

CHAPTER 3 PLAN PROPOSALS

3.1 NATURE AND TYPE OF PLAN PROPOSALS

Development Approach towards fulfillment of the plan objectives has been outlined in the previous Chapter. Further identification of physical development projects & their spatial organization would lead the way forward not only in meeting the interests of the tourists but also the aspirations of the local community and ensure sustainability in socio-economic functioning of the settlements. Compatibility in competing uses of land also needs to be ensured for harmonious development and the Master Plan for Havelock & Neil Islands would attempt to achieve this through proper zoning of land use. Master Plan would also determine the extent of land to be brought under different land use zones on the basis of the projected local population, expected level of tourists and the planning norms suggested by the apex planning bodies. Orderly physical developments are proposed to be achieved through prescription of certain minimum standards in key planning parameters, which will supplement the plan proposals as 'Development Regulations'. These apart, the Master Plan proposals will also include certain policies & programmes, for the consideration of the Administration towards improving the economy and maintaining the ecological balance in the islands. The following sections of this chapter provide the above details.

Infrastructure is the key towards development and an important determinant of the standard of living of the people. The term 'Infrastructure' is wide and covers many things from the local to regional level. The Master Plan for Havelock & Neil Islands draws attention to the basic services of the local population as well the tourists' population which could be sizable and matching in number.

3.2 BASIC SERVICES

3.2.1 Water Supply

Discussion on water supply status in Chapter 2, leads to the conclusion that Havelock Island would require 0.40 MLD of additional water to sustain the present level of 120 lpcd supply by the plan period 2034 for the resident population. By similar standard, Neil Island would require 0.33 MLD of additional water by the year 2034. Provision of water supply to the tourist population at the level 120 lpcd, will add up to the additional water requirement to the level of 1.60 MLD and 0.57 MLD at Havelock and Neil Islands respectively.

Provision of water supply to the resident and tourist population at the minimum level of 70 lpcd, as visioned by the Ministry of Drinking Water & Sanitation and as recommended by the CPHEEO of the Ministry of Urban Development, Government of India require additional water to the extent of 0.52 MLD at Havelock Island and 0.26 MLD at Neil Island. Unaccounted and water loss could further push up the additional need by atleast 10 per cent.

Further, it is to be noted that agriculture which is practiced in sizable extent of lands at Havelock and Neil Islands, consumes large quantum of subsurface water. Modernization of irrigation methods and alignment of cropping pattern with minimum use of water could help to conserve water and its

sustainability for the domestic use. Strengthening of existing small and local level ponds are proposed in addition to creating check dams, where concentrated water flows are more prevalent, which will help watershed development in the islands.

These two islands receive good amount of rainfall for more number of days, and direct use of rainwater, could be a strategy for augmenting utilizable water resources.

Tourism activities demand large quantity of water and they become responsible for increasing withdrawals of underground water. The anticipated level of increase in tourists' will also cause fast depletion of underground water. The blossoming tourism industry at Havelock and Neil Islands is to be encouraged to cut water consumption and improve waste management towards sustainable development of these islands. Tourism Industry consumption if not regulated, it could cause high levels of undesirable impacts over the local communities.

The A & N Administration may serve the water requirement of resident population with priority and help the Tourism Industry to develop the infrastructure required for establishing new water sources and conservation of water. The cost of water supply from the tourism industry is to be fully recovered by the administration. Desalination Plant could be installed to support the water needs of the tourism industry, which would be in a position to meet the cost of water through desalination.

3.2.2 Drainage

As mentioned earlier, the amount of rainfall is good at these islands. However, being surrounded by sea on all sides with natural slope towards the sea, run-off water is proportionately high at both these islands. Harvesting of rain water is proposed to sustain the water table which is depleting fast in view of high quantum of withdrawal for agriculture and use of tourism industry. Use of direct rain water is also suggested in the last section. Channeling rainwater through construction of a proper drainage system is proposed to meet the above requirements.

3.2.3 Waste Management

It is proposed that Waste management exercise is given priority attention both at Havelock and Neil Islands. Deficiencies in waste management will have snowballing impacts over multitude of sectors. Especially, consequences on health, ecology and economy could be highly damaging and irreparable, if timely actions are not taken in this direction.

As mentioned in chapter 1, both solid and liquid waste management measures are yet to be taken up in full, at these islands. In both islands, availability of the toilet facilities for the local population is only minimal. Income in some cases and the lifestyle in others, are the reasons behind people not having the toilet facility of their own. However, considering the number of households it would not be a difficult task to provide individual toilet or community toilet for the entire population in these islands, and also completely ban the open defecation. It is proposed that the households below the poverty line, are financially supported by the Administration to built toilet facilities, if land is available and where land is

not available community toilet facilities could be established. Public toilets are also proposed in all places of tourists' congregation.

Wastewater treatment protects human and environmental health, and therefore it is proposed that the waste water generated at these islands is fully treated and reused to the fullest. There are several options and methods to consider in waste water treatment. As suggested in Chapter 2, decentralized approach in waste management is preferred as it evades resources and impacts of moving the waste to a central location for treatment, considering the distributed nature of communities, land requirement and the environmental sensitivities.

The sewage management through conventional septic tank system though widely popular and used by several communities requires reconsideration for proposing in the islands in view of the prevailing soil conditions, water table, and closeness of the communities to water bodies. The Ministry of Environment and Forests, Government of India has published a compendium on sewage treatment technologies, which gives the fact sheets of different methods. The Administration may also consider, the Decentralized Waste Treatment System (DEWATS) proposed by the Centre for Environmental Planning and Technology (CEPT), Ahmedabad which requires only about 0.25 hectares of land area for establishing the facility for population upto 5,000.

The Hotel Owners Association also to be encouraged to have their own individual / combined wastewater treatment plants and should not be allowed to discharge the waste water in open. Master Plan proposes to conserve water and focus on treatment and reuse of water with the participation of the hotel / tourism industry. Commercial establishments, which are to be considered big in the island context, are proposed to construct their own wastewater treatment facilities.

Solid Waste Issues looms large at these islands, as the volume of wastes have significantly increased over the years with the increasing tourism activities and modernization of life styles of the local communities. Waste from tourism could be nearly twice the rate of local waste generation. Wastes are dumped in open, as the generation is more than the capacity of the local community / administration to manage. The size and function of these islands may also not support full recycling and reuse of solid waste. However, attention is required to be placed on segregation of waste and treatment of biodegradable waste locally. Wastes that are not possible to be recycled and reused locally are to be transferred out of the island, which otherwise would lead to retention of wastes in the islands.

3.3 SOCIAL INFRASTRUCTURE

3.3.1 Health

Considering the isolation of inhabited islands, difficult terrain and communication bottlenecks, the provision of health facilities have been liberal and the norms for establishment of different levels of facilities have been relaxed. As per the relaxed norms Primary Health Sub-Centres are established at a distance of 5 KM and PHCs at 10 KM distance irrespective of population. Though this level of facilities may be adequate for the resident population, the tourists require higher level of health facilities. The high value tourist population at minimum requires 'doctor on call' facilities at the staying places, and emergency medical care facilities of very high order. It is proposed that a working model is developed

with the participation of private sector to establish emergency care hospital at both Havelock & Neil with availability of highly skilled medical practitioners, who could be brought to these islands for short stays capitalizing the tourism attractions present. Such a facility will greatly help the tourists and also facilitate the local population.

Further, it is proposed that 'Air Ambulance' facility is made available to transport the patients (both tourists & locals) from these islands to Port Blair.

3.3.2 Education

Though, the availability of educational institutions are adequate for the present as mentioned in Chapter 1, it would require additional facilities during the plan period, mainly considering the spread of the communities. Establishing 1 higher secondary school additionally at Havelock Island and 2 primary schools at Neil Island are expected to meet the requirements.

3.3.3 Housing

As per the 2011 census, of the 1641 households in Havelock Island 862 of them are housed at Govindanagar, which constitutes 52 %. The nearness to boat jetty and better opportunities for livelihood through business and tourism related activities make Govindanagar as the preferred location for housing. The similar reasons contribute for Neil Kendra in Neil Islands, to house 40 % of the households in the Neil Islands in its territory. Unplanned and organic growth of these settlements, coupled with poor housing conditions and disharmony between the built and the natural environment are discouraging for development of tourism activities. Further, planned and compact development of housing colonies would help providing better quality and level of services, which both the Havelock & Neil Islands very much require.

Therefore, it is proposed that a planned residential neighborhood is developed at Govindanagar providing access to all public facilities. Similarly, a residential neighborhood could be developed at Neil Island, and Bharatpur will be the suitable location, as sufficient extent of lands are available there and also it is located in close proximity to Neil Kendra. It is proposed that the land use planning takes care of compact and clustered development, around the existing and new locations.

Further, it is projected that during the plan period, the arrival of tourists would increase to 5000 and 2000 tourists everyday at Havelock & Neil Islands respectively. The tourists are expected stay for atleast couple of days, and this scenario is expected to create a surge in level of service population, for whom the housing requirement is also to be planned.

Need for rental accommodation could turn to be a new and important issue, where most of the resident population currently lives in their own premises. In many cases, the support population in-migrating to these islands may initially require single rental accommodation. It is proposed that the Administration, may consider a proposal for construction of rental accommodation, including the people working in the private sector. The Administration also need to plan for alternative accommodation for the households, living in areas proposed for developing public and tourists facilities.

3.4 TOURISM DEVELOPMENT

The Economic Survey of A & N Islands 2007-08, published by the A & N Administration has set the vision to develop A & N islands as an up market destination for eco tourists through environmentally sustainable development of infrastructure without disturbing the natural eco systems. In this direction, the Tourism Development at Havelock and Neil Islands is to focus on –

- Achieving Maximum Economic Benefit with Minimal Ecological Impacts
 - Increasing tourist flow and extend of stay
 - Sustenance of the Tourists interests.
- 1) Prepare an Action Plan for implementation of the identified Tourism Development Projects in the Master Plan and also identify tourism spots / locations which can attract tourists with minimal interventions. The Action Plan is to draw suitable site locations through scientific and systematic analysis for the various projects identified, prepare cost estimates, suggest financial modeling and develop strategies for project execution and maintenance.
 - 2) International Tourists help to achieve high value tourism with low volume. Havelock and Neil are to become the Face of Andaman Tourism, which will tremendously help attracting foreign tourists. Tourism Department of the A & N Administration need to engage itself with the Tourism Agencies of the other State Governments in the main land, to channel the international tourists to the island.
 - 3) Identification of Port Blair - Neil - Havelock - Little Andaman as the Priority Circuit for development of Tourism, as identified by M/s. IL & FS in its report submitted to the Ministry of Tourism, Government of India (2012) is to be taken further. Tour Operation in such circuit will help to bring more tourists to Havelock & Neil Islands and also save time and energy in transportation of the tourists.
 - 4) Entry to Havelock, which is considered to be paradise on earth, is most uninviting. No billboards to welcome the arrival, or to pronounce the island's treasure or to direct tourists for a greater exploration in store! Therefore, it is proposed to develop a 'Tourists Pavilion' adjoining the Boat Jetty at Govindanagar (Havelock). The tourists on arrival at Havelock will proceed to the Pavilion, which will house tourists information centre, dormitories, cloak rooms, restaurants, clinic, booking centres for hotel / resort / cabs etc.. It could also be the place to begin chartered day tours of the islands. Similar idea of 'Tourists Pavilion' is also proposed for Neil Island at Neil Kendra Revenue Village.
 - 5) The immediate surroundings of the boat jetty at Govindanagar is a mix of tourists and local community. Tourists are to receive inviting and absorbing experience on landing at these islands, uninterrupted by the activities of local population, congestion and pollution. The area around boat jetty and the proposed 'Tourists Pavilion, require complete rejuvenation for which a detailed spatial planning is proposed.

- 6) Govindanagar beach is just adjacent to the boat jetty, where the tourists arrive. Presently, it is the place to stock the commodities for transport, and dumping the waste. Maintaining an unpolluted coastal environment and beautification of this beach, can offer the tourists an enchanting experience within hours of their arrival. Beach / Sea Front developments are proposed not only at Govindanagar but also required at Kalapathar, Radhanagar, Sitapur, Bharatpur, and Lakshmanpur.
- 7) Corals are seen at low water depths in the vicinity of elephant beach and light house. Corals are seen in naked eyes and snorkeling is more enticing for those, youth in mind. However, not many tourists could experience this, as the travel from Govindanagar to the coral colony in fishing/ fibre boats is considered unsafe, as no licensed boat operators at present. Constructing a Boat House at Govindanagar will help to operate licensed boat services to these coral colonies. Coral colonies are also seen towards the northeast of Havelock Island, beyond the sheet rocks in the coast adjoining Vijaynagar. Boat House similar to Govindanagar is proposed at Vijaynagar, which can help to organize trips for scuba diving.
- 8) Open spaces and Parks, apart from serving recreational and leisure purposes also help to manage the spillover tourists' population. The Parks also function as intermediary spaces for the tourists, while visiting the various tourists' places. Unfortunately, both the Havelock & Neil Islands do not have any parks, and hence it is proposed to develop one each in these islands, in such a way that they are near to the boat jetties.
- 9) Scuba diving is a adventurous and famous recreational activity for coral viewing. However, the activity requires physical agility, hence not suited for all categories of tourists. Therefore, a Coral Museum is proposed with exotic varieties of corals very near to the boat house, so that those who do not prefer to go for scuba diving, may still enjoy the wonders of nature in a more convenient setting. An Aquarium could also supplement the coral museum to add more attractions for the tourists.
- 10) Aerial view of the serene nature of islands will always be shining in memory! Havelock endowed with top class beaches of the world and vast lands of agriculture, plantations and natural vegetation will be absorbing to gaze from an elevation. The maximum elevation of the islands is about 185 metres from the mean sea level and at this point it is proposed to erect a View Tower to earn a spot glimpse of the islands. The tourists can also spot other islands from the tower with the aid of binoculars installed in the towers.
- 11) A trek path is proposed for a natural trail in the tranquil forest environment to visit the Island View Tower. After having a bird's eye view of the island from the tower, the tourists can descend down in the forest path to the Radhanagar beach. Also, a Tourist Info booth is proposed at the foot of the trek path, where resting lounges, tourists' info booths, restaurant, art culture, internet café are proposed to be made available.
- 12) Increasing the tourists flow and extending their duration of stay are the focus for development in the Master Plan. Number of proposals are being made in this Master Plan to generate more

interest for the tourists, which can also help to attract more tourists to these islands. It is necessary that the accommodation facilities also become part of tourism elements, and therefore it is proposed that Eco Resorts are encouraged to be established which can have minimal impact on the environment. In this direction, it is proposed that the establishment of eco resorts is not largely seen as a commercially exploiting activity in land use planning.

- 13) Pleasure of tourism is significantly influenced by the nature and characteristics of the staying places. Different kind of lodging facilities create, range of emotions and tourists are generally sensitive in this regard. The cost of lodging also impacts the number of tourists and the economic level of tourists. Though, the objective of tourism development in the islands is set on 'high value low volume' tourism, it is proposed that enough opportunities are created for all sections of the tourists to enjoy the serenity and the beauty of these islands. In this direction, it is proposed that four types of tourists' accommodation, viz., Dormitories, Budget Lodges, Rural Stay Houses and Eco Resorts are developed at different locations.

While Radhanagar could be the most desired village for establishing eco resorts, Krishnanagar could be the ideal place for promoting budget accommodation and rural stay places. The entry points like Govindanagar in Havelock Island and Neil Kendra in Neil Island are the places where dormitory facilities to come up. In order to encourage eco resorts, the land parcels to be zoned under Open Spaces and Parks could also be permitted to develop such accommodation facilities.

- 14) Developing Rural Stay Places at Krishnanagar will help developing this village as a centre for 'Rural Tourism'. The habitations, the agricultural fields around and the temples present at Krishnanagar could be well taken advantage of, in this regard.

3.4.1 Guidelines for Eco Friendly Constructions

As Eco Resorts are proposed to be encouraged in the sense that it will cause minimal impact over the environment, caution is to be exercised in granting permission for these tourists facilities. The proposed activity is to be clearly established as eco friendly, and in this regard, it is to be ensured that the proposed eco resorts are designed in harmony with the local natural and cultural environment, using principles of sustainable design; they minimise the use of non-renewable energy resources and minimise the use of non-renewable materials for construction; they use recycled materials where possible; they work in harmony with the local community offering jobs with a wide range of responsibilities and employment; they work to provide benefits to local conservation and offer to educate the visitor about the local environment and culture. Overall, the accommodation they provide, need to be i) part of the experience, ii) an extension of the conservation site, iii) integrated with the surrounding environment, and iv) environmentally sensitive in terms of planning, design and operation.

3.5 TRANSPORT

Havelock Island transport infrastructure includes road, sea and air transport. The sea and air transport connectivity which provides the inter-island linkage, needs further strengthening in order to receive the estimated level of tourists (5000) by the plan period. In this regard, the Directorate of Shipping Services

is proposed to consider introducing more number of luxury ferries in a phased manner. Exclusive ferries for tourists' population may also be considered. Boat Jetty at Havelock Island requires all round improvements and expansion to meet the expected level of tourists and operation of more ferries. The upgradation proposed in waiting, ticketing, parking and wash rooms facilities by M/s. IL & FS in their report (2012) is to be considered in tune with expected level of tourists in the plan period, for implementation.

Boat Jetty at Neil is also proposed for improvements and expansion to meet the demands of increase in number of ferries and tourist in the plan period. Luxury ferries are also proposed to Neil Island which will help more international tourists to visit the island. Directorate of Shipping Services is to consider introducing frequent and local ferry connectivity between Havelock and Neil Islands.

Realization of the plan objectives would further require policy decisions with regard to intra-island transport of the tourists, both at Havelock & Neil Islands. If unregulated, the number of commercial vehicles run on conventional fuels, is estimated to have ten-fold increase by the plan period, to cater to the tourists population which may cause enormous damage to the environment. Therefore, it is proposed to ban the use of commercial vehicles run on conventional fuels, for the transport of tourists and allow LNG, battery operated / environmentally friendly vehicles run on non-conventional fuel by the transport operators in a phased manner.

Convenient Island Shuttle Services, Hop on; hop off bus services, battery operated mini bus services can greatly reduce the dependence on private transport, which can also help to minimize the pollution levels in the island.

Tourism locations and the Transport terminals are required to have proper parking facilities. The lack of parking facilities at Havelock Island, apart from curbing flow of traffic also develops negative impact on tourism. It is proposed that Parking Lots are constructed near to the boat jetties, and beaches of tourists' interest. Parking lots are proposed to be part of development of every tourist destination in the islands.

Further, developing a circuit to visit all tourism location within the islands helps to make tourism interesting and convenient. At Havelock, tourists need to drive back in the same road after visiting Vijaynagar beach. A linkage through the forest to the existing road is proposed, to establish a circuit in the road network. This will help to connect Vijaynagar and Radhanagar directly, reducing the travel distance and time significantly. The link road proposed is to pass through the elevated terrain surrounded by forests, which itself will become a tourism component.

Havelock & Neil Islands having become the favorite tourist destination, the overall condition of the roads are to be improved and widened to facilitate minimum of two way movement of traffic with cycle tracks. The main tourists' corridors (as shown in the maps) are to be widened to the extent of 20 metre in future, which can accommodate four-lane traffic, with provision of cycle track and pedestrian foot path of 2 m. each.

3.6 LAND USE ZONING AND PLANNING NORMS

Master Plan for Havelock & Neil Islands proposes to regulate the physical growth in these islands in an orderly manner by identifying different land use zones which ensure economic viability, environmental sustainability and social stability during the plan period and beyond. Land Use Zoning and Planning Norms are stipulated for various construction and land development activities to serve as effective tools for ensuring an orderly development.

3.6.1 Land Use Zoning

Land use zoning provides spatial segregation of conflicting land uses and increasing positive externalities, because many uses find an advantage in being grouped with compatible land uses. The Master Plan for the Havelock & Neil Islands designate following category of land use zones for regulating wide range of demands in utilization of land for development.

- i) Residential (RE)
- ii) Commercial (CO)
- iii) Public and Semi Public (PSP)
- iv) Transportation and Communication (TC)
- v) Parks and Open Spaces (POS)
- vi) Agricultural (AG)
- vii) Special Reservation (SR)

Also, each of the designated zones clearly identify that (a) activities permissible normally, (b) activities permissible with special sanction and (c) activities prohibited. This is to ensure that the developmental activities permissible in each of the land use zones are compatible to the principal land use. In order to facilitate the same the activities permissible under each land use zones are grouped in a hierarchy starting from activities of lower intensity to higher intensity.

3.6.2 Planning Norms for Construction Activity

- i) Planning norms for the construction activities identify 7 important planning parameters for consideration. They are minimum plot size, minimum plot frontage, minimum abutting road width, maximum FAR permissible, maximum plot coverage, maximum permissible height and maximum floors permissible. These norms vary for each of the land use zones depending on the requirement, carrying capacity of the land and the infrastructure availability. In addition to the 7 parameters, parameters for setback spaces and parking norms have been spelt and they are commonly applicable to all the land use zones.
- ii) The planning norms prescribed also takes into account the need for tree planting, requirements of coastal regulation zone, and requirements for earthquake resistance structures.

- (iii) The maximum number of floors & height permissible in the Havelock & Neil Islands are restricted to G+1 floor or 12 m. respectively, by taking into account the peculiar nature of land form, panoramic view points and vulnerability to earthquake.
- (iv) The maximum FAR in Havelock & Neil Islands is 125 for Commercial & Residential land use zones and 100 for the public and semi public land use zone. This has been carefully conceived taking into account, the carrying capacity of the islands.
- (v) All other norms such as plot size, plot frontage, road width requirements, plot coverage, have been prescribed separately for each of the land uses taking into account the requirements of various activities. They ensure that each of the parcels of land is properly accessed by a public road: and adequate lighting, ventilation, safety, and privacy are ensured for all the developments. Parking norms ensure that the parking requirements are met within the plots under consideration and the burden is not passed to the public roads.

3.6.3 Planning Norms for Land Development

Development of land for residential activities in the form of layout and sub division of land separate norms have been devised. The norms ensure that large scale land developments are in order particularly with regard to the accessibility, hierarchy of roads, reservation of lands for parks and open spaces and civic amenities.

The following chapter on Development Regulations details the land use zoning regulations and planning norms for construction activities and land development in the form of residential and industrial layouts and sub-divisions.

3.7 LAND USE PLANNING

Development approach proposed in the Master Plan and the regulations proposed for physical development necessitates all land parcels in the revenue villages of Havelock & Neil Islands are brought under certain land use zones. Hence lands in these island are classified (survey number wise) under a specific land use zone on the basis of their suitability & potential, to achieve the objectives of the Master Plan. The land use classification and the extent of land made available for various zones, as derived on the basis of the projected population and planning norms are presented in Table 3.1 and Table 3.2.

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Town and Country Planning Unit, APWD

Table 3.1 Proposed Land Use Distribution for Havelock Island – 2034

Land Use / Revenue Village	Govindanagar		Vijaynagar		Krishnanagar		Shyamnagar		Radhanagar		Havelock Island	
	Area (ha)	%	Area (ha)	%								
Residential	95.39	26.52	44.40	15.20	41.73	11.49	87.99	28.28	17.68	4.52	287.19	16.72
Commercial	35.73	9.93	76.01	26.03	19.13	5.27	4.14	1.33	8.43	2.16	144.43	8.35
Public & Semi Pub.	60.20	16.74	60.12	20.58	31.18	8.58	5.98	1.92	5.31	1.36	162.79	9.48
Trans. & Comm.	12.14	3.38	4.57	1.57	5.40	1.49	6.12	1.97	9.30	2.38	37.53	2.19
Parks & O. Space	23.42	6.51	40.96	14.03	0.00	0.00	0.00	0.00	279.64	71.48	344.03	20.03
Agricultural	129.59	36.03	65.99	22.60	229.14	63.08	164.50	52.87	26.69	6.82	615.92	35.86
Special Reservation												
Forest	0.00	0.00	0.00	0.00	29.46	8.11	38.01	12.22	39.93	10.21	107.41	6.25
Water Bodies	3.20	0.89	0.00	0.00	7.20	1.98	4.39	1.41	4.25	1.09	19.05	1.11
Total	359.67	100.00	292.06	100.00	363.24	100.00	311.14	100.00	391.24	100.00	1717.35	100.00

Table 3.2 Proposed Land Use Distribution for Neil Island – 2034

Land Use / Revenue Village	Neil Kendra		Bharatpur		Sitapur		Lakshmanpur		Ramnagar		Neil Island	
	Area (ha)	%	Area (ha)	%								
Residential	41.39	38.21	37.42	19.91	16.68	3.00	13.94	8.07	20.98	10.92	130.40	10.72
Commercial	4.57	4.22	0.31	0.17	0.44	0.08	14.36	8.32	8.73	4.54	28.41	2.34
Public & Semi Pub.	14.77	13.64	2.88	1.53	2.21	0.40	7.22	4.18	6.00	3.12	33.07	2.72
Trans. & Comm.	6.61	6.11	1.59	0.85	0.81	0.15	6.56	3.80	4.26	2.22	19.83	1.63
Parks & O. Space	22.11	20.42	62.94	33.49	16.40	2.95	30.74	17.81	0.00	0.00	132.19	10.87
Agricultural	18.83	17.39	74.24	39.51	295.27	53.16	91.31	52.89	152.10	79.19	631.76	51.94
Special Reservation												
Forest	0.00	0.00	5.44	2.89	223.43	40.23	8.03	4.05	0.00	0.00	236.90	19.48
Water Bodies	0.02	0.02	3.11	1.65	0.20	0.04	0.47	0.27	0.01	0.00	3.81	0.31
Total	108.31	100.00	187.92	100.00	555.44	100.00	172.64	100.00	192.07	100.00	1216.38	100.00

The proposed land use plan 2034 for Havelock & Neil Islands are shown in Map No. 8 and 9 respectively. Also the existing and proposed land use maps of the revenue villages in these islands are available at the Town Planning Unit, of the APWD, Port Blair. Some of the salient features of the proposed land use plan are listed below.

- i) In addition to the lands under residential use at present, Master Plan proposes to earmark 185 hectares of more lands under residential zone, in order to enhance the quality of housing developments at Havelock Island. This amounts to threefold increase in the residential use area, and nearly 70 % of these additional lands come from Shyamnagar and Govindanagar.

- ii) Similarly, at Neil Island also 82 hectares of lands have been additionally brought under residential use zone and nearly 66 % of these lands are from the revenue villages Neil Kendra and Bharatpur.
- iii) As tourism is considered as a thrust area for development and employment generation it becomes necessary sizable extent of lands are allocated for commercial use. At Havelock Island 90 hectares of lands have been additionally brought under commercial use zone and the respective addition at Neil Island is 82 hectares.
- iv) In order to strengthen the social & physical infrastructure which are fundamental for both local population and tourists, sizable extent of lands have been brought under the Public and Semi Public Use. Addition of lands proposed in public and semipublic use zone is about 138 hectares at Havelock Island, which is showing a six fold increase. The increase at Neil Island is about three fold, where 23 hectares of additional lands are brought under public and semipublic use zone.
- v) Land use plan prescribes earmarking of certain lands under the classification 'Parks and Open Spaces' in order to preserve the open and natural spaces which are essential for sustainable development. This could also help in capitalizing the potentials of tourism development. About 20 % and 10 % of the total area at Havelock and Neil Islands are brought under this classification.
- vi) The land use plan also protects the forests lands and water bodies, as these lands are brought under 'Special Reservation' classification.

3.8 PROJECTS AND PHASING

Attainment of objectives enunciated in the last chapter of the Master Plan depends on the extent to which the programmes and project proposals identified are formulated as viable projects and implemented successfully. Allocation of public funds in full for the proposals may not be feasible considering competing priorities of the Government. Necessarily private funds are to be channeled and projects are to be phased for realization of plan objectives. However, consuming the entire plan period of 20 years for project implementation is undesirable in order to capitalize the development potential in these islands and also achieve orderliness in development. Accordingly, projects are identified hereunder and categorized in two groups proposed to be implemented in ten years time.

Phase I (2014-19)

- 1) Augmentation of Existing Water Supply Sources & Preparation of Water Management Plan for both Havelock & Neil islands, identifying the projects necessary for water conservation / recharge & augmentation of water resources.
- 2) Design & Develop new Water Supply Delivery System in both the islands.
- 3) Strengthening of existing small & local level ponds to store more water.

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- 4) Construction of Storm Water Drains at Havelock & Neil Islands.
- 5) Construction of decentralized waste water treatment system (DEWATS), at Govindanagar and Krishnanagar in Havelock Island and at Neil Kendra in Neil Island.
- 6) Construction of community toilets at revenue villages where households do not possess individual toilet facilities.
- 7) Construction of modern toilets at all tourism places at Havelock & Neil Islands.
- 8) Create awareness among the residents about waste management & Launch of segregation of waste at source programme & establish a complete waste management system, drawing suitable plan for Havelock Island.
- 9) Construction of local level compost yards for treating the bio degradable wastes.
- 10) Establishment of Sophisticated Emergency Care Hospital at Havelock Island.
- 11) Construction of Residential Neighbourhood at Govindanagar in Havelock Island and Bharatpur in Neil Island.
- 12) Construction of Rental Accommodation Building at Shyamnagar in Havelock Island and Bharatpur in Neil Island.
- 13) Construction of Fish Landing Centres at Havelock & Neil Island.
- 14) Establishment of Ice Plants and Cold Storage at Havelock & Neil Island.
- 15) Preparation of an Action Plan for detail planning of various tourism projects identified in the Master Plan and also to suggest a suitable financing and implementation strategy.
- 16) Tourism Department to get networked with the various State Governments, to bring more foreign and domestic tourists to Havelock & Neil Islands.
- 17) Promote Port Blair - Neil - Havelock - Little Andaman Circuit Tourism, to help more visitors for the island.
- 18) Preparation of a Detailed Spatial Development Plan for Govindanagar and Neil Kendra including the boat jetty areas.
- 19) Beach / Sea Front developments at Govindanagar, Neil Kendra, Kalapathar, Radhanagar, Sitapur, Bharatpur and Lakshmanpur.
- 20) Boat House construction and operation at Govindanagar and Vijaynagar to visit Coral Colonies.
- 21) Developing large Island Parks at Havelock & Neil Islands.
- 22) Formation of 'Trek Path' to the highest point of the Havelock Island.
- 23) Formulation of 'Rural Tourism Plan', to identify the nature of activities for promotion and their integration with the spatial plan. The Plan may also suggest a suitable plan implementation strategy.

MASTER PLAN FOR HAVELOCK AND NEIL ISLANDS

Town and Country Planning Unit, APWD

- 24) Improvements & expansion of boat jetties and enhancement of passenger facilities at Havelock & Neil Islands.
- 25) Introduction of innovative transport services for the tourists, using alternative non polluting fuel.
- 26) Formation of Link Road to connect Vijaynagar and Krishnanagar
- 27) Widening and improvement of the main road network at Havelock and Neil Islands for two way movement of traffic with cycle track and footpath.
- 28) Improvement of rural road networks at Havelock Island, ensuring better connectivity to the State Highways and establishing critical links in circulation.
- 29) Extension of rural roads, construction of link roads and general improvements to the rural road networks at Neil Islands.
- 30) Construction of Parking Lots near the Transport Terminals (Boat Jetties & Helipads), beaches of tourists interest and all places of tourists' interest.
- 31) Preparation and Implementation of Plan for Phased enhancement of energy generation through non conventional sources, both at Havelock & Neil Islands.
- 32) To conduct study for establishment of a Marina/Cruise terminal either at Havelock/Neil Islands.

Phase II (2019-24)

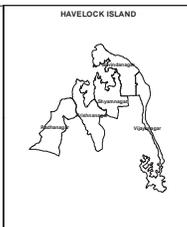
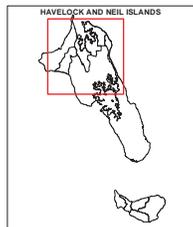
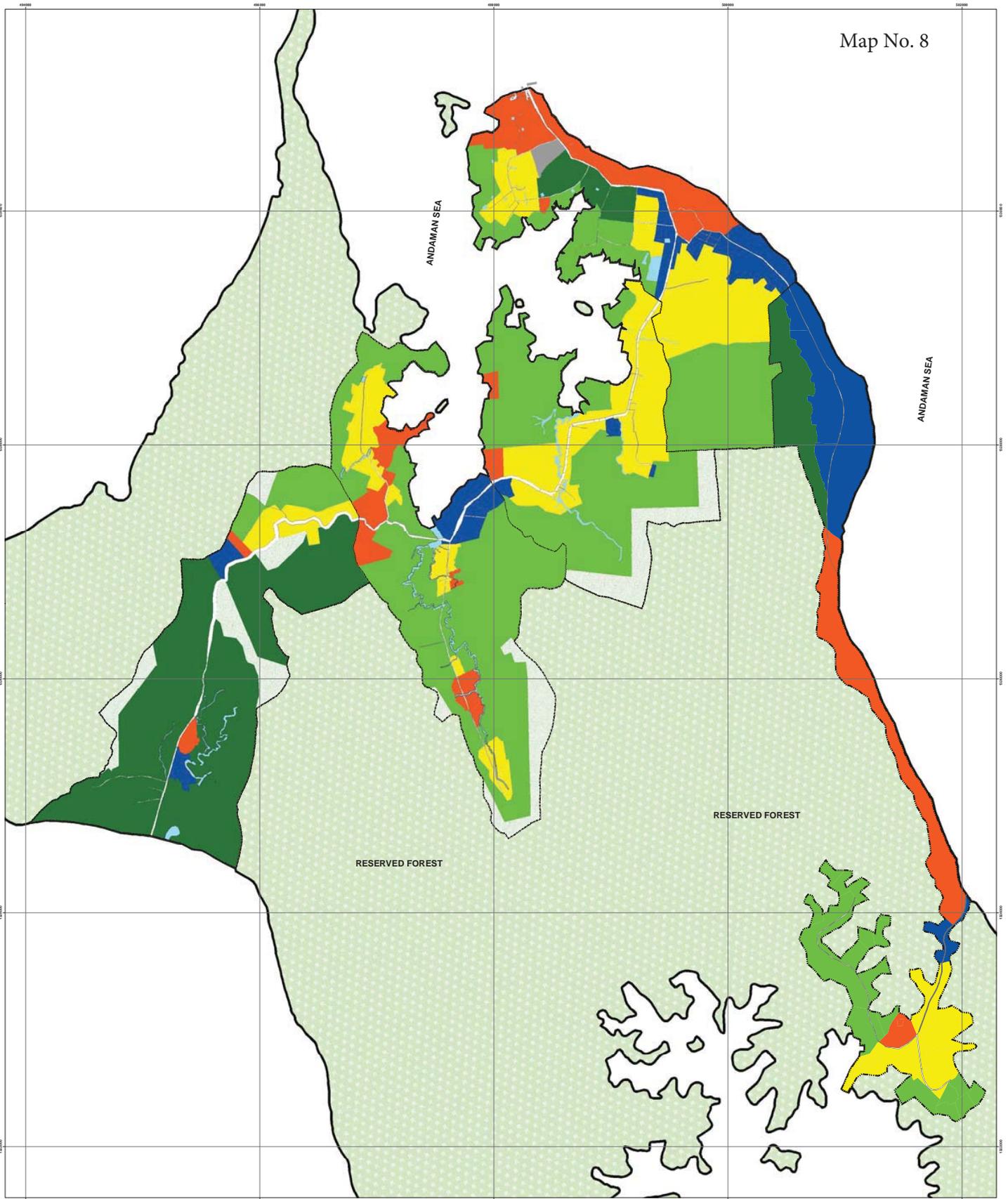
- 33) Establishment a Desalination Plant at Havelock & Neil Islands.
- 34) Introduction of 'Air Ambulance' Services between Havelock Island and Port Blair.
- 35) Establishment of additional higher secondary and primary schools at Havelock and Neil Island respectively.
- 36) Developing a 'Tourist Pavilion' adjoining the boat jetty at Govindnagar & Neil Kendra.
- 37) Establishment of a 'Coral Museum' at Vijaynagar.
- 38) Construction of Havelock 'Watch Tower' to have 360 degree view of the island.

3.9 PROJECT LAND REQUIREMENTS AND COSTING

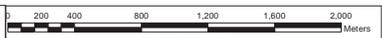
Successful implementation of the Master Plan project proposals largely depends on the availability of land and required funding for development. The proposals extend across many sectors and it will be the responsibility of the concerned agency / department to initiate suitable actions towards implementation of the projects. The development projects envisaged in the Master Plan in many cases may require further detailing through detailed studies and investigations. The extent of lands to be acquired, displacement of people, benefits to the community and the negative impacts of affected people are to be studied for incorporating appropriate mitigation plans as part of project proposals. However, an indication of land financial requirements, for the major project proposals is shown in Table 3.3.

Table 3.3 Land & Financial Requirement for Implementation of Major Projects

Sl. No.	Project Title	Project Requirement	
		Land (ha.)	Finance (Rs. in Crores)
1	Decentralized Wastewater Treatment System – Govindanagar, Krishnanagar & Neil Kendra	1	10
2	Compost Yards at all revenue villages	1	10
3	Emergency Care Hospital at Havelock	1	50
4	Expansion & Improvements of Helipads	2	20
5	Development of Residential Neighbourhood	5	100
6	Construction of Rental Accommodation at Shyamnagar	5	30
7	Construction of Community / Public Toilets	--	5
8	Island Parks at Havelock & Neil	5	20
9	Desalination Plant for Havelock & Neil Islands	3	50
10	Coral Museum at Vijaynagar	1	20
11	Development of Havelock Boat Jetty Area	--	10
12	Development of Neil Boat Jetty Area	--	10
13	Beach / Sea Front Developments	--	5
14	Tourist Pavilion at Govindnagar and Neil Kendra	2 hect each	100
15	Construction of Boat Houses	--	20
16	Havelock Watch Tower	1	20
17	Formation of Trek Path	--	2
18	Link Road between Vijaynagar & Krishnanagar	--	10
19	Road Improvements	--	25
	Total	29	517

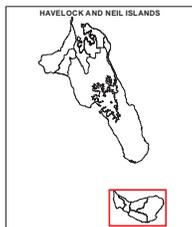
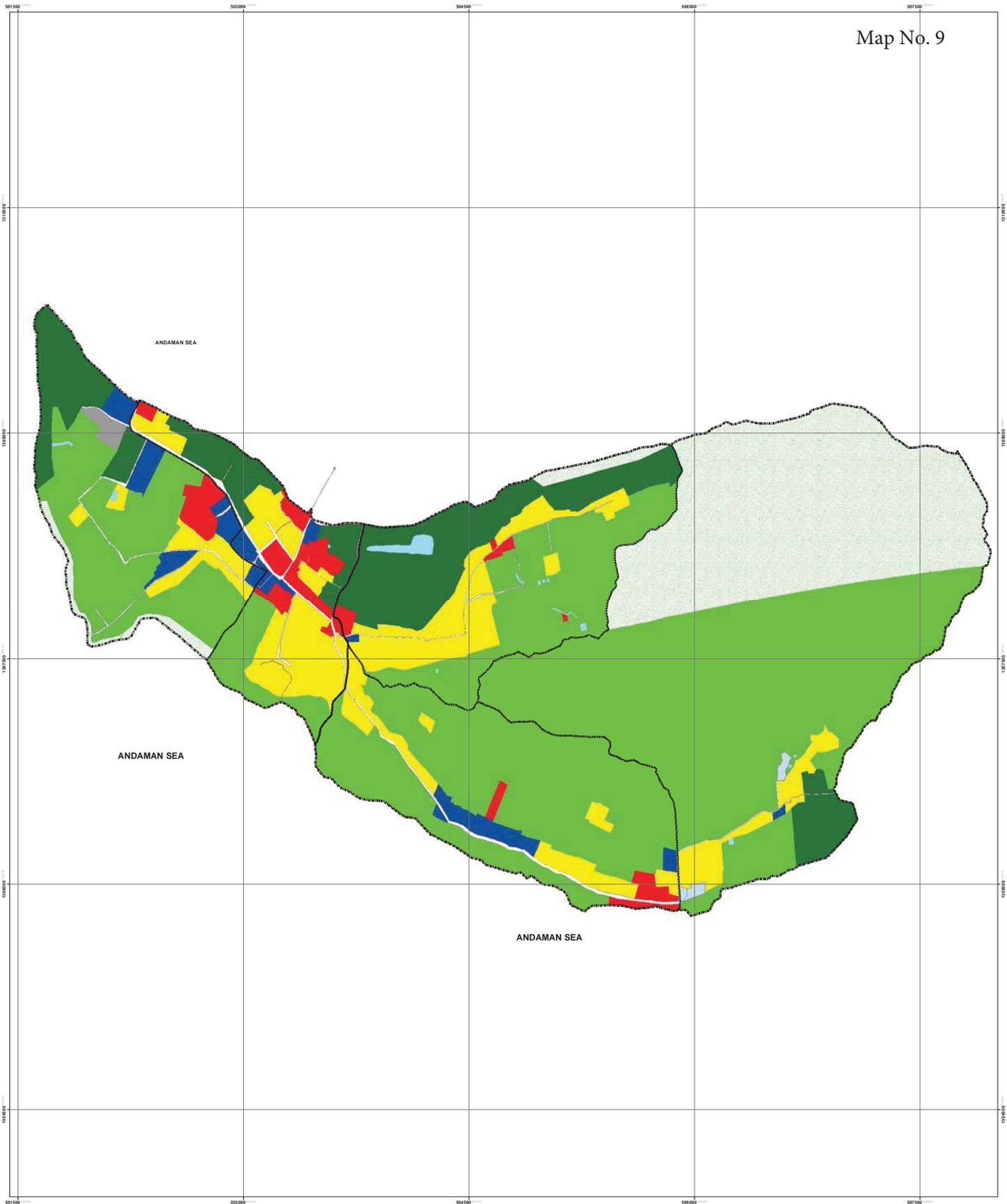


LEGEND			
 Residential	 Transport & Communication	 Agricultural	 LPA Boundary
 Commercial	 Parks and Open Space	 Reserved Forest	 Village Boundary
 Public & Semi-Public	 Water bodies	 Other Forest	 Roads
		 Mangroves	



PROJECTION SYSTEM : UTM DATUM : WGS84 SPHEROID : WGS84 ZONE : 48		
DATE	ISLAND NAME	
AUGUST 2014	HAVELOCK	
CLIENT	Town and Country Planning Unit Andaman Public Works Department A & N Administration, Port Blair	APWD
CONSULTANTS	School of Architecture & Planning Anna University Chennai	

**PROPOSED LANDUSE 2034 - HAVELOCK ISLAND
MASTER PLAN FOR HAVELOCK AND NEIL ISLANDS -2034**



LEGEND

- Residential
- Transport & Communication
- Agricultural
- - - LPA Boundary
- Commercial
- Parks and Open Space
- Reserved Forest
- - - Village Boundary
- Public & Semi-Public
- Water bodies
- Other Forest
- Mangroves
- Roads



PROJECTION SYSTEM : UTM
 DATUM : WGS84
 SPHEROID : WGS84
 ZONE : 48

DATE : AUGUST 2014
 ISLAND NAME : NEIL

CLIENT : Andaman Public Works Department
 A & N Administration, Port Blair

CONSULTANTS : School of Architecture & Planning
 Anna University Chennai

**PROPOSED LANDUSE NEIL ISLAND
 MASTER PLAN FOR HAVELOCK AND NEIL ISLANDS -2034**