Waterfront Landscape Development, in Case of Kanyakumari

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Abstract: With the growth of tourism, landscape development has become more feasible in scenic areas across the nation where people may unwind, play, and so on. Many cities' economic and historical importance can be attributed to the magnificent streams that flow through them. These cities' waterfronts, which are on the banks of rivers and draw residents as well as visitors to spend time there, have the potential to become the cultural and historical centres of the cities. Thus, waterfronts have emerged as the lively urban core of cities. There are different types of waterfronts like Riverfront, Lakefront and Seafront based on the source of water in the city. The creation of waterfront is considered as a better commercial idea for converting a vacant space into a thriving hub of tourist, culture, leisure, and commerce. The study concentrates on the importance and distinctiveness of Kanyakumari Beach, the need to develop its waterfront landscapes, which have natural, religious, and cultural importance, and the design and planning interventions required, which were analysed through mapping of existing usage, movement, and identification of issues that affect the beach environment to restore and showcase the natural and cultural uniqueness.

Keywords: Cultural value of Kanyakumari beach, Kanyakumari beach, Natural value tourism, Tourism value.

1. Introduction

Waterfronts are areas of land that border a body of water, typically a lake, river, or ocean. They have been a vital part of human settlement and commerce since ancient times, providing access to water for transportation, fishing, and other activities.

Waterfronts can be found in both urban and rural areas, and can vary greatly in their size and character. They may be bustling commercial ports, quiet fishing villages, or recreational areas for swimming, boating, and other water sports.

Waterfronts are often important economic centers, serving as hubs for trade and transportation. They are also popular tourist destinations, offering scenic views, cultural attractions, and recreational activities.

However, waterfronts can also be vulnerable to natural disasters such as storms, flooding, and sea level rise. In recent years, there has been a growing focus on creating resilient and sustainable waterfronts that can withstand these challenges while still providing economic and social benefits to the surrounding community.

Efforts to revitalize waterfront areas have included redevelopment projects that aim to create mixed-use developments with housing, retail, and recreational spaces. These projects have often involved public-private partnerships and community involvement to ensure that the waterfront is accessible and inclusive for all.

Overall, waterfronts are dynamic and complex spaces that play a crucial role in the economic, social, and environmental well-being of communities around the world.

2. Methodology

The research aims to find out what are the supporting elements needed for a beachfront to be developed in case of Kanyakumari Beach. For this the Historical and cultural overview of the site, Tourism value, and user analysis are studied. This includes mapping of all points of interest with natural, cultural and heritage values within the selected area and to identify areas which require conservation and recognizing areas of sustainable development. The study's conclusion outlines the required planning measures that can be taken to preserve and highlight the region's distinctive natural and cultural features and to develop a center that is sustainably and environmentally maintained.

3. Location and Significance

Kanyakumari is a coastal town located in the southernmost part of India, in the state of Tamil Nadu. It is situated at the confluence of the Arabian Sea, the Indian Ocean, and the Bay of Bengal. The town is also known by its former name, Cape Comorin.

Kanyakumari is a popular tourist destination, famous for its stunning natural beauty, cultural and historical significance, and religious importance. Some of the most notable attractions in the town include:

- *Vivekananda Rock Memorial:* A monument dedicated to the Hindu monk Swami Vivekananda, who meditated on this rock in 1892 and was inspired to spread the message of Vedanta and yoga to the Western world.
- *Thiruvalluvar Statue:* A 133-feet tall statue of the Tamil poet and philosopher Thiruvalluvar, located on a nearby rocky island.
- *Kanyakumari Beach:* A picturesque beach with

panoramic views of the sea and the town's coastline.

- *Kumari Amman Temple:* An ancient temple dedicated to the goddess Devi Kanya Kumari, which is believed to be one of the 108 Shakti Peethas in Hindu mythology.

Apart from these, Kanyakumari also boasts of a rich history and culture, with several museums, art galleries, and cultural centers showcasing the town's heritage. The town is also a popular destination for pilgrims, as it is considered a holy site in Hinduism, Christianity, and Islam.

A. Historical Evidence

There are several references to Kanyakumari in ancient books and texts.

1. Sangam literature: Kanyakumari is mentioned in the Tamil Sangam literature, which dates back to the 3rd century BCE. The Sangam poets refer to the town as Kanyakumari or Kumari Kandam. The Tamil epic Silappatikaram, written in the 2nd century CE, describes the beauty of Kanyakumari and its importance as a pilgrimage site.
2. Mahabharata: Kanyakumari is mentioned in the Mahabharata, an ancient Indian epic that dates back to the 8th or 9th century BCE. In the Mahabharata, Kanyakumari is referred to as the southernmost point of the Indian subcontinent.
3. Ramayana: Kanyakumari is also mentioned in the Ramayana, an ancient Indian epic that dates back to the 5th century BCE. In the Ramayana, Lord Rama is said to have visited Kanyakumari during his journey to Lanka to rescue his wife Sita.
4. Periplus of the Erythraean Sea: The Periplus of the Erythraean Sea, a Greek manuscript from the 1st century CE, describes Kanyakumari as a bustling port and an important center of trade.
5. Marco Polo: The famous Italian traveller Marco Polo visited Kanyakumari in the 13th century and wrote about the town's rich culture and the grand temple dedicated to the goddess Kumari Amman.

Overall, there is a wealth of historical evidence in ancient books and texts that demonstrate the significance of Kanyakumari in ancient times.

B. Mythological Origin of Kanyakumari

According to Hindu mythology, the district gets its name from the goddess Kanyakumari (also known as Devi Kumari), who is believed to be an incarnation of the Hindu goddess Parvati.

Legend has it that the goddess Kanyakumari was supposed to marry Lord Shiva, but the wedding was called off at the last moment due to a misunderstanding. Devastated, the goddess took a vow of celibacy and decided to stay at the spot where the wedding was supposed to take place. It is believed that the rock formation at Kanyakumari represents the goddess, and a temple dedicated to her stands at the site.

Another legend says that Kanyakumari was once a beautiful princess who was cursed to turn into a stone statue by a sage

named Narada. The curse was lifted when Lord Shiva promised to marry her, but he failed to show up on the wedding day. As a result, the princess jumped into the sea and disappeared, but it is said that her spirit still resides at Kanyakumari.

These myths have contributed to the cultural significance of Kanyakumari and the establishment of various Hindu temples and shrines in the district. Today, Kanyakumari is a popular pilgrimage site and a popular tourist destination for its natural beauty and cultural heritage
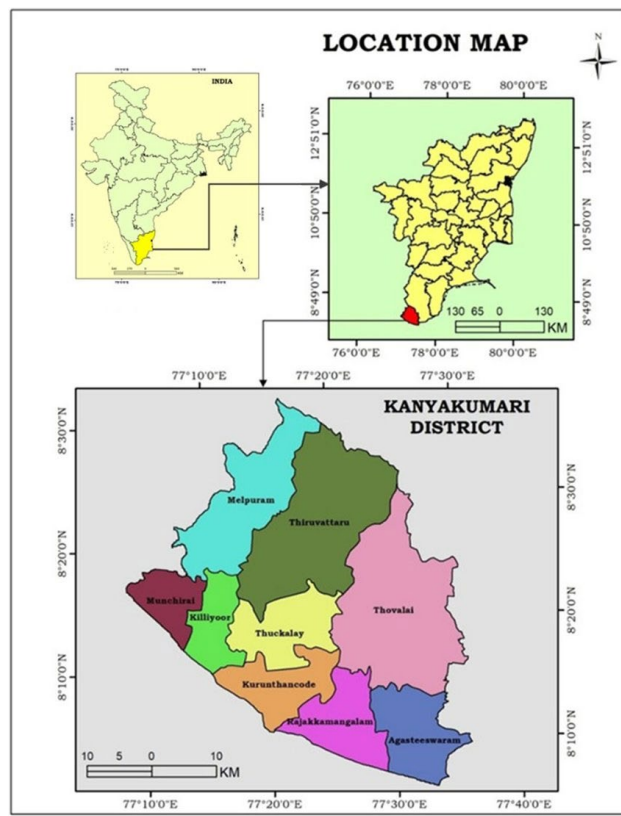

Fig. 1. Location map of Kanyakumari
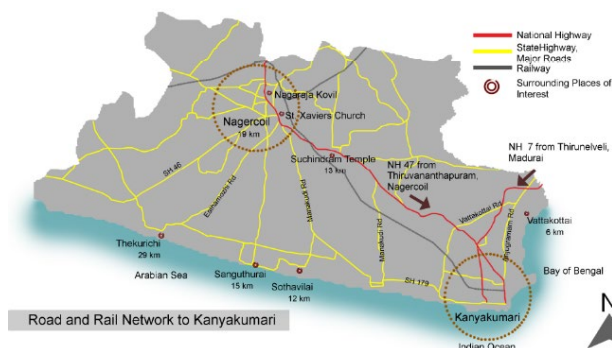
C. Linkages

Fig. 2. Connectivity map of Kanyakumari

Kanyakumari is well connected by National Highways 7 and 47 and broad-gauge railway line. Nagercoil, the district headquarter town of Kanyakumari district, is the nearest and major town located 18 km away in north-west and the capital city of neighboring Kerala State, Thiruvananthapuram is 87 km away in the north-west direction.

NH 7 and NH 47 connects to Thiruvananthapuram and Tirunelveli, Thoothukudi respectively.

Nearest Railway Station: Kanyakumari Railway Station 5

Nearest Airports: Thiruvananthapuram 99 Kms, Thoothukudi 133 Kms.

D. Climate

Tropical Hot Humid Climate
Annual Rainfall-1400-1800mm

E. Social Structure

Table 1
Social structure of Kanyakumari

Census Year	Population	Decennial Growth	Percentage Variation
1951	5218	-	-
1961	8499	+3271	62.69
1971	11211	+2722	32.06
1981	14087	+2876	25.65
1991	17225	+3138	22.27
2001	19678	+2453	14.25

Year	Total Population	Male	Female
2011	22453	11272	11181

F. Worker's Profile

The Economic base of the town is mainly obtained from the fishing activities (primary) and tourism and its related activities (tertiary).

The participation rate during 1971 and 1981 has been more or less constant and it has marginally increased to 30% in 1991.

G. Craft Tradition in Kanyakumari

Sea shell craft has been a traditional art form in Kanyakumari for generations. The artisans of the region use various types of shells, such as cowrie, conch, and clam, to create a wide range of decorative items and household objects. These include lamps, jewellery, wall hangings, trays, and even mirrors. One of the most popular sea shell crafts in Kanyakumari is the creation of lampshades. The artisans use small pieces of shells to create intricate patterns and designs, which are then glued onto a base made of wood or cane. These lampshades are not only beautiful but also functional, as they cast a soft and warm light that creates a soothing ambiance in any room. Another popular sea shell craft in Kanyakumari is the creation of jewellery. The artisans use a combination of shells and other materials, such as beads and thread, to create unique and colourful pieces of jewellery. These pieces are often sold to tourists as souvenirs, but they are also worn by locals during festivals and other special occasions.

Sea shell craft in Kanyakumari is not just a means of livelihood for the artisans, but also a way to preserve their cultural heritage. By creating these beautiful and intricate objects, they are keeping alive a tradition that has been passed down through generations

These are just a few of the many traditional crafts that can be found in Kanyakumari. Each craft tradition is unique and reflects the rich cultural heritage of the region

H. Tourism in Kanyakumari

1) Domestic Tourism

The major Indian visitor influx to Kanyakumari is Pilgrimage and recreation. The Kumari Amman Temple, Vivekananda Rock and Guganataswami Temple attract pilgrims.

These temples also are important places within the Sabarimala Pilgrim Route.

2) International Tourism

Kanyakumari is an important international tourism destination because of its unique natural features and the iconic Thiruvalluvar Statue.

Its unique cultural mix of Kerala and Tamilnadu adds to its value.

International tourists peak during the months of December, January, May, June, July

3) Tourist Season

The tourist season is between December-February and March-May.

Pilgrimage Tourism is predominant during December-February and Leisure tourism is predominant from March-May as it coincides with summer vacation.

Due to the high influx of international visitors throughout the year in the recent years it is now considered to be a tourism hotspot all year round.
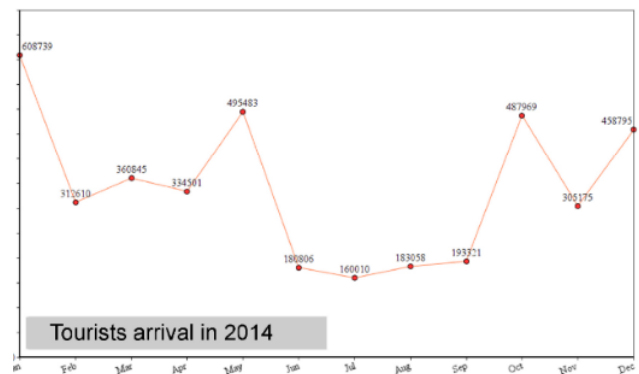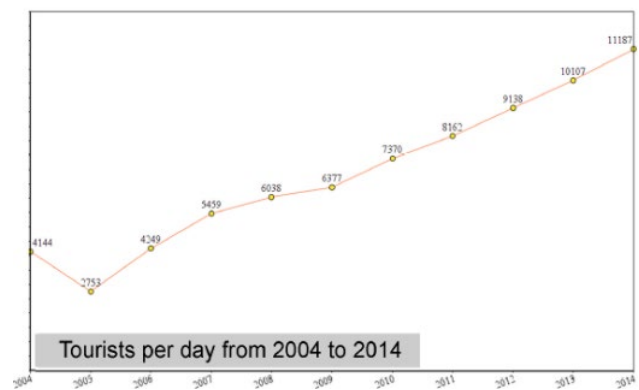

Fig. 3. Tourist's arrival in 2014

Fig. 4. Tourists per day from 2004-2014

4. Study Area

The study area comes under Agastheeswarm Taluk and covers around 260 acres. This area includes most of the tourist destinations in Kanyakumari such as Kanya Devi Temple,

Gandhi Mandapam, Kamarajar Memorial,

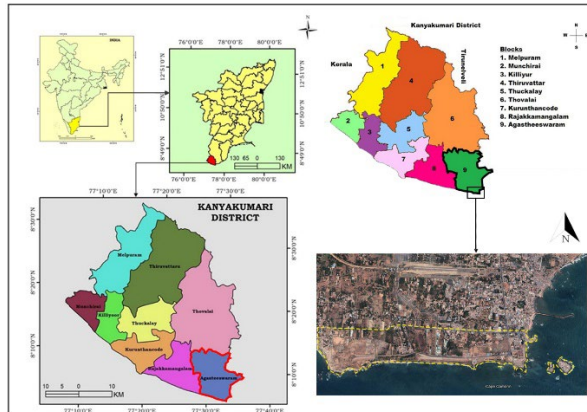Tiruvalluvar Statue, Vivekananda rock Memorial, Sunrise and Sunset points.

Fig. 5. Study area

A. Values Associated with the Study Area
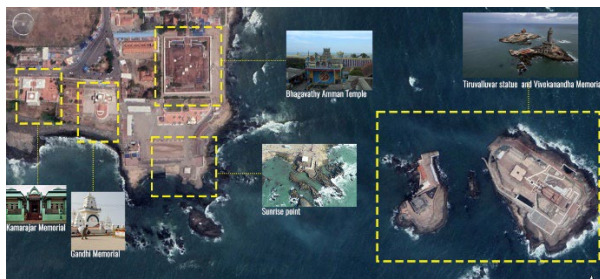
1) Tourism Value

Fig. 6. Zone with highest tourism value

These are some of the major places of interest which attracts most of the tourists including international tourists to this spot.

B. Cultural Value

Religious rituals, traditions and festivals associated with the temple add on to the cultural heritage value. The festivals related to the temple may include,

1) *Chitra Poornima Festival:* on the Full moon day in May.
2) *Navaratri festival:* The 9-day festival in (September–October).
3) *Vaisakha festival:* 10-day festival in May–June culminating by a Thoni Ezhunellathu in May–June. During this festival, the idol will be taken in procession both in the morning and evening, during Aaraatu the eastern door is opened. On the ninth day, the Thoni Ezhunellathu takes place. The idol will be taken around the water on the western part in a boat.
4) *Kalabham festival:* The idol is smeared in Sandal paste on the last Friday of the month of Karkidaka or Aadi, in July–August.
5) *Crafts, Traditional Occupations:* The crafts and traditional occupations associated with this place also add on to the cultural layers. Certains unique crafts like lace making have historic and economic importance

1) Historic Value

Thiruvalluvar statue, Vivekananda Rock, Gandhi Mandapam, Kamarajar Memorial are sites associated with various leaders and form the historic layer

2) Natural Value

The confluence of three seas, the seashore, Sunrise and Sunset form the main Natural landscape of this place.

3) Zonation of the Study Area

Fig. 7. Map showing the various zones in the study area

The entire study area has been divided into four different zones. The activities in each zone are analysed and present conditions are identified.
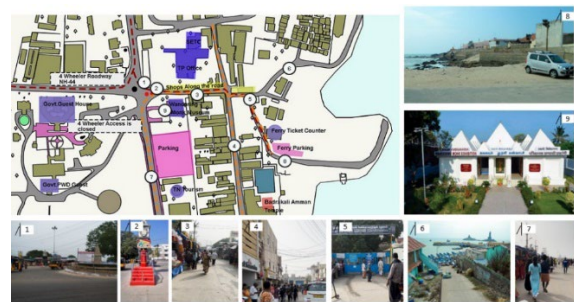
4) Zone-1

Fig. 8. Zone-1, Active Time Period-4AM to 10PM

The beach road starts from this zone. The important streets in this zone include the Sannathi Street which is a 6.5m road which are completely lined with permanent and seasonal shops, and lodges. The existing railing along the pedestrian way is bent by the seasonal shops and the awnings of the permanent shops are extended to the pavement making the entire street congested. The Temple which is intended to be a focal point from the start of the Sannathi Street is completely hidden due to a greater number of seasonal shops. The Sannathi Street which is intended to be a pedestrianised zone is open to vehicular traffic making the street heavily congested and the pleasant user experience is lost. This street is pedestrianised only during the festival season of the temple. The next important street is the way to the ferry service which attracts most of the tourists moving to the Tiruvalluvar statue and the Vivekananda Rock Memorial with queue extending till the National highway. The third major street is the primary way to the sunrise point, Gandhi Memorial and the Kamarajar Mani Mandapam with seasonal shops lining along both the sides. Along the eastern side of the street, a museum, a parking lot (2665sq.m) and Tourism department can be found. The carrying capacity of this street exceeds during the festival seasons and during the summer months.

5) Zone-2

This zone carries the major tourism and pilgrimage spots and is the destination point of the zone-1. The parks which were constructed later were Triangular Park, Tsunami Memorial Park, and a park adjacent to the Kamarajar Mani Mandapam. The triangular park is not under use and is completely surrounded by two-wheeler parking and the park adjacent to the Kamarajar Memorial is not maintained properly. The zone behind the 16 pillar mandapam is congested with improper arrangement of seasonal shops and toilets obstructing the sea view and the OAT provided is partially damaged.
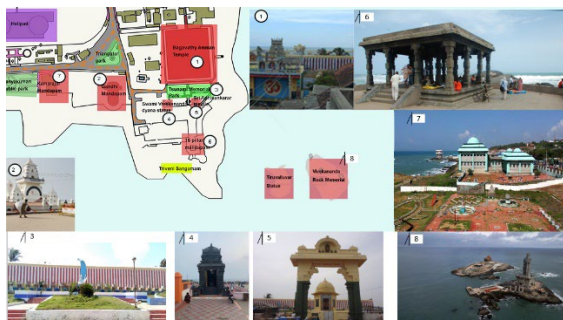

Fig. 9. Zone-2

6) Zone-3

This zone (access no. 2 to the site) which is the transition between the sunrise and sunset points is majorly used as a relaxing zone where people dine and shop around. This zone is moderately crowded with seasonal shops. Parking on the seaward side and seasonal shops obstructs the sea view.

Fig. 10. Zone-3, Active Time Period-10AM to 10PM

7) Zone-4

Fig. 11. Zone-4, Active time-4PM to 8PM

This zone is primarily used for sunset experience with only limited temporary stalls. The scenic beauty of the sea can be experienced at this zone with no obstruction. Seating spaces are limited at this zone. Minimal lighting at this zone makes it unsafe and less usage of this zone.

5. Coastal Regulation Guidelines

The study area comes under category-2.

Category-2:

The area that have already been developed up to or the shoreline. For this purpose, ' Developed Area' is referred to as that area within the municipal limits or in other legally designated urban areas which is already substantially built up and which has been provided with drainage and approach roads and other infrastructural facilities, such as water supply and sewerage mains.

Regulations:

    a) Buildings shall be permitted neither on the seaward side of the existing road (or roads proposed in the approved Coastal Zone Plane of the area) nor on the seaward side of the existing and proposed road. Existing authorized structures shall be subject to the existing local Town and Country Planning regulations including the existing normsof FSI/FAR.

    b) Reconstruction of the authorized building to be permitted subject to the existing FSI/FAR norms and without change in the existing use.

    c) The design and construction of buildings shall be consistent with the surrounding landscape and architectural style.
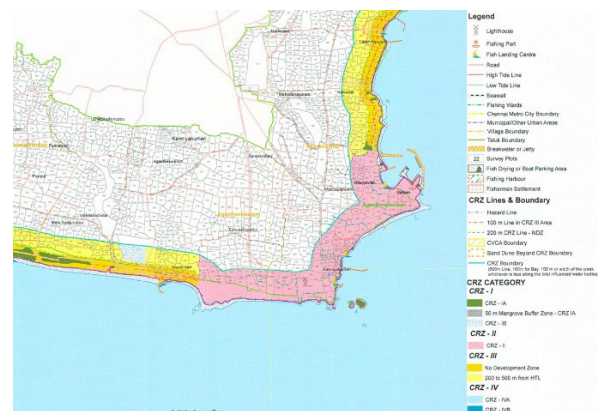

Fig. 12. CRZ Category of the study area

6. Natural Features of the Study Area

Fig. 13. Natural features

7. Design Considerations

A. Aboriginal Cultural Heritage

    1. Acknowledge and protect Aboriginal heritage places and values (Memorials and the monuments) in a

culturally appropriate manner.

2. Enhancement of Sannathi Street and the way to the holy dip area.
3. Replicating the elements of the temple to create a sense of place

B. *Geology*

1. Make use of materials that complement the geology and substrate of the site and its surroundings.
2. Position the development to cause the least amount of soil and plant disturbance. Limit cut and fill.
3. Employ methods that preserve the natural slope. Reduce disturbance at fossil and geomorphologically important sites.

C. *Morphology*

1. Preserve and accentuate the coastline's angular shape, in particular the long, horizontal banding created by the vegetation.
2. Steer clear of regions with breaches in the vegetation's canopy.
3. Use the site's morphology to choose viewpoints and where to put resting spots in regions with shade.

D. *Vegetation*

1. Promote broad native species replanting and natural regeneration.
2. When replanting, employ local native species whenever possible and reinstate the natural hierarchy of trees, shrubs, and groundcovers.
3. Create plantings to direct access and movement (or use existing plantings).

E. *Climatic Conditions*

1. Manage wind and solar exposure through consideration of planting vegetation on the windward side.

F. *Views*

1. Increase possibilities for the general people to enjoy beautiful natural aspects
2. Maintain current views of the coast or of the water.
3. Improve and frame current views of the coast.

G. *Local Character and Sense of Place*

1. Take into account the unique natural, social, and cultural characteristics that contribute to a place's unique character. (Geology, ecology and architecture).
2. Design elements that complement and mix with the local character and scenery.
3. Refrain from using stark contrasts in design, scale, and shape.
4. Steer clear of visual prominence in highly trafficked areas.
5. Local histories and narratives can be reflected in the landscape's features.
6. In addition to lining up craft stores, the local craft tradition needs to be strengthened by incorporating landscape elements that honour regional craft

traditions.

H. *Heritage*

1. Reflect local histories and narrative.

I. *Public Access*

1. Except where access control is the primary goal, do not restrict public access to and along the beach.
2. Take alternate routes to avoid hazardous coastal areas and environmentally sensitive locations.
3. Assure that access safeguards cultural and historical values.
4. Groups of structures and infrastructure should be served by a single access point to the seashore whenever it is practical. (Car parks, etc).
5. Ensure that traffic flows freely to, from, and through the site by making sure that bicycle, pedestrian, and vehicle paths are free from obstacle and conflict.
6. Take into account the demands of individuals with various physical capacities or degrees of competence.

J. *Sustainability*

1. Use native plants: Native plants are adapted to the local climate and soil conditions, which makes them more resilient to weather events and requires less maintenance. They also provide habitat for local wildlife.
2. Consider erosion control: Coastal areas are prone to erosion, which can lead to loss of land and habitat. Consider using erosion control measures such as planting vegetation or installing retaining walls.
3. Use permeable paving: Permeable paving allows rainwater to soak into the ground, reducing runoff and erosion.
4. Minimize hardscape: Minimizing the use of hardscape such as concrete and asphalt can help reduce the heat island effect and allow for better stormwater management
5. Use sustainable materials: Choose materials that are environmentally friendly, such as recycled or repurposed materials, and avoid materials that have negative environmental impacts, such as plastics.
6. Consider the long-term maintenance needs: Design the landscape to minimize maintenance requirements, such as choosing low-maintenance plants and using mulch to reduce weed growth.
7. Maximize biodiversity: Incorporate a variety of plants, trees, and other vegetation to create a diverse and thriving ecosystem that supports local wildlife.
8. Consider the energy efficiency of the landscape: Use trees and other vegetation to provide shade and reduce the need for air conditioning in the summer, and use windbreaks to reduce energy needs in the winter

8. Conclusion

The Ocean in itself (confluence of three seas), Thiruvalluvar statue, kamarajar Manimandapam, Gandhi mandapam attracts

more tourists to this beach. Planning solutions must be developed for the problem of car parking which directly obstructs the sea view This will happen by relocating the parking offshore and completely pedestrianizing the entire stretch. All obstacles that block the vision should be removed from the shoreline whether they are toilets, or other built-up parks. The necessary coordination elements should be provided for the requirements of the recreational activity. Design changes should be made to pedestrian pathways, public spaces, and the amount of vegetation. A suitable plan should be created to create a network of pedestrian walkways that connects the recreation areas with views of the sea to one another.

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