



**ACHARYA'S NRV SCHOOL OF ARCHITECTURE  
SOLADEVANAHALLI, BENGALURU -560107**

**DWARAKA MUSEUM OF ARTEFACTS  
ARCHITECTURE DESIGN PROJECT (THESIS) – 2022-23**

**Submitted in partial fulfillment of the Requirements for the  
“Bachelor of Architecture” Degree Course**

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**A project report submitted to  
VISVESHVARAYA TECHNOLOGICAL UNIVERSITY  
“Jnana Sangama”, Machhe, Belgaum – 590018**

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## CERTIFICATE

This is to certify that this thesis report titled **DWARAKA MUSEUM OF ARTEFACTS** by **SAIKRISHNA REDDY** of X SEMESTER B. Arch, USN No. **1AA18AT046**, has been submitted in partial fulfillment of the requirements for the award of under graduate degree Bachelor of Architecture (B.Arch) by Visveshwaraya Technological University VTU, Belgaum during the year 2022- 23.

**Guide:**

**Principal**

**Examined by :**

**1)Internal Examiner :**

**2)External examiner 1 :**

**3)External examiner 2 :**

## DECLARATION

This thesis title “**DWARAKA MUSEUM OF ARTEFACTS**”, submitted in partial fulfillment of the requirement for the award of the under graduate of Bachelor of architecture is my original work to the best of my knowledge.

The sources for the various information and the data used have been duly acknowledged.

The work has not been submitted or provided to any other institution/ organization for any diploma/degree or any other purpose.

I take full responsibility for the content in this report and in the event of any conflict or dispute if any, hereby indemnify Acharya’s NRV School of Architecture and Visveshwaraya Technological University, Belagavi, and its official representatives against any damages that any raise thereof.

**SAIKRISHNA REDDY**

**1AA18AT046**

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## **ABSTRACT**

This dissertation proposes the design and development of a Formula One (F1) circuit in Bangalore, India, intending to provide a solution to the problem of the lack of drivers to compete in F1. The proposed circuit would also aim to address the need for F1 academies in India and explore ways to bring F1 back to India. The dissertation begins with an analysis of the current state of F1 in India and the challenges faced by the sport in the country. It then discusses the design of the proposed circuit, highlighting its key features and the benefits it would offer. The dissertation also examines the role of F1 academies in promoting motorsport in India and the potential benefits they could bring to the country. Finally, the dissertation explores ways in which F1 can be brought back to India, including the development of a comprehensive motorsport ecosystem in the country.

## **CHAPTER 1 – INTRODUCTION**

Dwaraka is a city and a Municipality of Devbhumi Dwaraka district in the state of Gujarat in western India. It is located on the western shore of the Okhamandal peninsula on the right bank of the Gomti river at the mouth of the Gulf of Kutch facing the Arabian Sea. The city has a hot and dry climate with a 16-day rainy season. It had a population of 38,873 in 2011. The city's economy is tourism-based.

### **MOTIVATION:**

Dwaraka is one of the four sacred Hindu pilgrimage sites collectively called the Chardham, and is one of the seven most ancient religious cities (Sapta Puri) in India.

Dwaraka is often identified with the Dwaraka kingdom, described in the Bhagavata Purana as the ancient kingdom of Krishna and is believed to have been the first capital of Gujarat. The main festival of Janmashtami is celebrated in Bhadrapada.

Archaeological investigations at Dwaraka, both on shore and offshore in the Arabian Sea, have been performed by the Archaeological Survey of India. The first investigations carried out on land in 1963 revealed many artefacts. Excavations done at two sites on the seaward side of Dwaraka brought to light submerged settlements, a large stone-built jetty, and triangular stone anchors with three holes. The settlements are in the form of exterior and interior walls.

### **1.1 AIM**

- To spread the knowledge of our ancient history.
- The knowledge of the facts of Dwaraka nagari which submerged in the Arabian Sea (Ocean).



## **1.2 OBJECTIVES**

- Dwaraka is a tourist place where many foreigners also visit the place so the museum helps them to understand the ancient history of India.
- The facts and knowledge can spread across the world.
- The artefacts which are displayed in the museum can be preserved.

## **1.2 SCOPE OF THE PROJECT**

- The artefacts, sculptures, monuments which are collected by the archeological department are in more numbers, in future there might be a chance of collecting more artefacts.
- Hence, I am providing a museum or can be a preservation centre to those artefacts.
- Centralized museum of artefacts
- Surrounded by interactive technology based museum and art gallery of history of Dwaraka
- Recreational area by providing OAT
- Research centre

## LIMITATIONS

- Lack of funding: For the development of the project huge amount of funding is required, in present situation lack of funding is the crisis for the project.
- Political instability: Political instability may affect the long-term viability of the museum. It resulting changes in government policies or funding, which may adversely affect the project.

### 1.1. METHODOLOGY

- **Research Framework**
- **Justification of Research Objective**
- **Data Collection**
- **Design Development**

#### Research Framework

- Research

#### Justification and Research Obejective

- Research Questionnare

#### Data Collection

- Case study and Literature Study
- Site Analysis

#### Design Development

- Conceptualization
  - Sustainability
- Design Development
- Final Design

## **CHAPTER 2 – LITERATURE REVIEW**

### **2.1. History And Evolution of Dwaraka**

Museums are usually funded by public money and guided by a board of directors. It is important to keep this in mind when designing them so that they can fill the needs of their visitors, while also being financially sustainable.

A museum will sometimes be designed to house a specific collection, but it may also be designed to have different exhibits and collections throughout the year. The type of collections will have an impact on the way the museum is designed.

### **2.2. MUSEUM PLANNING**

Museums can vary considerably in size, type and purpose, therefore it is important to be able to narrow down the particular features and context for the project as concepts are developed. Some museums employ large amounts of staff, qualified experts who curate, manage and conserve the collections. Other museums however, may require very few staff to oversee the exhibits.

While there is no standard formula for space planning and areas for a museum, due to their variations, much of the requirements will come from the clients brief, type of collection, purpose and so on. It is important to understand the museum's mission, and create an interesting layout for the collections. Key to this is the circulation through the spaces and how the visitors interact with the exhibits.

#### **2.2.1. SPATIAL RELATIONSHIPS**

While there is no standard formula for museum design, in most cases a selection of

different spaces are generally seen in most museums. It is important to assess how these spaces will need to relate to one another, and how public and staff will circulation between these spaces.

These museum spaces can include (but are not limited to):

- Public display areas
- Storage for exhibits not currently on display
- Conservation area
- Data collection
- Loading/unloading
- Packing/unpacking
- Workshop
- Staff facilities
- Lobby/reception
- Sales/shop
- Cafe
- Public restroom facilities
- Event spaces
- Teaching rooms

### **2.2.2. ACCESSIBILITY**

As mentioned earlier, it is important that the museum is accessible to all and this

should be taken into consideration throughout the design process to ensure access is not an afterthought.

The building must be able to accommodate people with any kind of disability. This can fall into three different areas.

### **Approach and Entrance**

Users must be able to approach and enter the building safely and easily. If the building is an existing historic building with restrictions to access, it could be worth considering an alteration to the main point of entry to allow for everyone to access the building in a more convenient location.

### **2.2.3. CIRCULATION**

All visitors should be able to circulate through the building using the same routes, with or without a disability. Ideally, lifts should be near to main stair access to allow everyone to experience the same flow through the spaces. Disabled facilities should be available on every floor to allow easy access.

### **2.2.4 STAFF**

- All other areas not open to the public should be easily accessible for a wheelchair user, with suitable facilities on the office level.
- All access requirements will be noted in local building regulations, it is important to adhere to these guidelines. However, I would always aim to go above and beyond the minimum requirements to make sure access and use of the museum is enjoyed by all equally as much as possible.

### **2.2.5. CIRCULATION**

- How visitors flow and circulate through the museum is a key part of the user experience. Is it easy to navigate? Does the route tell a story? Questions like this will help establish how visitors will experience the building and progress through the exhibits.
- Signage and guidance is an important part of the circulation plan of a museum, helping to guide the visitor on the suggested route through the exhibits help them get the best experience of the museum. Consider foreign visitors and how this information might be communicated to them.
- The entrance of the museum should provide clear indication of the layout of the building, proposed circulation and facilities available to the visitor. This will ensure the visitor is able to access the collections, and the other museum services available.
- Circulation through the museum may take a linear form, where there is a clear beginning, middle or end. Circulation could also be a loop, where the visitor is led through the collections and finishes back at the beginning. Other options include core and satellites, where there are more central areas with small display rooms branching off from them. In some cases there will be a combination of all of the above.
- Staircases, escalators and lifts will need to be designed in accordance with local building regulations

Circulation through the spaces will be one of the most important parts of the museum planning and layout and is not to be underestimated.

### **2.2.6. DISPLAY AND COMMUNICATION**

How the exhibits are displayed and communicated will play an important role in the experience of the visitors. How will the staff communicate the collections to the visitors? What do the visitors want to see? here are a variety of mediums that can facilitate communication of the collections to the visitors and these include:

- graphic display
- video and sound
- video
- static objects
- tactile objects
- interactive computer
- animatronics
- reconstruction
- working environments and more

Be creative and think outside the box when planning how the visitors will experience the exhibits. Think about colour, stories and how everything might connect. Depending on the exhibits, it is important that there is plenty of space between and around the exhibits so visitors are able to experience them clearly without being crowded by other visitors.

Interactive elements will allow visitors to explore and learn more about the topic, while sound can create a mood or atmosphere. Lighting is also important to allow viewers to see the exhibits clearly, but can also create an atmosphere.

Make sure that your signage is clear and well-written so visitors can easily understand what they are viewing.

### **2.2.7. STORAGE**

Storage spaces will depend on the nature of the collections and the work carried out at the museum in addition to the display of collections to visitors.

Storage spaces can require access by staff to assess the collections, or they may be temporary holding areas while collections are changed over. Generally the storage areas will not be open to the public and solely used by staff of the museum.

Storage requirements will be specific to each museum and it is important to understand the requirements to ensure enough space is provided.

## **2.3. PUBLIC FACILITIES AND RESTROOMS**

Public facilities and restrooms should be easy to locate throughout the building. Museum visitors often spend a long time in the building and will require moments to rest. Seating and rest zones should be available for visitors to use, along with usual sanitary requirements.

Cafes are often located at the entrance to a museum to allow visitors to access refreshments at the start or end of their visit.

### **2.3.1. LIGHTING**



The lighting design in a museum or building that houses sensitive objects is a complicated process. Considerations need to be taken first and foremost on the effects of natural and artificial lighting on the exhibits. Direct sunlight should not fall on a collection item and there are detailed guidance documents relating to UV radiation and light dosage which go beyond the scope of this article.

Lighting can also create a mood and experience for the visitor as they pass through the collections. It is important that visitors aren't subjected to extreme changes in brightness as this can be uncomfortable. However changes in lighting is important in order to provide interest. Coloured lighting can also be used as well as different types of lights. It can be used to create highlights and shadows around the collections.

A lighting specialist would usually be consulted for a museum design.

### **2.3.2. CLIMATE, ENVIRONMENT AND TEMPERATURE**

Museum collections are often sensitive to any fluctuations in temperature, humidity and air pollution. Therefore it is important the climatic conditions are designed carefully and remain constant in any areas that house the exhibits, including any storage facilities.

There are guides available that demonstrate suitable relative humidity and temperatures for museums and galleries. It is likely a specialist will be consulted to assist with the environment design of the museum, to ensure the conservation of the exhibits.

### **2.3.3. SECURITY**

Security is an important consideration for any museum design. The safety of the museum staff, visitors and collections are of utmost importance, with many factors to consider.

Reducing entry points to the museum allows for access areas to be monitored closely. Usually a single entrance for the public will suffice, with additional access for staff and deliveries. Entrance and exits are the more vulnerable part of the building in terms of security and need special attention when designing.

Museums are often zoned for security reasons, with daytime access enabled for all visitors, but night time security increased.

Visitors can be sent through a security checkpoint before entering the museum. Museum employees can wear uniforms so that they can be easily identified and trained on how to handle emergencies and protocols that should be followed.

All collections and exhibits must be suitably protected from theft, vandalism and accidental damage. This may include using glass cabinets to house the exhibits or employing security staff to patrol the spaces and monitor particularly important or expensive pieces.

Space must be provided for equipment and safe escape from the building in case of emergency.

## **CHAPTER 3 – CASE STUDY**

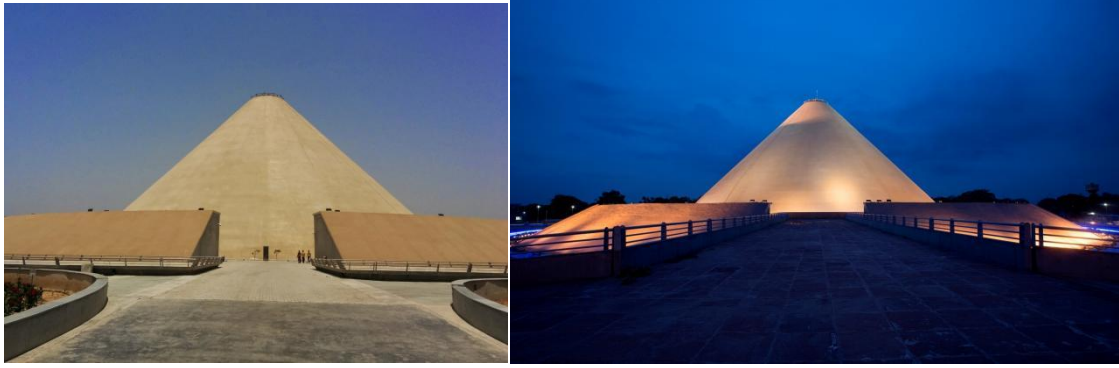
### **3.1. DOMESTIC**

#### **Case study 01 – A SALT - MOUND - SHAPED MUSEUM**

LOCATION	: Dandi kutir,Gandhinagar,Gujarat
ARCHITECT	: Arcop
OPENED	: January 2015
CONSTRUCTION COST	: Rs. 260 crore
AREA	: 15 acre
OWNER	:Government of Gujarat

Dandi Kutir, a salt-mound-shaped museum dedicated to the life, ideology and works of Mahatma Gandhi - the father of the nation - is a latest edition in the capital city of Gandhinagar. Conceived and built by the Government of Gujarat, the Dandi Kutir is the biggest permanent museum in the world based on the life and teachings of one man - Mahatma Gandhi.

Designed by Shapoorji Pallonji Engineering and Construction, Gandhi's principles of social justice, non-violence and Satyagraha have been ingeniously portrayed in this iconic structure



## **Design**

Dandi Kutir, a salt-mound-shaped museum dedicated to the life, ideology and works of Mahatma Gandhi - the father of the nation - is a latest edition in the capital city of Gandhinagar. Conceived and built by the Government of Gujarat, the Dandi Kutir is the biggest permanent museum in the world based on the life and teachings of one man - Mahatma Gandhi.

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The museum occupies a prominent place on the north-west flange of the city at the culmination point of a green-belt opposite the Capitol Complex of Gandhinagar. It is spread on a plot of 6-hectares (60,000 square meters) surrounded by an approach road on all sides.

The museum takes the shape of a giant cone which resembles a salt mound - a symbol of Gandhi's historic Dandi March against the salt tax provisions imposed by the British regime in March 1930.

The concrete shell-shaped structure of the museum has a diameter of 90 metres and

a height of 41 metres. This hollow conical envelope accommodates 3-level museum building inside it. All the levels of the museum are well connected by elevators and steel-and-glass catwalks. A giant skylight at the apex of the cone lit the interiors in a dramatic way.

The structure of the museum is ringed by low-height circular building which accommodates administrative offices and other service areas. This ringed-structure, topped by a slanting roof, seems to emerge out of a circular water body which encircle the entire museum complex. Its form complements the form of the conical structure of the main museum in the centre.





The brief from the chief Architect was to make the main conical structure of museum look like lit in a moon light! The building scheme takes inspiration from Mahatma Gandhi's freedom fight incident of Salt march which took place in Gujarat's Dandi village. It has four main elements that needed to be distinctly lit with a certain hierarchy. The 41m high and 90m dia salt mound has been discreetly lit with precise optics to impart utmost visual comfort and prevent light pollution.

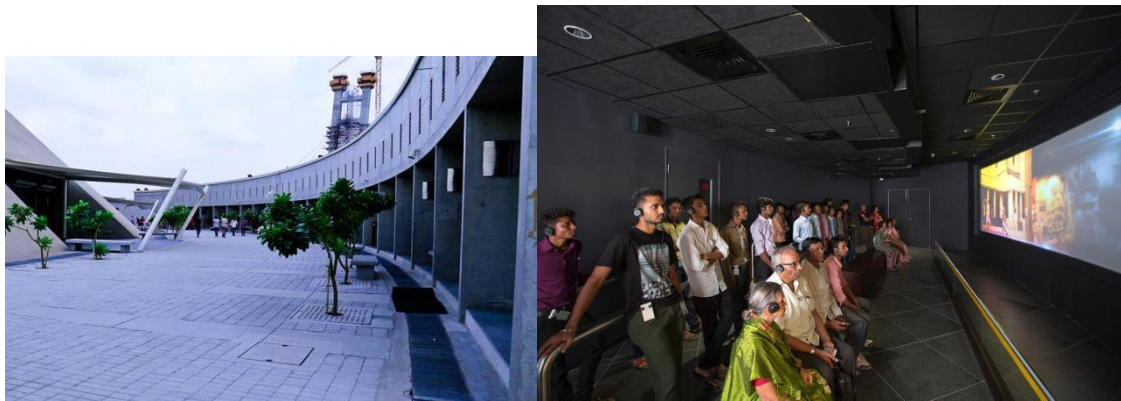
The surrounding landscape (In a concentric manner, the salt mound then the sand mound, then waterbody canal then the landscaped gardens and peripheral roads) are lit in such a manner that there is always an unobtrusive main focus on the salt mound the main structure.

The structure of the museum is ringed by low-height circular building which accommodates administrative offices and other service areas. This ringed-structure, topped by a slanting roof, seems to emerge out of a circular water body which encircle the entire museum complex. Its form complements the form of the conical

structure of the main museum in the centre.

A circular plaza in between the low-height service block and the main museum provides pedestrian access to the Dandi Kutir.

Inside the museum, Mahatma Gandhi's principles of non-violence, social justice, self-reliance and Satyagraha have been creatively portrayed with the help of sophisticated technologies such as 3D mapping, holography, 360 projection, transparent LED screens etc.



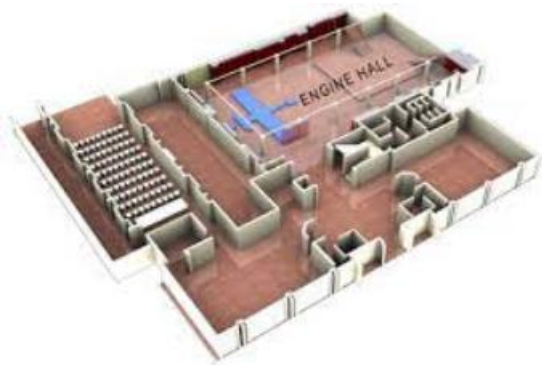
## **Case study 02 – VISVESVARAYA INDUSTRIAL AND TECHNOLOGICAL MUSEUM**

**LOCATION** : Kasturba road, Bangalore, India

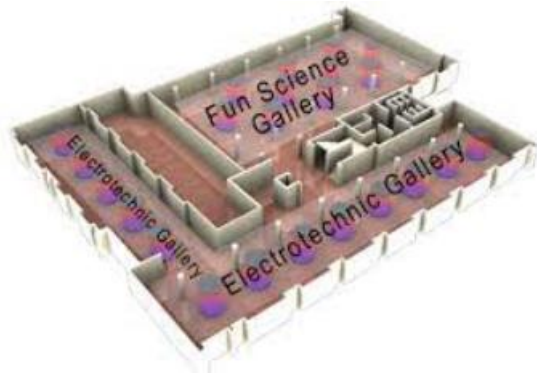
**ARCHITECT** : Populous

**OPENED** : 14 July 1962

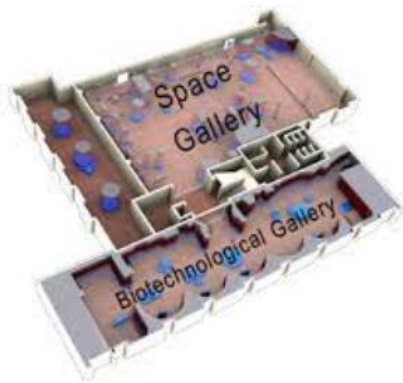
**AREA** : 0.9 acres



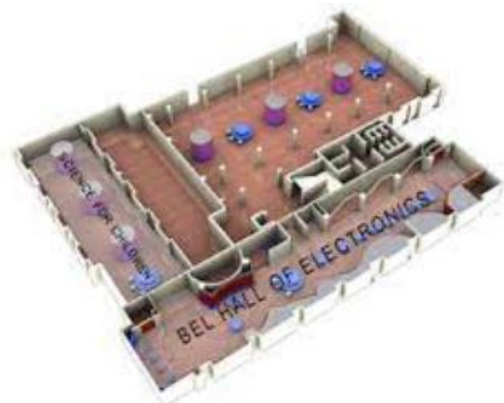
FLOOR PLAN



GROUND FLOOR



FIRST FLOOR



SECOND FLOOR

For more than 60 years, Silverstone has been one of the most significant venues for motor racing, leaving a lasting legacy for all. In addition to being well-known for hosting events worldwide, Silverstone is renowned for its thrilling driving excursions, opulent corporate entertainment, and prestigious conference.

## **GROUND FLOOR.**

Engine Hall

Electrothenic Gallery

Fun Science Gallery

Space Gallery

Biotechnology Gallery



Bell hall of electronics

Science of Children

Dinosaur Enclave

Wright Brothers

Flyer Simulator

SOS

Taramanda

## **FIRST FLOOR**

3D Theatre

Smoke Rings

Sand Art

Infinity Well

Water in your body

Spark Theatre

Smart Room

Weather Studio

Second Generation Computer

Hydel Power

## **SECOND FLOOR**

Walk through cell

Genetic Wheel

Identify my parents

Enzymes

Gene Splicing

Rocket Launching station

Your weight on different planets

Power of ten

Air Rocket

Indian Satellites

## **INTERACTIVE TECHNOLOGY BASED ACTIVITIES**

Origin

The reality of the museum began with the germ of an idea born in the mind of a visionary journalist and nationalist, Mr. BN Gupta. Having travelled widely and inspired by museums in the West like the Smithsonian, he came up with the idea of establishing a similar museum in Bengaluru in 1958.

VITM was opened to the public on July 14, 1962 by Prime Minister Pandit Jawaharlal Nehru in the presence of scientific and political luminaries. The museum proudly housed various industrial products and engines.

Under the steady stewardship of CSIR, there was a significant transformation in the museum's character; from being an industrial museum, it also became a science museum. In fact, VITM counts its birthday as July 27, 1965 – the day the first gallery was inaugurated



## Vision

The Museum's vital mission is to popularise science among the masses through various initiatives such as new galleries on science and technology, travelling exhibitions on contemporary science and technology topics, mobile science exhibitions, workshops, popular science lectures, science demonstrations, publications, and related activities.



The BEL Hall of Electronics, set up with major financial and material support from Bharat Electronics Ltd, was thrown open to the visitors of the museum by His Excellency the Governor of Karnataka, Shri T.N.Chaturvedi on 29th June 2004. This 550 sq. mts. exposition houses fascinating exhibits on digital electronics, communication, virtual environment and computer software.

## SECTIONS

Basic Electronics, Digital Electronics and Communications

Electronics in defence, Imaging Technology and Telemedicine

Virtual Reality, Internet, Milestones in Electronics and 3D Theatre

A metallic tubular structure is used to solve the cover problem, generating the desired geometries while reducing the structure's overall weight.

## 3.2. INTERNATIONAL

### **Case study 03 – SMITHSONIAN INSTITUTION, WASHINGTON, D C**

Construction began on the Smithsonian Institution Building ("the Castle") in 1849.

Designed by architect James Renwick Jr., its interiors were completed by general contractor Gilbert Cameron. The building opened in 1855.

The Smithsonian's first expansion came with the construction of the Arts and Industries Building in 1881

LOCATION : Washington, d.c

OPENED : August 10, 1846

DIRECTOR : Lonnie bunch Secretary of the Smithsonian

ARCHITECT : Daniel burnham

Charles follen mckim

### **Design**

The National Zoological Park opened in 1889 to accommodate the Smithsonian's Department of Living Animals. The park was designed by landscape architect Frederick Law Olmsted.

The National Museum of Natural History opened in June 1911 to similarly accommodate the Smithsonian's United States National Museum, which had previously been housed in the Castle and then the Arts and Industries Building. This structure was designed by the D.C. architectural firm of Hornblower & Marshall.

When Detroit philanthropist Charles Lang Freer donated his private collection to the Smithsonian and funds to build the museum to hold it (which was named the Freer Gallery), it was among the Smithsonian's first major donations from a private individual. The gallery opened in 1923.

More than 40 years would pass before the next museum, the Museum of History and Technology (renamed the National Museum of American History in 1980), opened in 1964. It was designed by the world-renowned firm of McKim, Mead & White. The Anacostia Community Museum, an "experimental store-front" museum created

at the initiative of Smithsonian Secretary S. Dillon Ripley, opened in the Anacostia neighborhood of Washington, D.C., in 1967. That same year, the Smithsonian signed an agreement to take over the Cooper Union Museum for the Arts of Decoration (now the Cooper Hewitt, Smithsonian Design Museum). The National Portrait Gallery and the Smithsonian American Art Museum opened in the Old Patent Office Building (built in 1867) on October 7, 1968. The reuse of an older building continued with the opening of the Renwick Gallery in 1972 in the 1874 Renwick-designed art gallery originally built by local philanthropist William Wilson Corcoran to house the Corcoran Gallery of Art.

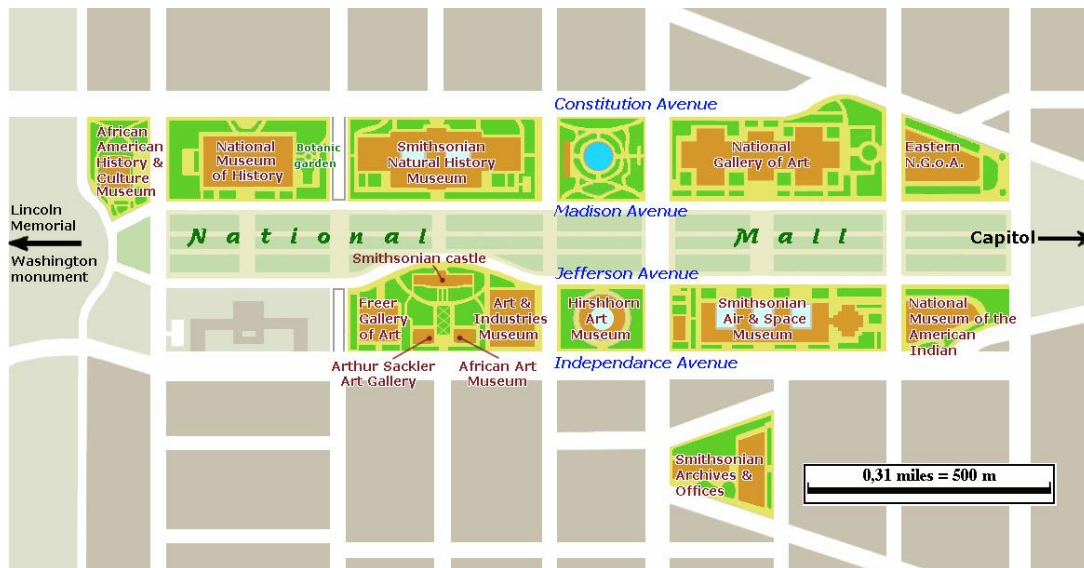
The first new museum building to open since the National Museum of History and Technology was the Hirshhorn Museum and Sculpture Garden, which opened in 1974. The National Air and Space Museum, the Smithsonian's largest in terms of floor space, opened in June 1976.

Eleven years later, the National Museum of African Art and the Arthur M. Sackler Gallery opened in a new, joint, underground museum between the Freer Gallery and the Smithsonian Castle. Reuse of another old building came in 1993 with the opening of the National Postal Museum in the 1904 former City Post Office building, a few city blocks from the Mall.

In 2004, the Smithsonian opened the National Museum of the American Indian in a new building near the United States Capitol. Twelve years later almost to the day, in 2016, the latest museum opened: the National Museum of African American History and Culture, in a new building near the Washington Monument.

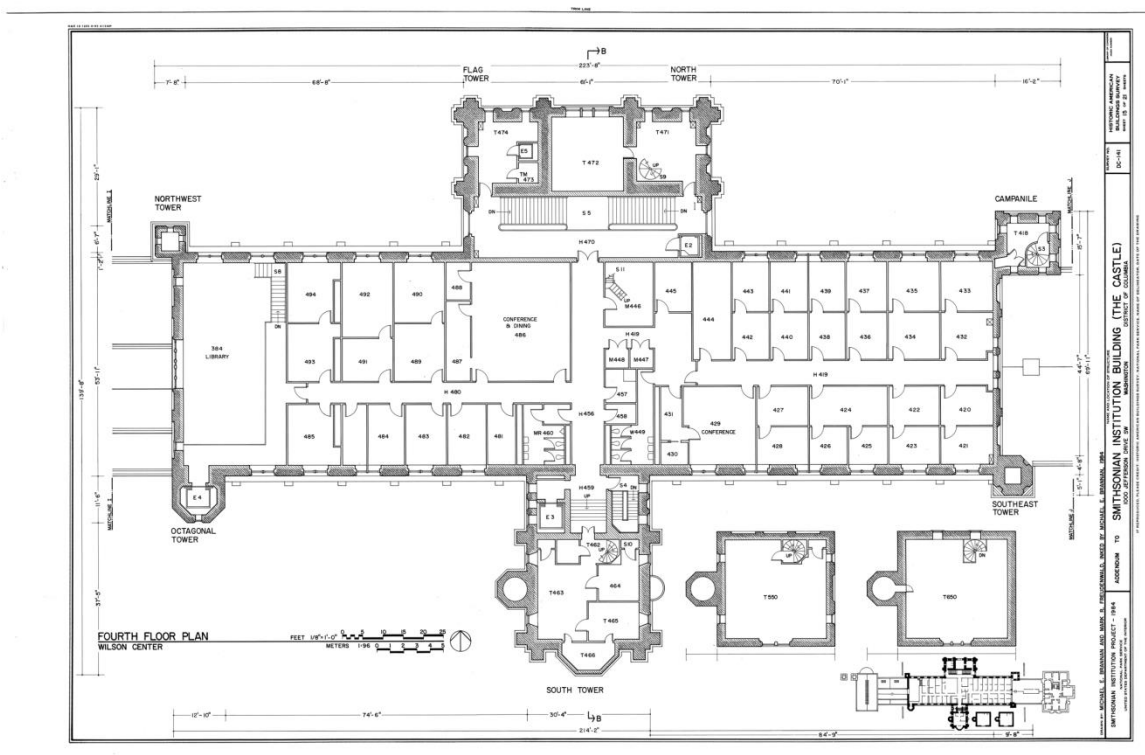
Two more museums have been established and are being planned for eventual construction on the mall: the National Museum of the American Latino and the Smithsonian American Women's History Museum.

The circuit is a portion of the cutting-edge Jaypee Greens Sports City, which spans



## Facilities in BIC

- PIT Lane and Garages - No. of garages – 41
- Team Buildings - Total team buildings – 18
- Paddock Club - No. of halls – 12
- Media Center
- Grandstand
- Grand Plaza and Open Areas
- Platinum Enclosures



The Smithsonian Institution Building, popularly known as the "Castle," was designed by [architect James Renwick, Jr.](#) The building is constructed of red sandstone from Seneca Creek, Maryland, in the Norman style (a 12th-century combination of late Romanesque and early Gothic motifs). When it was completed in 1855, it sat on an isolated piece of land cut off from downtown Washington, DC, by a canal. In the ensuing decades, the Castle became the anchor for the National Mall, as additional museums and government buildings were constructed around it. Over the years several reconstructions have taken place. The first followed a disastrous fire on January 24, 1865, which destroyed the upper story of the main segment and the north and south towers. In 1883, the east wing was fireproofed and enlarged to accommodate more offices. Remodeling from 1968 to 1969 restored the building to the Victorian atmosphere reminiscent of the era during which it was first inhabited. In 1977, the Castle was awarded Historic Landmark status.



## CHAPTER 4 – SITE ANALYSIS

### Introduction:



### ABSTRACT

Tourism is a rapidly evolving industry in the global marketplace. Tourism in India has grown substantially over the last three decades. Foreign tourist arrivals during 1997 were 2,374,094 as compared to 2,286,860 in 1996, an increase of 3.8%. India's share in the world tourist market at the end of 1996-97 was 0.39 per cent. Foreign exchange earnings in the same year were estimated at Rs. 10,418 crore. Tourism has become one of the largest foreign exchange earners of the country. Domestic tourism's contribution to the generation of employment is very high. The tourism's contribution to GDP of the country has been 5.9% in 2003-04, while employment in tourism sector both direct and indirect, has been 41.8 million in the same year, which accounts for 8.78% of total employment in the country. A National Rally Championship. The Kari Motor Speedway, located in Coimbatore, about 400 km from Bangalore, is one of the most popular motorsports venues in the country and has hosted several major events.

## **S.R.Rao's proposals.**

The proposal envisaged a three-stage heritage conservation. This was to be done along with further excavations in Bet Dwarka. It was suggested that access to the submerged city in Dwarka water can be given to visitors, in fair season, through underwater acrylic tubes or viewing chambers at specific points. Such facilities exist in Singapore and Auckland (New Zealand). Alternatively, underwater video cameras can be used to project images above water, in monitors.

The project also mooted the idea of a submarine museum of dolphins as they are in good population in deeper water, off Dwarka. There is also a strong case for a Maritime Museum of Antiquities found in excavations at Dwarka, Bet Dwarka, Somnath, Nageswar and dioramas of Lothal port and Dwarka city. As of now, the Dwarka antiquities are lying in NIO, Goa.





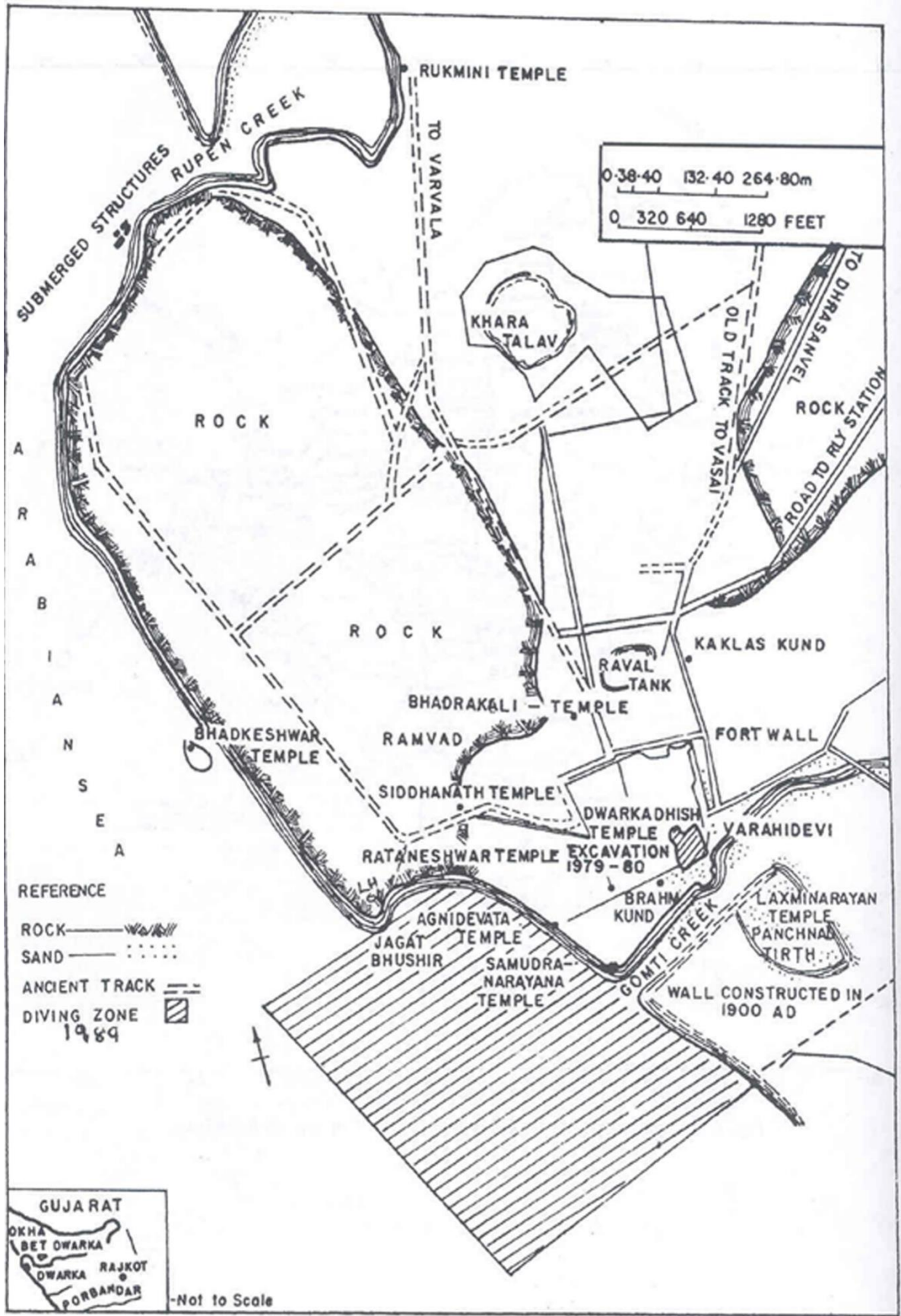
The first archaeological excavations at Dwaraka were done by the Deccan College, Pune and the Department of Archaeology, Government of Gujarat, in 1963 under the direction of H.D. Sankalia. It revealed artefacts many centuries old.

The Marine Archaeological Unit (MAU) of the Archaeological Survey of India (ASI) conducted a second round of excavations in 1979 under the supervision of Dr S. R. Rao (one of the most respected archaeologists of India). An emeritus scientist at the marine archaeology unit of the National Institute of Oceanography, Rao has excavated a large number of Harappan sites including the port city of Lothal in Gujarat. He found a distinct pottery known as lustrous red ware, which could be more than 3,000 years old. Based on the results of these excavations, the search for the sunken city in the Arabian Sea began in 1981. Scientists and archaeologists have continually worked on the site for 20 years.

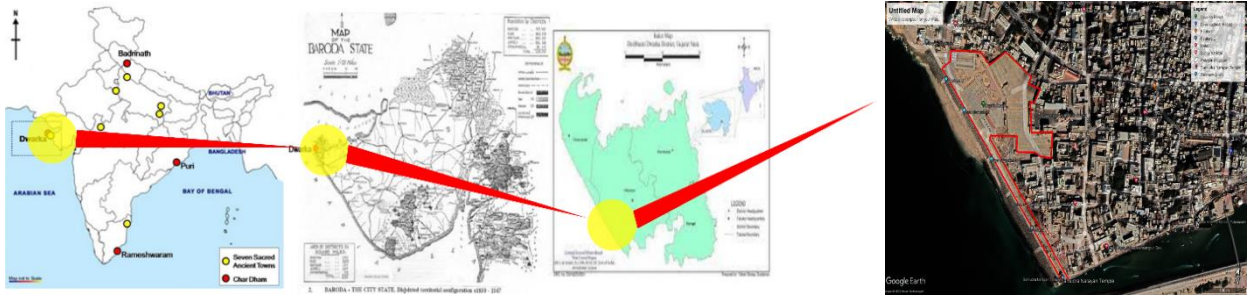
- \* Explorations yielded structures such as bastions, walls, pillars and triangular and rectangular stone anchors.
- \* A semi-spherical single-hole stone which might be the base for flagpost.
- \* L-shaped edges of stones for proper grip and arresting wave action on bastions.
- \* Seals, inscriptions, which have been dated to 1500 BC.
- \* Pottery, which have been dated to 3528 BC.
- \* Stone sculptures, terracotta beads, bronze, copper and iron objects.



Dwarka is the headquarters of Okhamandal Taluka, in the extreme west of the Saurashtra peninsula on the Arabian Sea. Dwarka is a C class Municipality with a population of 38,787 as per provisional population figures of Census 2011. It has witnessed a decadal growth of 15.3 % over the last year. The Municipal area is 42.7 sq. km of which the inhabited area is only 5.2 sq. km.



## SITE



### LOCATION:

AT GOMTI GHAT

DWARAKA BEACH POINTS

NEAR SAMUDRANARAYAN

TEMPLE

DWARAKA CITY - 110059

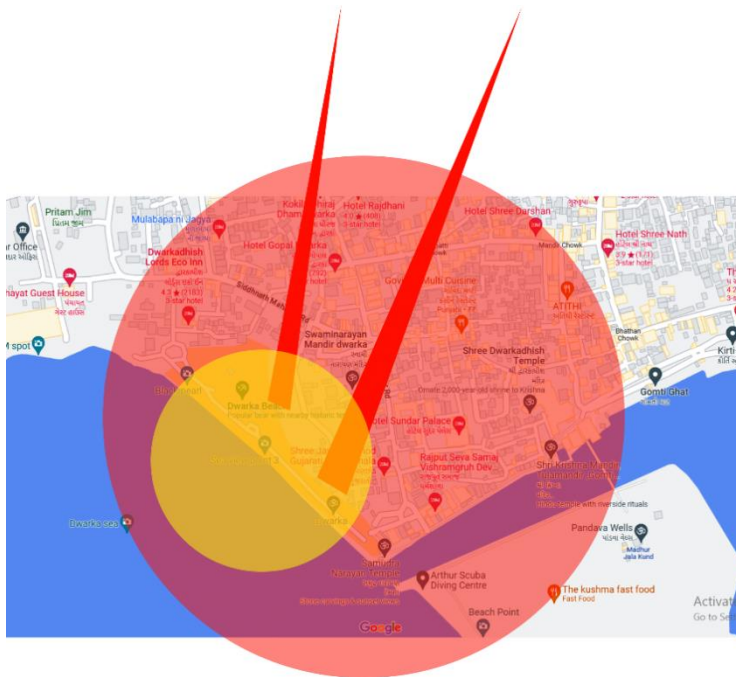
GUJURAT

### Accessibility



Situated at the confluence of River Gomti and the Arabian Sea, the Samudra Narayan Temple is dedicated to Goddess Gomti. According to the legend, River Gomti has been brought from heaven by Rishi Vasishtha to sanctify Rama after his battle with Ravana. After purification of Rama, Goddess Gomti manifested here on the ghat and got submerged into the Arabian Sea. Along with Goddess Gomti, the temple enshrines beautiful idols of Lord Varuna, Samudra Deva, Mira Bai and Mother Asta Bhavani. There is a sacred kund or tank in the temple, where several ceremonial sacrifices performed.





DWARAKADISH TEMPLE

GOMTI RIVER

SWAMINARAYANA TEMPLE

DWARAKA BEACH

SEA VIEW POINTS

SAMUDRANARAYANA TEMPLE

SHRI KRISHNA TULAMANDIR

PANADAVA WELLS

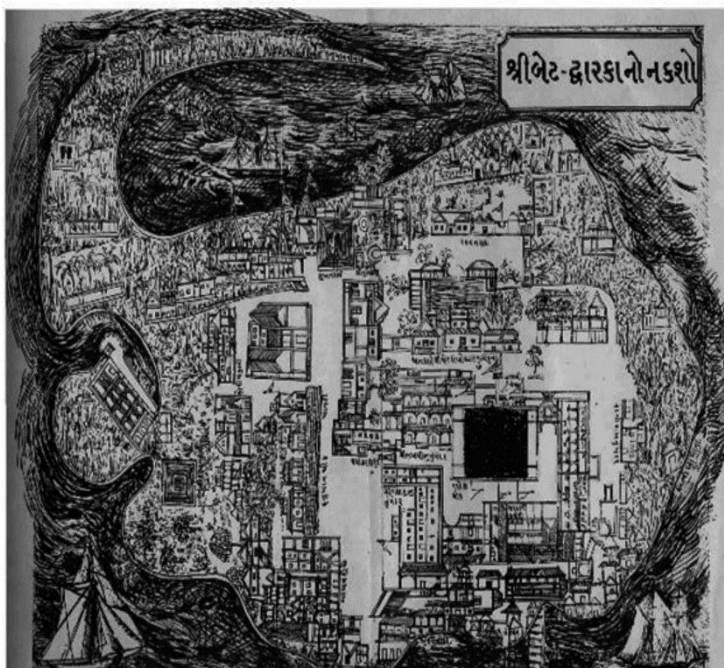
SCUBA DIVING CENTRE



## OBSERVATIONS

The site surroundings are not well developed which indirectly indicates the black mark for site

The garbage, sanitary etc are along the beach side or thrown in the sea which creates more wastage



Dwarka is known for its rich culture that exists in form of people, practices and places where traditional art forms exist. The people in Dwarka and its surroundings make hand embroidered clothing products in a local style named as Rayka art.

Dwarka houses one of the oldest marine archaeological sites in the country. During marine explorations, archaeological remains dating 2500 to 1500 BCE were discovered at the mouth of the Gomti River. The oldest excavations found in the region belong to the Harappa period,



Intangible heritage identified in Dwarka includes most of the above manifestations.

The convention also recommends the following

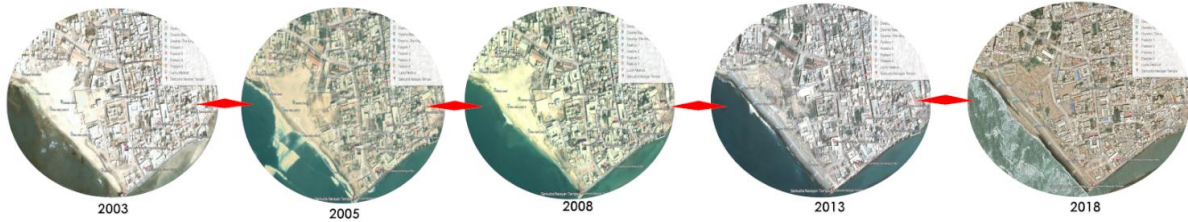
- 1) Adopt a general policy integrating the safeguarding of such heritage into planning programmes
- 2) Foster scientific, technical and artistic studies to safeguard the intangible cultural heritage
- 3) Create or strengthen institutions for training in the management, promotion
- 4) Improve access to the intangible cultural heritage while respecting customary practices

Document intangible cultural heritage and facilitate their access

- 5) Create awareness about the intangible heritage

Build capacity of artisans

## HIISTORY AND TIMELINE OF THE SITE



location map for Dwarka and Bet Dwarka

Historic map of Bet Dwarka locating various structures in the city and the river



MUGHALS INVASIONN (1241 AD)

ISLAMIC ARCHITECTURE INFLUENCE IN THE CITY AFTER MUGHAL  
INVASION

## **Regional setting**

Dwarka lies at 20.22' North and 69.05' East geographical coordinates in the Saurashtra sub-region of Gujarat state. The city is located on the western shore of Okha Mandal Peninsula at the estuary of the Gomti River. Bet Dwarka is located 30 km north of Dwarka. Located on the tip of the western India, it marks the entry to the Arabian Sea and Gulf of Kutch and hence, has served as a major port in the earlier centuries.

Dwarka is in close proximity with the International Naval Border between India and Pakistan and hence, is in strategically important geo-political region for India. The city also sites INS Dwarka – a forward outpost of the Indian Navy (Indian Navy, 2016), examining the Okha Port and an Indian

## **Introduction to Dwarka**

The ancient city of Dwarka is located on the western tip of the Saurashtra peninsula in Gujarat, India. The city is one of the Chardhams<sup>1</sup> of the Hindu pilgrim circuit. The city is associated with mythological periods having associations with Lord Krishna and has rich religious and cultural significance in the Hindu religion. Owing to its religious, historic and architectural value, it attracts close to 20 lakh tourists every year.

Dwarka houses one of the oldest marine archaeological sites in the country. During marine explorations, archaeological remains dating 2500 to 1500 BCE were discovered at the mouth of the Gomti River. The oldest excavations found in the region belong to the Harappa period, hinting that the site was probably a trading

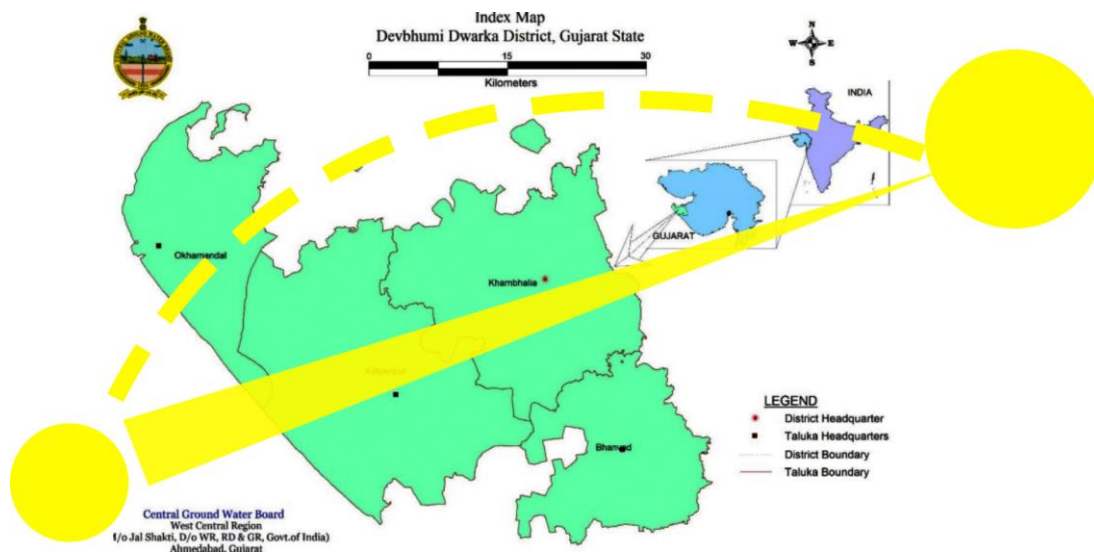
dockyard during the Indus Valley Civilisation. Dwarka also houses a large number of temples dating back from 12th to 15th century CE. Dwarka has several built structures related to water bodies in the form of kunds, sarovars and ghats.



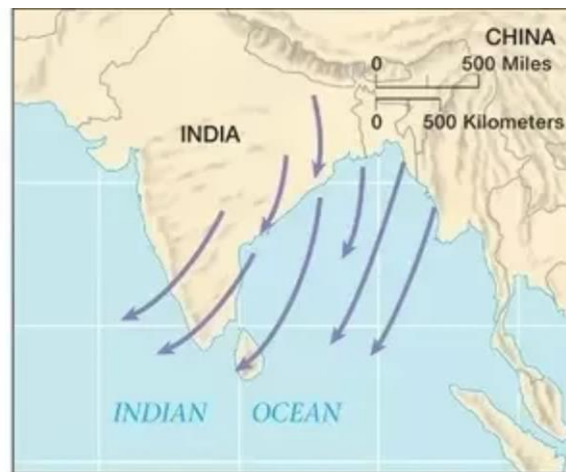
In 1473 the Gujarat Sultan Mahmud Begada sacked the city and destroyed the temple of Dwarka.[17][18] The Jagat Mandir or the Dwarakadhisa temple was later rebuilt.[19] Vallabha Acharya retrieved an idol of Dwarkadhish, which was revered by Rukmini. He hid it in a stepwell, known as Savitri vav, during the Muslim invasion, before moving it to Ladva village.

In 1551, when Turk Aziz invaded Dwarka, the idol was shifted to the island of Bet Dwarka

# CLIMATE ANALYSIS OF DWARAKA CITY



Summer



Winter

## Hydrometeorology

Devbhumi Dwarka district is located in West of Gujarat, comes under normal rainfall areas in

Gujarat, having Semi-arid climate with moderately low humidity. The main seasons

prevailing in

the district are

(a) monsoon - mid of June to October,

(b) winter- November to February, and

(c) summer – March to June.

### Climate and Raifall

Climate condition of an area is resultant of various component like temperature variation, mean

average rainfall and number of rainy days. The temperature ranges from around 41°C in May to

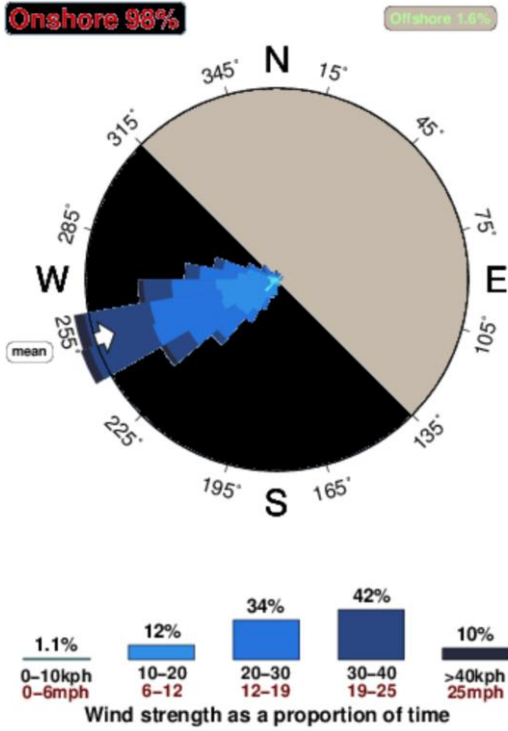
6.3° C in the month of December. As can be seen from table below, the average rainfall for the last

thirty-five years is 669 mm. The more rainfall received in the months of July and August and

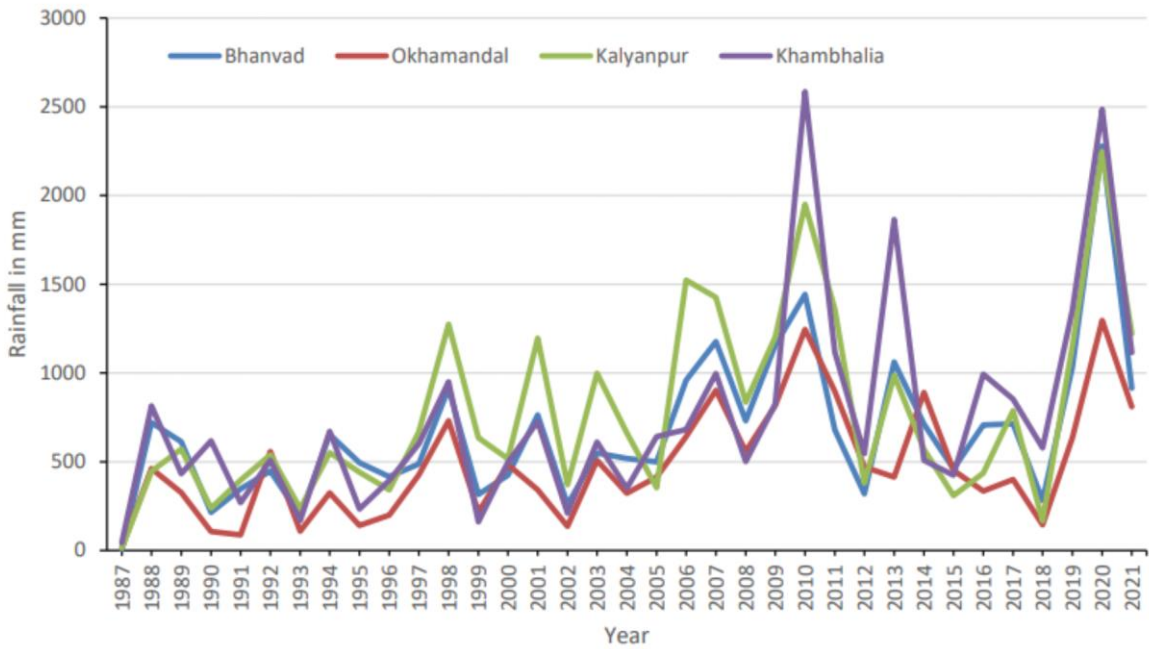
thereafter rainfall declined in the months of September and October. However, scanty and uneven

rainfall pattern is common. The Taluka wise average rainfall is shown table

### Dwarka Beach Wind Statistics July averages since 2006



### Rainfall 1987-2021





## VEGETATION



## Demography

The total population of the district is 7,52,484 of which male population constitutes about 3,86,566

(51.37%) and female population is 3,65,918 (48.63 %) (Census, 2011) while its area is 4,051 km<sup>2</sup>.

Khambhaliya taluka comprises maximum population 2,68,062 of the district whereas Bhanvad taluka

has minimum population 1,25,561 in the district. The district consists of 281 villages and 06

Municipalities.

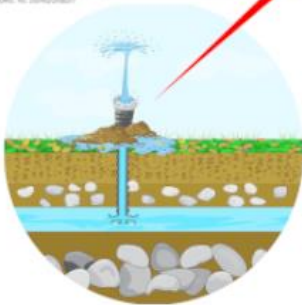
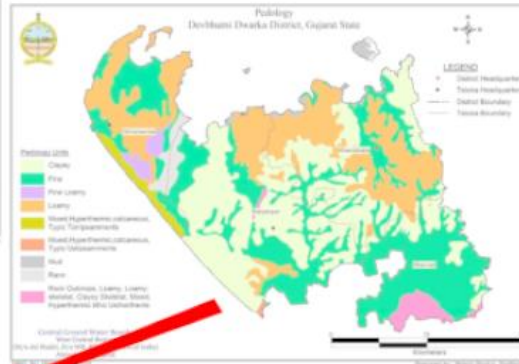
Sr. No	Taluka	Male	Female	Total	Sex Ratio
1	Kalyanpur	99,575	96,458	1,96,033	970
2	Bhanvad	63,980	61,581	1,25,561	960
3	Okhamandal	84,074	78,754	1,62,828	936
4	Khambhaliya	1,38,937	1,29,125	2,68,062	928
	Total	3,86,566	3,65,918	7,52,484	938

### Surface Water Availability

Devbhumi Dwarka district is blessed with plenty of rivers like Sorthi, Vartu, Sani, Ghee, Sonmati, Sindhani, Bhadhari etc. On these rivers 9 dams are constructed and water is utilized for irrigation purpose through main canal of 70 Km and distributary canal of 67 km. Irrigation potential of these dams is 9067 Ha.

### Soil type

Soils of the district may be broadly classified as Goradu sandy loam, Coastal alluvial (saline), Coarse soil from Granite, shallow black and hilly. Goradu sandy loam are the main soil type of the district, while the coastal and hilly soils are the sub-soils. The black soil is rich in mineral and organic matter and is more fertile. The medium black soils are found in Khambaliya, and kalyanpur talukas. These soils are generally 25 to 50 cm deep. Shallow black soils are found in Bhanwad, and Okhamandal talukas, which is about 25cm deep



GANDHI MEMORIAL



SAMUDRA NARAYANA TEMPLE



MADHUR JALKUND



DWARAKADISH TEMPLE



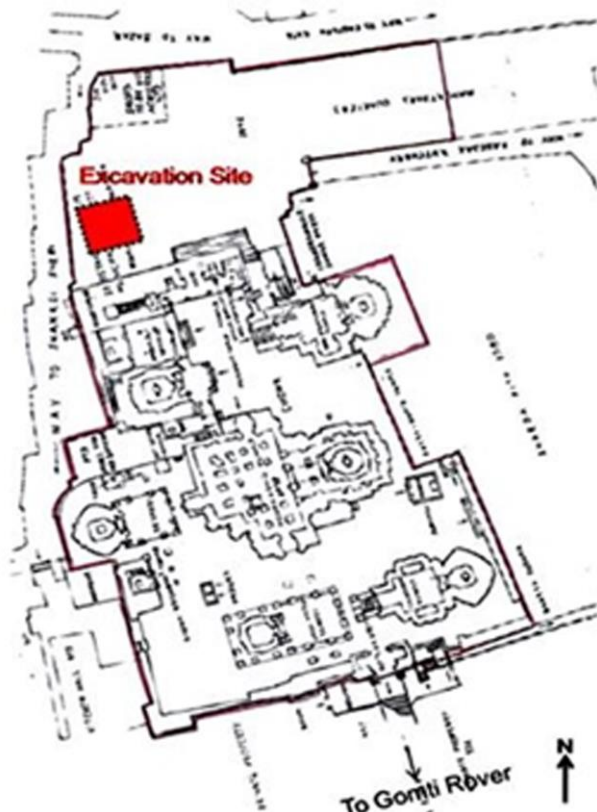
GOMBI RIVER BRIDGE



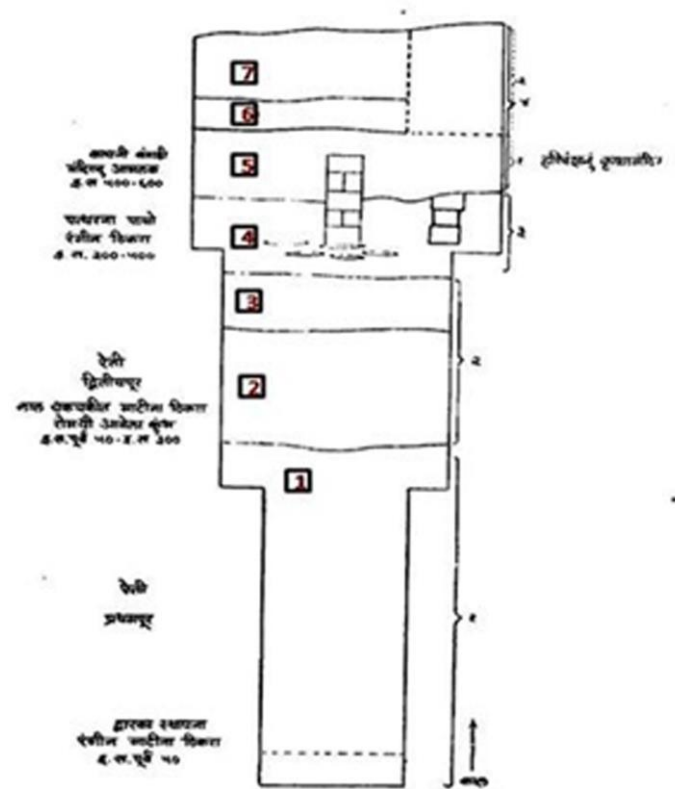
PANDAVAS WELLS

## Site Analysis

### Site location of Archeological findings



Site Location of Archeological Findings



Schematic Diagram of Layers of Buried Dwarka City (Pushkarbhai Gokani, 1973)

Layer of Excavated City	Findings	Estimated year of civilization
7	Existing	15/ 16th Century CE
6	Foundation of a structure, remains of many sea shells. Speculated to be a shell shop.	1850 CE
5	Stone foundation of a house, beautiful articles made of ivory and clay toys	500 CE to 600 CE
4	Foundation of a house, red and black utensils, coloured glass bangles, glazed porcelain utensils (speculated to be of Iranian origin)	300 CE to 500 CE
3	Pinnacle or <i>shikhara</i> of a Krishna temple (also mentioned in document of Harivanshgranth)	-
2	House foundation, clay utensils, and glossy red clay utensils. Stone pitchers used for storing liquor (Roman origin)	50 BCE to 300 CE
1	Dwarka engulfed by sea	Before 50 BCE

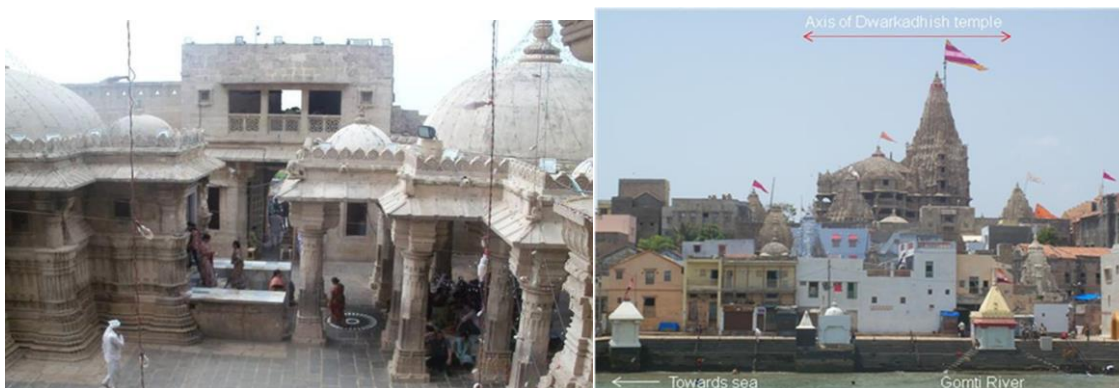
Source: (The Lost City of Dvaraka. 1999)

## Architectural Significance

This temple of Dwarkadhish is ornate, exquisite, majestic and one of the most imposing structures of Hindu architecture in Gujarat. Eighty-four feet long multi-coloured flag decorated with the symbols of the sun and moon waves from the temple dome (Dwarkadhish Temple, 2016).

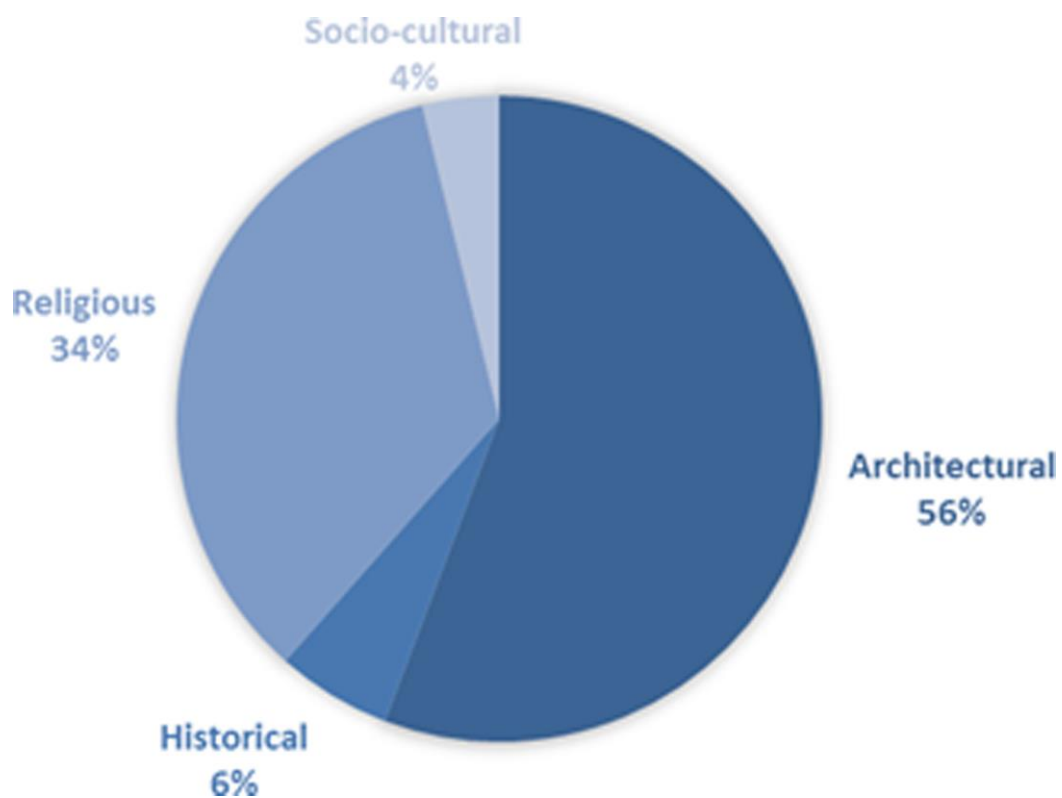
The temple when measured on the plan is 27.35 by 21.3 m. The mandapa of the temple made up of 60 pillars rises to five storeys and is open on all sides. The temple has a high conical shikhara. The pyramidal roof of the mandapa is adorned with a series of tiny bell shaped domes. The exterior façade and the shikhara of the temple are profusely carved as compared to the interiors of the temple which are plain.(Archaeological Survey of India, nd).

The temple complex has two main gates for entrance. The one on the southern side is known as „Swargadwar and is accessible by 56 steps from Gomti River. The northern gate is known as „Mokshadwar. This entrance leads to the main market.



## Heritage significance

The significance of the structure defines its heritage character. While identifying heritage structures in Dwarka and Bet Dwarka, UMC documented their significance as architectural, historic, archaeological, socio-cultural and environmental. Out of a total 44 structures, 29 have architectural significance – in many cases in addition to religious and historical significance. Eighteen structures were found to have religious significance along with historical and socio-cultural significance



## Religious and spiritual activities

The city has a large tourist footfall on the important religious days like Janmastami(birth day of Lord Krishna), Tulsi-Vivaha, Jal Yatra, Rath Yatra, Jiladan Utsav, etc. According to the traditions, the main idol in Jagat Temple is decorated with flowers and fruits on these days (Dwarkadhish.org, 2008).

The religious activities are practiced by the local and the visiting population and are assisted by the local priests who perform puja (prayers), aartis(songs of worship) and other ceremonies at the temples and the Gomti Ghat. These activities are performed many times daily at fixed times. There is Mangala Aarti in the morning followed by Abhishek, Snan Bhog, Aarti Bhog, Aarti Darshan, Madhyanh Bhog, Raj Bhog and Shayan Aarti in the night. Large crowds emerge at these aartis and is managed by the Devasthan Samiti.





## **Folklores associated with Lord Krishna**

People in Dwarka tell many mythological tales about Lord Krishna. Glimpses of these tales can be seen in different forms of music, dance, dramas, literature, art, linguistics and philosophy. These myths form a significant part of religious beliefs and should be documented at the earliest.

United Nations Educational, Scientific and Cultural Organisations (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage is an important tool to identify, document and promote intangible heritage. The convention identifies the following as manifestation of intangible cultural heritage (UNESCO, 2003)



## Mapping of Heritage Structures In Dwarak



Most of the residents in the surrounding area of the temple complex are Brahmins. The pujaris of the temple also belong to this community. Being a city of Lord Krishna (who was a gopalak), cow is considered holy. Provisions for drinking water and offering food for cows are commonly seen around the city.

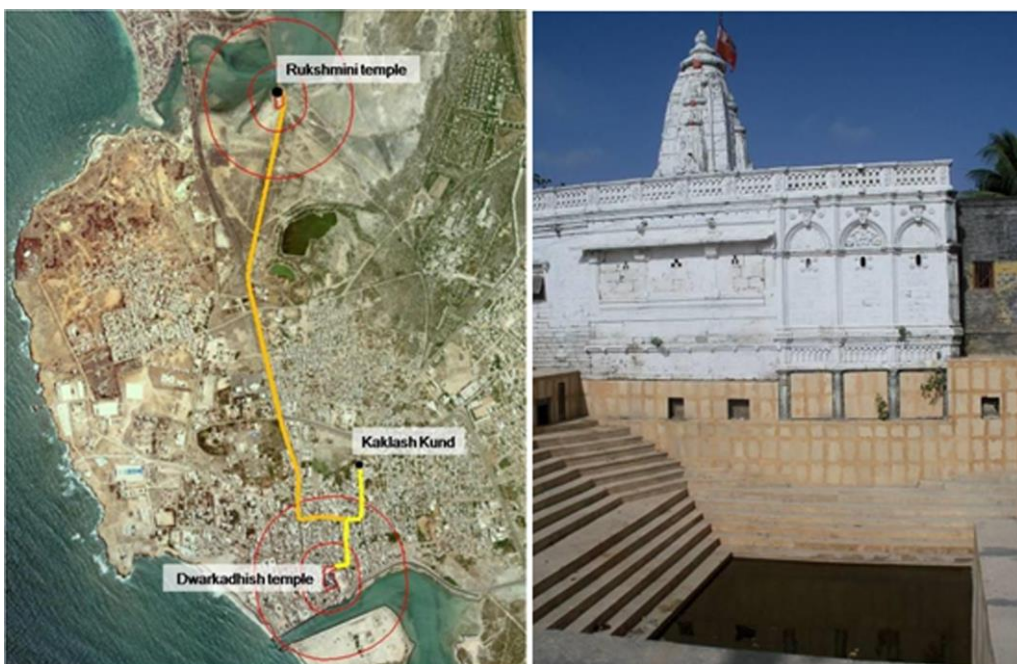
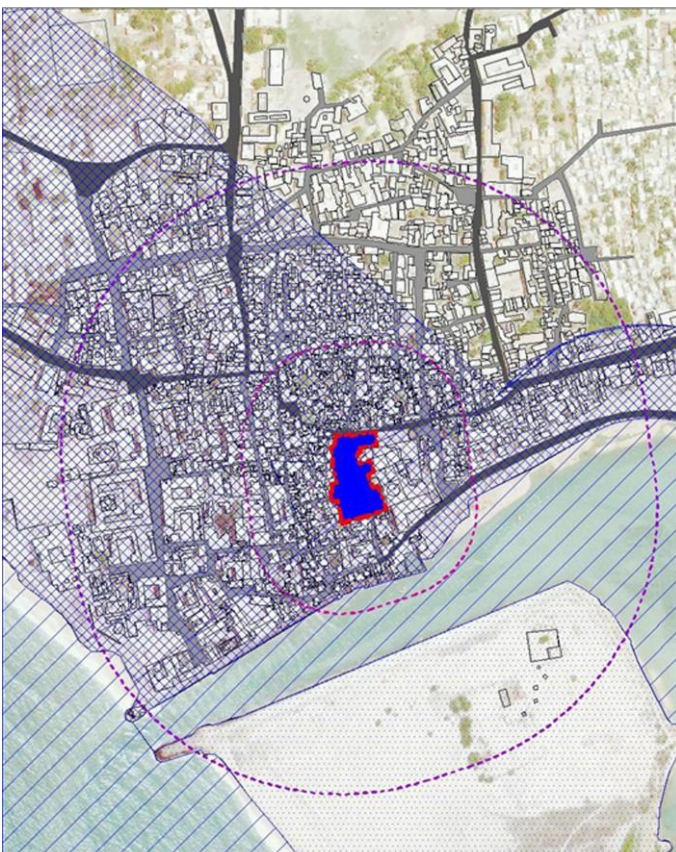




Figure ground map of Dwaraka city



<b>Area Under Coastal Regulation Zone</b>		Year: 2012	0 50 100 m	
Project Title: Heritage Bylaws for Prohibited and Regulated Areas of Dwarakadish Temple Source: Satellite Image - Google Earth; Area under CRZ, CRZ Notification 2011; Overlay: UMC Prepared for: Archeological Survey of India (ASI) Prepared by: Urban Management Centre, Ahmedabad		<b>Legend</b> Area under coastal regulation zone CRZ I CRZ II CRZ III CRZ IV		

Area Under Coastal Regulation Zone

The 'Coastal Zone Regulations' is applicable in most of the study area. As per 'Coastal Regulation Zone Notification, Ministry Of Environment and Forests – 2011', areas or structures of archaeological importance and heritage sites are declared as CRZ -I. Hence the Dwarkadhish temple complex falls under CRZ -I. The rest of the built study area to the north of Gomti River falls under CRZ-II, the Gomti River itself and the sea till 12 nautical miles from land fall under CRZ-III and the island to the south of Gomti River falls under CRZ IV. These zones are indicated in the following map.

### **Site Analysis**

#### **TOPOGRAPHY AND CONTOUR**

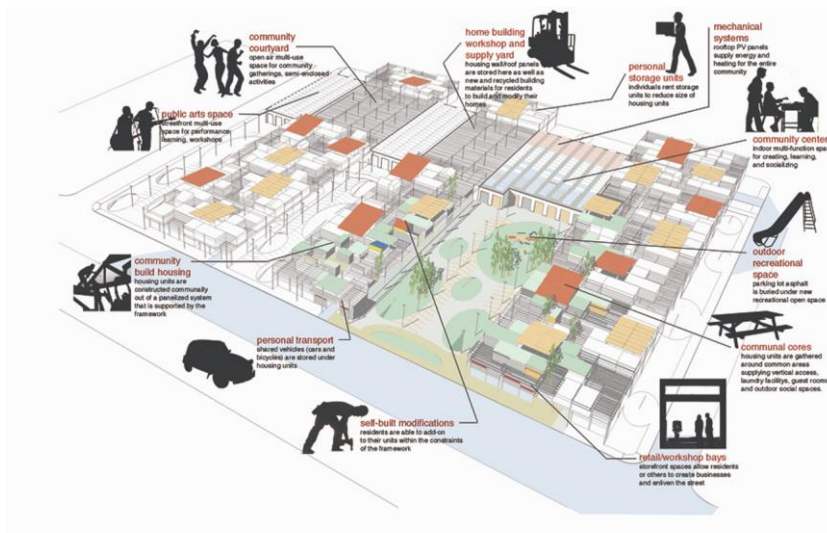
##### **Natural Features**

The entire region of Dwarka has a rock bed of calcareous sandstone. It is this stone that is used for construction of the Dwarkadhish temple complex (Pushkarbhai Gokani, 1973). This stone like said before is still used for construction in the upcoming buildings.

Dwarkadhish temple complex is built on a mound which slopes down towards the Gomti River and the sea. The contours of the study area are indicated in the map below.



## CIRCULATION



Circulation pattern of the area has also been studied to determine the quality of approach to the monument.

The circulation pattern in the study area has been discussed with respect to linkage of monument through roads, circulation in the study area, approach roads and pedestrian- vehicular movement.

## Circulation in the Study Area

National Highway (NH51) is the main access road to Dwarka and runs from inside the city though away from the regulated area. The city bus stand is also located on this road. Five roads from different locations on the highway lead to the Monument



## Skyline

As the temple is of great height it has good visibility from far away. Because of the dense fabric in the study area, the temple is not visible from the ground.



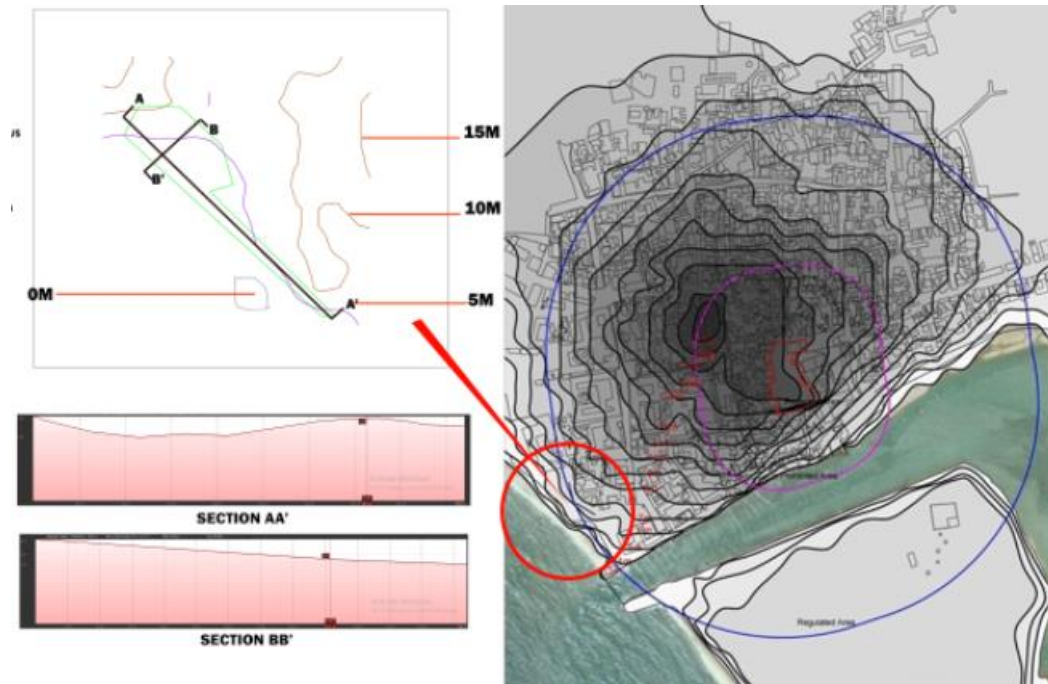
## Skyline of the study area



## Dwarkadhish Temple Visible among Other Structures in the Study Area



## View of Dwarkadhish Temple from the City



name: Dwarka topographic map, elevation, terrain.

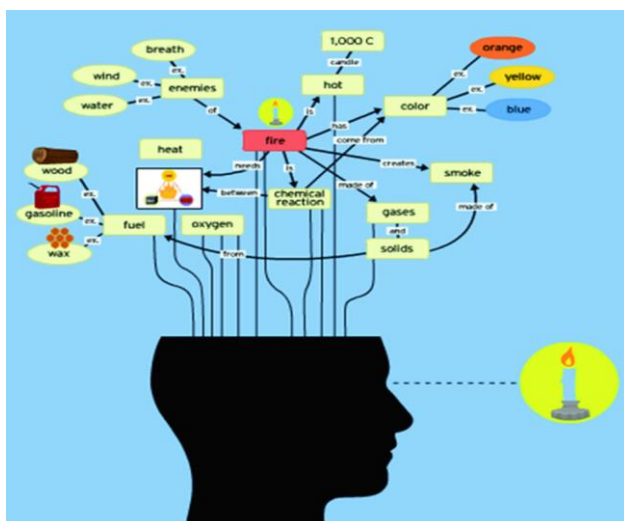
Location: Dwarka, Okhamandal Taluka, Devbhumi Dwaraka District, Gujarat, 361335, India

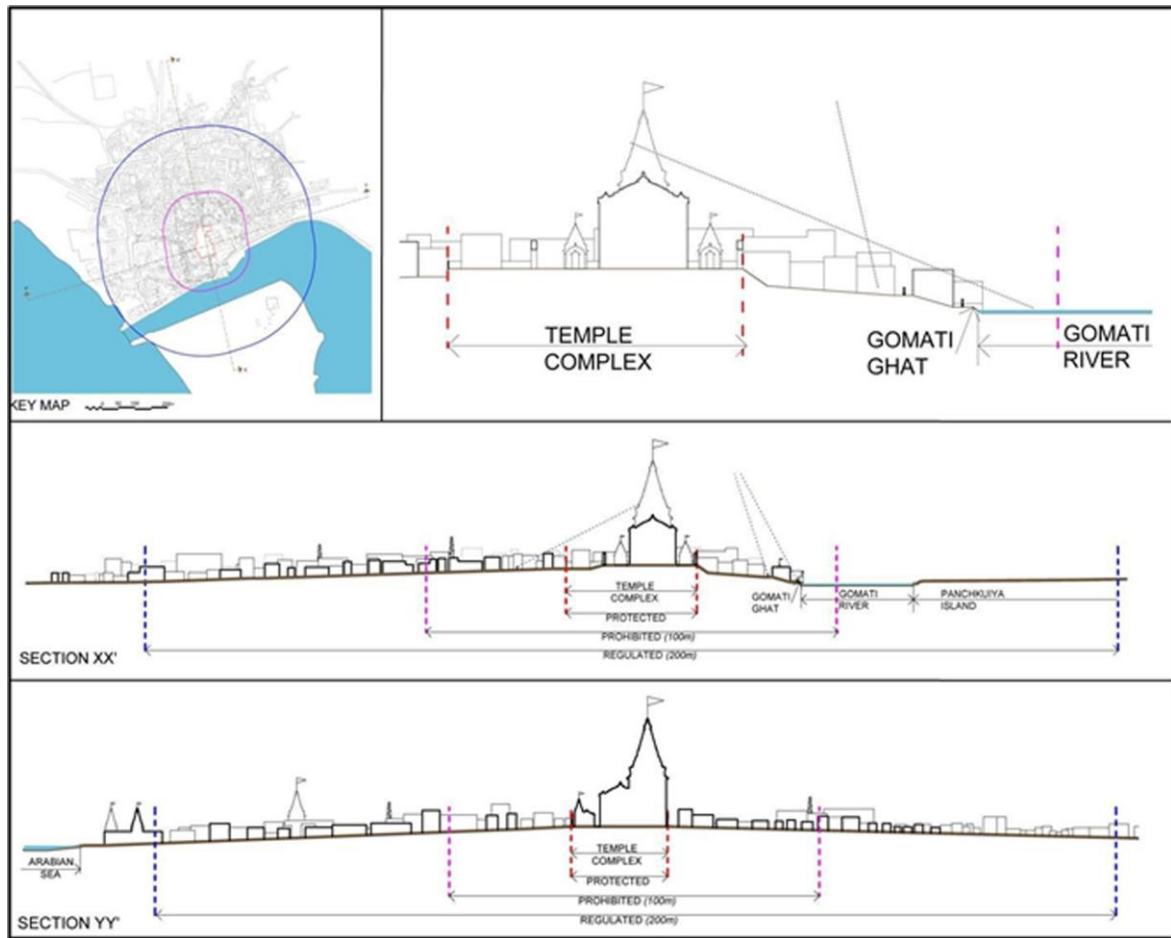
Average elevation: 5 m

Minimum elevation: -1 m

Maximum elevation: 24 m

## VISUAL CHARACTERISTICS





Temple shikharas and flags dominate the skyline. The topography of the area also plays a role in forming the skyline characteristics giving it the slope. Cell phone towers and water tanks are also dominant above the general height of the built forms. The variant roof character is also evident in the skyline.

### Visual Quality

Hoardings, signage, festival decorations, temporary sheds projecting on streets, electric wires and cable etc. along with the building façade and characteristics govern the visual quality of the study area.



Being a city of religious character, the temple and the whole city has elaborate decorations during festivals. This includes lighting, hanging toran across streets etc. After the festival is over some of the decorations like toran hinder the visual character and add to the visual clutter.



Colour coding of buildings in the study area would unify the prohibited and regulated areas. This would also enhance the visual focus of the stone Shikhara of Dwarkadhish Temple and other structures of heritage and architectural prominence.

### Assessment of Visual Quality

Issue	Action
Projections on streets reduce road width.	Regulation on allowable projections.
Temporary constructions encroaching road and open spaces.	Guidelines for temporary structures.
Improper location, size and design of hoardings.	Guidelines for proper hoarding design and location.
Cable and electric wires along the road.	Provision for laying underground infrastructure.
Cell phone towers are visual hindrance.	No cell phone towers in the prohibited area.

### Visual Quality

Hoardings, signage, festival decorations, temporary sheds projecting on streets, electric wires and cable etc. along with the building façade and characteristics govern the visual quality of the study area.

Being a city of religious character, the temple and the whole city has elaborate decorations during festivals. This includes lighting, hanging toran across streets etc.

After the festival is over some of the decorations like toran hinder the visual character and add to the visual clutter.

Issue	Action
Buildings with heritage value in the study area not listed.	Guidelines for heritage listing and renovation.
Dense built fabric with insufficient open space.	Regulation on ground coverage.
Newly built tall buildings barring the view of the temple.	Building height regulations.
Projections and installations on roof leading to incoherent skyline.	Regulation of roof projections like dish TV, water tank etc.
Insensitive façade treatment and building elements.	Façade control regulations <ul style="list-style-type: none"> <li>• Roof</li> <li>• Parapet wall</li> <li>• Balcony and projections design</li> <li>• Colour</li> <li>• Building height</li> <li>• Building material</li> </ul>

## Visibility of monument

The temple is visible from the roof tops of buildings in the study area. It is not visible from the street because of the narrow roads. Tall mobile towers hinder the view of the temple.

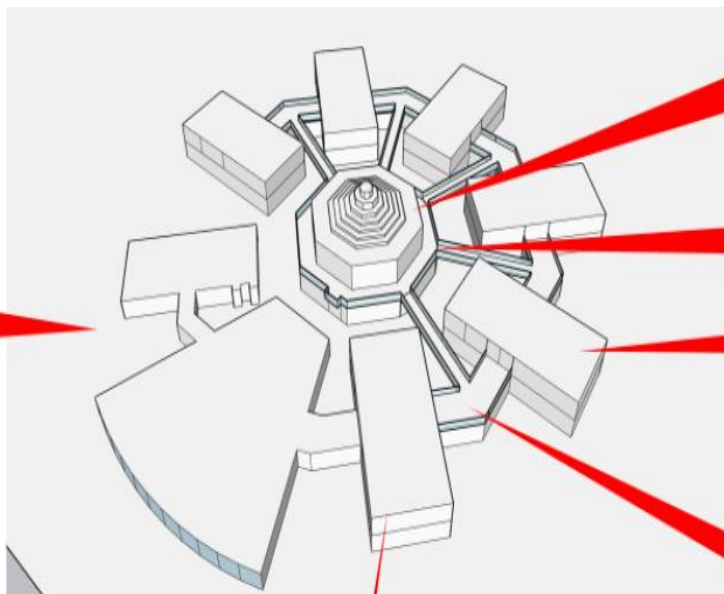
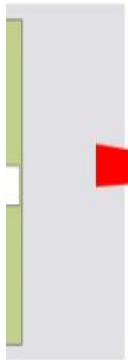
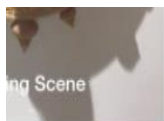
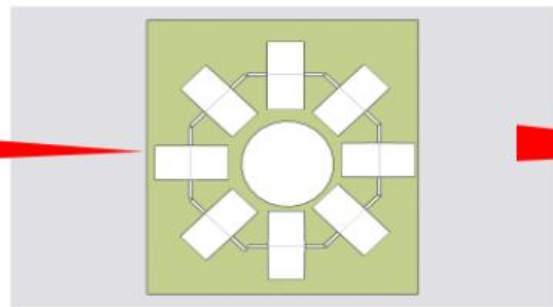
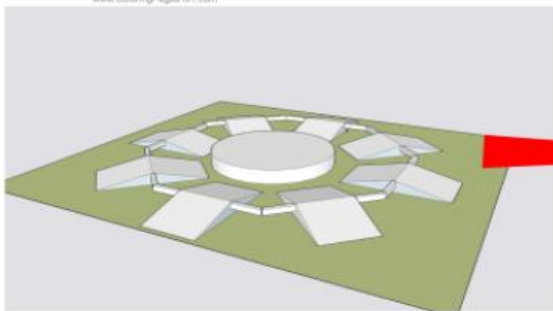


## CHAPTER 5 – ZONING AND CONCEPTUALIZATION

The Sudarshana Chakra (Sanskrit: Sudarśanacakra) is a divine discus, attributed to Vishnu in the Hindu scriptures.[1] The Sudarshana Chakra is generally portrayed on the right rear hand of the four hands of Vishnu, who also holds the Panchajanya (conch), the Kaumodaki (mace), and the Padma (lotus).

In the Rigveda, the Sudarshana Chakra is stated to be Vishnu's symbol as the wheel of time. The discus later emerged as an ayudhapurusha (an anthropomorphic form), as a fierce form of Vishnu, used for the destruction of demons. As an ayudhapurusha, the deity is known as Chakraperumal or Chakratalvar.

# Concept (Form based)



centralized museum for artefacts

open cafeteria

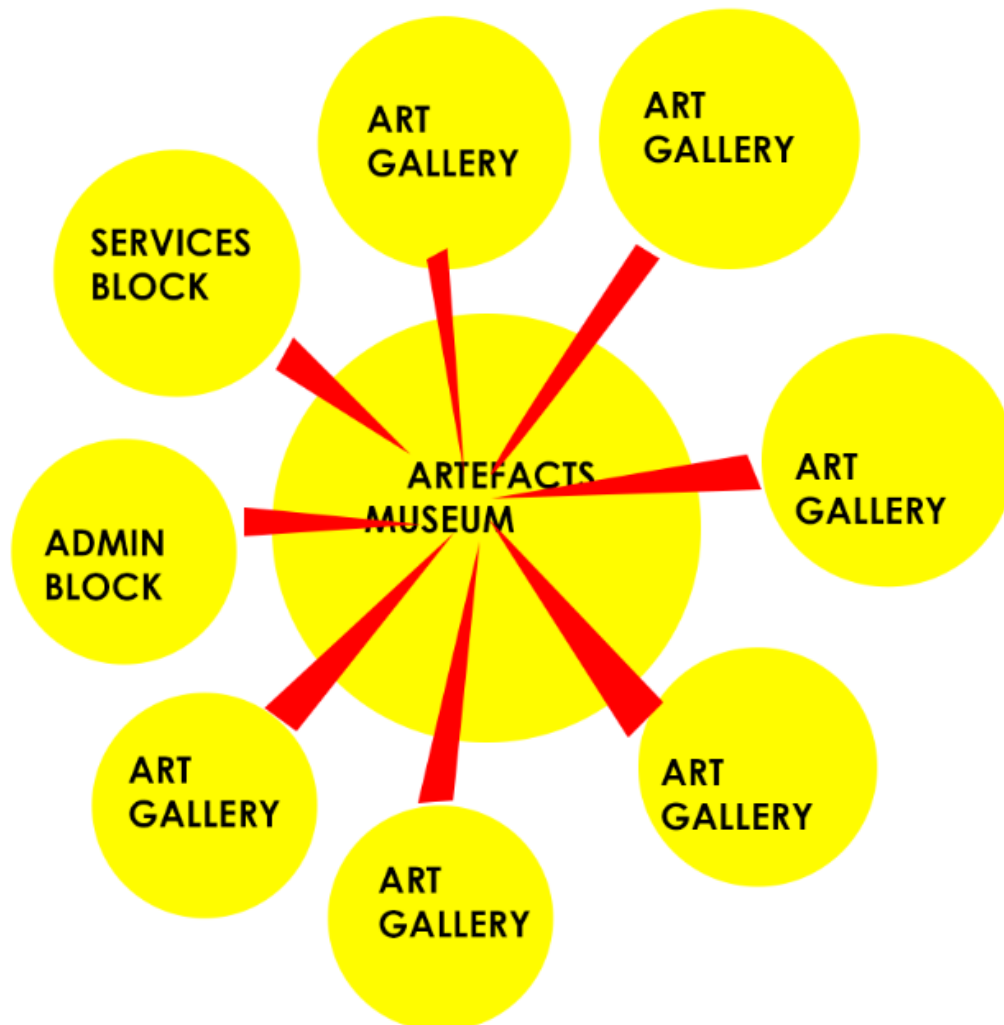
Art gallery with interactive technology blocks

Bridges connecting to centre

concept development



# Museum Zoning



Museums with interactive exhibits let their guests engage with the items and activities on display. Instead of just simply reading the information posted, visitors are able to participate actively through hands-on experience. Physical interaction makes it easier for people to be receptive to discovering and learning new ideas. Thus, interactive museums can effectively educate visitors in a fun and exciting way.



Promotes creativity

Another importance of interactive exhibits is that it promotes creativity, especially among children. Since most items on display are built to be as durable as possible, visitors can test and play with it themselves. Children won't have a difficult time following strict directions as they are allowed to experiment with the exhibits on their own. Going to an interactive museum can spark more creativity than many other activities.

## AERA STATEMENT

BUILT UP	AREA	PERCENTAGE
TOTAL AREA	29946	
GROUND COVERAGE	8162	30%
TOTAL BUILT UP AREA	11332	40%

SL NO	PROGRAMME	AREA
1	ADMIN AREA	650
2	SERVICES BLOCK	300
3	RETAILS	144
4	OAT	418
5	PARKING	1000
6	OPEN CAFÉ	613
7	RESEARCH CENTRE	755
8	STAFF WELFARE	930
9	ART GALLERY AND INTERACTIVE SPACE	4326
10	TOILETS AND STORAGE	1700
11	STAIRCASE	196
12	THEATRE	206

11032

### ADMIN AREA

SL NO	PROGRAMME	DIMENSION (m)	AREA (sqm)	QUANTITY	TOTAL AREA (sqm)	PERCENTAGE
1	HELP DESK	20 X 10	200	1	200	28.57
2	RECEPTION AND LOUNGE	20 X 10	200	1	200	28.57
3	ACCOUNT AND STORAGE		300	1	300	42.86
			700	3	700	

### RETAILS

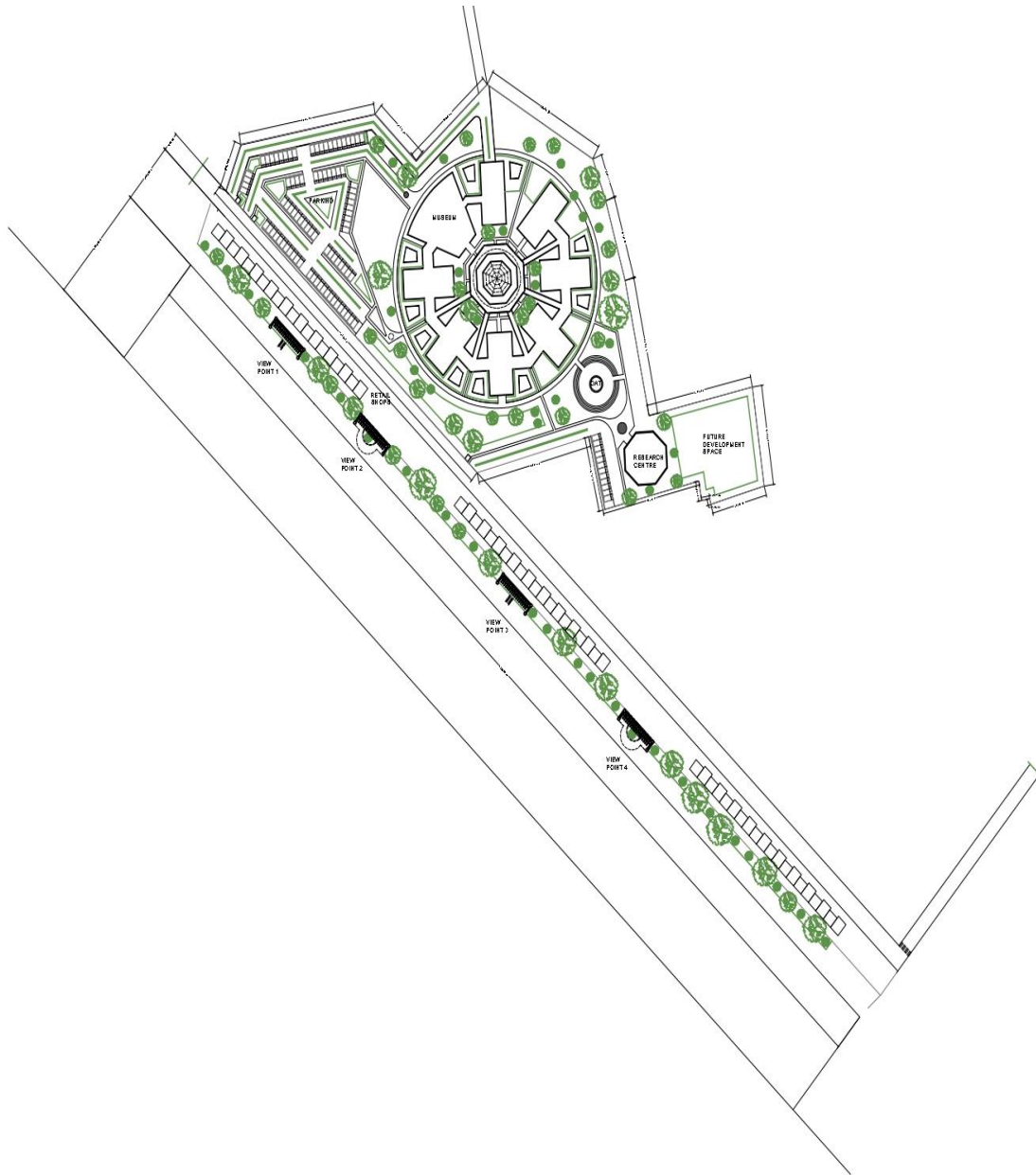
SL NO	PROGRAMME	DIMENSION (m)	AREA (sqm)	QUANTITY	TOTAL AREA (sqm)	PERCENTAGE
1	SHOP 1	7 X 4	28	3	84	62.69
2	SHOP 2	5 X 5	25	2	50	37.31
			53	5	134	

### STAFF WELFARE

SL NO	PROGRAMME	DIMENSION (m)	AREA (sqm)	QUANTITY	TOTAL AREA (sqm)	PERCENTAGE
1	STAFF BEDROOM	5 X 6	30	10	300	32.26
2	STAFF CANTEEN	20 X 15	300	1	300	32.26
3	MEETING AREA + TRAINING AREA	20 X 15	300	1	300	32.26
4	MEDICAL ROOM	5 X 6	30	1	30	3.23
			660	13	930	

TOILETS AND STORAGE						
SL NO	PROGRAMME	DIMENSION (m)	AREA (sqm)	QUANTITY	TOTAL AREA (sqm)	PERCENTAGE
1	STAFF TOILET (GROUND FLOOR)	10 X 10	100	1	100	5.88
2	TOILET 1	10 X 7.8	78	4	312	18.35
3	TOILET 2	20 X 7.8	156	1	156	9.18
4	STORAGE 1	10 X 7.8	78	4	312	18.35
5	STORAGE 2	6 X 5	30	24	720	42.35
6	STORAGE 3	4 X 10	40	1	40	2.35
7	STORAGE 4	6 X 10	60	1	60	3.53
			542	36	1700	

## CHAPTER 6 - DESIGN

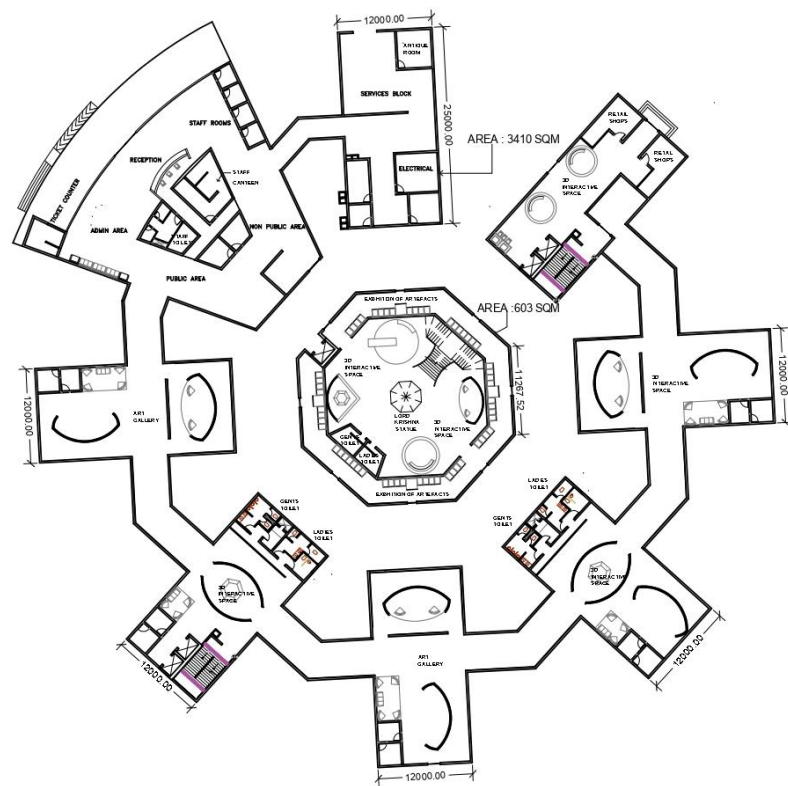


MASTERPLAN



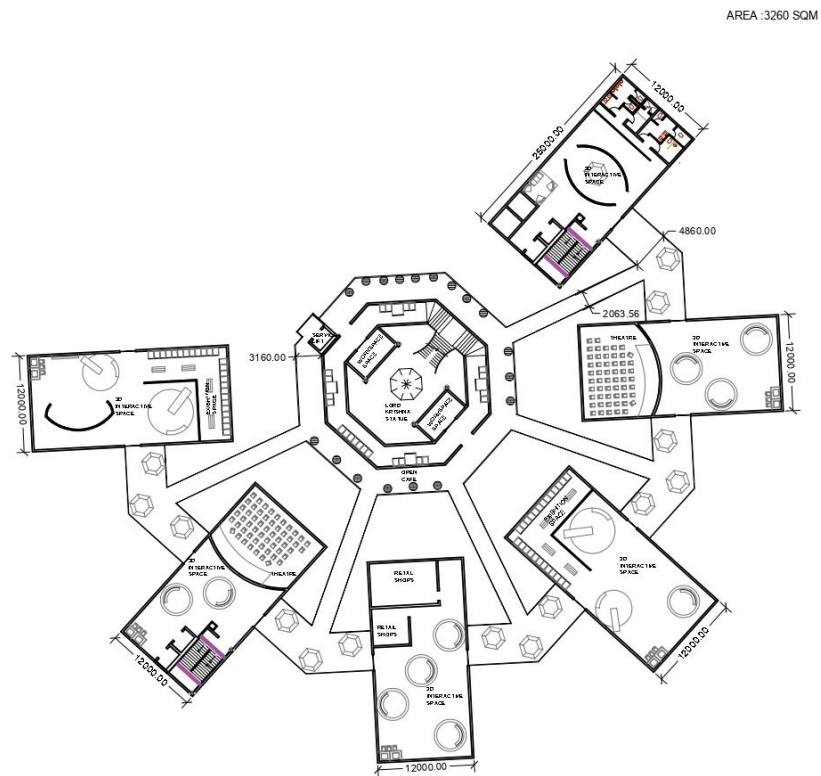
# GROUND FLOOR PLAN

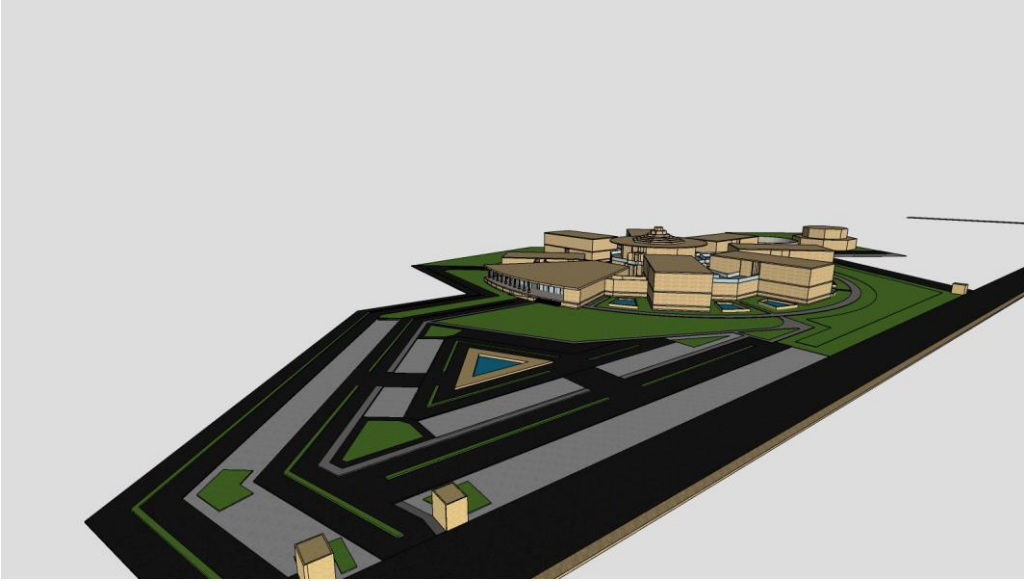
AERA – 4013 SQM



# FIRST FLOOR PLAN

AERA – 3260 SQM





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