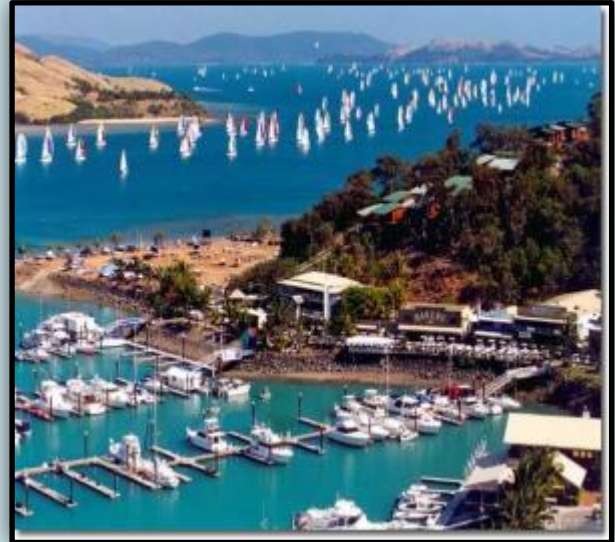


# DEVELOPMENT OF MARINA IN A&N ISLANDS ON PPP BASIS

## FEASIBILITY STUDY



**MAY 2010**

*\*Images for illustrative purposes only*

**DIRECTORATE OF TOURISM,  
ANDAMAN & NICOBAR ADMINISTRATION**

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## EXECUTIVE SUMMARY

Andaman & Nicobar Islands have the potential to become one of the most exotic and high-end holiday destinations in the world. With its pristine clear waters, sandy beaches, coral life in shallow areas, the place is a perfect vacation spot, with immense capacity for adventure sports and eco-tourism. Ministry of Tourism, Government of India has recognized this latent potential of A&N, and plan to develop the place as a high-end tourism destination. The Andaman & Nicobar Administration is taking many steps for rapid development of the Union Territory, and with the same objective, it has decided to develop a Marina with 50 berths in A&N. The Administration has decided to undertake the project on Public Private Partnership (PPP) basis and Feedback Ventures has been appointed as the Consultants for the same.

The project has been envisaged to be a one stop leisure tourism destination. The project has been carefully configured such that the needs of sailors (yacht) are met and a complete luxury experience is available to them. The following are key points about the project:

- The project includes development of a 50 berth marina, marina servicing facilities and accommodation of atleast 30 rooms.
- The burgeoning high income group in India has increased the prospects of leisure tourism industry in India manifold.
- This being one of the first Marina projects in India, holds a lot of significance in deciding the future growth of marina in India.
- The project is entitled to receive a grant of maximum Rs 7.5 Crores for marina development, subject to the conditions which are detailed out in [Chapter 5](#) of this report.
- The project site is located at Viper Island, an island to the west of Port Blair. Around 5 acres of land area and 551 ft X 426 ft of water area has been earmarked for this project
- This report includes a brief on the rationale behind site selection and indicative project plan to determine an estimate of project parameters, cost and time implications and role required to be played by the private player and A&N Administration for successful execution of the project
- Since the project has been structured as a Design, Build, Operate and Transfer (DBOT) project, the private operator shall build a strategy for the implementation and competitive operation of the project

# CHAPTER 1 - INTRODUCTION

## 1.1 PROJECT BACKGROUND

Andaman & Nicobar Islands, due to its natural beauty and positioning carries immense potential for tourism. Andaman & Nicobar Administration (A&N Administration), with an objective of boosting tourism in the A&N islands, has decided to develop a fully serviced 50 berth marina with an accommodation facility of a minimum capacity of 30 rooms. This is one of the key projects that have been launched by the Administration with a view to prepare the island in terms of infrastructure to handle high end tourism. The Administration is also in the process of charting 'Tourism Policy for Andaman & Nicobar Islands', for organized tourism infrastructure development in the Union Territory. The Administration has identified Public Private Partnership model as an effective way for project realization.

A&N Administration has appointed Feedback Ventures Pvt. Ltd. for providing transaction advisory services for development of the Project on PPP Model. Building a marina in Andaman & Nicobar shall not only increase tourism activity in A&N, but it shall place Port Blair on the International Circuit of Sailing Destinations.

## 1.2 ANDAMAN & NICOBAR ISLANDS

Andaman & Nicobar Islands (A&N Islands) is an archipelago of 572 islands, located between the latitudes 6° to 14° North and longitudes 92° to 94° East. The extreme North point of the group of Islands falls in 13° 34' 3" N while the extreme South Point of the Nicobars is 6° 45' N. Situated in the Bay of Bengal, this group of 572 islands lies 193 km away from Cape Negrais in Myanmar, 1255 km from Calcutta, and 1190 km from Chennai. As a Union Territory, the Andaman and Nicobar Islands is nominally under the direct control of the Indian Head of State. In practice, the position of Lt. Governor is appointed to directly administer the territory. Port Blair is the Head-Quarters of the Administration, and is situated by sea 780 miles from Calcutta and 740 miles from Chennai.

### 1.2.1 IMPORTANCE

Andaman & Nicobar Islands is unique and recognized, not only for natural exquisiteness, but its significance is much greater and in diverse aspects.

#### ECOLOGICAL

A&N Islands, often referred to as 'Tropical Paradise', is a place rich with ecological diversity. A&N is the only place in India where exquisite coral reefs are found. It also has a vast forest resource base with 7,171 sq km of the total area of island covered by forests. A large variety of timber is found in the Andaman group of islands. The Islands have reported the occurrence of diatomaceous earth, gold, limestone, nickel, selenite and sulphur. Besides, the Islands boasts of being the home to 2500 species of flowering plants, 5100 species of animals, and 179 species of corals.

#### HISTORICAL

A&N islands are of great historical significance because Britishers used it as a penal colony for freedom fighters at the time of their rule in India. The British established their first colony in the Andaman and Nicobar Islands in 1789, which was abandoned in 1796. The British finally annexed the islands in the 19th century adding them to their empire. The Cellular Jail, in Port Blair, forms a major tourist attraction, both domestic and international.

### **1.2.2 VEGETATION**

The vegetation of Andamans is an almost unbroken tropical forest, consisting of two clearly marked divisions – the littoral and non-littoral, the former being the more valuable economically. The sandstone ledges and the fringing coral reefs around the coasts are wonderfully free from marine vegetation, and seaweeds are scarce. Neil Island, an island in the A&N group is popularly known as the ‘Vegetable Bowl of Andamans’, due to its rich supply of vegetables and food items.

### **1.2.3 DEMOGRAPHIC AND ANTHROPOLOGICAL DETAILS**

The total population of the island is 356,265 (according to the 2001 census). Of the total 572 islands, only 36 islands are inhabited. The major languages spoken in the Andamans in numerical order are Bengali, Hindi, Tamil, Nicobarese and Telugu. Other languages include Malayalam and English. The majority of Andamans are Hindus, but there are significant Muslims and Christian and Sikh minorities. The population density is 34 people per sq. km and the literacy rate is 74 %.

The main aboriginal group in the Andamans is the Onges, who live on Little Andaman. Onges, like other Andamanese tribes, are of Negrito origin. In the Nicobars, the only aboriginals are the Shompens, who are averse to any contact with the outside world. The Nicobarese, the largest group, seem to be of mixed Burmese, Malay, Mon and Shan origin.

### **1.2.4 OCCUPATION**

Over 90% of the A&N territory is under forest cover which forms the major source of income. About 50 % of the forest has been set aside as Tribal Reserves, National Parks and Wildlife Sanctuaries. Rich luxuriant mangroves occupy nearly 11.5 % of the territory. More than 150 plant and animal species are rife. Coconut, which grows in abundance, is the main item of trade and diet of the locals. The Union Territory has 1,374 registered small scale, village and handicrafts units. The number of export-oriented units is also increasing in the agro-processing sectors. Andaman and Nicobar Integrated Development Corporation has made its presence felt in civil supplies, tourism, fisheries, industries, and industrial financing activities. Around 48,675 hectares of land is under cultivation here.

The main food crop here is Paddy, whereas coconut and areca nut are the main cash crops of the Nicobar group of islands. A variety of fruits such as mango, sapota, orange, banana, papaya, pineapple and some root crops are also grown on the islands.

### **1.2.5 TOURISM POTENTIAL**

With respect to tourism, A&N islands carry immense potential to become an exotic and high-end holiday destination for eco-tourism and adventure tourism. The clear waters and white sandy beaches make Andamans a perfect tropical place to stop. The Andamans are surrounded by shallow coral reefs and a

clear sea. It is an ideal location for a relaxed holiday. Though, A&N has many out of bound and protected areas, deserted beaches, exquisite coral life and clear waters offer delightful opportunities making it an ideal location for a relaxed holiday.

### **1.2.6 WEATHER CONDITIONS**

The climate remains tropical throughout the year with temperatures varying between 24°C and 35°C. Due to the incessant sea breeze; Andamans has very humid weather. The southwest monsoon touches the Indian soil first in the Andamans and then proceeds towards the mainland. From mid-May to October, heavy rains flush the islands. In November and December less severe rains arrive with the northeast monsoon. The best time to visit these islands is between mid November and April.

### **1.3 PROJECT PLAN**

The project envisages the development of marina, marina servicing facilities along with an accommodation (of atleast 30 rooms) in the islands in the Public Private Partnership (PPP) mode.

The Project shall be developed as a complete leisure tourism destination. The Marina shall have 50 berths with provision to harbor yachts of different lengths. An indicative mix of berthing is indicated in the Chapter 4. An accommodation facility of 30 rooms, power, fuelling stations, club house etc. shall be a part of the project.

## CHAPTER 2 – MARKET ASSESSMENT

This section presents an assessment of market factors which will be significant for the project. The factors governing market demand and market supply of similar facilities and competitors analysis has been included in this chapter.

### 2.1 PROJECTED MARINA SUPPLY IN INDIA

Ministry of Tourism, Government of India, with tourism development high on its priority charts, has emphasized on development of Water Tourism activities in many cities. With respect to development of Water Sports, Kochi has been the front runner. The city has not only launched a Marina Development Program but also has been the first Indian city to host world's premier sailing race – Volvo Ocean Race 2008 - 2009. Besides Kochi, 6 other Indian cities are in the process of launching Marina projects. The following is a brief review of upcoming Marinas in India.

S No.	Location	Projected Capacity till 2011 (Berths)	Projected Capacity Augmentation between 2012 – 2013 (Berths)	Remarks
1	Kochi	50		Private Partner already selected; Development under the process
2	A&N Islands	50		Private Partner Selection under the process
3	Goa	300		Developer under the process of taking clearances
4	Mumbai	20	30	Marina with 30 berths awaiting approval from authorities
5	Chennai	50	ND	'Chennai Marina' – residential township planning a Marina – Capacity not yet finalized
6	Pondicherry		ND	Feasibility Study being carried out
7	Kolkata		ND	Kolkata Port Trust has began the Feasibility study for Marina in Nov 08
	<b>Total</b>	<b>470</b>	<b>30+</b>	

ND – Capacity Not Decided yet

### 2.2 OVERVIEW OF MARINAS IN SOUTH- EAST ASIA

South East Asia consisting of plethora of archipelagos and islands with diversity is a worldwide marine travel destination. Amongst the Southeast Asian nations, Malaysia, Indonesia and Thailand amongst have rapidly become the hub of tourism, and the joint efforts of these countries are further expected to increase their tourism potential.

## 2.2.1 THAILAND

Thailand, especially Phuket, has been presented with a lot of details in the report, because of a few reasons. Thailand, due to its proximity to Andaman and Nicobar looks at the same market for leisure tourism as A&N. Also, in terms of infrastructure for leisure sea traffic management and adventure tourism, Thailand is highly developed, studying which gives us an idea of the level of services and facilities required to host the kind of Marine traffic we are looking at.

Thailand has internationally gained reputation of being a popular yachting destination of Asia. With 7 operational Marinas and more than 1200 berths, Thailand is a major sailing destination for yachts coming from West including US and Europe. Marinas in Thailand are spread over both the Western Coast (Andaman Sea) and the Eastern Coast of Thailand (Gulf of Thailand).

Marina	Capacity (Berths)	Location
Boat Lagoon	168	Andaman Sea
Phuket Yacht Haven	220	Andaman Sea
Royal Yacht Marina	350	Andaman Sea
Ao Po Marina	200	Andaman Sea
Lakeside Marina	41	Gulf Of Thailand
Siam Royal View	60	Gulf Of Thailand
Ocean Marina Yacht Club	200	Gulf Of Thailand
<b>Total</b>	<b>1239</b>	

Thailand in 2007 saw 2,80,047 visitors from the Sea Route. In the graph below, we observe that more than half of the International Tourists belonged to East Asia including Malaysia, China, Hongkong, Korea, Taiwan etc who could be potential targets for a marina at A&N.

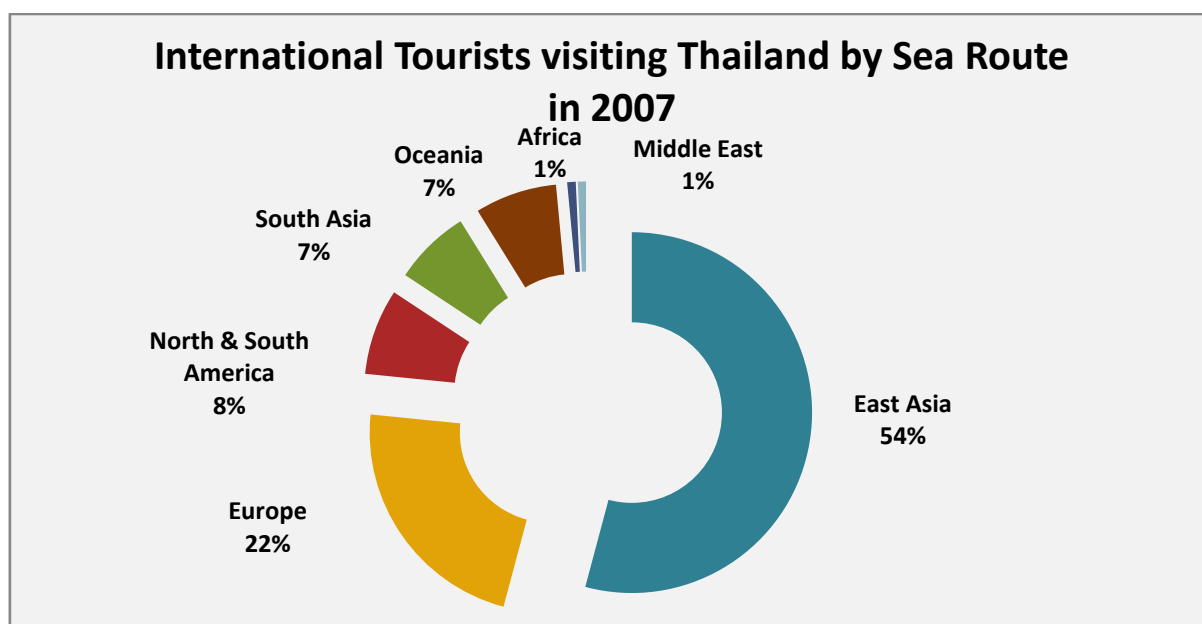


Figure 1: International Tourists visiting Thailand by Sea Route in 2007

\*\*Source – Tourism Statistics from Reports by Tourism Authority of Thailand

Besides the ports in Thailand, which take share of some traffic mentioned, out of the 7 important Marinas in Thailand, 4 Marinas are located in the city of Phuket.

## PHUKET

Phuket - acknowledged as the 'Pearl of the South' - is an exceptional tourist destination, surrounded by the Andaman Sea in the Indian Ocean. With capacity of more than 900 berths, Marinas in Phuket offer required services and facilities needed by the sailors, at the same time offering outstanding natural beauty. Home to world class Marinas like Royal Phuket Marina which have been awarded with the best accolades, and more such Marina projects being in the line, Phuket is rapidly growing to become Asia's Yachting Club.

Marina Capacity Analysis – Phuket, Thailand		
Marina	Existing Capacity (Berths)	Planned Capacity Augmentation (Berths)
Boat Lagoon	168	
Phuket Yacht Haven	220	
Royal Phuket Marina	350	
Ao Po Marina	200	
Jumeirah Private Island Phuket		101
<b>Total</b>	<b>938</b>	<b>101</b>

## RECENT TRENDS IN LEISURE TRAVEL IN THAILAND

The current trends of the key indicators of tourism have been mixed in Thailand, indicating the possibility of a slowdown in country. This slowdown in growth has already been widely attributed to a number of

factors that placed strain on the economy last few years. As noted by the World Bank, much of this was due to a weakening in domestic demand stemming from political uncertainties, a decrease in consumer and investor confidence from higher oil prices, and the reduction in the growth of export receipts in terms of baht because of the Baht's appreciation against the dollar. The past 4 years have posed two major challenges on the tourism hub of South-east Asia. The 2004 Tsunami that devastated the coastal areas of Thailand, including Phuket, and the Military Coup that ousted a democratically elected government just two years ago, could have led to an economic catastrophe. There was concern that the thriving tourist industry would grind to a halt, bringing down with it the flourishing foreign-owned housing market. Although the country has been able to recover from the Tsunami at an excellent pace, and it has been noticed that the new government has not taken any adverse steps against Tourism industry, still the events have managed to retard the earlier pace of growth of tourism in the country.

### **2.2.2 SINGAPORE**

Singapore is one of the most popular tourist destinations in Asia-Pacific region. Tourism industry in Singapore is growing very rapidly for the past several years. Tourism industry is strengthening by the infrastructure developments, various events and the country's strategic location in the heart of region. The country has traditionally been a major hub for commercial shipping and is recognized as having the facilities and know-how to meet the servicing needs of vessels that put into port. Smallest nation in Southeast Asia, it is an island country located at the southern tip of Malay Peninsula. It is made up of not just one island but a main island with 63 surrounding islets. With rich contrast and vibrant colours, Singapore is a popular travel destination, making tourism one of its largest industries. Growing tourism, rising number of visitor arrivals, increasing emergence of South East Asian destinations as travel attractions have led to a remarkable performance in the tourism industry in the country, with hotel occupancy rates exceeding 80% every year for the last 5 years in a row.

As of 2007, the tourism industry contributed 3% to Singapore's GDP, and generated US\$ 9.4 Billion in tourism receipts. This clearly shows the important role tourism industry plays in Singapore's economy. To ensure that tourism remains a key economic pillar, a bold target, Tourism 2015, was unveiled in the year 2005. The major objectives of the initiative are to triple tourism receipts to US\$ 30 Billion, doubling visitor arrivals to 17 Million, and creating an additional 100,000 jobs in the services sector by 2015.

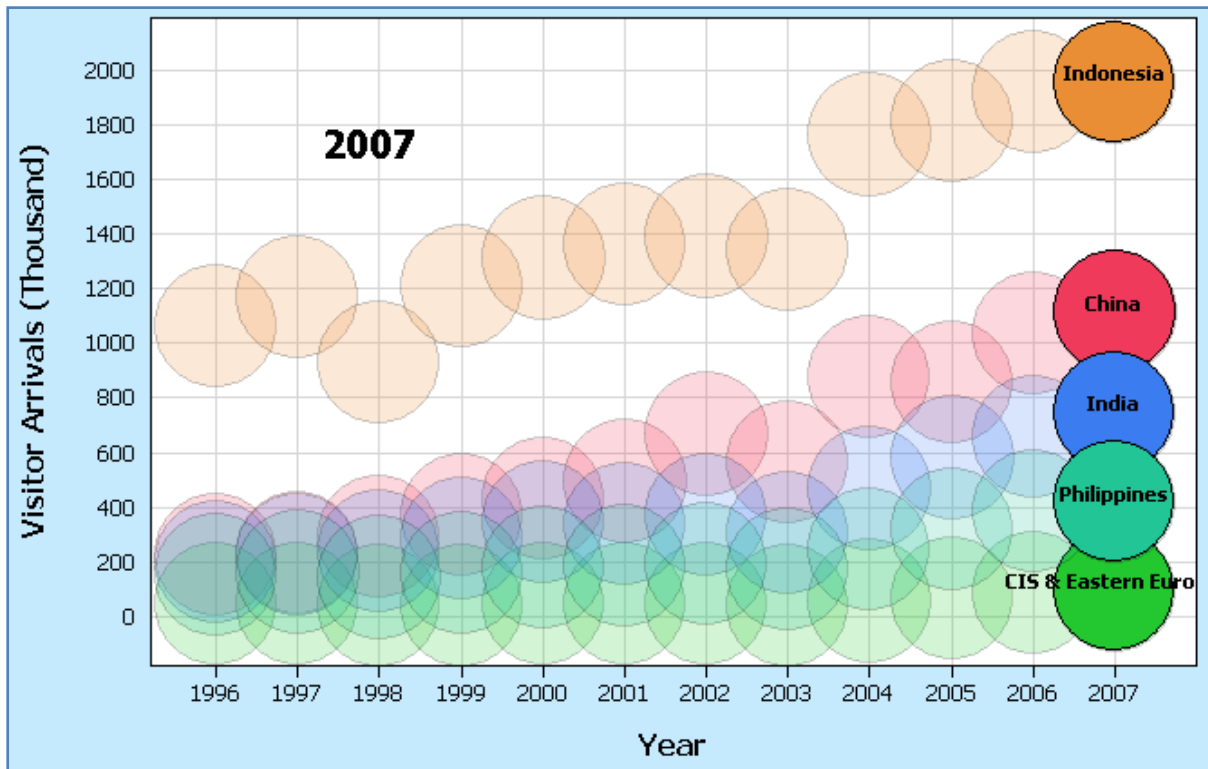
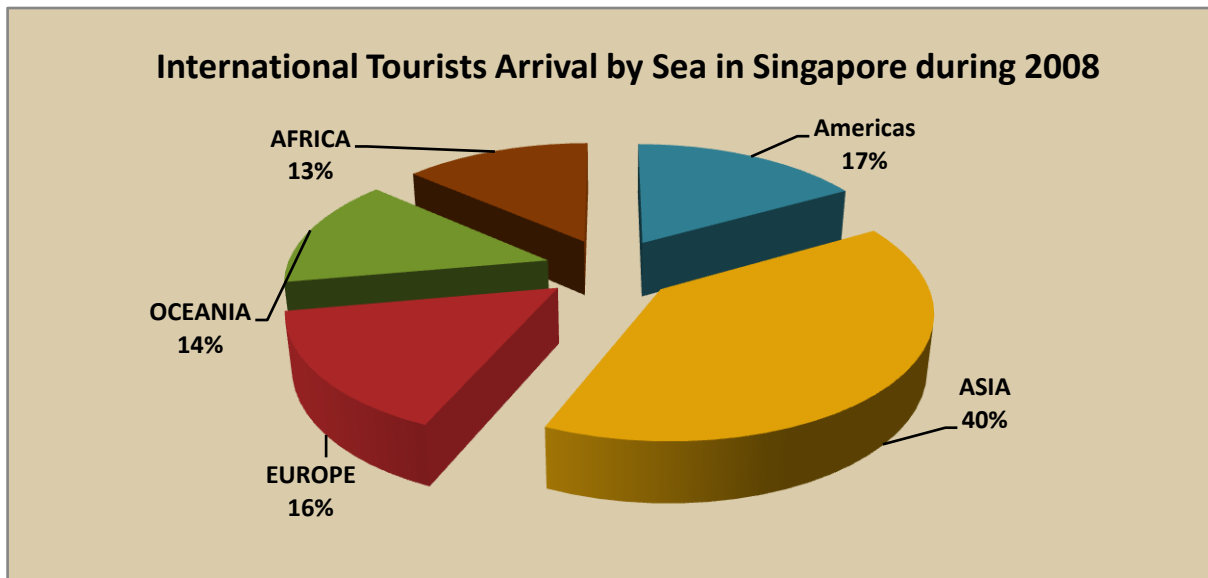


Figure 2: International Tourist Arrivals in Singapore (By Geography)

With over 13% of tourist arrivals being through sea route in Singapore, it forms considerable share of the total tourism, with high rate of growth.



## CAPACITY ASSESSMENT

Singapore boasts a capacity of 710 berths for yachts with most of the Marinas having provisions for Super Yachts and Mega Yachts. With inbuilt facilities for accommodation, yacht training, yacht charter, luxury services, Marinas in Singapore are tailor-made to attract international luxury travellers of the premium category.

Marina	Capacity (Berths)
Marina Keppel Bay	75
Raffles Marina	162
ONE°15 marina Club	270
Republic of Singapore Yacht Club	168
Marina Country Club	35
<b>Total</b>	<b>710</b>

## ONE°15 MARINA CLUB

ONE°15 Marina is illustrated in details in the report because it is an ideal example of an all facility Marina where besides state-of-the-art Marina services, the Club offers services such as Accommodation, Boat Charter, Cruiser, Houseboats and Yacht Training. The A&N Marina project also aims to be a composite leisure tourism hub for the sailors. Hence, the operational model of ONE°15 Marina has significance for the project.



ONE°15 Marina is a world class Marina replete with a comprehensive range of luxurious private club amenities catering to both boaters and non-boaters. It is nestled within the Sentosa Cove enclave. Besides berthing facilities, the place offers various styles of accommodation, fitness centre, tennis courts, swimming pool, health facilities like spa, lounge, games rooms, 3 dining facilities offering special cuisines etc. With an entrance of 40 metres useable width (50 metres minus low water apron) and a 5.6 metre datum depth, ONE°15 can accommodate mega-yachts of up to 200ft within its shelter of natural, deep water.

Facilities Provided in the Marina –

- 270 wet berths including 13 Mega-yacht berths
- Fuel sales – provides Octane 95 Petrol & Marine Diesel (based on Pump price)
- Maintenance Yard
- Power Supply (100amp in 3 phases)
- Waste Pump-out System
- WIFI Internet Broadband Access
- Yacht Chandlery
- Boat Charter
- Houseboats & Cruiser

The combination of services and product packaging of ONE°15 Marina is similar to the product components that can be ideal in planning of Marina in the Andamans. The accommodation, berthing, additional services all combine to form a model that can be replicated to fit into the scenario of Andamans to create a potential Marina project in the islands.

### 2.2.3 MALAYSIA

Malaysia has always been famous as a tourist destination. Sandy beaches, humid mangroves and its rich cultural heritage has always lured people across the world. The tourism sector has grown significantly in Malaysia both in terms of tourist arrivals and tourism receipts. Tourism has become an important source of foreign exchange earnings in Malaysia. It contributes at least about 8 to 10 percent of the GDP of Malaysia and employs about half a million people or at least about 5 percent of the total employed in Malaysia. However more 'traditional' tourism pursuits continue to thrive and grow. One of these pursuits includes marine or sea-based tourism. A large sum has also been invested in the facilities such as marinas and harbours necessary to support the growing number of yachts and boats.

Situated in Southeast Asia, Malaysia, with an area of 329,750 sq km, consists of two non continuous areas: Peninsular Malaysia on the Asian mainland, and the states of Sarawak and Sabah, known together as East Malaysia, on the island of Borneo. And having 7,200 Km of waterways with major ports are well connected to Indonesia, Thailand, Singapore & Philippines.

#### CAPACITY ASSESSMENT

Malaysia has about 9 operating marinas with a combined capacity of about 1070 berths and most of them have provision for super yachts and mega yachts. Advanced facilities are also provided for yachts such as yacht repair facilities, electronic fueling systems and marine travel lifts.

Marina	Capacity (Berths)
Royal Langkawi Yacht Club	200
Telaga Harbour	67
Rebak Marina	124
Tanjong City Marina	102
Lumut Yacht Club	40
Admiral Marina	130
Sebana Cove	170
Miri Marina	80
Sutera Harbour	104
<b>Total</b>	<b>1017</b>

### 2.2.4 SRI LANKA

Sri Lanka gains importance in the marine analysis due to the strategic location of the country. It is a strategic naval link between West Asia and South East Asia. With a coastline of 1340 km and positioning in the sailing route for vessels enroute to the Red Sea, Sri Lanka has immense potential to emerge as a stop-over point for marine vessels and a good point of departure for cruising the Maldives, Chagos and Seychelles. Also its White sandy beaches, lush greenery, exciting adventures, amazing wildlife and a rich heritage has always lured the tourists. Tourism is the fourth largest earner of foreign exchange in the Sri Lankan national economy. So it is trying hard to sprucing itself up with a new yacht marina in a bid to attract the high-spending sailors who sail past the island's south coast on their round-the-world voyages

and to attract foreign tourists. The country has not yet developed adequate infrastructure and convenient systems and processes to cater to volume of yachts. However, the country has had Marina infrastructure much before the planning for the same has begun in India.

Tourism in Sri Lanka was severely affected by the tsunami in December 2004 and thus recorded a negative growth with arrivals dropping by 3% in 2005 compared to 2004. Post-tsunami, the monthly arrival figures recovered due to special promotional campaign offering incentives carried out by the Sri Lanka Tourist Board (SLTB).

## CAPACITY ASSESSMENT

Sri Lanka provides Yacht berthing facilities in two locations – Galle and Colombo. Most yachts call at the old port of Galle on the island's southern tip. Currently, the two ports see yacht traffic of hardly 10 – 15 yachts in an year. But, it is expected that once the facilities in Galle get revamped, the same shall increase to high volumes.

Marina	Capacity (Berths)	Remarks
Galle	50	Under Construction. 100 more berths planned in the second phase of the project.
Colombo		Berthing facility at the Colombo Port
<b>Total</b>	<b>50+</b>	

### 2.2.5 MALDIVES

Lying 180 miles off the Southern tip of India, Maldives is a set of 1190 islands, spread over 26 atolls, ringlike coral formations enclosing a lagoon, which gives it a unique paradise-like appearance. The islands stretch for about 820 km from North to South, 130 km at the widest point and do not exceed a length of 4.5 miles or an altitude of 6 feet above sea level. No more than 200 islands are inhabited, the rest includes the 87 tourist resorts and uninhabited islands, some of which are used for drying fish or other agricultural activities. A geological eccentricity nestled in the middle of the Indian Ocean, Maldives Islands are a series of ancient coral reefs that grew up around the sides of towering prehistoric volcanoes.

Though Maldives is 95% ocean, the region does not offer any designated Yacht Marina. However, there are plans to build one. Anchorage facility is available in the islands in resorts which offer integrated yacht harbouring services, and in a few other places with option for anchorage. There is a lack of all-weather anchorages and in most lagoons the anchorages are very deep and exposed, so islands such as Thulusdhoo and Himmafushi are popular because they have shallow well-protected anchorages. Many of the communities have now improved the marking of their lagoon entrances, and in some cases, deepened them.

## CAPACITY ASSESSMENT

Maldives currently offers 2 anchorage facilities wherein visiting yachts are allowed to harbour. Male, the capital city of the country has capacity to berth vessels. The anchorage falls in the South Maldives area.

The other anchorage is at Island Sailors Marina is located in the North Maldives. Both these Marinas have basic support facilities.

Marina	Capacity (Berths)	Remarks
Male	6	
Island Sailors Marina		Facility integrated with the port
Dhonakulhi	25	
Laguna Beach	50	
<b>Total</b>	<b>81+</b>	

### Key Learnings for Andaman & Nicobar

- ① Integrated development of Marina and leisure tourism infrastructure including boats, cruiser, houseboats etc. is a structuring option successfully operational in luxury marina and leisure hub - ONE°15 Marina, Singapore. The implementation of project using a structure of this kind leads to holistic development of the project as a tourism destination and opens opportunities for further introduction of peripheral services in the project in the future.
- ① There is a defined market for Marina in the South East Asian countries and the proximity of Andaman & Nicobar to the countries with advanced marina infrastructure like Thailand, Singapore and Malaysia suggests the potential market for leisure tourism in A&N as well. However, the ability of A&N to attract the market rests on the standard of facilities that is developed.
- ① The structural design of Marinas in South East Asia reflects the design varieties of vessels catered to by the South East Asian destinations. The existence of facilities for Mega Yachts, Super Yachts indicates the demand for berthing of such high end vessels in the Marinas. However, the bulk of vessels being of the standard size, it is advisable to plan berthing for wider range of yachts including provisions for superyachts and megayachts, with increased focus towards the standard size vessels.
- ① Recent slowdown in the Leisure tourism market in Thailand, attributed to the political uncertainties and aftermaths of Tsunami, poses a hidden opportunity for A&N, to project itself as an alternative destination for yachts. However, the challenge lies for A&N in not only developing adequate infrastructure to pull the market and marketing itself as a tourist destination but also in streamlining the clearance and other mandatory processes.
- ① Availability of ancillary services like fresh water, fuel, electricity, accommodation etc is imperative for the development of a marketable facility. However, development of international standard infrastructure requires provision for larger number of berths, inclusion of other value added services like dry docking, repair, maintenance, sailing school, fractional boat ownership etc.

## 2.3 SUPPLY OF ACCOMODATION FACILITIES IN A&N

The following is a list of major hotels and resorts in A&N:

S No.	Name	Location	Operated by
<b>Hotels operated by Private parties</b>			
1	Barefoot at Havelock	Havelock Island	Private
2	Welcome Group – Bay Island	Port Blair	Private
3	Peerless Beach Resort	Port Blair	Private
4	Sentinel	Port Blair	Private
5	Sinclairs Bay View	Port Blair	Private
6	Islands Cove	Port Blair	Private
<b>Hotels operated by Government agencies</b>			
1	Hornbill Nest	Port Blair	A&N Administration
2	Dolphin Resort	Havelock Island	A&N Administration
3	Hawabill Nest	Neil Island	A&N Administration
4	Megapode	Port Blair	ANIIDCO

The occupancy of hotels in A&N islands is significantly seasonal in nature. The period of October to April is generally the season which experiences maximum traffic of tourists and is considered as the on-season. Maximum hotels have occupancy ranging between 75 – 100% during the on-season. The period of May to September months experiences a slump in tourist traffic decreasing the occupancy in hotels to as low as 30%. This period is considered as off-season. The tourist traffic can be classified into major segments like Honeymoon travelers, Families and groups, and Others etc. Honeymoon travelers are users who have higher rate of spending as compared to families. A major part of families under ‘Families and groups’ segment travel on Leave Travel Concession (LTC) package, which is provided by Indian Government to Government employees. The rate of spending per traveler is higher in case of ‘Honeymoon travelers’ as compared to ‘Families and Groups’. There is demand for eco-friendly resorts which is why a number of accommodation facilities have been developed on Havelock and Neil Island which offer eco-friendly cottage experience to the users. Premium facilities like ‘Barefoot at Havelock’ and ‘Welcome Group – Bay Island Resort by ITC’ command as high as Rs 16,000 per night for suites, whereas the rentals drop to as low as Rs 9,000 for the same suites in off-season.

### 2.3.1 MARKET ANALYSIS

#### 1. INTERNATIONAL SAILORS

The yachts setting on sail from US, Europe, Dubai and other International Yachting regions, and bound to Far East constitute the International Sailing Circuit. The yachts covering distances more than 5000 kms during their trip, demand periodic maintenance and servicing in the due course. Besides, Phuket being one of the popular International Cruising and Yachting destinations, Andaman Sea has a lot of yachting traffic. This creates a huge market for a fully serviced Marina in the Andaman Sea for International Yachts.

Whether Andaman & Nicobar Islands can become an International Yachting Stop-over point depends upon two factors – Facilities provided in the Marina, and Convenience of Approach to the Marina from the International Sailing Route. The essential services including electricity, water, re-fuelling, and sewerage pump-out would be a part of the planned Marina. With regards to the convenience of approach, A&N Islands is located centrally between Singapore and Colombo and just north of sea traffic route to South East Asian ports including Phuket. The deviation time to A&N Islands from the main EAST-WEST route as compared to the rest of the potential stop over destinations is lowest.

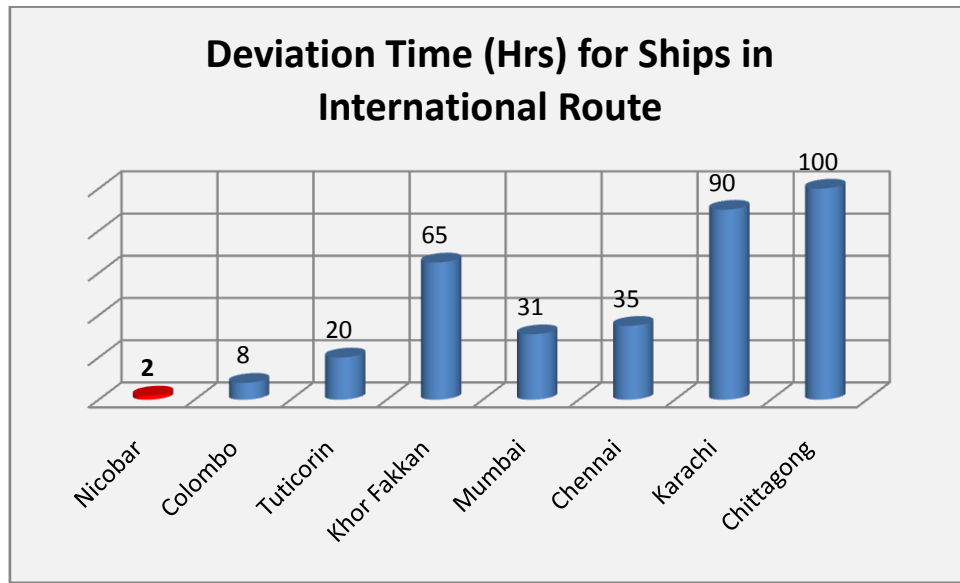


Figure 3: Deviation Time (Hours) for Ships on International Route

This makes it evident that geographically the Islands are strategically positioned to be a strong choice of sailors as a stop-over in their route.

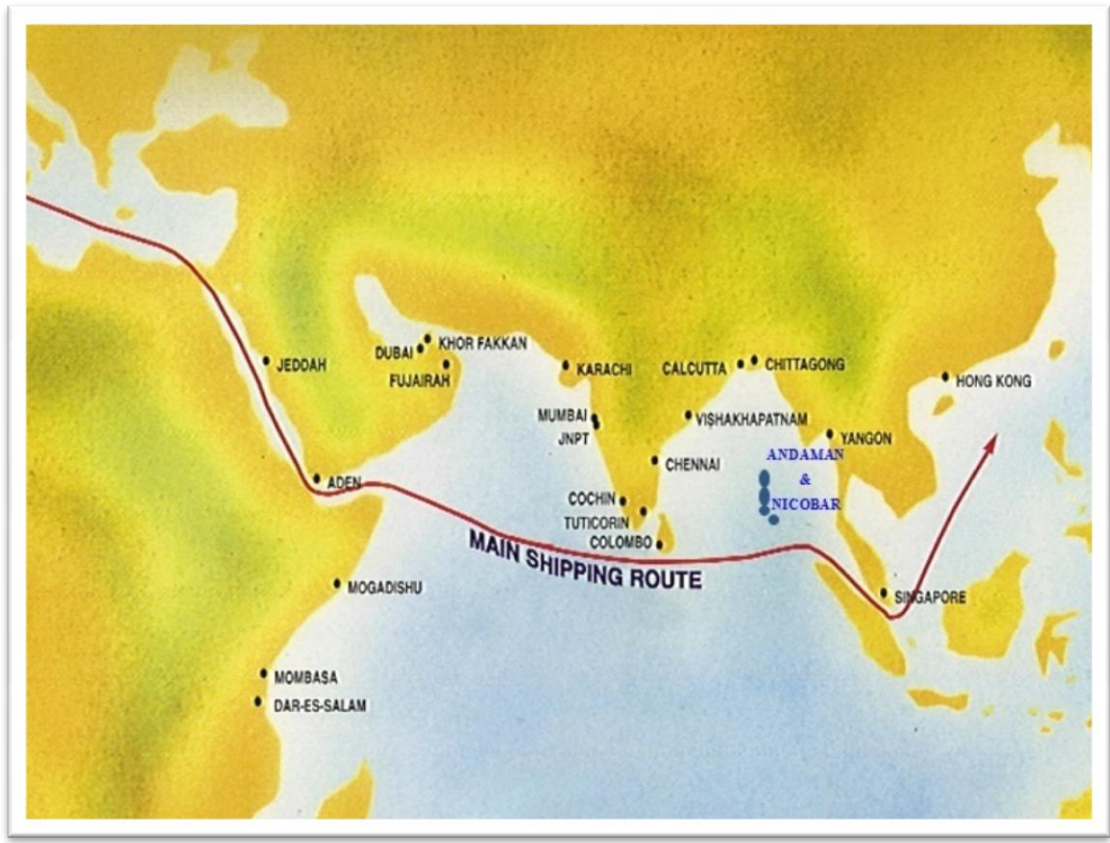
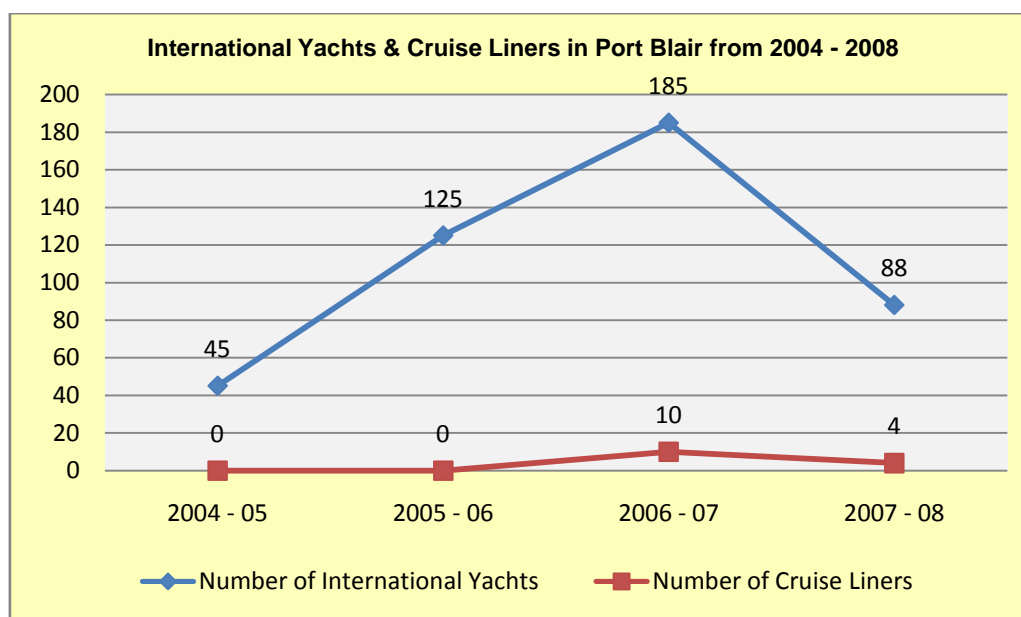


Figure 4: International Sailing Route - via - Red Sea

Despite not having an operational Marina, Andaman & Nicobar Islands already witness inbound traffic of International Yachts. Even though the market for Cruise Tourism in India is not fully developed yet, Andaman & Nicobar possesses a share of the same. The following are the records of the number of International Yachts and Cruise Liners that visited A&N in the last 4 years. The below representation shows that post Tsunami, there has been an increase of International Yachts in Port Blair every year, except the last year.

**Table 1: International Yachts & Cruise Liners in Port Blair from 2004 - 2008**



## 2. DOMESTIC SAILORS

Strong economic growth in India has led to increases in the disposable incomes of consumers, which in turn has boosted their standard of living and prompted them to increase their expenditure on leisure activities such as travel and to travel more frequently. Increases in disposable income have not only benefited affluent urban consumers but also middle-income consumers across India. Furthermore, owing to increasingly hectic lifestyles, Indians are increasingly travelling on quick getaway trips or weekend trips. As their level of disposable income has improved, many young Indians have also indicated demand for travel products such as eco-tourism packages and spa packages and demand for “offbeat” destinations such as beaches and trekking routes. These young travelers are more willing to spend their disposable income on new products for the thrill of a new experience as well as for the prestige these unique products offer. Therefore “premium”, niche holiday packages are expected to become more popular as Indian consumers become more concerned with the prestige associated with travel and treat travel to exotic destinations as a status symbol. A greater number of Indians are expected to travel more frequently due to sustained increases in their level of disposable income and their need for more frequent breaks owing to their hectic lifestyles.

The number of Yachts in India is also on the rise. India has already organized 2 India International Boat Show (IIBS) to showcase the rising interest in yachting in India and at the same time acting as a stimulus to Indian boating industry. According to Business Standard, there are around 200 boats and 50 yachts already owned by Indians in only Mumbai and Goa. Boat Sales in Mumbai India International Boat Show (IIBS) 2007 were as high as Rs 200 Crores. This shows that though the market for yachting is still at a nascent stage in India, the growth in the market is promising. Also, if we see, the number of planned Marinas on the Eastern coast of India is much lesser than the number of projects planned on the Western Coast of India including Kochi, Mumbai and Goa. This shows that development of a Marina on the Eastern side of India and in Andaman & Nicobar Islands offers a great opportunity. The total number of registered luxury boats, according to

Yachting Association of India (YAI) is already more than 120 yachts and boats in India. But for domestic sailors, the scope of A&N Marina lies more in a Tourism destination rather than a place for round-the-year parking and maintaining the boats and yachts, due to the lack of mainland connectivity.

### 3. UNTAPPED MARKET FOR RECREATIONAL YACHTING

Yachting is developing fast as most luxurious sport activity in India and gives ample scope for its visitors. It also provides an easy access to the shore at major beach resorts, and harbors. Andaman & Nicobar Islands has witnessed a rapid growth in the number of tourists visiting the Islands over the years.

It has been observed that along with the rise in tourist traffic in A&N, there has been a corresponding increase in the popularity of water sports activity in the Andaman & Nicobar Islands. Diving, snorkeling, exploration and fishing are also some other water sport options besides Surfing and Yachting. Development of Yachting facility in Andaman & Nicobar Islands can not only open up an unexplored market for A&N, but also form a significant attraction for Tourists visiting the Islands as the pristine water, picturesque natural beauty, historical association, and an abode of tribal population make it an ideal Water Sports destination.

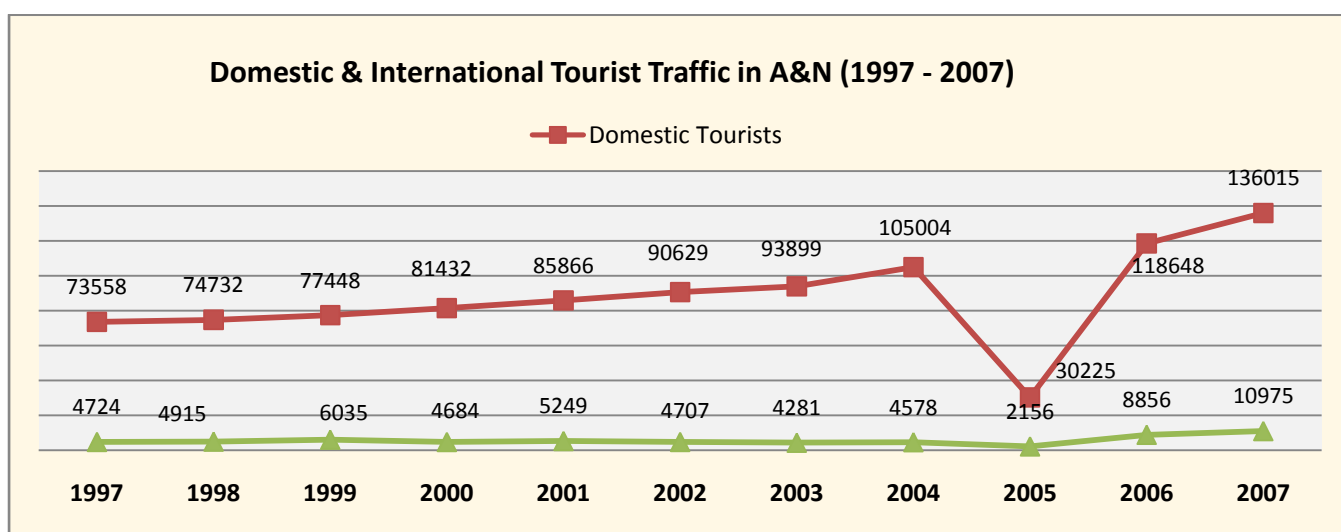


Figure 5: Tourist Traffic in A&N (1997 - 2007)

### 4. MARITIME EVENTS

A huge market for yachting exists in terms of the International events including boat shows, rallies, racing competitions that are organized every year. In events like Yacht Race, a group of competing yachts come together to cover a pre-decided sea stretch passing through various countries, to reach the finishing line. In the process, Yachts halt at some locations, and after that the bunch sets on with the race again. The benefit of being able to host such events is increased international visibility as yachting destination, as well as multi-fold growth in related business activities due to multiplier effect

created by the increased demand of visiting yachts. Examples of such events are Volvo Ocean Race, India International Boat Show (IIBS), Vasco Da Gama Rally, Boat India, Andaman Sea Rally etc.

## CHAPTER 3 – SITE ASSESSMENT

### 3.1 POTENTIAL SITES FOR MARINA

After careful eliminatory analysis of the parameters vital for the development of a commercially significant project, and on the basis of the observations of various technical experts of different departments of A&N, the following 8 sites have been selected:

S No.	Site	Location
1	Viper Island – Jetty	Viper Island
2	Junglighat Jetty	Port Blair, South Andaman Island
3	Sesostri Bay	Port Blair, South Andaman Island
4	Pani Ghat	South Andaman Island
5	Chidiya Tapu	South Andaman Island
6	Radhanagar Beach	Havelock Island
7	Bharatpur Beach	Neil Island
8	Command Bay	Port Blair, South Andaman Island

### 3.2 CLEARANCES & PERMITS

Coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action (in the landward side) upto 500 metres from the High Tide Line (HTL) and the land between the Low Tide Line (LTL) and the HTL in India are classified as Coastal Regulation Zone and the development activities are regulated. The Marina facility is being built to cater to sea vessels in terms of providing them a stop-over point with basic services like fuel, sewerage pump-out, fresh water, electricity etc which is similar to other Port Projects that provide similar services to the marine vessels. Hence, regulations regarding No Development Zone under the Coastal Regulations Zone (CRZ) rules shall not be applicable for the development of marina and associated facilities. To obtain the clearance, the project proposal needs to be submitted to the Ministry of Surface Transport, Department of Road Transport & Highways, Government of India and get classified as a non-major port project.

As per CRZ rules the development control regulations which include Floor Space Index, Ground Coverage Ratio etc. shall be as per the Master Plan of the area. In case no master plan is available for the site CRZ rules provides the limiting conditions for development control. The project shall have to abide by the Development Control Regulations which apply to the site which has been selected. The design and construction of buildings has to be consistent with the surrounding landscape and local architectural style.

#### STEPS FOR OBTAINING CLEARANCES:

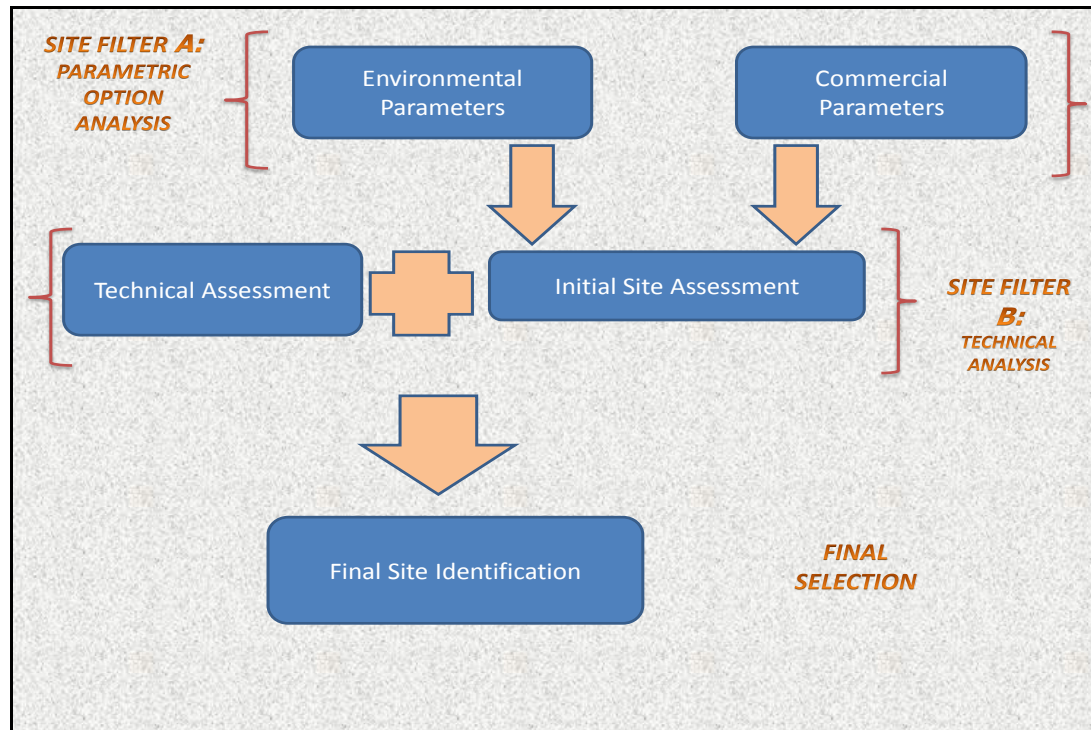
- i) **Environmental Impact Assessment (EIA):** The first stage of site clearance is an Environmental Impact Assessment (EIA) study which has to be carried out. As stated below, the report has to be submitted to the Ministry of Environment & Forests (MOEF), Government of India as a part of the proposal for environmental clearance for the project.

- ii) **CRZ Clearance** from Andaman & Nicobar Coastal Zone Management Authority has to be obtained. As stated earlier, the project can obtain the status of Non-major port by applying to the Ministry of Surface Transport, Department of Road Transport & Highways, Government of India by which the No Development Zone norm under CRZ regulations shall be relaxed.
- iii) **NOC** from A&N Islands Pollution Control Committee
- iv) Application for final Environmental / CRZ clearance to be made to **Ministry of Environment and Forest (MOEF), New Delhi** in which the following documents need to be submitted:
  - a. Environmental Impact Assessment (EIA) Report
  - b. Detailed Project Report (DPR)
  - c. Letter of recommendation from Andaman & Nicobar Coastal Zone Management Authority
  - d. NOC from A&N Islands Pollution Control Committee

The Developer shall be responsible for obtaining the Clearances with respect to the project. Full support shall be provided from the Administration in this respect to facilitate the clearance process.

### 3.3 SITE ASSESSMENT – PROCEDURE

The following are the steps that have been followed for identification of the site:



### 3.4 SITE ANALYSIS – HAVELOCK & NEIL ISLANDS

The sites on Havelock & Neil Islands have not been illustrated under the detailed parametric comparison, due to issues with the site that make them non-conducive for Marina development, biggest of which is the rough wind and weather conditions in the sites.

### **RADHANAGAR BEACH, HAVELOCK ISLAND**

Havelock is the largest island in Ritchie's archipelago which is at a distance of 57 kms from Port Blair. It takes 2.5 hours (two and half hours) in ferry from Port Blair to reach there. The island is known for its white sandy beaches and clear water. The periphery of the island is rich in marine life with corals, dolphins, turtles etc being found. This makes it suitable for water sports like scuba diving and snorkeling. Havelock Island witnesses the maximum tourist traffic amongst all the islands in A&N. Hence, the island has all facilities available for tourists. A Five Star Resort is operated in the islands by Barefoot group. Besides 'Barefoot at Havelock' and few other private resorts, the Island also has Government accommodation available.

However, taking commercial factors as well as environmental parameters into consideration reveals that the development of the project at Radhanagar beach faces constraints that not only increase the capital expenditure of the project, decrease the market for the Marina, but also pose as potential hindrance to the activities that is currently performed at the beach. Firstly, due to exposure to high wave conditions, a Marina development in Radhanagar beach requires breakwater development. Secondly, currently the Inter-Island connectivity to Havelock Island is such that it takes atleast 2.5 hours for a tourist to reach Havelock from Port Blair. Due to this, the site is relatively not convenient for travelers to visit. International vessels that visit the Marina need to make registrations at the Port Management Board, for which they need to go to Port Blair. A distance of 2.5 hours becomes a huge bottleneck in that case. Lastly, the telecom connectivity of the island is very limited due to which telephone connections from very few service providers like Bharat Sanchar Nigam Limited, work on the island. The market with other basic commodities available is mainly located at Port Blair, which means that basic development to support Marina visitors is less in Havelock

### **BHARATPUR BEACH, NEIL ISLAND**

Neil Island is an island with 18.9 square kilometers of area, located at around 40 kilometers from Port Blair. Popularly known as 'Vegetable bowl of Andamans', it is rich in production of food items and is responsible for food supply to the rest of Andaman. As it is the case with the rest of the islands of A&N, Neil also boasts of white sandy beaches and clear water. The place, being lush green and full of varieties of natural birds and trees, is a major tourist spot.

The following are the strengths and weaknesses of the sites at Radhanagar Beach (Havelock Island) and Bharatpur Beach (Neil Island).

#### **Strengths**

- Tourist traffic maximum in the Havelock Island amongst all A&N Islands
- Rich in natural beauty with sandy beaches and clear waters

#### **Weaknesses**

- Exposure to open sea and rough waves; Wave height exceeding the maximum wave height limit for Marinas
- Site at a distance of atleast 2.5 hours from Customs and Immigration office, Port Management Board, Port Blair
- Site at a distance of atleast 2.5 hours from Commercial Market, Port Blair. There are small markets in Havelock and Neil Islands, but they have very limited items.



Figure 6: Bharatpur Beach, Neil

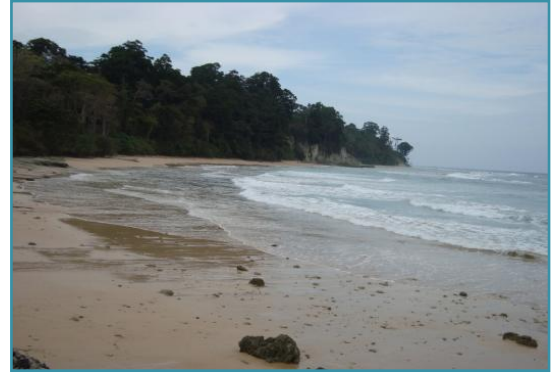


Figure 7: Radhanagar Beach, Havelock

### 3.5 SITE COMPARISON

The table below provides a comparative overview of the potential sites considered for Marina development with details about the strengths and weaknesses of each site:

Table 2: Summary - Parametric Option Analysis

SUMMARY - PARAMETRIC OPTION ANALYSIS							
		VIPER ISLAND	JUNGLIGHAT	SESOSTRIS BAY	PANI GHAT	CHIDIYA TAPU	COMMAND BAY
<b>ENVIRONMENTAL ASSESSMENT</b>							
1	<b>Heritage with Archaeological &amp; Historical Importance</b>	Island has the remains of an old British Jail and gallows which attracts tourists, but the same is not a Heritage structure.	No Heritage Structures in proximity	Surrounded by a number of Heritage sites including Cellular Jail on one side and Ross Island on the other.	At considerable distance from Heritage structures such that construction project can be undertaken without harming the heritage structures	No Heritage Structures in proximity	At considerable distance from heritage structures such that construction project can be undertaken without harming the heritage structures
2	<b>Ecological Impact</b>	No corals and mangrove forests present in the site area.	Marked for the Piscine life found in the area	Shallow area around Port Blair does not have much marine life.	Does not contain corals.	Most ecologically delicate area and has a lot of Forest Area	Does not contain corals. The area has an old jetty which is currently not used. There is an establishment of the Suryachakra Power Corporation to the North of the Command Bay.
3	<b>Hydrographic Data</b>	Depth range - 3 m to 11 m	Depth range - 3 m to 7 m	Depth range - 10 m to 25 m	Depth range - 1 m to 19 m	Depth range - 1 m to 15 m	Depth range - 7 m to 14 m
4	<b>Water Quality</b>	Clear water, except when due to rains, the muddy water from land	Water Quality issues same as Viper Island	High quality of water, due to regular replenishment of the water in the area	Quality is good and is conducive for Marina development	Due to lack of much development in the proximity, and proper flush	Quality is good and is conducive for Marina development

SUMMARY - PARAMETRIC OPTION ANALYSIS

		VIPER ISLAND	JUNGLIGHAT	SESOSTRIS BAY	PANI GHAT	CHIDIYA TAPU	COMMAND BAY
		which drains into the bay		with open sea water		out of water to the sea, the water at Chidiya Tapu is relatively clean and good quality	
5	<b>Air Quality</b>	General quality of Air in Port Blair is relatively clean, which will register some drop at the time of construction of the project. Again, due to the increased traffic and rise in activities in the area once the Marina is operational, the general quality of air in the area will take a setback. Relevant mitigation measures would be needed to make sure that the damage to Air quality is minimized					
6	<b>Transportation &amp; Connectivity</b>	Ferry from Phoenix Bay Jetty or Andaman Point; Ride takes not less than 15 minutes; Yachts which enter Port Blair will have to traverse the semi circular route which runs in the Northern side of Port Blair	Easy connectivity through roads with the Airport and all other points in Port Blair	Reaching the site is convenient as the same is also having connectivity with the main Port Blair	Connected to Port Blair through road as well as through water. The road quality is poor, which is why taking a ferry from Phoenix Bay is rather more convenient for reaching Pani Ghat	Connectivity to Chidiya Tapu is worst amongst the sites identified. The reason being that the site itself has more than 20 kms from the Airport and the only road which runs to the site is a 1 lane which runs from Port Blair to Chidiya Tapu	The access to Command Bay is through both Bamboo Flat Jetty and Pani Ghat Jetty. The ferry for Bamboo Flat Jetty is available from the Chatham Wharf after every half an hour in the working hours. From Bamboo Flat jetty, 10 minutes ride in the auto rickshaw or private vehicle is needed to reach Command Bay. The road leading to Quarry Jetty for around 200 m before the Quarry Jetty is not developed but can be upgraded to create a proper access way to Command Bay.
7	<b>Interference to</b>	Tourist spot and so	Boats carrying fishermen,	Boats which run to and	Existing traffic to Pani	The existing traffic in the	The Northern area to the

**SUMMARY - PARAMETRIC OPTION ANALYSIS**

		VIPER ISLAND	JUNGLIGHAT	SESOSTRIS BAY	PANI GHAT	CHIDIYA TAPU	COMMAND BAY
	<b>Existing Traffic</b>	there is traffic of tourists on the island through ferries, which will be intercepted by the Marina traffic	which will face problem if the Marina comes up	from Ross Island carrying tourists from Port Blair; Channel is seldom used by Navy ships for navigation, which will be obstructed if a breakwater is formed	Ghat consists majorly of local commuters who come to Port Blair daily for work. Thus, there will be interference to ferries which support the local traffic	area is very minimal, with tourists visiting the place, and local people commuting to Port Blair main daily	Command Bay is used for loading and unloading gas cylinders. The traffic for the same however, can continue undisturbed as the Quarry Jetty is to the end of the Command Bay
8	<b>Landscape</b>	Development in this site will definitely carry some visual changes in the landscape of the region if the open spaces near the remains of the jail is taken up for development of marina	Densely populated area which would register highest effect on the landscape change index. The built up would have a major visual impact on landscape as visible from local residential units	Surrounded by the developments, resorts and hotels; Project would have a huge impact on the landscape and would block the view for the establishments nearby	Near the local residential areas, which implies that development in the bay, will significantly impact the landscaping of the region for the residential units in proximity	Relatively less inhabited area with less spoilage done on the coastline as well; Alteration in the landscape will comparatively be minimal leading to lesser nuances in the visual background of the area	The Command Point legend is very close to the Command Bay. So it is essential that the development is done keeping the landscape in mind and the legend undisturbed.
<b>COMMERCIAL ASSESSMENT</b>							
1	<b>Surrounding Developments</b>	No commercial development on the island, and so scores low on the factor of surrounding developments. But Viper Island being a tourist spot by itself, there can be some	Surrounding developments of Junglighat area are not very supportive of the Marina project, as the area around the Junglighat jetty is full of residential colonies and very less commercial development,	Falls in the middle of the hub in Port Blair, with Cellular Jail, Water Sports Complex, Ross Island surrounding it. This shows that surrounding market supports coming up of Marina in the area. Also the nearness to the resorts	Less than 15 minutes by boat from Port Blair. For any commercial requirements, Aberdeen market, Port Blair is accessible through this route. At the same time, for	Lacks much commercial development; The place attracts tourists though with the popular Sunset at Chidiya Tapu and Bird Sanctuary exhibiting a unique variety of birds	The Command Bay crosses the Hope Town area, which is why there are few establishments visible in the way to Command Bay. However, the site is tranquil and free from disturbances

SUMMARY - PARAMETRIC OPTION ANALYSIS

		VIPER ISLAND	JUNGLIGHAT	SESOSTRIS BAY	PANI GHAT	CHIDIYA TAPU	COMMAND BAY
		cross-selling and the tourists visiting Viper Island can emerge as potential users of the Marina	or very less visited by the tourists	like ITC Welcome Group – Bay Island Resort, Hotel Sinclairs and many more, supports the development project	reaching the Port Authorities, the same route can be taken		
2	<b>Scope of Future Expansion</b>	Free wet area on the other side of the island can be used for future expansion, thereby making it possible for the Marina to expand in future if the need be	Coastline in Junglighat area has very little scope of expansion as the place is already under use, and any other expansion will mean rehabilitation, regeneration costs in the area, along with other issues	The area does not offer much scope for future expansion, as the place is surrounded by residential establishments in the land side and Indian Oil Corporation plant	The surrounding area already covered with developments, will leave hardly any scope for future expansion in the dry area, though the number of slips can be increased in the Marina at a later stage, depending upon the need	The area being relatively maiden in terms of commercial activity, it will pose maximum opportunity for future development and expansion	Future expansion is possible in the place given that the water area in the bay is sufficient to cater to double the planned capacity also
3	<b>Capital Expenditure</b>	Periodic cleaning of water required due to muddy water flowing in the area during rains. Wave attenuator may be required. Development of Sea-wall required at the site.	Clean up of the surrounding area required due to the presence of cemetery in the proximity.	Need of a concrete breakwater in the site due to wave height conditions. Depth more than 20 m in the site.	Wave attenuator may be required in the site.	Depth at the site is not more than 3 m for considerable distance from the shore, which means to prepare the Marina for being able to receive Super Yachts, Luxury Cruises, the area will need dredging; Need of wave attenuation will be less	Development at Command Bay may require a wave attenuator.
4	<b>Scope of Auxiliary Developments</b>	Total of 5 acres of land available for the project,	Existing establishments at the location which need to	Availability of land difficult for the project	Minor auxiliary developments can be	Site offers maximum opportunity for ancillary	Auxiliary Developments are possible in the area east of

SUMMARY - PARAMETRIC OPTION ANALYSIS

		VIPER ISLAND	JUNGLIGHAT	SESOSTRIS BAY	PANI GHAT	CHIDIYA TAPU	COMMAND BAY
		which gives opportunity for additional developments.	be removed and rehabilitated in case of additional developments.	due to the surrounding area already having establishments.	made at the site.	developments as the area has very less commercial developments, and residences	the Command Bay because there is 1.97 acres of partially level land at the disposal of the project.
5	<b>Time for Development</b>	Critical patch for project development will be governed by the fact that all supplies need to be ferried to this Island	Project Development is to be the major time consuming activity	Would take maximum time, as concrete breakwater construction would entail huge time for construction	Utilities easily accessible reducing time for support infrastructure	Time for Dredging and Utilities setup required apart from development of project time.	Utilities easily accessible reducing time for support infrastructure
6	<b>Accessibility</b>	Site accessible through ferries from Port Blair.	Site accessible through ferries and roads from Port Blair.	Most easily accessible site from Port Blair.	Site accessible through ferries and roads.	Site accessible through roads. Located at 26 km from Port Blair.	Site accessible through ferries from Chatham Jetty and Bamboo Flat as well as road.
7	<b>Regeneration &amp; Rehabilitation Costs</b>	No rehabilitation costs	Densely populated; Maximum implication in terms of rehabilitation costs shall be there	Expected land area in the site itself is less, given the developments around the site, which is why less regeneration costs shall be involved in this site	Regeneration costs, may be required if some inhabitations are displaced in the process of land area development. However, the same shall depend upon the amount of land area that is planned.	Regeneration costs will be minimal in this case, as there is very less number of inhabitations or developments in the area near the site	The regeneration costs is not a major component in the site as the area of Quarry jetty area does not have any existing establishments.

### **3.6 CONCLUSION - PROJECT SITE**

Looking at the various commercial, environmental, technical factors considered in the site analysis, availability of land, business prospects, convenience of monitoring of the project, alongwith the discussions with the experts and authorities from different departments of A&N Administration, and consultant's experience, the site that has been selected for the Marina project is Viper Island. The next chapter gives detailed description of Viper Island and a broad level concept plan of the project as planned in Viper Island.

## CHAPTER 4 – PROJECT PLAN

This section provides details about the site, topography, area requirements, project components, services and facilities that may be included, regulatory aspects and financials of the project.

### 4.1 VIPER ISLAND

Viper Island is an island to the west of Junglighat. It is around 69 acres crescent shaped place where the Old British Jail where the British used to harbor convicts. It has ruins of gallows atop a hillock. The Jail was abandoned when the Cellular Jail was constructed in 1906. It has a jetty which is currently used by the daily ferry services for landing. These Ferries not only serve as a transportation medium for tourists who visit Viper Island to view the Old British Gallows, a place with historical significance. Boats for Viper Island are available from the Phoenix Bay Jetty, or the Jetty at Andaman Point near the Water Sports Complex. The following are potentials and constraints of the site at Viper Island:

#### Potential

- **Accessibility** – Viper Island is in close proximity to Port Blair, making the commercial market, airport and other amenities at a convenient distance to the Marina project site.
- **Monitoring & Control** – The administrative monitoring and control over the Marina is easy in Viper due to proximity to Administrative departments like Port Management Board.
- **Obtaining Clearances** – The international yachts entering Andaman waters need to obtain clearances, report to the Port Management Board and get customs and immigration clearance. The same shall be facilitated by the proximity of the Marina site to Port Blair.
- **Scope of Support Facilities** – The site has 5 acres of land area at disposal which shall enable development of state-of-the-art support service facilities.

#### Constraints

- **Utilities** – There is currently no supply of power, diesel and fresh water in Viper Island. Arrangements for the same, however, can be made as explained in the next section.
- **Wave Attenuation** – Identified site is deep within the inner harbor hence is mostly sheltered from both South West and North East winds but the same is classified as ‘Smooth Water’ all the year round as per the Merchant Shipping Act. The maximum wave height in the smooth waters is expected upto 1.2 m. The site may require wave attenuator. For the purposes of establishing feasibility the analysis is conducted after considering the capital cost for development of breakwater. The actual requirement and design of wave attenuator shall be established at the time of preparation of Detailed Project Report by the private partner.

### 4.2 SITE INFORMATION

#### Site Location

The below given map shows the location of Viper Island in A&N Islands. The site is 5 acre land with equivalent water area on the east coast of Viper island.

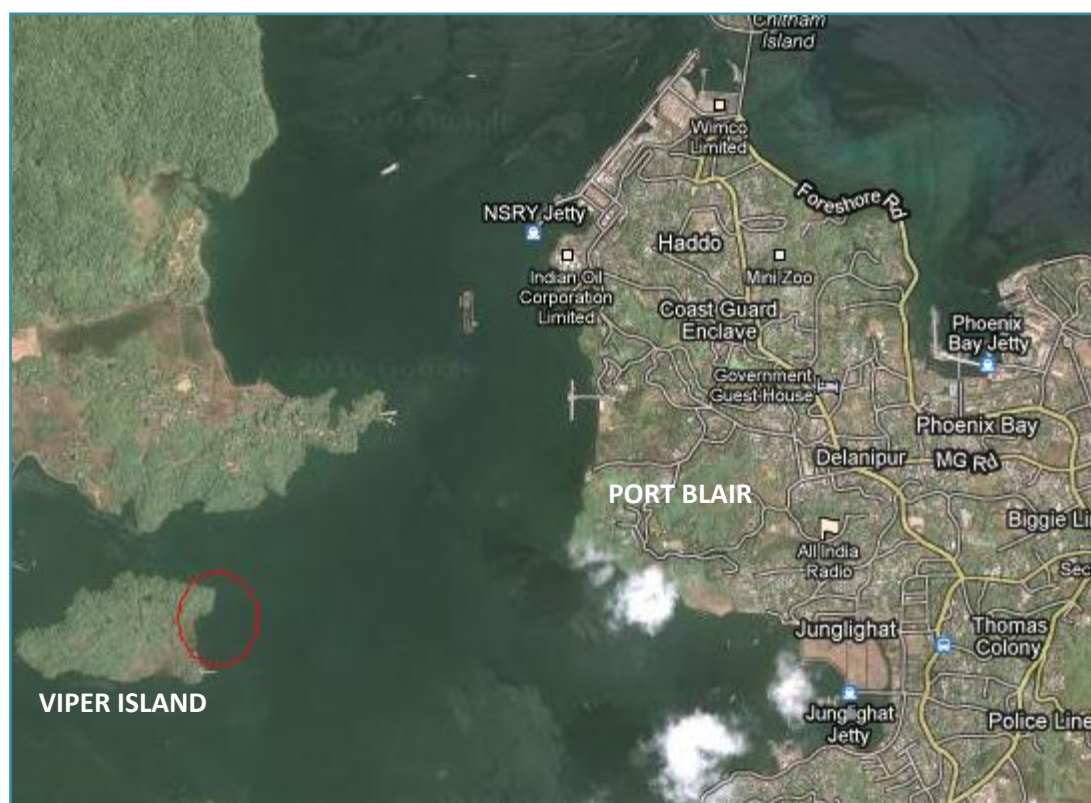


Figure 8: Site Location - Viper Island

### Hydrographic Data

The depth of water in region east to the Viper Island ranges from 3 m to 11 m with the majority of area having depth of 3 to 4 m. The above hydrographic information for the site has been obtained from the hydrographic charts published by National Hydrographic Office, Dehradun, 31 Aug 2003 under the Superintendence of Rear Admiral K R Srinivasan, AVSM, FIS, Chief Hydrographer to the Government of India.

### Maximum Wave Height

According to the Merchant Shipping Act, Viper Island is declared to be 'Smooth Waters' region with the wave height in the region ranging upto 1.2 m maximum.

YACHT TRAFFIC IN A&N ISLANDS (2004 – 2007)					
		2004-05	2005-06	2006-07	
1	April	17	13	21	North-East
2	May	5	3	2	Variable
3	June	Nil	Nil	Nil	South West Winds
4	July	Nil	Nil	Nil	
5	August	Nil	Nil	Nil	

6	September	Nil	Nil	Nil	
7	October	1	Nil	Nil	Variable
8	November	2	2	2	North – East Winds
9	December	6	7	6	
10	January	5	15	42	
11	February	7	46	72	
12	March	2	39	40	
	<b>Total</b>	<b>45</b>	<b>125</b>	<b>185</b>	

If we see the month-wise yacht traffic for the last 3 years in Andaman, it shows that no yachts visit the islands in the time of June to September which are the months with maximum effect of South West winds.

### Tidal Information

The tidal stream information for area where Viper Island falls is as shown below:

Time	Direction of Streams (degrees)	Rates at Spring tides (knots)	Rates at Neap tides (knots)
-6 hrs before HW	280	0.5	0.2
-5 hrs before HW	088	0.2	0.1
-4 hrs before HW	037	0.3	0.1
-3 hrs before HW	092	0.3	0.1
-2 hrs before HW	112	0.2	0.1
-1 hrs before HW	136	0.3	0.1
High Water(HW)	127	0.4	0.1
1 hrs after HW	136	0.3	0.1
2 hrs after HW	177	0.3	0.1
3 hrs after HW	295	0.4	0.1
4 hrs after HW	304	0.4	0.2
5 hrs after HW	301	0.4	0.2
6 hrs after HW	285	0.5	0.2

The chart given above shows the current in the waters during spring and neap tides. As we see in the chart, the current in wind in the Viper Island area is as low as 0.1 during maximum time in neap tides and goes maximum to 0.2 knots in the neap tide. During spring tide, the highest current seen is 0.5 while the maximum time current ranges between 0.3 to 0.4 knots.

### Land Availability

The land area for the project is yet to be demarcated. However, land availability of around 5 acres may be possible for the Marina project in Viper Island.

### Utilities

Viper Island currently does not have any sub-station for supply of power. There is a high voltage transmission line running across the island. It is expected that the marina facility shall have the following requirement of power during operations stage:

Electricity (full capacity)	Requirement (KVA)
Marina Facility (16 A @ 220 V for 50 slips)	176
Accommodation (10A @ 220 V for 30 rooms)	66
Other Facilities at Marina (@ 100% of above)	121
Total Requirement	363

Andaman Administration is planning to set up a sub-station at Viper Island to supply power to the various developments planned on Viper Island, marina facility being one of them.

The requirement of fresh water for operation of marina is as estimated below

Fresh Water (full capacity)	Requirement (kilo litre per day)
Marina Facility (5 PAC for 20 days for 50 slips at 150 lpd)	750
Accommodation (400 lpd x 30 room x 2 persons)	24
Total Requirement	774

Andaman Administration is planning to set up a pump house for drawing fresh water from the interiors of the Island and supply water through pipelines till the battery limits of the site.

#### Area features

The below given are some features of the area in which Viper Island falls.

No.	TECHNICAL PARAMETER	SITE POSITION		
1	Sheltered or exposed	Identified site is deep within the inner harbor hence is mostly sheltered from both South West and North East winds.		
2	Max. fetch (kms)	No tidal effect in the area;		
3	Direction of max fetch	No tidal effect in the area		
4	Max. wave height	The area has been declared as Smooth Water all the year round as per the Merchant Shipping Act. The maximum wave height in the smooth waters is expected upto 1.2 m.		
5	Max wave period	Negligible wave impact at the Inner Harbor		
6	Possible reflected waves	No surge effect and wave reflection phenomenon as the area is smooth waters		
7	Current flow rate	Month	Vector	
		Jan	Medium	50 – 74%
		Mar	Low	<50%
		May	Low	<50%
		July	Low	<50%
		Sept	Low	<50%
		Nov	Low	<50%
8	Max. wind speed & Direction of Prevailing Wind	Month	Mean Wind Speed (knots)	Direction of Wind

		0800	1700		
		Jan	7	8	North-East
		Feb	5	6	North-East
		Mar	4	5	North-East
		Apr	5	5	North-East
		May	7	7	Variable
		June	12	12	South-West
		July	11	11	South-West
		Aug	11	11	South-West
		Sept	9	9	Variable
		Oct	6	5	North-East
		Nov	7	7	North-East
		Dec	7	7	North-East
9	<b>Tidal range</b>	No tidal effect. However, the maximum tidal range reaches to 2.4 – 2.7 m			
10	<b>Water depth @ low waters</b>	3 m to 4 m			
11	<b>Highest water level</b>	5.4 m to 6.7 m			
12	<b>Drying</b>	No drying region in the area			
13	<b>Bridge length</b>	No bridge or causeway in the route / region			
14	<b>Disabled access</b>	No disabled access in the route			
15	<b>Land Availability</b>	Land area of 5 acres available for the project			

### 4.3 BLUEPRINT OF THE DEVELOPMENT PROJECT

While a Marina with a capacity of 50 berths is to be built according to project specification, the site has to be selected keeping in view future needs of expansion. Also, it is important that the planning of berths in the Marina be such that the 50 berths is able to cater to standard size vessels as well as appropriate provision is made to handle large size yachts. Thus, we feel that it is best if the specification of the boat length to be catered to by each berth in the Marina is specified by the Authority to the Private Partner. The major volume of yachts which fall under the category of Standard size Yachts vary from 30 feet to 50 feet. However, these days luxury yachts of premium standard with boat length varying from 80 feet to 120 feet is also gaining popularity. Finally, Mega yachts which constitute yachts with more than 125 feet are also present in the market, though it is very less in number. Accordingly, looking at the approximate volume of yachts of every category that are present in the market, as well as, referring to the '*Guidelines for Berthing Facilities for Marina – State of California, United States*', the following suggestive berthing plan for the Marina has been worked out.

#### Water Area Requirement

AREA PLAN - WET AREA						
Vessel Category	No. of Berths	Berth Length (in ft)	Berth Width (in ft)	Finger Width (in ft)	Total Berth Area Occupied (ft <sup>2</sup> )	Total Berth Area (in Acres)
Standard Size Berths upto 50 feet	30	50	15	3	27,000	0.62

Large Size Berths upto 80 feet	18	80	18.5	5	33,840	0.78
Large Size Berths upto 130 feet	2	130	22	6.5	7,410	0.17
					68,250	1.57
Area for Paths and movement areas						1.57
Minimum Wet Area requirement						3.13

The minimum water area required for the project is 3.13 acres. The site that has been identified has a water front of 168 meters. The site identified for the project contains 168 m X 130 m (551 ft X 426 ft) of water area, which is 5.38 acres. This gives the option to developers to create a good berthing design with requisite spacing in between berths, which is indicative of a quality Marina. Moreover, additional area in the waterfront will offer the scope of expansion of the facility in the future, if the developer decides to increase the number of berths in the Marina.

### **Marina Servicing Facilities**

The following is an indicative area plan of the land based project facilities:

### **Service Facilities**

Facility	Area (sqft)
Water Supply	400
Power Supply	250
Fuel Supply	2,421
Ship Store – Chandlery and other retail	500
Sewerage Pump out	250
Minor Repair Maintenance	15,000
Boat Storage	21,000
Restaurant & Café	2,000
Club House	3,400
<b>Total</b>	<b>45,221</b>

### **Accommodation:**

A 30 room accommodation facility is also envisaged at the project site. The configuration of which is presented below

Facility	Area (sqft)
----------	-------------

Standard Rooms (18 rooms of area 250 sqft)	4,500
Deluxe Rooms (10 rooms of area 350 sqft)	3,500
Suites (2 rooms of area 450 sqft)	900
Corridors, stairs and circulation	13,068
Reception and lounge and rest rooms	3,000
Administration	1,600
Health Club	1,600
Beauty Saloon	450
Dining Area	2,000
Back of House Areas	4,000
<b>Total</b>	<b>34,618</b>

# CHAPTER 5 – FINANCIAL ESTIMATION

The Project includes Marina development and operation and development of standard Marina services like Accommodation. This section deals with the preliminary cost analysis and revenue projections for the Project.

## 5.1 KEY ASSUMPTIONS

The key assumptions made during financial estimation of the project strength are outlined below. Since the different aspects affecting financial analysis are cost calculation, revenue, demand, funding strategy etc, the assumptions have been illustrated according to these classifications.

### 5.1.1 PROJECT COST

The Project Cost has been calculated on the basis of the facilities to be developed as a part of the Project and the cost of development of those facilities in the site selected for the project.

#### Marina

The structures deployed in the water in Marina are mostly floating structures, pontoons etc. The floating structures are installed using the turnkey method, which is that the structures are manufactured in the job-shops and transported and assembled at the project site. To arrive at the cost of the Marina on-water structures, we have referred to the Kochi Marina project, which through an international competitive bidding process in 2008 had selected a Marina developer for the construction of on-water structures of 50 berth Marina. Since, in the first phase of KTDC plans to build 30 berths, the bids were invited for construction of 30 berths. Out of the qualified bidders (who met the technical eligibility criteria), the following was the bids received from the lowest and second lowest bidder for the project cost.

Bid Results for Kochi Marina (construction of 30 berths)	
Bidder	Cost of work (in Rs Crores)
Gulf Marina	2
Walcon Marine	3
Average	2.5

*\*\*Information received from bidders of Kochi project*

Following a conservative approach, the average value of the lowest two bids has been considered, which comes to Rs 2.5 Crores. The following calculations are then used to arrive at the project cost of on-water structures for Andaman Marina.

Details	Estimated Cost of work (in Rs Cr)
Average Cost for 30 berths as per bid in 2008	3.33
Cost for 50 berths in Kochi (using Extrapolation)	4.17
Cost for 50 berths in Andaman (@20% escalation due to logistic costs, inflation in costs from 2008)	<b>5.00</b>

### Wave Attenuator

The wave height in a marina that is acceptable (moderate wave climate) varies between as low as 0.125 m to 0.75 m depending upon three factors – direction of wave, peak period of wave and the frequency of the wave event. As per the notification (S.O. 2790) from Ministry of Shipping and Transport (issued pursuant to Clause (41) of Section 3 of the Merchant Shipping Act, 1958) the project site (at Viper Island) is classified as ‘smooth waters’ all the year round. As per definition of smooth waters – the significant wave height is known to be less than 1.2 m. For a conservative estimate, we have kept the option of setting up a wave attenuator across two sides of the proposed water body, assuming the wave height in Viper Island is maximum, i.e., 1.2 m. In this scenario, the budgetary cost of the wave attenuator (including transportation, customs duties and installation) works out to be Rs 11.68 Cr. The same has been elaborated in the following table:

### Costing for Wave Attenuator

- Budgetary quote obtained: 5000 AED (Arab Emirates Dirham) per sqm of wave attenuator
- Total length of wave attenuator required – 250 mtrs
- Width of wave attenuator 6 m

Table 3: Cost Estimate - Wave Attenuator

	Break-up	Measure	Unit
Total area required for Wave attenuator	=250 x 6	1500	sqm
FOB (Freight on Board) cost of wave attenuator (per sqm) (inclusive of support for installation)		5000	AED
AED to Rupee conversion (17 <sup>th</sup> June 2009)		13.09	rupees / AED
FOB cost of wave attenuator	250 x 6 x 5000 x 13.09 / 10 <sup>7</sup>	9.82	Rupees Cr
Customs	at 10% of FOB	0.98	Rupees Cr
Countervailing duty	at 4% of FOB	0.39	Rupees Cr
Education Cess	at 2% of customs and countervailing duty	0.028	Rupees Cr

<b>Transportation Cost</b>			
No. of TEUs required		24	TEU (Twenty foot Equivalent Unit)
Cost of transportation per TEU		4000	USD
USD to INR conversion (17 <sup>th</sup> June 2009)		48	INR / USD
Cost of transportation of wave attenuators	$24 \times 4000 \times 48 / 10^7$	0.46	Rupees Cr
<b>Total Cost of wave attenuators</b>		<b>11.68</b>	Rupees Cr

Marina servicing facilities planned in Andaman Marina include fuelling, fresh water supply, sanitation, dry boat storage and minor repair and maintenance facility among the other things. Since the cost for development of facilities with user interfacing is different from cost of development of support facilities. Thus, the cost of development of all the land based facilities has been calculated separately for facilities with high quality furnishing requirements and other support facilities (with negligible furnishing requirements) as calculated as mentioned below:

**Table 4: Cost Estimation – Non-furnished Land Based Facilities**

<b>Land Based Facility</b>	<b>Estimated Built Up Area Required (in sq ft)</b>
Water Supply	400
Power Supply	250
Fuel Supply	2,421
Ship Store – Chandlery and other retail shops	500
Sewerage Pump out	250
Minor Repair Maintenance	15,000
Boat Storage	21,000
<b>Estimated Built Up Area (BUA) under non-furnished land based components (A)</b>	<b>39,821</b>
<b>Development Cost</b>	<b>Average Cost (Rs per sq ft of BUA)</b>
Total for Civil Works	1000
HVAC & Electrical	500
Other Cost	400
<b>Total</b>	<b>1900</b>
Estimated Built Up Area (BUA) under non-furnished land based components (A)	39,821 sq ft
Cost (per sq ft of BUA) (C)	Rs 1900

Estimated cost of development of non-furnished land based components ( $Cost_n = A \times C$ )	<b>7.56 Crores</b>
--	--------------------

Thus, estimated cost for Marina support facilities with low furnishing requirements is 7.56 Crores. The following is the calculation for cost of facilities with premium furnishing needs:

**Table 5: Cost Estimation - Furnished Land based facilities**

Land Based Facility	Estimated Built Up Area Required (in sq ft)
Restaurant & Café	2,000
Club House	3,400
<b>Estimated Built Up Area (BUA) under furnished land based components (B)</b>	<b>5,400</b>
Development Cost	Average Cost (Rs per sq ft of BUA)
Total for Civil Works	1200
Furnishing Works	800
Plumbing & Firefighting Services	500
HVAC & Electrical	1400
Other Cost	450
<b>Total</b>	<b>4350</b>
Estimated Built Up Area (BUA) under furnished land based components (B)	5,400 sq ft
Cost (per sq ft of BUA) (C)	Rs 4350
Estimated cost of development of furnished land based components ( $Cost_f = B \times C$ )	<b>2.34 Crores</b>

Thus, the construction cost for the development of land based facilities approximately comes to 7.56 Crores for support facilities, and 2.34 Crores for user end facilities. The other costs involved in Marina are the cost for development of slipway, and equipments required for the facility like travel lift etc. Plus, the site levelling costs before the start of the construction has to be considered. Factoring all these costs, the following is the total cost estimate obtained for the Marina:

**Table 6: Total Project Cost - Marina & Marina Service Facilities**

Cost Components – Marina	Total (in Rs Crores)
Water based structures (50 berths except wave attenuator and sea wall)	5.00
Wave Attenuator	11.68
Sea-wall	1.00
Site Leveling Costs	0.75

Costs of Equipments	9.25
Development of support facilities (non-furnished)	7.56
Development of support facilities (furnished)	2.34
<b>ESTIMATED PROJECT COST - MARINA</b>	<b>37.58</b>

## Accommodation

An accommodation facility of 30 rooms has been envisaged in the project. But the same has not been included for grant calculations. This means accommodation development will be done completely at the investment of private developer.

Table 7: Estimated Project Cost - Accommodation

Area Plan – Accommodation		Total (sq ft)
Standard Rooms	18 @ 250 sq ft	4,500
Deluxe Rooms	10 @ 350 sq ft	3,500
Suites	2 @ 450 sq ft	900
Front of House Areas (Admin Office, Circulation Area, Public Areas )		19,718
Dining & Function Areas		2,000
Back of House Areas (Kitchen, Workshop, Staff canteen etc)		4,000
<b>Accommodation Area Total</b>		<b>34,618</b>
<b>Cost Components - Accommodation</b>		<b>Total</b>
Area for Accommodation facility		34,618 sq ft
Cost of Construction		Rs 4,350 / sq ft
<b>ESTIMATED PROJECT COST - ACCOMMODATION</b>		<b>Rs 15.06 Cr</b>

## 5.1.2 PROJECT FUNDING

There are three types of funds that are available for the project. These are: Equity, debt and grant. We discuss here the sources of grant and other issues related to funding.

**Equity:** Equity capital is provided by the Sponsor(s) to the project company. It may be in the form of share capital.

**Debt:** Debt funding is raised through banks and financial institutions and is usually the non-recourse or limited recourse type. A typical BOT road project has a debt equity ratio of 70:30 and lenders have a lien on the Concession rather than the sponsors' balance sheet. Provided that the project is bankable, raising long-term debt is not difficult for the project company.

**Grant:** Government of India has allocated grant for the project under the scheme of **Additional Central Assistance (Tsunami Rehabilitation Plan)**. The maximum government grant allowable for the project is Rs.7.50 Crores.

The final amount of grant that shall be utilized in the project shall be decided on the basis of the actual project cost incurred by the developer on the project as the maximum proportion of grant to the project expense is also capped.

Further, the maximum limit imposed on the subsidy has been 40% of the cost element for Marina. However, the absolute cap for the subsidy for the project has been kept as defined above, which means that even if the Project Cost is higher than anticipated, the maximum grant for the project shall not exceed **Rs 7.50 Crores** as mentioned above. The final amount of grant that is utilized in the project shall be decided on the basis of the structuring of the project.

### **ESTIMATED PROJECT COST**

The following are the calculations on the basis of which the project cost has been estimated. The cost for development of Accommodation facility has not been included in the calculations for the Marina, as the grant shall not be given for the development of accommodation. The cost of Accommodation development has been displayed separately. Since the Marina facilities include development of Minor Repair & Maintenance facility, the cost of equipments, slipway construction etc is taken to be a part of the total cost of equipments for the Marina. Cost of Excavation is required for initial leveling of land before the same can be used for construction. Below is the project cost estimate arrived at after the consideration of all the above mentioned cost components.

<b>COST CATEGORY</b>	<b>AMOUNT (RS CRORES)</b>
<b>Cost – Marina</b>	<b>37.58</b>
<b>Cost of Accommodation</b>	<b>15.06</b>
<b>TOTAL PROJECT COST</b>	<b>52.64</b>

### **FUNDING MECHANISM**

Table 8: Funding - Marina & Accommodation

<b>Funding Mechanism</b>	<b>% of Total Project Cost (Marina)</b>		<b>Amount (in Rs Cr)</b>	
	<b>Marina</b>	<b>Accommodation</b>	<b>Marina</b>	<b>Accommodation</b>
<b>Equity</b>	32%	40%	<b>12.03</b>	<b>6.02</b>
<b>Debt</b>	48%	60%	<b>18.05</b>	<b>9.04</b>
<b>Grant</b>	20%		<b>7.50</b>	
<b>Total</b>			<b>37.58</b>	<b>15.06</b>

### 5.1.3 ASSUMPTIONS – CAPITAL EXPENDITURE

For financial analysis, the maximum allowable subsidy has been utilized in the project, taking which the project cost is as mentioned below:

Table 9: Capital Expenditure

S NO.	PROJECT SUB-COMPONENT	EXPENDITURE (IN RS CRORES)
1	Marina	37.58
2	Accommodation	15.06
	<b>TOTAL PROJECT COST</b>	<b>52. 64</b>

### 5.1.4 ASSUMPTIONS – OPERATIONAL EXPENDITURE

#### Marina

The major components of operational costs are sales & marketing, employee, raw material, maintenance costs and cost of utilities. The project facility being planned in the Marina is a leisure tourism destination which will provide high end services to niche sector of tourists. Thus, the maintenance, level of quality required etc. are similar in a Marina with that of hospitality projects who also provide service to high end tourists. Thus, the base for marketing costs, utility costs and other expenses for the facility have been taken from hospitality industry averages. The major difference in the costs for a Marina is in the cost for employees and maintenance cost. A total of 15 employees have been taken for the Marina which includes employees with different per day remuneration and different role and contribution. Because, vessel pilotage for vessels above 200 GRT will be done by PMB pilots (and the fee also shall accrue to PMB), while the vessels with less than 200 GRT tonnage will do self piloting, there will be not a need for pilot in the Marina. Still, a pilot has also been taken in the calculations for making it a conservative estimate. The maintenance costs depend upon the useful life of the asset. The useful life of Marina is taken to be 15 – 25 years. Thus, going by the average value, the useful life of Marinas has been taken as 20 years and thus, the depreciation has been taken as 5% of the capital cost. Regular repair and maintenance for the Marina shall not be high in the initial years, but will start increasing gradually. Thus, in the initial years, the repair and maintenance has been taken as 0.75 % of revenue, as the more the utilisation of facility (revenue), the more the need for maintenance. The Annual Concession Fee for water area being given under the Project has been taken as at Rupees 4.5 per square meter per month which is subject to revisions as notified by the port. The utility costs, maintenance cost, sewerage costs etc can be linked to revenues as they increase or decrease with the rise or fall in utilisation of the facility (directly related to revenue). Thus, the following cost figures are arrived at for the Marina operations:

Table 10: Assumptions – Marina Operational Expenditure

OPERATIONAL EXPENDITURE ASSUMPTIONS	
<b>Marina</b>	
Regular Maintenance	0.75% of Total Revenue (with increasing trend)
Salaries & Wages	2.73 lakhs / mnth (with increasing trend)
Utilities (Fuel, Electricity and others)	4% of Revenue
Water / Sewerage / Refuse	2% of Berthing Revenue
Annual Concession Fee (Water Area)	Ar Rs 4.5 per square meter per month (totalling to Rs 11.79 lakh per year)
<b>Accommodation (based on benchmarking with similar facilities)</b>	
Raw Materials	8% of Revenue
Employee Cost	7% of Room Revenue
Fuel Cost	5% of Revenue
Maintenance	0.75% of capital cost (increasing trend)
Marketing	10% of Revenues (decreasing trend)
Other Expenses	5% of Revenue

### 5.1.5 DEPRECIATION

As an industry average, 5% depreciation has been used to calculate asset value decline for the Marina project.

Table 11: Depreciation

DEPRECIATION @ WDV METHOD	As % of Net Asset Book Value
Marina	5%
Accommodation	5%

### 5.1.6 PERIODIC MAINTENANCE

The Period Maintenance Cost of the Marina & Accommodation Facility is 5% incurred every 5 years during its operations.

### 5.1.7 TAXATION

The assumptions related to taxation are as follows:

**Table 12: Tax Rate Calculation**

PARTICULARS	ASSUMPTIONS
Base Corporate Tax rate	30.00%
Surcharge	10.00%
Education Cess	3.00%
Effective Rate	<b>33.99 %</b>

### 5.1.8 ASSUMPTIONS - TARIFF

The major revenue for Marina accrues from berthing facility. Besides berthing, the other facilities like fuel, electricity, services provided in the club house (laundry, showers etc) shall be revenue generating. For benchmarking the rates of above facilities, the Marinas from South-east Asia were considered and an average of rates for these facilities charged by them was considered.

**Table 13: Tariff - Marinas in South East Asia**

Rates of Marina facilities in South East Asian Marinas (Figures in Rs)					
	Phuket Boat Lagoon, Thailand	Miri Marina, Malaysia	Sebana Cove, Malaysia	Admiral Marina, Malaysia	Nongsa Point Marina, Indonesia
Daily (<75 ft) (Per ft)	26.80	14.1	19.74	24.39	42.31
Monthly (<75 ft) (Per ft)	569.93		376.05	658.47	434.20
Daily (>75 ft) (Per ft)		14.1		35.53	55.11
Monthly (>75 ft) (Per ft)	655.98			958.80	1,469.60
Fresh Water (per Cu. M)	98.75	28.2		84.60	113.56
Electricity (per KwH)	9.17	28.2		14.10	8.35
Fuel - Diesel (Per Liter)	As posted in fuel dock				40.75
Fuel - Petrol (Per Liter)					45.09

Of these, the values of Nongsa Point Marina are outlier, i.e., extreme values, which if taken into the sample, will highly affect the averages. Thus, the value of Nongsa Point is ignored and the average tariff of rest of the values is taken. Approximating, the values from the reference chart shown above, the rate of major revenue generating facilities is arrived at as shown below:

**Table 14: Indicative Tariff - Marina Support Services**

TARIFF CHARGES (in Rs)	
PROJECT SUBCOMPONENT	
Transient Rentals	<b>20 / Foot / Night</b>
Slip Rentals	<b>500/ Foot / Month</b>
Liveaboard Utility Usage Charges	<b>75 / Night</b>

Other Utility Charges	
Electricity Charges (per Kwh)	10
Fresh Water Charges (per Cu. M.)	50
Showers	20 per 6 minutes
Washers	90 per load
Dryers	10 per 7 minutes
Soap Dispenser	30 per box
Pump Out	
Sewage	Free
Bilge	450 pump out of less than 50 gals

Revenue Category	% of Total Revenues
Berthing & Support Facility Usage Revenues	74%
Value Added Revenues	26%

Other Relevant Specifications	
Inflation Rate	5%

### 5.1.9 DEMAND FORECASTING

#### Marina

The past traffic for Yachts in Andaman is as given below:

Table 15: Monthwise Historical data for Yachts Traffic in Andaman

		2004-05	2005-06	2006-07
1	April	17	13	21
2	May	5	3	2
3	June	Nil	Nil	Nil
4	July	Nil	Nil	Nil
5	August	Nil	Nil	Nil
6	September	Nil	Nil	Nil
7	October	1	Nil	Nil
8	November	2	2	2
9	December	6	7	6
10	January	5	15	42
11	February	7	46	72
12	March	2	39	40
	<b>Total</b>	<b>45</b>	<b>125</b>	<b>185</b>

**Table 16: Summary of Past Traffic of Yachts in Andaman**

Year	Number of Foreign Yachts
2007 - 08	88
2006 - 07	185
2005 - 06	125
2004 - 05	45

The average yacht traffic in last 3 years (since 2004-05 was the year of Tsunami in South East Asia) is 133. Taking an average stay of 7 days per yacht in Port Blair, the total number of berth days occupied by the yachts comes to 929 days. Total berth days available are  $50 * 365 = 18250$  days. Thus, according to the current traffic intensity, only 5% occupancy will be seen on the transient berths.

**Table 17: Berthing Demand Forecasting**

Category	Value
Average Yacht Traffic (Last 3 Years), T	133
Average Stay per Yacht in Port Blair, S	7
Total Berth Days Occupied, (BD = T x S)	929
Available Berth Days, A	18250
Berth Occupancy, O = BD/A	5.09%

However, since the present traffic is seen when there is no Marina facility in Andaman, it can be safely assumed that the total traffic that shall be witnessed for the project shall be much more than the current traffic. For projection purposes, we have taken the transient traffic for Marina to be 20%. For revenue estimation, the following occupancy levels have been assumed:

**Table 18: Expected Occupancy - Marina Berths**

OCCUPANCY RATES				
Type of Occupancy	2011	2015	2020	2025
<b>Transient Rentals</b>				
Standard Berths (50')	20%	30%	30%	30%
Large Size Berths (80' – 130')	15%	20%	20%	20%
<b>Slip Rentals</b>				
Standard Berths (50')	20%	30%	37.5%	37.5%
Large Size Berths (80' – 130')	15%	25%	30%	30%

It is assumed that in the initial few years, transient traffic forms a greater or equivalent proportion in traffic to the traffic with longer stay period. This is because there is already an existing market of transient traffic in Andaman Sea, which is why it will take lesser marketing and efforts to pull that category of traffic. However, with time and consistent marketing of the project, Slip Rentals for slips rented for longer period will gain share, as the traffic of tourists visiting the island for destination touring will increase.

## Accommodation

Since the projected traffic would be higher than the current traffic, the occupancy level of the accommodation facility would also increase. At the same time, the seasonality factor of demand for Marina berths would guide the demand for accommodation facility. The expected rate of occupancy of the accommodation facility is mentioned below:

**Table 19: Expected Occupancy - Accommodation**

OCCUPANCY RATES				
Type of Occupancy	2011	2015	2020	2025
Standard Rooms	30%	50%	67.5%	67.5%
Deluxe Rooms	20%	40%	60%	67.5%
Suites	20%	40%	60%	67.5%

## HISTORIC DATA

The historic data for tourism traffic was utilized to obtain seasonality factor for the purpose of calculation of maximum capacity utilization at different points in the year.

TOURISM TRAFFIC IN A&N – HISTORIC DATA (2000 – 2007)								
Month	2007	2006	2005	2004	2003	2002	2001	2000
January	18421	9374	1335	13309	7919	7599	8368	9577
February	15402	8191	1313	12011	8654	9366	7017	7615
March	15824	9490	775	12222	7699	7363	6304	6979
April	13626	7509	389	8647	7967	7411	7096	5821
May	12846	7516	896	8931	7052	6085	7662	5884
June	9515	8598	690	7173	5285	6274	7691	6012
July	8125	4268	180	4683	3884	6167	7194	5846
August	7995	4229	388	5616	7992	7729	6273	6395
September	10310	11961	3964	6229	9075	8625	6343	6937
October	9977	16239	6431	9046	9071	9196	8206	7323
November	9884	15836	6466	9949	11378	9286	8944	7999
December	14665	24414	9554	11766	12204	10235	10017	9728
<b>Total</b>	<b>146990</b>	<b>1,27,625</b>	<b>32381</b>	<b>109582</b>	<b>98180</b>	<b>95336</b>	<b>91115</b>	<b>86116</b>

## SEASONALITY FACTOR

The following seasonality was noticed in the tourism traffic to Andaman & Nicobar Islands:

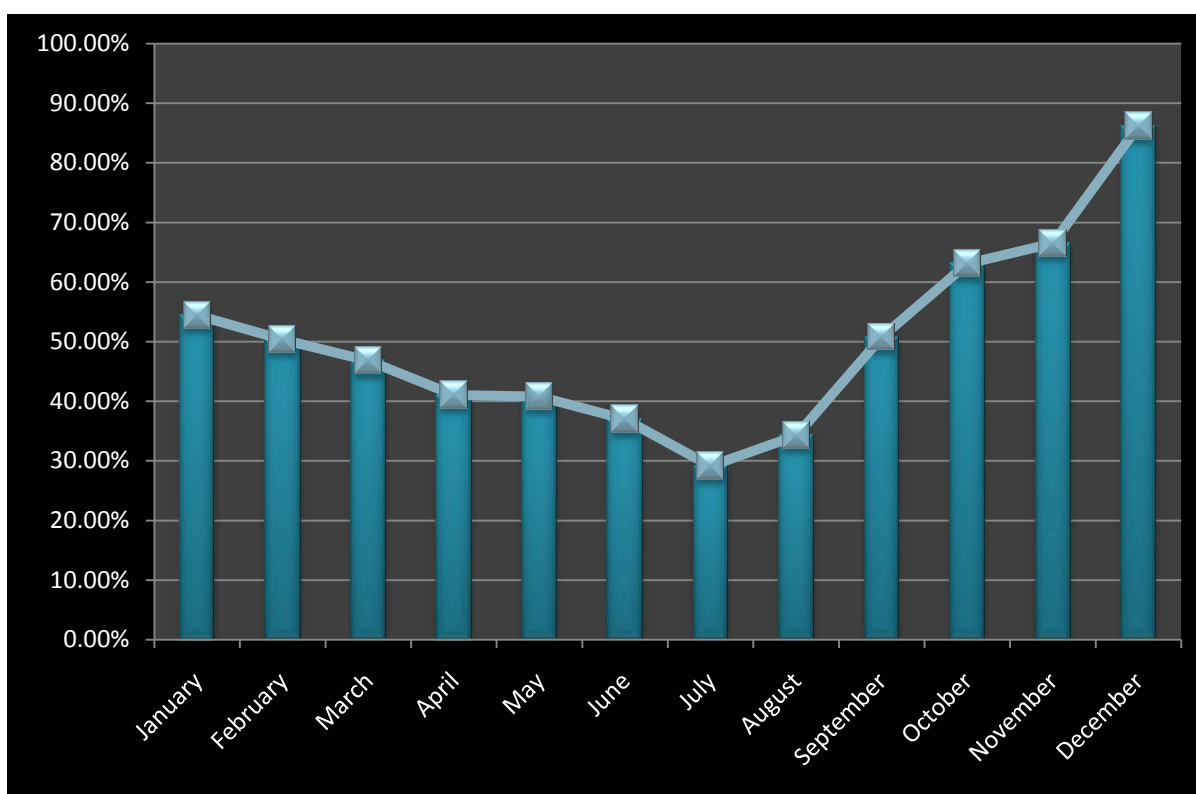


Figure 9: Seasonality in Tourist Traffic at different time points in the year

The above seasonality assumptions were input into the demand projections to obtain the annual number of passengers for the Cruise travel. Using the seasonality factors and the annual occupancy rates values, the following demand pattern for the Cruise travel was obtained:

#### 5.1.10 FUNDING ASSUMPTIONS

Assumptions related to funding are summarized in the following table:

Table 20: Funding Assumptions

PARTICULARS	ASSUMPTIONS	COMMENTS
Debt Equity Ratio (for Funding after Subsidy)	60: 40 for Marina and Accommodation facility	Generally accepted ratio for Project Finance
<b>Term loan</b>		
Interest rate	12.5% p.a	
Repayment period	10 years	Post Moratorium
Moratorium	2 years	

#### 5.1.11 REVENUE PROJECTIONS

The following are the financial estimates obtained of the project – excluding grant taken from government: for a concession period of 60 years

Table 21: Project Financial Projections

FINANCIAL PROJECTIONS (in Rs Lakhs)						
Particulars	2009& 2010	2020	2030	2040	2050	2068
Revenue		1637.6	2773.29	4513.59	7344.64	17643.18
O&M Expenses		(433.22)	( 803.73)	(1418.80)	(2489.62)	(6765)
Capital Expenditures*	(4514.56)					
Project Cash Flows	(4514.56)	1204.38	1970.06	3094.79	4450.23	9905.8
Project IRR (Pre Tax)	17.11%					

\* This excludes Rs 7.5 Cr of grant that is expected to be drawn down by the developer

The Project IRR for the project works out to 17. 11%.

### 5.1.12 CONCLUSIONS ON FINANCIAL ANALYSIS

Generally, in infrastructure projects, a Return of 17 - 18 % is considered to be a good return value from the project. The project, with standard demand, revenue and cost estimates in the event of utilization of grant returns 17.11% to the Project. As we will observe below, the returns are very sensitive to the revenue of the service. Also, the high sensitivity of the project to demand and to tariffs indicates that the project bears high risk there is an additional scope for higher returns that can compensate for this higher risk in the project. Out of the total land area of 5 acres allocated for the project a total ground coverage of 2.74 acres will be utilized for the plans as presented in this report. The rest of the land is available for further development subject to the applicable rules and regulations.

### 5.1.13 SENSITIVITY ANALYSIS

#### Sensitivity of Project IRR to Revenue

By the following table, we can see that any variation in the revenue generation of the project leads to a considerable change in the Project's Pre-tax Internal Rate of Return (IRR). A decrease in project returns of 20% makes the project IRR as poor as 12.10%.

Table 22: Sensitivity Analysis - Project IRR to Revenue

<i>Variation in Revenue</i>	<i>Case - Rise / Fall</i>	<i>Project IRR</i>
-20%	Decrease by 20%	14.06%
-10%	Decrease by 10%	15.64%
0%	Revenue level as in Present Analysis	17.11%
10%	Increase by 10%	18.51%
20%	Increase by 20%	19.85%

### Sensitivity of Project IRR to O&M Expenses

By the following table, we can see that with variation in O&M expenses there is a considerable change in the Project IRR.

Table 23: Sensitivity Analysis - Project IRR to O&M Expenses

<i>Variation in O&amp;M Expenses</i>	<i>Case - Rise / Fall</i>	<i>Project IRR</i>
-20%	Decrease by 20%	17.93%
-10%	Decrease by 10%	17.52%
0%	Expenses as in Present Analysis	17.11%
10%	Increase by 10%	16.69%
20%	Increase by 20%	16.26%