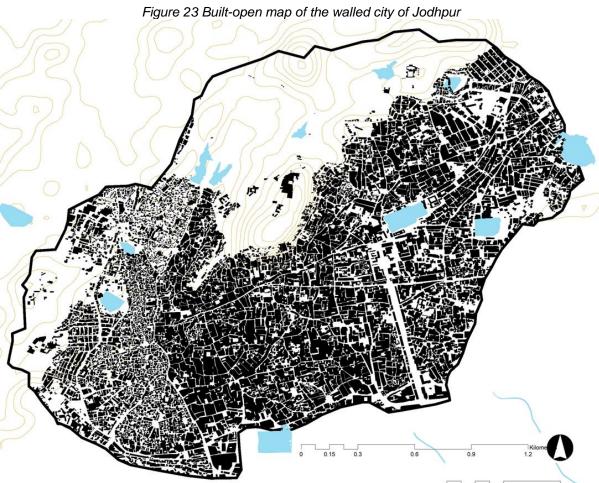
Table 4 Grading of tangible assets based on valuation

Grade-I	Grade-II	Grade-II
Heritage Grade-I comprises	Heritage Grade-II (A&B)	Heritage Grade-III comprises
buildings and precincts of	comprises of buildings and	building and precincts of
national or historic importance,	precincts of regional or local	importance for townscape; that
embodying excellence in	importance possessing special	evoke architectural, aesthetic,
architectural style, design,	architectural or aesthetic merit,	or sociological interest through
technology and material usage	or cultural or historical	not as much as in Heritage
and/or aesthetics; they may be	significance though of a lower	Grade-II. These contribute to
associated with a great historic	scale than Heritage Grade-I.	determine the character of the
event, personality, movement	They are local landmarks,	locality and can be
or institution. They have been	which contribute to the image	representative of lifestyle of a
and are the prime landmarks of	and identity of the region. They	particular community or region
the region. All-natural sites	may be the work of master	and may also be distinguished
shall fall within Grade-I.	craftsmen or may be models of	by setting, or special character
	proportion and ornamentation	of the façade and uniformity of
	or designed to suit a particular	height, width and scale.
	climate.	



Source: (JDA, 2017)





## **Building Regulations as per the Jodhpur Master Plan 2013**

The Jodhpur Master Plan 2031 divides the city into five geographical zones S-1 to S-5 in the same manner as the Unified Building Byelaws (UBB) 2017 (refer Table 7). It does not address the walled city separately, and hence, S-3 Zone regulations apply to the buildings in it. The parameters considered are set backs, Floor Area Ratio (FAR) – base and chargeable, and building height as defined in the following tables.

Hence, the S-3 Zone regulations specified in 'Section 5.3 (2)' criteria of the UBB 2017 apply to the walled city of Jodhpur.

According to the S-3 Zone regulations of the UBB 2017, permissible use and building heights have been regulated based on the adjacent road width. The same has been tabulated below.

Table 8 Permissible maximum height in walled city

Road Width along the plot	Permitted use of the building	Maximum height permitted	Remarks
Less than 6m	Residential	8m	-
6m and less than 9m	Residential	12.5m	Stilt floor level can only be used for parking.
Greater than 9m	Residential, Commercial or Institutional	Road width + 2 floors	Commercial and Institutional use would be restricted to the height equal to the road width, and additional 2 floors would be allowed for residential use only

Source: (Government of Rajasthan, 2017)

#### Issues with Development Control Regulation (DCR) / Need of DCRs

Neither set of the byelaws address the building regulations specifically for the walled city to protect its character, nature and architectural identity. The State UBB 2017 regulations in general restricts the building height based on the road width but it does not restrict the use according to the walled city characteristics. In addition to these, Jodhpur city bye laws, do not separate the walled city as a special part of the city.

With the current building byelaws, vandalism activity and modernized development practices are evident in the walled city area mainly along the major roads like Nai Sadak and Sojati Gate. Redevelopment activity often ends up in a negative impact on the urban fabric, especially streets and zones with distinct architectural and urban design features. Neither of the byelaws address decongestion of walled city area, facade conservation, building footprint, setbacks, parking and open spaces such as courtyards.

In addition to these, neither any of the byelaws address the heritage areas outside the walled city or within the prohibited zone (within 100m) and regulated zone (within 300m) around protected monuments.

#### 4.4 Infrastructure assessment

#### 4.4.1 Water supply

Jodhpur is located in a water stressed area due to low rainfall and dry climate. Local sources for water are not reliable for supply throughout the year. Jodhpur gets its daily supply of water from Rajiv Gandhi Lift Canal Water Supply Project (RGLC). PHED is responsible for planning, design, implementation and operations of the water supply system in Jodhpur City.

#### Source

PHED sources raw water from the RGLC to the tune of 240 MLD. This is augmented by other sources including borewells, and 400 MLD is supplied to JNN and some nearby villages. We estimate that out of 400 MLD, JNN received around 160 MLD. This is within the range of Service Level Benchmark (SLB) norm of 135 lpcd, with the city's population in 2017 is estimated at around 11.80 lakh (Jodhpur Nagar Nigam, 2017). In the absence of storage tanks, the water is stored in the Kaylana Lake located in Western part of the city.

Also, in case of emergency and the areas without water connections, PHED has provided 104 water pumps on nearby *baoris* and lakes of the respective areas.

#### **Treatment and Storage**

The entire city has been divided into 3 zones named City Divisions I, II and III. Each zone has its independent Water Treatment Plants (WTP) with a capacity of 120, 60 and 60 MLD, respectively. There are about 115 ESRs in the Jodhpur city to supply water to various parts of the city.

A joint venture between GoR and Agence

Barl Cail

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Figure 24 Water storage facility- Kaylana Lake

Française de Dévelopement has prepared a project to replace the main water distribution pipeline and construct new WTPs. The proposal is to build 2 WTPs with capacity of 90 MLD each, of which one is under construction and the other one is ready to use.

#### Distribution

The water is then supplied from ESRs to all the households and public spaces with water supply connections. The city has about 80% coverage of water supply connection at household level. The historic core/ walled city area itself has around 70,000 water supply connections. PHED has made efforts to improve coverage of water supply connections and now provides household connections within a week of application. In case of public spaces, the water connection is issued on the application submitted by an organization.

#### **Gap Analysis**

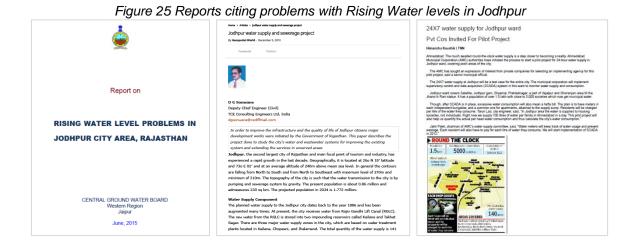
With the RGLC project, the city does not face scarcity of water even during the summer months. However, currently, the city falls short of the treatment capacity but it would be eliminated with the proposed and under construction WTPs. The only gap remains in the household level coverage of water supply connections for about 20% of the properties. The table below summarizes the gaps.

Table 9 Gap analysis for water supply in Jodhpur

#	Service Infrastructure	Units	Existing situation	<b>Existing Demand</b>	<b>Existing Gap</b>
1	Source	MLD	400	155	-
2	Treatment capacity	MLD	240	155	-
3	Connections	%	80%	100%	20%

Source: PHED

However, there are major challenges that Jodhpur is facing in terms of natural establishment and that is an ever-increasing ground water table, that is marring the under layer of the historic city. UMC during its first consultation meeting with NIUA cited this issue and referred to certain studies and reports that have established the facts. This situation has also been supported by the local level officials during several visits by UMC team to the city of Jodhpur.



#### 4.4.2 Sanitation and sewerage system

#### A. Sanitation

As of 2017, it is estimated that there are around 2,55,000 households in the city, and as per the SLB 2017, 95% have access to an individual household toilet. The remaining 5% depend on functional Public Toilets/ Community Toilets (PT/CT). Current figures for number of households defecating in the open are not available. Jodhpur was ranked 209th in the Swachh Survekshan 2017, and 4th in Rajasthan with Bundi, Sikar and Pali towns ahead of Jodhpur (Ministry of Urban Development, 2017).

There are about 51 PT/CT in Jodhpur, built and operated by two main agencies – Sulabh Seva and Akhil Bhartiya Paryavaran Sansthan (ABPS). The construction and O&M cost of all the PT/ CTs has been granted under SBM. Presently, ABPS operates 6 PT/ CT s while Sulabh Seva operates 40, out of which around 15 PT/ CT s are operated on 'pay and use' model and JNN pays the contractors for O&M of the rest of the PT/ CT s. Majority of the PTs are connected to the sewer lines, while the rest are connected to septic tanks. JNN empties the tanks on call basis and discharges the sludge and effluent in the nearest sewer line.

#### B. Sewerage system

The existing sewer network in walled city was laid in 1940s. Sewerage system is operated by the JNN in Jodhpur. The entire historic core of the city is covered by the sewerage network.

#### **Collection system**

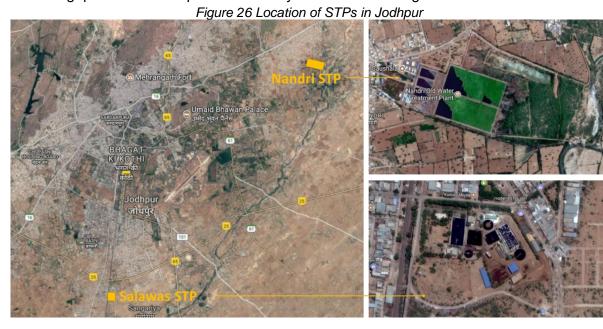
Jodhpur city generates around 127 MLD of sewage based on the SLB norms of 80% of water supplied being converted into sewage. Despite 95% individual household toilet coverage, Jodhpur has sewerage system in place serving around 80% of the city. Around 28% of properties are connected to a septic tank. Many properties originally constructed with a septic tank now have access to the sewerage network. This network covers about 100% of the walled city and about 70% of the area outside the walled city (Jodhpur Nagar Nigam, 2017).

JNN maintains the sewer lines using its 9 sewer jetting machines with capacities varying from 8,000, 6,000 and 3,000 liters.

AMRUT: The sewer lines in the walled city are more than 75 years old and have degraded with age. JNN has started replacing these lines under the AMRUT. Currently, the main line is being replaced and subsequently, 2 other minor lines would be replaced in the walled city. The total project involves replacement of 37 kms of the network. JNN has received INR 85 crores under the AMRUT in the financial year 2017-18 for Sewerage and Septage management, out of a total allocation of INR 112 crores. So far, about 40% of the work has been completed.

#### Treatment and disposal system

Jodhpur has utilized its natural topography to its advantage and avoided sewage pumping stations in the city. The city has two Sewage Treatment Plants (STP) at Salawas and Nandri with a treatment capacity of 50 MLD and 20 MLD, respectively. With a cumulative treatment capacity of 70 MLD, JNN's adequacy of sewage treatment capacity is around 55%. This leaves a gap of 70 MLD as per the current year's waste water generation.



#### **Gap Analysis**

As shown in the table below, Jodhpur requires toilet facility in additional 42,505 properties and sewer connections in 55,300 properties. The treatment capacity of existing STPs is less by 54 MLD.

Table 10 Gap analysis for sewerage system in Jodhpur

#	Service Infrastructure	Units	Existing	Existing	Existing
			situation	Demand	Gap
1	Properties with toilets	No.	212,495	255,000	42,505
2	Properties with sewer connections	No.	199,700	255,000	55,300
3	Sewage Treatment Plant	MLD	70	124	54

Source: (Jodhpur Nagar Nigam, 2017)

#### 4.4.3 Storm water drainage (SWD)

The Jodhpur city has a SWD covering only around 10% of the road length (Jodhpur Nagar Nigam, 2017).

#### **Collection system**

As per JNN, most of the walled city has 9-inch-wide open storm water drains while the area outside the walled city is partially covered. The open drains cause frequent overflow on the adjacent roads and create inconvenience. There are total of 13 major drains flowing through the city – divided in 4 storm water management zones. A detailed list of zone-wise drains is given in the Annexure 4. As per the SLB, there have been 18 instances of water logging in the city in 2016-17.

#### Disposal system

In 2017, the master plan for SWD Jodhpur has been sanctioned, according to which all storm water drains would discharge into Jojari River. JNN has initiated channelization of four major natural drains (one from each storm water zone).

#### **Gap Analysis**

There is a gap of around 90% of roads not covered by storm water drains.

#### 4.4.4 Solid waste management

#### Source

The total municipal solid waste generated in Jodhpur city is about 415 TPD¹ which include the waste generated from households, commercial establishments, institutions and public spaces. The JNN has not conducted any waste generation or characterization study.

#### Collection

JNN provides solid waste collection, transportation, processing and disposal service to the city. Around 40% of households are covered by door-to-door service (D2D). The D2D service in practicality is a secondary waste collection system as the households dump waste on the street outside their houses and municipal vehicles (tractors and loading taxis) collect that waste from the streets. The walled city is covered 100% while 85% of the rest of the city covered by this service.

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#	Zone	Contractor	Type of Vehicle	No. of vehicles				
1	Soorsagar Zone	Ranchhodsinghji Gehlot	Tractor	30				
2	City Zone	Gehlot and Bhati	Tractor	40				
		JRC Construction	Loading taxi	25				
3	Sardarpura Zone	Vijaysingh Gehlot	Tractor	30				
	Total			125				

Table 11 Zone wise distribution of waste collection vehicles in Jodhpur

Source: (Jodhpur Nagar Nigam, 2017)

JNN employs around 2200 street sweepers to sweep close to 1600 kms of roads. The sweepers use handcarts to collect the swept waste. The hand carts are then emptied in the secondary collection bins.

<sup>&</sup>lt;sup>1</sup> Due to absence of data, the waste generation has been calculated as per SWM norms **Invalid** source specified.

Figure 27 Street sweeping in Jodhpur





Also, there are 14 refuse collectors each with the capacity of 3 MT for the entire city. JNN proposes to procure an additional 4 new refuse collectors (6 to 8 MT capacity) in 2017.

Figure 28 Secondary collection bin and open dump (left); Refuse collector vehicle (right)





The collected waste is sent to one of the 13 transfer stations. From transfer station, the waste is compacted and transported to the dumping site located a few kilometers west of the city in Keru.

#### **Treatment and disposal system**

There is an open dumping site in Jodhpur at Keru. JNN has a non-functional composting plant of 100 TPD capacity. Currently JNN does not process or treat any solid waste.

JNN proposes to set up a waste to energy plant and is in discussions with a private sector partner for the same. The project has been approved and is awaiting signing of an MoU.

## **Gap Analysis**

Table 12 Gap analysis for solid waste management in Jodhpur

#	Service Infrastructure	Units	Existing situation	Existing Demand	Existing Gap
1	Generation of waste	TPD	414	414	-
2	No of vehicles (tractor & taxi)	No.	125	207	82
3	No. of secondary collection bins	No.	600	1,034	434
4	No. of dumper placers	No.	40	75	35
5	Capacity of scientific landfill	TPD	0	414	414

Source: (Jodhpur Nagar Nigam, 2017)

As of now there are 125 vehicles (Table 11) available for the waste collection and based on the capacity of vehicles and the average number of trips for each vehicle, the city needs an additional 82 vehicles. There are around 600 secondary collection bins with capacity of 500 liters each. These are emptied by 40 dumper placer vehicles. Assuming 10 to 12 bins cleared by each dumper placer in 24 hours, the number of vehicles seem to be less. As shown in Table 12, there is requirement of 35 additional dumper placers.

#### 4.4.5 Transportation

#### Road Network

In case of Jodhpur, there are multiple governing agencies has given charge of roads in various areas. These agencies are National Highway Authority of India (NHAI), PWD, JDA and JNN. All the agencies have given a specific area as per the required hierarchy. The details of which are given in the table below.

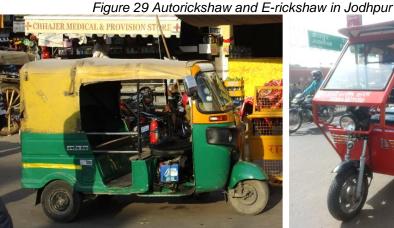
Road hierarchy # Road width (ft.) NHAI National Highway 160-200 1 2 **PWD** State Highway 60-100 3 JDA City Major roads 30-100 JNN Old City roads 10-30

Table 13 List of agencies involved with road network in Jodhpur

Source: JDA

#### **Public Transport**

Being a historic city, the streets in the walled city are narrow. These streets cannot accommodate large vehicles like buses. Some of the residents use auto-rickshaws and private vehicles, and on-street parking is common which often causes congestion and inconvenience to commuters and other road users. Many auto-rickshaws are now being replaced by e-rickshaws.

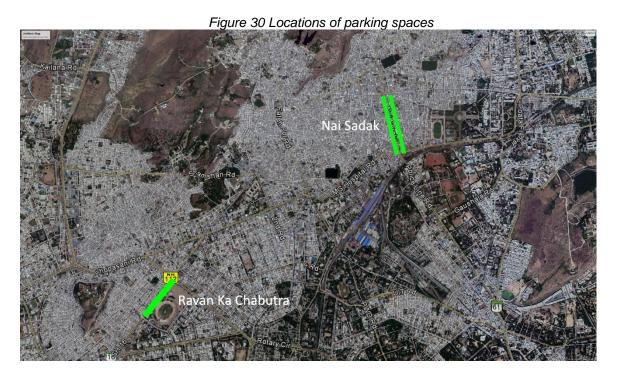




Outside the walled city, the roads are wider and cater to large vehicles. JNN operates a city bus service – Jodhpur Bus Service Ltd. along major routes in the city.

#### **Parking**

There are only two designated parking spaces developed by JNN. One of these parking spaces is on-street parking along Nai Sadak for two wheelers on one side of the road- and for four wheelers on other. Other parking space is at Ravan ka Chabutra in Shastrinagar.



#### 4.4.6 Power supply

The entire Rajasthan State has been divided into 3 zones, that is Jaipur, Ajmer and Jodhpur. Jodhpur city comes under Jodhpur Circle where Jodhpur Vidyut Vitran Nigam Ltd. (JVVNL) is in charge of providing electricity.

As per the field visits, it has been observed that over the ground electric cables are creating visual barriers in the historic core of the city. The places which showcase the culture of the city are getting disrupted by some of the infrastructure facilities. As shown in the pictures below, electric cables, pole and transformers have created visual nuisance which can be avoided by making it underground.



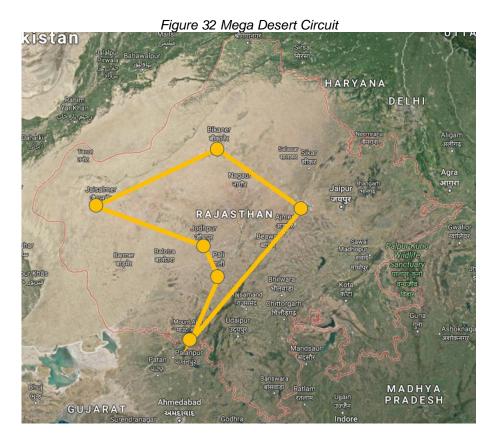




As per the information from JVVNL, the project to lay underground electric cables in the historic core of the city has been sanctioned and the implementation will begin soon. The estimated cost of the project is about Rs.35 Crores which will be funded by State Govt. of Rajasthan.

# 4.5 Existing and proposed investments in town

4.5.1 Mega desert circuit: Jaisalmer-Jodhpur-Bikaner-Sambhar-Pali-Mount Abu In addition to Rajasthan Tourism Unit Policy 2015 released by the Department of Rajasthan, to attract tourists, there is Centrally Sponsored Scheme (CSS), under the Ministry of Tourism, which includes *Mega Desert Circuit (Jaisalmer-Jodhpur-Bikaner-Sambhar-Pali-Mount Abu)*. The circuit is identified by RTDC and through the CSS, the Integrated Circuit development will be carried out. (MoT, 2017).



#### **Activities/Items under the State component:**

- Making the land available for development.
- Implementation of rehabilitation package, where shifting of dwellings or commercial units is required. However, the Government of India <u>would provide assistance for</u> <u>construction of Tourist Reception Centers including shopping complexes to house</u> <u>the displaced shops.</u>
- Operation, maintenance and management of the assets created
- External infrastructure like Water Supply, Electricity and Roads

# **Activities/Items under the Central component**

The assistance under this scheme will be focused on development of public goods instead of private goods. There should also be convergence with other programs of Government and

duplication shall be avoided. The following works may be taken up under the Scheme under the Central component

- Improvement of the surroundings of the destination like landscaping, parks, etc.
- Illumination of the Tourist destination and the area around and Sound and Light Shows.
- Providing for improvement in solid waste management and sewerage management,
   Public Conveniences.
- Improvement of road connectivity leading to the tourist sites, especially from the National Highways/State highways and other entry points.
- Construction of Wayside Public Conveniences.
- Procurement of equipment directly related to tourism, like Water Sports, Adventure Sports, Eco-friendly modes of transport for moving within the Tourism Zone and equipment for cleaning of the tourist destination will be eligible for 25% grant.
- Construction of public buildings which are required to be demolished because of implementation of the Master Plan.
- Refurbishment of the Monuments.
- Signages and display boards showing Tourist Area Maps and documentation on places of interest at the locations.
- Tourist Arrival Centers, Reception Centers, Interpretation Centers.
- Improvement of municipal services directly related to Tourism.
- Other work/activities directly related to tourism.

#### **Funding pattern**

The Centre will bear the 100% project cost of the circuit with a ceiling of INR 25 Crores for destination development and INR 50 Crores for circuit development. The definitions of the destination and circuit are clearly provided in the scheme document. Any additional costs shall be borne by the State Government. In respect of each large project involving central financial assistance of INR 25 crores and above, the Ministry of Tourism, should formalize Memorandum of Understanding (MoU) with State Government and other stakeholders indicating the works to be undertaken by them in physical and financial terms. Other stakeholders than the State can also contribute to the additional funding required as per the DPR of the project. The DPR has to be prepared by the State and submitted to the Centre, for the required assistance.

#### **Execution and Implementation**

The execution of projects would primarily be the responsibility of State Governments and local agencies. However, whenever a project is to be driven by the Central Government, central agencies could be engaged both for project preparation and for implementation with consent of State.

#### **Management of Assets**

The infrastructure and assets created will be maintained and managed by the State/UT Governments or their agencies with no financial commitment by Govt. of India. The sustainable maintenance plan for the assets to be created must be built into the project proposal for this purpose.

# **Monitoring committee**

State Level Monitoring Committees would be set up under the Chairmanship of the respective Secretary (Tourism) of the State/UT Government. This Committee would consist of a nominee of the Ministry of Tourism, Govt. of India and a nominee of the implementing agency. This committee will monitor the physical and financial progress of the sanctioned projects and submit the reports to the Ministry on regular basis.

Other than the above Scheme, a regular desert circuit carried out by the RTDC, are already under practice, but are targeted to an elite class of tourists and foreign tourists and are carried out in association with the Indian Railways.



4.5.2 Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

In November 2015, the State level technical committee approved the DPR amounting to INR 85.00 crores for repair, rehabilitation and rejuvenation of old and damaged sewerage system of 36.15 km in Jodhpur walled city with provision of trenchless technology for narrow roads of the walled city. In April 2017, the DPR for redevelopment of Umaid Udyan at Jodhpur, amounting to INR 2.50 crore was approved with instructions to arrange the plantings from forest departments/ Governments.

#### 4.5.3 Mukhya Mantri Jal Swawlamban Abhiyan (MJSA)

To achieve the objective of water harvesting & conservation, the related works will be implemented from the funds available from different sources like state departments, Non-governmental organizations (NGO), corporate social responsibility (CSR), people's participation, Non-Residents Villagers Club (NRV Club), etc. to prevent Rajasthan from drought by undertaking watershed wise water budgeting for permanent solution. Details of work under MJSA (Urban) are:

# **Roof Top Rain Water Harvesting Structure (RTWHS)**

Roof Top Rain Water Harvesting Structure will be initiated in all government administration buildings having roof top area 300 sqm or more. Work of roof top harvesting structures in departmental buildings shall be done by concerned office at their own expenses. The statutory prerequisite of making water harvesting structure, compulsory in the buildings with built up area of 300 sqm or more in urban zones may be strictly enforced by ULBs/ Development Authorities/ UITs. Information Education Communication (IEC) activities will be initiated for Roof Top Water Harvesting Structures and percolation pits (recharge trenches) in private Residences and structures.

Rejuvenation/ Reportion/ Repairing of existing old traditional baoris and big ponds Rejuvenation/restoration/renovation/repairing of existing old traditional baoris and big ponds in cities of State needs to be taken on priority basis. In this context, a listing of such baoris and big ponds is to be prepared by Collectors before taking the work in hand through various local welfare/development committees constituted in the area. The traditional water bodies like baoris, big ponds, old open wells etc. may be studied alongside details of storage capacity, present position, catchment area, inlet channel etc. DPR may be prepared for Rejuvenation/restoration/renovation/repairing under "Shahri Jan Bhagidari Yojna" where in participation of local development committees, NGO's, Trusts and public at large may be guaranteed. Particularly the people residing in the region of traditional water body may be roped in to make the initiative much more sustainable. The baoris/ water body may be named after the local deity and a stone inscription of the same might be put. Religious pioneers may be roped in and after renovation they may perform religious customs and devote the same to the people at large. Connecting water conservation with religious sentiments may make the initiative more sustainable. The motorized extraction of water from baoris/wells should be immediate stopped as the rate of extraction is greater than rate of recharge, renders the baoris/well dry very soon. "Jal mandir" may be made near the baoris/well for vending drinking water to the general population. This will be of utility incentive and in addition educative aim.

# Tree plantation and developing city forest

Under this, Development of Forest, land, water & fauna keeping watershed/cluster/index as a unit for natural resource management shall be taken to improve environmental conditions.

To harvest rain water and maintain the ground water level, the works admissible under the MJSA include treatment of catchment, utilization of available water harvesting structures, renovations of the non-functional water harvesting structures & creation of new water harvesting structures proposed under this scheme. This scheme is of particular relevance to conserve the step-wells of Jodhpur. Works orders of INR 53.32 lakh for repairs/ renovation and cleaning works for 10 step-wells of Jodhpur were given to private agencies.

#### 4.5.4 Rajasthan Tourism Unit Policy, 2015

Rajasthan Tourism Unit Policy, 2015 has been prepared by the Department of Tourism, GoR. The policy aims to keep pace with present trends and be more competitive, the State government has decided to expand the tourist centric infrastructure facilities. It addresses issues relating to time bound initiation of the tourism units like heritage hotels, conversion & allotment of land, approval of building plans, investment and their smooth implementation.

#### 4.5.5 Guidelines for operating heritage hotels/ properties

In 2015, an order from UD&HD, GoR pointed out the conversion of existing heritage hotels and other heritage properties into heritage hotels or other tourism. Likewise, the Department of Rural Development & Panchayati Raj (DoRD&PR), GoR also followed and amended their rules to enable change of land of heritage properties into heritage hotels and provide regularization of an existing heritage hotel.

In 2015, on the basis of recommendation by the DoT, Rajasthan Land Revenue Department amended the Rajasthan Land Revenue Rules, 2007 to enable conservation of heritage properties into heritage hotels, bringing convergence between the development and heritage conservation initiatives.

A certificate is issued by the Commissioner/ Director, Department of Tourism, GoR for such properties which contains photos of the front façade and other heritage features.

#### 4.5.6 Swachh Bharat Mission (SBM)

On 2nd October 2014, SBM with the aim to achieve a clean and Open Defecation Free (ODF) India was initiated. Under this, JNN has responsibility to carry out the different activities to make the city (ODF) and maintain cleanliness.

To increase public participation and to ensure behavior change in waste management, cleanliness and use of clean energy, "Smart Colony- Smart Ward" pilot project has been initiated throughout the city. To achieve these objectives, three tier administrative structure have been proposed for participation of ULB and community at local level to deal with local civic issues. The success of pilot stage will be replicated in other colonies. (JNN, 2015)

#### 4.5.7 Handicraft related schemes

The schemes implemented by Office of the Development Commissioner (Handicrafts) are composite in nature and not specific to any one area, caste or gender. The artisans belonging to all communities including women artisans draw benefits from the schemes.

A website has been developed as a platform for the artisans and weavers to display their information and artwork talent for the viewer's online. In addition, the scheme provides

- Market assistance scheme for handicraft artisans
- Artisan identity card scheme
- Craft council order
- Leather training scheme

Rajasthan Leather Artisans Development and Modernization Scheme, 2015 - The GoR has carried out these initiatives to encourage artisans to create market for their products and encourage artisans to participate in national exhibition cum sale. There have been efforts to build capacity of the artisans for new productions technologies. The scheme also promotes manufacturing of high quality products, so it can be marketed on national and international platforms.

Rajasthan State Industrial Policy – it has a provision on handicrafts products. The Indian Institute of Crafts and design entered into an MoU with National Institute of Design, Ahmedabad and NIFT, New Delhi to create highly skilled and motivated design-techno managers to contribute towards sustaining modernization and accelerating the growth of craft centers in Rajasthan. To sell the products and create quality benchmarks, Rajasthan Small Industries Corporation Ltd. will be redeveloped to accommodate the new requirements.





