Conservation of Coastal and Marine National Parks in Sri Lanka

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Content

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1. Executive Summary

The coastline and marine national parks of Sri Lanka about 1,620 km of length, which are home to a wide range of coastal ecosystems, are currently being damaged by a variety of human activities and the natural phenomena. In addition, ecosystems such as limestone, lagoons and estuaries, as well as mangroves, have been affected by these conditions. Various human activities and natural phenomena have adversely affected the viability of the coastal region and it is being feeling that these conditions need to be taken seriously into the Sustainable Development Goals of the year 2030. The objective of this audit was to examine and promote the protection of coastal and coastal resources through local, regional and national initiatives and thereby contribute to global sustainable development. The sub objectives of this audit were to review the role of affiliates and the regulations currently applicable in Sri Lanka, to evaluate the performance of various projects in operation for that role, and to identify the current environmental impact of coastal areas and the long-term environmental issues that may arise from them.

The scope of this audit is to examine the legal provisions taken for the conservation of coastal and marine national parks, to evaluate the measures and to examine the areas affected by human activities that are accelerating coastal erosion on the basis of the area samples affected by the relevant activities, based on expert reports for related scientific confirmations.

According to the Coast Conservation and Coastal Resource Management Act No. 57 of 1981, the Department of Coast Conservation and Coastal Resource Management functions as the pioneering institution of Coast Conservation. Coastal conservation activities are currently being carried out by the Coastal Management Plan 2018 prepared for the management of the coastal zone under this Act.

Adverse events such as unauthorized and informal constructions in the coastal environment, discharge of wastewater and solid waste, damage to coastal ecosystems, changes in salinity, blockage of estuaries and non-occurrence of lagoon and estuary measurements were observed and the weaknesses were observed in the management of possible adverse effects and the implementation of the proposed activities. Although observed at the institutional level as linked parties to the management of the coastal zone, it seems that the contribution of those parties in the operational phase is not sufficient. Although each of the stakeholder agencies for coastal conservation has identified different programs, there have been instances where guidelines had not been prepared for the implementation of those programs. It was observed the circumstances which, increased adverse effects on the coast, Operations of fishing Harbors associated with the audited coastal zone.

It was observed that, it is necessary focus the attention of the parties involved in coastal conservation by 2025 is expected to prevent and significantly reduce all forms of marine pollution, especially from land-based activities, including marine pollution and nutrient pollution. The development of the above adverse conditions.

2. Background and nature of the report

2.1. Background

2.1.1. Conservation of Coastal and Marine National Parks in Sri Lanka

The coastal environment of Sri Lanka, which consists of a large number of beaches including lagoons, mangroves, sea grasses, salt marshes, limestone cliffs and barrier beaches and an ecosystem of biodiversity such as sand dunes and leads to sand. Each of these coastal ecosystems have created an ecosystem of ecological importance that is beneficial to human beings, in addition to which these ecosystems significantly contribute to the livelihoods of the coastal community. Many coastal and offshore ecosystems along with coastal ecosystems contribute to the development of the export industry, including prawns, crabs, lobsters, sea urchins, sea urchins, shellfish and other fishery products.

More than 1800 species of subtropical fish identified in coastal and seawater species in the coastal ecosystems of the island, including 5 species of turtles that come to spawn for spawning, and other endangered species including endangered and other 380 species which belong to the category of mammals including rare guinea pig and 37 species of invertebrates. Several species of sea snakes and a variety of reptile species are also found in these areas. Lagoon and estuaries, reefs, mangroves, sea grass and salt marshes, various fish species, spawning or breeding grounds of invertebrates and mollusks belong to this coastal environment and conservation of these sites is an essential task of the relevant authorities.

The value of reefs, mangroves, lagoons, estuaries and beaches is very high and, it has been reduced the full effect of tidal activity caused by weather events such as hurricanes, floods and hurricanes as the water bodies such as estuaries and lagoons act as buffer zones and then the coastal community is protected by the dispersal of water brought in by the rivers and by storage of water temporary. Coastal ecosystems such as mangroves, sea grass and salt marshes act as a large filter, discharging wastewater from urban and industrial effluents and retains contaminants and silt brought in by rainwater from the land.

In addition, a number of sites of religious, archaeological and historical value are situated in the coastline around the island, providing opportunities for coastal populations, especially for the gardens and homes of the fishing community in the coastal areas. Many coastal systems, especially limestone and sand dunes, help to stabilize the coastline. Specially the limestone acts as a natural wall, preventing coastal erosion by dissipating the strength of strong tidal waves during the monsoon season.

The use of marine resources for various purposes has grown rapidly up to today and the marine resources are being depleted accordingly. Sri Lanka has a high value coastal area and the length of the coastline is about 1,620 km with lakes and estuaries other than lagoons and this region is currently being damaged due to various influences of natural and human activities.

In terms of Section 12 of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981,

I. "Beach" means the strip of land adjacent to the sea that is not submerged in seawater.

II. “Coastal zone” refers to an area between a medium tidal boundary of three hundred meters and a tidal wave within two kilometers of the sea to a river, stream, lagoon, or other body of water that is permanently or intermittently connected to the sea. By now, the boundaries toward the land should spread for a distance of two kilometers, measured perpendicular to a straight line drawn between their natural points of entry, so that rivers, streams and lagoons or any other body of water connected to the sea are zero along the boundary. It also extends 100 meters from central sea level to the mainland and covers a greater distance.

III. “Coastal conservation” refers to the protection and the coast from erosion or submergence, as well as the planning and management of development activities within the coastal zone.

2.1.2. Importance and basic information about the coastal region of Sri Lanka

(a) Physical condition and socio-economic significance

i. The coastal region of Sri Lanka is largely taken a plain nature and it has been reported to cover 24% of the total land area.
ii. 30% of the population of Sri Lanka lives in coastal areas.
iii. 60% of the urban centers of Sri Lanka are located in the coastal region.
iv. About 80% of the fish production of Sri Lanka comes from the shallow marine region.
v. Natural resources such as salt and sand are abundant in this region.
vi. The coastal region has natural and well-designed port facilities.
vii. High value in terms of natural beauty including sunlight, proximity to the sea, river funnel estuary, delta.

(Coastal Zones and Coastal Resource Management Plan - 2018)

(b) Important coastal ecosystems

A variety of ecosystems have been created that are of greatly beneficial to coastal creatures and human beings. Some of them are as follows:

i. Salt marshes
ii. Mangroves
iii. Estuary
iv. Coral systems

2.1.3. Characteristics of the coastal zone

The coastline of Sri Lanka is about 1620 km in length including dunes and bays, except lagoons. The horizontal beaches to the southwest and northeast consist of rocky outcrops and spectacular sand dunes on either side. The southwest coast also has a system of sinuous complex lagoons and reservoirs. The bay of Trincomalee on the northeast coast is considered to be the perfect natural Harbor in the Indian Ocean. Lagoon, sand dunes and lead to sand can be seen in some places along the northwestern and southeastern coasts. There is a continental pool of shallow water around the island, formed by well-formed sand dunes and reefs along the coast.

The coastal landscape consists of a highly dynamic transition zone between the sea, land and atmosphere, and these areas are formed as a result of sea and atmospheric influences on land and sediment (sand) supply. The rivers that flow from the central hills flow into the sea, creating a face that is a very important feature of coastal landscapes. These rivers transport large amounts of sand, clay, and sludge, which are essential for nutrition. But it also brings pollutants that degrade the quality of coastal waters and ecosystems. There are a variety of ecosystems located in the land areas along the coastline, including beaches, barriers, sand dunes, sand dunes, rocky beaches, mangroves and salt marshes, rocky outcrops, lagoons, face and sea grasslands.

The characteristic conditions in the coastal region are as follows.

(a) Mangroves

Mangrove is a specialized fruit-bearing plant and these plants and bushes have been adapted to grow in the intertidal zone of lagoon estuaries and covered bays in the tropics and subtropics. Although it is difficult for normal plants to grow in highly saline waters, mangroves can grow successfully in seawater because the leaves of those plants emit the extra salt, with the form of salt crystals. There are 21 true mangrove species recorded in Sri Lanka. According to the 2020 National Red Data Book, it is recorded that the 10 species out of these have been threatened with extinction. However, this unique ecosystem has been faced in the danger of extinction due to informal human activities. Therefore, it is the duty and

responsibility of the present generation to conserve the mangrove environment while consuming sustainably for the survival of the future generation.

i. Specialization of mangroves

- Since the Mangroves grow in the region between sea / lagoon and land, coastal erosion caused by waves is prevented by mangrove plants.
- Most of the marine and lagoon species spend their childhoods among mangrove roots. Thus, the fish spend their early stages among the mangrove roots because they get their own protection in large and complex root systems. Due to this, there is a very large and sensitive ecosystem among mangroves plants. When mangroves become extinct, those animals lose their breeding places and their habitat which they can live safely and population of these animals is dwindled.
- Mangroves have the ability to absorb several times more carbon than normal plants.
- It acts as a mangrove filter to retain pollutants and silt brought in from within the country and also reduces the impact of floods.

ii. Degradation of mangrove areas

A great damage has been caused to mangrove swamps due to large-scale conversion of mangrove lands for shrimp farming and salt production. In addition, lowland agriculture, housing, and settlement expansion have greatly contributed to the destruction of mangroves. It was observed that the usage of timber for domestic activities and the branches for firewood has been used exceeding the Sustainable level due to human activities.

(b) Lagoon and estuary

A coastal lagoon is a shallow coastal body of water separated by a barrier. This barrier can be formed by a reef, an island or a sand dune or a strip of rock. The estuary is the place where the sea and the river meet. The estuaries and lagoons are often dynamic ecosystems because the seawater brought in by the tide mixes with the freshwater that flows through rivers and canals.

The coastline of Sri Lanka consists of a number of estuaries and lagoons, which are migratory ecosystems, attractive places, rich with endemic rare species and rich in aquatic biodiversity with a variety of tropical conditions. These ecosystems consist of mangroves, salt marshes, grasslands and muddy meadows.

The lagoons and estuaries of Sri Lanka are very valuable ecosystems and a source of income for the fishing community and a resource that provides economic value by providing anchorage facilities for parking fishing boats which is rich in biodiversity. In the present, these valuable natural resources have been faced to a serious threat due to human activities.

(c) Sea grass

Sea grass is a fruit bearing plant species that grows well in shallow estuaries and oceanic areas and the sea grass is abundant in in the coastal waters of Sri Lanka, and they have been spread associated with the coral reef eco system or estuaries and lagoons. Provides habitat for endangered guinea pigs and other aquatic life. In addition, the grasslands serve as breeding grounds for large numbers of fish and invertebrates. Polychaeta worms of Sri Lanka which are obtained from sea grasslands and fed to the mother animals of aquaculture. These also act as a mode of purifying seawater.

Many of the marine grasses associated with lagoons and reefs are being harmed by the use of unhealthy fishing methods and by trapping fishing nets at the bottom of lagoons, building physical structures, entering agrochemicals, and exposing of algae.

(d) Barrier beaches, sand dunes and leads to sand

The coastline of Sri Lanka which is with the length of 1620 km is consisted mostly with sand. Beaches are formed by depositing the sediments on the shore. Among these, barrier beaches, sand dunes and lead to sand have become very dangerous condition due to their variability. Damaging of Barrier beaches, sand dunes and lead to sand in Sri Lanka are mainly affected by, unauthorized acquisition of buildings, relocation of tourist hotels and infrastructure, expansion of settlements and conversion of land for various agricultural activities.

(e) Salt marshes

Saline marshes are often found closer to the land boundary in the intertidal zone, and the salinity of the soil is remaining in a high level, due to not receiving ample quantity of fresh water to wash away the salts that accumulate in it. It is reported that there are approximately 27,520 hectares as salt marshes in the country. The salt marshes are mostly located in the northern, north western, north eastern and south eastern parts of the island where the dry climate is prevailed most of the period. Salt marshes are provided vital environmental activities, including a resting place and feeding ground for native and migratory birds.

2.1.4. Coastal erosion and action to prevent it

(a) Causes of coastal erosion

Coastal erosion is caused by the activation of ocean water, ocean waves, flood tides, backwash and tides created associated with the ocean water. The effect of the ocean wave is to create ocean waves or surfs as the wind blows over the surface of the ocean surface. Coastal erosion is exacerbated by the rapid impact of these waves on the coast. Tsunami waves caused by seasonal winds, hurricanes and earthquakes accelerate the coastal erosion. Although coastal erosion has been a natural phenomenon since ancient times, human activities have also contributed to make it strong in the present. The human impact on coastal erosion has been increased due to the Technological development, development projects, and overpopulation. Coastal engineering surveys conducted in Sri Lanka have shown that human activities in the coastal region and out of it, are contributing to the increase of the coastal erosion. A summary of these effects is given in the table below.

Activities	Current Situation	Outcomes	Impact to the coast	Examples of locations about the coastal impacts
i. Coastal Sand Mining	Moderate	Existing Volume for Coastal Flow Process	Leading to Coastal and Coastal Erosion	Panadura, Lunawa
ii. Dumping of sand from rivers	High	Decreased quantity of sand supplied to the coast by upper rivers, inflow of sea water	Erosion of beaches and river banks	Kelani, Nilwala, Maha Oya, Kalu Ganga
iii. Collection of limestone fragments from the beach and the shoreline.	Low	Gaps between the natural limestone formations.	Increasing the coastal erosion	Rakawa,Ahangama
Iv. Excavation of the limestone reef.	Low	Lower coastal stability	Increasing the strength of the wave coming towards the shore, intensifying the coastal erosion	Seenigama, Rekawa
v. Removal of natural sand dunes				Kalutara, Chilaw
vi. Maintenance Excavations for entrance roads to Ports and Access Canals	Moderate	Decreased Coastal Stability, Exposure to erosion and Wind	Destruction of Coastal Buildings, Intensifying the Coastal Erosion	Colombo port.
viii. Removal of coastal vegetation	Moderate	Decreased stability on nearby shorelines	Intensifying the Coastal Erosion	Erosion can be expected in the silt deposited beaches.

ix.	Unplanned construction of coast guard structures.	Moderate	Decreased stability on nearby shorelines	Intensifying of coastal erosion or expansion of nearby coasts	Oluvil Port

Table No. 01 (Coastal Zones and Coastal Resource Management Plan - 2018)

More information on some of the most influential of the above activities is given below.

i. Sand mining from rivers

As the removal of sand from river systems directly reduces the amount of sediment supplied to the coast, it has been identified as a major cause of coastal erosion in Sri Lanka,

Although many measures have been taken for controlling, it has been revealed that, the sand removal from the North Western, Western and Southern Provinces is at a very high level and construction work as well as coastal erosion is also at a high level in these provinces. The river systems such as Kelani River, Kalu Ganga, Deduru Oya, Maha Oya and Nilwala are listed as large-scale sand dredging rivers and in the present the Mahaweli River also has been included.

Removal of sand from rivers is unsustainable and is a long-term problem associated with social and economic problems. This is because the effect of sand removal from rivers cannot be renovated in short or medium term.

ii. Removal of sand from sand dunes and beaches

Sand removal from beaches and sand dunes has been increased recently in line with the demand for sand and the higher prices. Although the amount of sand removed from beaches and sand dunes is less, when it compares with the amount of sand removed from rivers, the removal of sand from beaches and sand dunes reduces the amount of sand in the system for coastal flow, which is highly detrimental to the coastal stability.

Although the Coast Conservation and Coastal Resource Management Department has implemented remediation measures, it has been revealed that sand removal from sand dunes has been increased in the North Western, Western and Northern Provinces recently. It was revealed that due to the conflict situation in the Northern

and Eastern Provinces, several very important sand dune systems have been damaged, because it was not possible to evaluate the unauthorized removal of sand from the sand dunes at that time.

iii. Removal of limestone

The rocky outcrop is a rigid platform-like structure in shallow tropical waters that extends from the bottom of the ocean parallel to the shoreline. They are made up of calcium carbonate, which is secreted by algae, an organic compound.

Other risk factors which cause harm for hailstones including adverse fishing practices such as dynamite casting, ornamental fishing using Mexe nets, and lobster fishing using bottom nets, as well as prohibited traps such as "Surukku" and "Laiyya", Causing the decrease the rare fish that inhabit the area.

The growth of coastal tourism along the southern, north-western and eastern coasts has directly or indirectly contributed to the damage of limestone. It has been reported that the destruction of these ecosystems has been directly affected by the stepping on limestone, anchoring, transportation of the boats with glass bottoms and collecting the pieces of limestone as souvenirs.

In addition, the spread of parasites such as psoriasis has caused extensive damage to reefs, which have been found to be caused in the places where overfishing is done or the places where the nutrient inflows from land areas, are very high.

(b) Consequences of coastal erosion

Different consequences have been aroused due to the coastal erosion in each area.

i. Destruction of settlements and buildings.

One of the major consequences of coastal erosion is the destruction of coastal settlements. Coastal erosion has severely affected the settlements of many coastal areas of Sri Lanka due to the large population living in coastal areas. Because of that, the destruction of properties and the loss of lives has been increased. Also, the government has to spend a lot of money on the destruction of tourist hotels, coastal coconut plantations and the rehabilitate of settlements.

ii. Washing the land into the sea

The most serious problem of coastal erosion is the erosion of land areas towards the sea and thereby the reduction of land area. Coastal erosion destroys about 17500 - 285000 square meters of coastal areas per year in the 685 km stretch from Kalpitiya to Yala in Sri Lanka. Examples - Seenigama was located associated with the coast between the periods of 1840 - 1920. However, due to the intensification of coastal erosion in the area, the Seenigama Devalaya is located about a mile away from the mainland today.

iii. Impact on the tourism industry

The southern coast of Sri Lanka is closely associated with the tourism industry. 75% of the rated hotels in Sri Lanka and 80% of the hotel rooms are located on the land coast. As coastal erosion intensifies, it is also damaged to the physical resources such as hotels, lounges, restaurants, and swimming pools. Also, the size of the beaches associated with tourist hotels has been reduced due to coastal erosion is observed as an indirect factor affecting the tourism industry.

iv. Impact on the fishing industry

Fishing is the main industry of the large coastal population. Through this a large amount of people are making their livelihood. There are also a large number of coastal fishing jetties and cold storages. As the coastal erosion intensified, the fishing boats have also been damaged due to the erosion of these fishing Harbors.

v. Disruption to the transportation.

Disrupting is happened to the coastal transportation systems due to intensifying of the coastal erosion. Intensifying of the coastal erosion has posed a serious threat to highways as well as railways. Already, highways and railways along the southwest coast of Sri Lanka have been eroded and destroyed. As a result, traffic in the area is disrupted from time to time. The government also spends a lot of money to renovate this transport system from time to time.

vi. Destruction of the natural beauty

Coastal areas can be depicted as an important natural biodiversity ecosystem of a country. The natural beauty of the coast affects the value of a country and also the relaxation and recreation of its people. When the coast is eroded in this way, the aesthetic value of it is deteriorates. Research has identified 89 such aesthetic sites that are threatened by coastal erosion.

vii. Destruction of coastal historical sites

Various historical and scientific sites are located in the coastal areas. But the rapid coastal erosion along the coast has contributed to the destruction of those historic sites. Such historical sites have been identified in the coastal areas of Sri Lanka.

Historic Place	Distributed District
1. Shiva Devalaya	Colombo - Modara
2. Aiyanar Devalaya	Puttalam
3. Duma Viharaya	Kalutara - Moragolla
4. Seenigama Devalaya	Galle - Seenigama
5. Galle Fort	Galle City
6. Duma Devalaya	Galle - Thalpe South
7. Vishnu Devalaya	Matara Dev Nuwara
8. Samudugiri Devalaya	Matara Dev Nuwara
9. Kirinda Temple	Hambantota Kirinda
10. Tangalle Fort	Hambantota - Kotuwegoda
11. Samudu Viharaya	Ampara - Kumana
12. Vishnu Kovil	Jaffna - Thirimale
13. Sea Temple Vihara	Ampara - Pottuvil

Table No. 02 (Courtesy of the Internet)

(c) Projects implemented as remedies for coastal erosion

Coastal erosion has become an ongoing problem in Sri Lanka. It has socio-economic and environmental consequences. Coastal erosion due to natural causes as well as human activities, loss of beaches, obstruction of tourism and recreation, and damage to public and private property infrastructure are included to this. The major costs incurred annually for coastal erosion as well as the cost incurred for emergency and disaster relief services are as follows.

Period	Description	Amount spent Rs.
1985 – 1999	- For coastal erosion management during the period	1520 million Rupees
2001 – 2007	- under the financial assistance from the Asian Development Bank	03 million Rupees
	- For rehabilitation of tsunami affected areas Money spent on beach rehabilitation	1.4 million Rupees
	for sand feeding and other coastal activities for the South, West and North West coasts	02 billion Rupees

Accordingly, although it has been used the structural and non-structural management strategies, 43 coastal erosion sites have been reported in 10 districts during the period 2010-2013, indicating that coastal erosion is an ongoing problem.

(Coastal Zones and Coastal Resource Management Plan - 2018)

(d) Master plan for coastal Erosion Management

In August 1986, a coastal Erosion Management Master Plan has been supplied under Danida technical assistance. Extensive social, economic, environmental and tertiary analyzes by a team of experts from the Department of Coast Conservation and Coastal Resource Management and Danish water handling (DHI) experts have defined the coastal erosion problem of Sri Lanka on a limited scale, with a limited amount of information, and the best tools that can be used to minimize possible corrosion of the strips Instant access had been recommended.

2.1.5. Beaches of Sri Lanka

Sri Lanka is an island of full of beautiful places that attracts tourists from all over the world. Due to the beautiful coastline around Sri Lanka, it is a popular destination for foreign tourists. There are several beaches around the country that attract the attention of tourists.

(a) Unawatuna

Located on the southern coast of Unawatuna, which is one of the most beautiful beaches in Sri Lanka. Discovery Channel once named Unawatuna as the best tropical beach in the world. Coral reefs are located close to the Unawatuna beach, which is a largely stretched coastline. Also, the waves coming across a large sea area enhance the splendor of Unawatuna beach.

(b) Arugambay beach

Situated on the east coast, the beautiful Arugam Bay is one of the cleanest beaches in Sri Lanka. Arugam Bay is one of the most popular surfing beaches in the world. Arugam Bay has become more and more popular as a tourist paradise, with the first international surfing competition being held here in 2004.

(c) Passikuda

Pasikudah Beach which is one of the most beautiful beaches, that a natural water pool could be seen, that stretches for about a kilometer. The waves in the area are soothing, then the tourists are able to go down to the Sea as they like and have been able to have fun. There is also a beautiful coral reef on this beach. The coral reefs provide both beauty and protection, and a pool with the gentle waves has been created on the beach, because the sea waves are broken by this coral reef.

(d) Marble Beach

Marble Beach is one of the most beautiful beaches on the east coast, facing the Coddier Bay. The beach gets its name from the fact that the sun shines during the day and shines like a marble surface. Also, the sea near this beach looks like a pool of water because it is shallow. This shallow sea area is called Marble Beach because it looks like a marble catchment area when the sun sets.

(e) Nilaveli Coast

Pigeon Island is located a short distance from the Nilaveli beach, which is popular among tourists as a southern beach. The sea near Pigeon Island has been identified as one of the best shallow diving centers in Sri Lanka. Also suitable for aquatic sports, the Nilaveli beach is a well-preserved bio reef (sanctuary) that is home to a variety of colorful tropical fish.

(Courtesy of the Internet)

2.1.6. Marine National Parks

Sensitive ecosystems such as mangroves, coral reefs, sand dunes and the places rich with biodiversity are located along the scenic coastline of Sri Lanka covering an area of about 1620 km. The two government agencies have been identified as the Department of Wildlife Conservation and the Department of Coast Conservation and Coastal Resource Management are the primary agencies for the protection and conservation of these valuable resources. Other government agencies that support the functions of these two institutions are the Marine Environment Protection Authority, the Ministry of Fisheries and Aquatic Resources, and the Department of Archeology.

Although the permission has been granted to study and observe natural resources of the marine national park which is established by a provision under subsection (1) of section (2) of the Fauna and Flora Protection Ordinance (Authority 469), it means a beach and adjacent seas that are primarily composed of marine natural resources such as limestone layers, sea grass, seabed or some other ecosystem.

Currently, the Department of Wildlife Conservation has declared 29 Marine National Parks and these Marine National Parks are regulated in accordance with the provisions of the Fauna and Flora Ordinance.

In accordance with the Coastal Conservation and Coastal Resource Management Act No. 57 of 1981 (Coast Conservation Amendment Act No. 49 of 2011), classified as affected areas, Coastal Parks and Conservation Areas and Special Management areas and protects and conserves coastal resources are conducted by the Department of the Coastal Conservation which is primarily involved in the conservation of coastal resources.

2.1.7. Related Institutions and Roles and Other Provisions

2.1.7.1. Coast Conservation Department

(a) In accordance with the Coast Conservation Act No. 57 of 1981 (This Act has been amended as Coast Conservation and Coastal Resource Management Act in terms of 3 (1) (b) of the Coast Conservation Amendment Act No. 49 of 2011), the Government Institution which primarily acts regarding the coastal conservation activities, is the Coast Conservation Department and the role of the Coast Conservation Department under Act No. 57 of 1981 is as follows.

i. Conducting a survey of the coastal zone and making provisions for the preparation of a coastal zone management plan.
ii. Regularization of development activities within the coastal zone.
iii. Making work plans for coastal conservation within the coastal zone and make arrangements for their implementation.
iv. Provision for subsequent amendments to certain written laws and making arrangements for related or ancillary matters.
v. Conducting research in collaboration with other departments, agencies and institutions for the task of coastal conservation.

Ministries of Identifying the Roles of the Department of Coast Conservation and Coastal Resource Management in relation to Coast Conservation and Coastal Resource Management.

Year	Date	Number of Gazette Notification	Relevant Ministry
2010	2010.04.30	1651/20	Ministry of Ports and Aviation
2010	2010.11.22	1681/3	Ministry of Defense (Ministry of Defense and Urban Development)
2015	2015.09.21	1933/13	Ministry of Mahaweli Development and Environment
2020	2020.08.09	2187/27	State Ministry of Urban Development Coast Conservation Waste Disposal and Community Sanitation

Table No. 03

(b) Areas designated by the Coast Conservation Act No. 49 of 2011

In accordance with the Section 22 (a) (I), III (b) 22 (c) (I) and III c 22 (e) (I) of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 as amended by the Coast Conservation Act No. 49 of 2011) (I), areas Affected, Coastal Parks and Conservation Areas and Special Management Areas could be declared by the Minister through the provisions of the Gazette Regulations and those areas can be described as follows:

i. Affected areas

In accordance with the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 22b (I), (a), (b) and (c) an area belongs to any water body or any part of water body that falls within or adjacent to the coastal zone Inside or in a part of a lagoon or in a peripheral area of a lagoon, can be referred to as an affected area.

ii. Beach Parks

In terms of Section III (b) 22 (c) (I) of the Act, , the area within the coastal zone is declared as a beach park by the rules published in the Gazette Notification, when the Minister is of the view that it is necessary to protect the natural beauty and biodiversity of an area within the coastal zone. In accordance with the

Section III (b) 22 (c) (2) of the Act, the Minister shall make orders governing the manner in which those parks are to be administered, the activities that can be carried out within that area and the persons who are permitted to enter those areas.

iii. Conservation areas

When special measures are required in an area to protect the coastal and aquatic ecosystem under Act 22 d (I) of the Act, the Minister declares such an area as a conservation area by the regulations published in the Gazette.

iv. Special Management Areas

If the Minister finds that a co-operative approach is required to plan resource management within a specific geographical area as per Act 22e (I) of the Act, an area which is within the coastal zone or adjoining the coastal zone or comprising both the coastal zone and the adjoining land areas are Published in the Gazette the Terms declare it as a Special Management Area. However, the Act states that no area shall be designated as a Special Management Area unless it is included in the Coastal Zones and Coastal Resource Management Plan prepared under the provisions of this Act.

Accordingly, in accordance with the paragraph (a) of subsection 22 (b) (sub) (a) of section 22 (b) of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981, Gazette Notification No. 2076/29 dated 6 June 2018, Panama Sand Range and No. 2126 / 46 The Gazette Notification dated 6 June 2019 declared the Sandikadu Sand Range as an affected area.

v. Sandikadu Sand Range

This sand dune is located in the Sandikadu Land in the Poonapitiya Grama Niladhari Division of the Mundalama Divisional Secretariat Division in the Puttalam District, which is a natural resource located on a beautiful coastline and covers about 27 hectares, among the problems associated with this mountain range, Land acquisition and illegal cultivation have been reported, and the Coast Conservation and Coastal Resource Management Department has declared the area as a "vulnerable area" to prevent further damage happened to this mountain range.

vi. Panama Sand Mountain range

The Panama Sand Mountain range is environmentally very important area,which is located in the Panama North and Panama South Grama Niladhari Divisions of the Lahugala Divisional Secretariat in the Ampara District of the Eastern Province,and the Coastal Resource Management Department declared the area as a "vulnerable area" to prevent further damage happened to this mountain range.

(c) Coastal Resource Management Plan

The Coastal Zone Management Plan was prepared by the Department of Coast Conservation and Coastal Management under Section 12 (1) of the Coast Conservation and Coastal Resource Management Act, No. 57 of 1981, recognizing the need for a management plan aimed at the conservation, development and sustainable use of a dynamic coastal area of Sri Lanka which is rich in the resources with the increase in population and economic activity in the coastal areas.

The first Coastal Zone Management Plan was prepared in accordance with the Act in 1990 and amended in 1997 and 2004. The Coastal Zone and Coastal Resource Management Plan for the year 2018 was prepared in accordance with the legal provisions of the Coast Conservation and Coastal Resource Management (Amendment) Act No. 49 of 2011. The Coast Conservation and Coastal Management Plan 2018 limited management to five main areas: Coastal Management, Coastal Pollution, Coastal Ecosystem Management, Special Management Areas and Regulatory Mechanisms.

Coastal erosion has been identified as a key factor in initiating the Coastal Zone Management Program in Sri Lanka.

2.1.7.2. Marine Environment Protection Authority

The Marine Environmental Protection Authority is established and enforced by the Marine Pollution Prevention Act No. 35 of 2008 and "arranging provisions for controlling and mitigating the prevention and control of pollution in the waters of Sri Lanka or any other maritime region or coastal area of Sri Lanka and making provision for or related matters to it, are conducted by this. The vision of this Authority is to create a healthy coastal and marine environment for future generations.

2.1.7.3. Department of Wildlife Conservation

Established in the year 1949, the primary function of the Department of Wildlife Conservation is to conserve wildlife resources in Sri Lanka. The Fauna and Flora Protection Ordinance (Authority 469) and Fauna and Flora Protection Ordinance (Amendment) No. 22 of 2009 specify the declaration of marine national parks and related matters.

2.1.7.4. Department of Archeology

The vision of the Department of Archeology of Sri Lanka which had been established in 1890, is to promote the proper management of the Archaeological Heritage of Sri Lanka. In accordance with the Sections 02, 16 and 47 of the Antiquities Ordinance No. 09 of 1940, Antiquities, whether they are in underground, in a river or lake or within the inland (marine) sea of Sri Lanka, shall be treated as Government Property subject to the provisions of that Act and the ownership of antiquities deposited in seawater at sea in the sea border owned by Sri Lanka is vested for the Director General of Archeology.

2.1.7.5. Department of Fisheries and Aquatic Resources

The vision of this department is to make an inspiring contribution to the national economy by strengthening the socio-economic status of the fishing community while maintaining the fisheries and aquatic resources in a sustainable manner. Through the provisions of the Fisheries and Aquatic Resources Act No. 02 of 1996, granting licenses for fishing operations, registration of local fishing boats, prohibition of use and possession of poisonous and explosives, prohibited fishing gear and fishing practices, certain offshore waters Provisions have also been made for the declaration of an area or any adjacent land area or both the watershed area and the land area as Fisheries Reserve and Prohibited Activities in Fisheries Reserve Areas.

2.1.7.6. Central Environmental Authority

The Environmental Authority has been established in mid-August 1981 under the National Environmental Act No. 47 of 1980 with the vision of "a clean green environment through excellent service". With the provisions of the National Environmental Act No. 47 of 1980, the provisions have been arranged, regarding the polluting, restricting, regulating and controlling of the local water line, and not granting permission to pollute the local water line of Sri Lanka.

2.2. Authority for Audit

The Audit was conducted under my direction in accordance with the provisions contained in the National Audit Act No. 19 of 2018, which must be read in conjunction with Article 154 (3) of the Constitution of the Democratic Socialist Republic of Sri Lanka.

2.3. Audit Objective and Sub Objectives

The purpose of the investigation was to promote the actions taken to protect coastal and coastal resources through local, regional and national initiatives and thereby contribute to global sustainable development. The following sub-objectives are considered here.

i. Reviewing the role of related institutions and regulations affecting in Sri Lanka at present
ii. Evaluating the performance of the various projects in operation for that role
iii. Identifying the current environmental damage related to coastal areas and the long-term environmental problems that may arise from it

2.4. Access to Audit

(a) It emphasizes the importance of understanding and paying attention to the threats posed to Sri Lanka by the importance of the coast as mentioned in paragraph 2.1.2. of the report.

(b) Given the importance of the existence of an intact beach, the social, economic and environmental impact of coastal destruction has become a matter of greater concern and the gradual development of threats to the survival of coastal and marine national parks in Sri Lanka The basic premise of this audit was to discuss relevant environmental and related issues due to the disclosures made by the parties.

2.5. Limiting of the scope and scope of the audit

2.5.1. Compliance with international standards

My audit was conducted in accordance with the International Audit Standards (ISSAI 5110 - ISSAI 5140) of the Supreme Audit Institutions.

2.5.2. Scope

The observations shown in this report are the following observations regarding its scope in reaching conclusions.

(a) Evaluate the legal provisions and measures taken by the following institutions for the conservation of coastal and marine national parks.

i. Department of Coast Conservation and Coastal Resource Management
ii. Department of Wildlife Conservation
iii. Marine Environment Protection Authority
iv. Department of Fisheries
v. Central Environmental Authority
vi. Department of Archeology
vii. Ministry of Environment

(b) The areas affected by human activities that accelerate coastal erosion were examined on the basis of samples.

(c) It has been done based on expert reports for scientific confirmations related to this environmental problem.

2.5.3. Scope Limitations

(a) There have been instances where action has not been taken to obtain information from the relevant parties to verify the contents of this report.

(b) Due to the Covid 19 epidemic in the year 2020, only a limited number of site inspections had to be carried out.

2.6. Audit methodology

Evidence was collected using the following methods.

(a) Documentary evidence

- Files
- Newspaper articles
- Magazines

(b) Physical observations

- Field trips

(c) Other evidence

- Discussion notes
- Questionnaires
- Research reports
- Action plans and guidelines
- Budget speech

2.7. Audit Criteria and Sub Criteria

2.7.1. Effective regulations and ordinances

i. Coast Conservation Act No. 57 of 1981

ii. Coast Guard Act No. 41 of 2009

iii. Forest Fauna and Flora Ordinance 469th Authority

iv. National Environmental Act No. 47 of 1980

v. Prevention of Marine Pollution Act No. 35 of 2008

vi. Fisheries and Aquatic Resources Act No. 02 of 1996

viii. Antiquities Ordinance No. 09 of 1940

2.7.2. Policies and plans

i. Coastal Zone and Coastal Resource Management Plan of Sri Lanka as per the Gazette Notification No. 2072/58 - 25th May 2018 issued under Section 12 (1) of the Coast Conservation Act No. 57 of 1981

ii. Green Lanka National Program

2.7.3. How to pursuit in accordance with the relevant regulations

Sub criteria	Field of focused
Coast Conservation Act No. 57 of 1981 - Section 04 Part (b) Section 06 and Section 07 (Amendment Act) Preparation of programs for coastal conservation.	Establishment of an Advisory Council for Preparation of work plans for coastal conservation
Coast Conservation Act No. 57 of 1981 - under Section 11 (1) and Section 08 (Amendment Act, 2011)	Submission of a Survey Report
Coast Conservation Act No. 57 of 1981 - Sub-section 12 (1) and 9 (2) (Amendment Act, 2011	Submission of Coastal Zones and Coastal Resource Management Plan.
Coast Conservation Act No. 57 of 1981.under sub-section (e) of sub-section 12 (1)	Submission of criteria for conducting research
Coast Conservation Act No. 57 of 1981 - Part III Section 14 (1)	No one shall engage in any development work in the coastal zone except under the authority of a permit.
Coast Conservation Act No. 57 of 1981 - Part III (a) Part 22 (b) Part 22 (c) (1), 22 (d) (1), Part III (d), 22 (e) (1), III (D) Section 226 (1), III and Section 19 of the Amendment Act No. 49 of 2011	The areas affected, coastal parks and conservation areas, gazetting special management areas and preparing the coastal access plan.

Table no.4

Fauna and Flora Protection Ordinance (Authority 469) and Fauna and Flora Protection Ordinance No. 22 of 2009 (Amended)) sub-Section 2 (1) (e)	Declaration of Marine National Parks
Fauna and Flora Protection Ordinance (Authority 469) - Paragraph 3 (b), Section 5 of the Amended Act No. 22 of 2009	No one is allowed to enter a marine national park except for viewing.
Fauna and Flora Protection Ordinance (Authority 469) - 3 (c) Paragraph: - Section 5	Prohibits killing, hunting, damaging or destroying animals in a marine national park
Fauna and Flora Protection Ordinance (Authority 469) - Para (a) (d) of sub-section 03 Amendment Act No. 22 of 2009 Article 05	A right acquired by law, custom or practice to operate in a Marine National Park should not be construed as prohibiting or restricting the exercise of such right acquired by that person prior to the date of establishment of that Marine National Park. The Minister may prescribe customs or practices and customs that can be implemented in any Marine National Park.
Fauna and Flora Protection Ordinance (Authority 469) - Section 5 (b) Amendment Act No. 22 of 2009 Article 05.	A person who is permitted to enter or stay in a Marine National Park may be removed from the site if it is found to be a threat or harassment to that place.
Sri Lanka Coastal Zones and Coastal Resource Management Plan as per Gazette Notification No. 2072 dated 25th May 2018	Has been formulated to ensure long term sustainable use of coastal environment and its resources in line with National Development Goals.
National Environmental Act No. 47 of 1980 Section 23 (g) and 23 (d) of IV (b)	Pollution, Restriction, Regulation and Control of Inland Watersheds. Pollution of Sri Lanka's inland waters should not be allowed.

Marine Pollution Prevention Act No. 35 of 2008 Part III Section 14 (1) (h)	Being a member of the Marine Environment Council
Prevention of Marine Pollution Act No. 35 of 2008 - Section VIII Section 27	Anyone who dumps oil, harmful substances or other contaminants into Sri Lankan waters or any other marine area shall be guilty of an offense under this Act unless in accordance with the terms and conditions of a permit obtained from the Authority. If convicted, he will be subject to a fine of not less than Rs. 04 million and not less than Rs. 03 million.
Prevention of Marine Pollution Act No. 35 of 2008 - Section IX Section 34 (2) (b) (c) (d)	Promoting maritime or port activities, tourism, including fisheries, and protecting and developing tourist attractions in Sri Lankan inland waters or offshore or pre-coastal areas, including beaches and coral reefs. The health and well-being of the people of the coastal area includes the protection and conservation of living marine resources and wildlife
Fisheries and Aquatic Resources Act No. 02 of 1996 - Part II 6 (1) - Part III 15 (1), (2) - Part IV 27 (1) - Part IV28 - Section V 36 (a) (b) (c) (d) (e) - Article 37 (a) (b) (c)	Issuing licenses for fishing operations Registration of local fishing boats Prohibition of use and possession of poisons and explosives. Prohibited fishing gear and fishing methods. An area in or adjacent to the Sri Lankan waters, or both that watershed and land areas, may be declared as a Fisheries Reserve. Prohibited activities in fisheries reserves

Antiquities Ordinance No. 09 of 1940 Article 02 and Article 16 Article 47	According to the Antiquities Ordinance, any physical object older than one hundred years declared by the Minister can be considered as a whole object and any real monument older than one hundred years can be declared as an old monument. Antiquities which have not already been discovered by the regulations, whether they are underground, in a river or lake or within the local sea and ocean of Sri Lanka, shall be treated as Government property subject to the provisions of this Act. The Director General of Archeology has been transferred the ownership of the antiquities deposited in the seawater in the territorial waters of Sri Lanka. Before clearing land or damaging the seabed for the construction or expansion of ports and Harbor s along the country's coasts, we must do the same. An investor who is looking should obtain a survey report to assess the archaeological impact.

3. Audit observations

3.1. Institutional and legal background

3.1.1. Coast Conservation Act

The main objectives of establishing the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 as amended by the Coast Conservation (Amendment) Act No. 64 of 1988 and the Coast Conservation (Amendment) Act No. 49 of 2011 are to make arrangements for the provisions to prepare a survey of the coastal zone and to prepare a plan for the management of the coastal zone ordering and controlling of the development of the inner coastal region, regulating them and making provisions to prepare working proposals and activating them for the coastal conservation of inner coastal region and the Department of Coast Conservation and Coastal Resource Management is the responsible institution for, formulating and implementing action plans for coastal conservation within the coastal zone and implementing them. .

(a) Legal provisions

Preparation of working plans for the coastal conservation, establishment of an advisory council on coastal conservation, implementation of a survey regarding the coastal resources, research on coastal resources, development and utilization of coastal areas in accordance with the main provisions of this Act relating to coastal conservation and the provisions have been made for the declaration of national parks and ancillary matters. (Schedule - 01)

The following observations were made in this regard.

i. Although the Coastal Resources and Coastal Management Department acts as the project endorsement agency in the implementation of a project / proposal in the coastal zone, when the project department itself submits a project proposal, it was not observed the clear legal provisions in accordance with the National Environmental Act No. of 1980, relating to the relevant party to carry out the Environmental Recommendation / Environmental Assessment Report. Therefore, it was observed that there may be difficulties in making the right decisions regarding the environmental issues that arise during the implementation of those projects.

ii. The special Management Areas can be declared through the regulations through 22(e) of the section III c. of the Coast Conservation and Coastal Resource Management Act No. 49 of 2011. (promulgated). Although 45 locations in 12 districts have been identified as proposed areas which are to be declared as Special Management Areas through the Gazette Notification No. 2072/58 dated 25th May 2018, those areas have not been declared as Special Management Areas till the date of audit. As it was not done according to that, not much attention was paid to the conservation of those areas.

3.1.2. Coastal Conservation and Coastal Resource Management Consultative Council

The following facts were revealed.

(a) The contribution of members of 18 Government Institutions has been obtained to the Advisory Council of the Coastal Conservation and Coastal Resource Management to be established in terms of Section 6 (1) of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 (as amended by Act No. 49 of 2011). Institutions should coordinate with these institutions in carrying out the role relevant to the Coast Conservation Department. Accordingly, the composition consisted of 08 Ministries, 05 Statutory Institutions, 02 Departments and Universities, Active NGOs involved in the protection of the coastal environment, representing the fisheries industry.

(b) The functions of the Advisory Council which consists of 18 members appointed by Section 7 of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 have been identified.

(c) The Duties of the Advisory Council have been presented by Section 07 of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 as amended by Acts No. 64 of 1998 and No. 49 of 2011. At the same time Article 10 (1) deals with the meetings of the council and the Article 10 (4) deals with the volume of the council.

Following are the observations made on the above requirements at the Consultative Council meetings held by the Department of Coast Conservation and Coastal Resource Management from the year 2013 to the year 2018.

i. Although according to Section 10 (1) of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981, the meetings of the Advisory Council should be held at least once in every 2 months, but the minimum number of meetings required for all the 5 years except the year 2014 had not been conducted during the periods considered by the audit.

ii. The solid full membership for the Consultative Council meeting held on 20 October 2017 had not been completed. Therefore, it was observed that the legitimacy of the decisions of the Council during that session was problematic and the decisions taken at the Consultative Council meetings were not carried out at the optimum level due to the loss of the opportunity to consider effective decisions and proposals.

iii. The role of the Council in all other proposed development activities in the Coastal Zone, including advising, reviewing the Coastal Zone Management Plan, etc. Lands were monitored under the Urban Development Act. Accordingly, although areas such as Environment, Fisheries, Urban Development and Geology have been included in this Council, the Institutional Representation for all 23 Consultative Councils held from 2013 to 2018 in each year is Ministry, Local Government and Provincial Councils, Institutions such as the Environmental Authority had no institutional representation. The details were as follows.

Year	**Number of congregation meetings held**	**field represented by members who have not attended a single meeting**
2013	03	Ministry of Local Government and Provincial Councils

2014	06	Central Environmental Authority, Ministry of Economic Development
2015	02	Geology and Mining
2016	03	Central Environmental Authority Ministry of Provincial Councils and Local Government Urban Development Authority
2017	04	Ministry of Mega police and Western Development Ministry of Provincial Councils and Local Government
2018	05	Central Environmental Authority Land Commissioner General
	23	

Table No. 05

iv. Although the Marine Environmental Protection Authority Act was required to obtain clearances for all proposed development and coastal conservation activities in the coastal zone, the 18 members of this Advisory Council did not include a member of the Marine Environmental Protection Authority.

3.1.3. Antiquities Ordinance No. 09 of 1940

The details were as follows.

(a) The law pertaining to the field of antiquities in Sri Lanka is spread over several Acts. The Antiquities Ordinance No. 09 of 1940, as amended by the Antiquities (Amendment) Act, No.24 of 1998, plays a major role in this. This is an Ordinance to "make provisions for the better preservation of antiquities and buildings of historical or archaeological significance in Sri Lanka." The Cultural Property Act No. 73 of 1988 is a law enacted to regulate the export and licensing of cultural property. Further, the Central Cultural Fund Act No. 57 of 1980 also contains provisions pertaining to this area.

(b) When it is discussing about the marine antiquities, the wreckage of ships more than 100 years old on the sea or on the seabed may include the artefacts on those ships and the Harbors and settlements surrounded by water. It is also important to protect antiquities deposited in the sea as well as the way the antiques which are protected in the land. Although the antiquities not yet discovered, whether they are in a river or a lake or within the territorial waters of Sri Lanka, should be considered as government property under the Act. "Indigenous Ocean" refers to an area declared as the Inland Sea of Sri Lanka by a declaration made under the Maritime Zones Act No. 22 of 1976. These include submerged seaports, settlements and sunken ships and boats with all sorts of physical remains left within the local maritime boundary. Sri Lanka has been an island for thousands of years and Sri Lanka has used the sea for thousands of years to maintain contacts with foreign countries. There is many natural Harbors around Sri Lanka. This is why it is just as important to protect the artifacts on the seabed as it is protecting the artifacts on land.

(c) The ownership of antiquities deposited in the seawater within the territorial waters of Sri Lanka is vested in the Director General of Archeology.

Here, the marine artefacts can be classified as exploration, measurement, excavation and conservation. An antique or archeological site discovered by the exploration should be measured before excavation. After those excavations can be carried out and the required information can be obtained. Sand or mud deposited on antiquities should be scientifically removed during an excavation. It is important to preserve marine archeological sites after excavation. They must be protected from thieves' enemies. They can be preserved on site itself. Or else it can be taken to the surface of the sea and preserved. Before clearing land or damaging the seabed for the construction or expansion of ports or Harbors off the coast of the country, an investor wishing to do so must obtain an "Archaeological Impact Assessment Survey Report".

The following facts were observed regarding the conservation of archeological sites located in the coastal zone.

i. All the sites of archaeological value located in the coastal area had not been identified and action had not been taken to publish them in a gazette notification.

ii. Requests were made to the Department of Coast Conservation and Coastal Resource Management for the approval to construct 07 new fishing Harbors in 05 districts and to obtain the approval of the Advisory Council for 02 areas in the Jaffna District, Point Pedro and Mandatiw. Although the investor should have obtained an Archaeological Impact Assessment Report before clearing land or damaging the seabed for the construction or expansion of coastal ports and Harbors, it was not confirmed that it had been presented as it was.

iii. According to the Sri Lanka Coastal Zones and Coastal Resource Management Plan (Table 6.4) published by the Department of Coast Conservation and Coastal Resource Management in 2018, it has been identified 259 sites of archaeological, historical, religious and cultural value in the coastal zones. (Annexure 01) Out of these 259 sites, the Department of Archeology has identified the sites as archeological sites by 30th November 2020, and had not been submitted the information on the sites, marking the places / boundaries published by the Gazette, which have not been published by the Gazette till the date of the audit.

iv. According to the answers given by the Trincomalee Regional Office, it was observed that the boundaries of 05 archeological sites have not been demarcated or published in a gazette notification. Further a plan had been drawn up for the archaeological place of Senbimalei and it has been proposed to gazette as an archeological site which would be separated in the future.

3.1.4. Technical standards and plans

3.1.4.1. Standards for classification according to the quality of seawater

Coastal water is often used for aquaculture and other purposes. The quality of coastal water is very important here. Water quality standards based on coastal water quality have been introduced in other countries, and based on these standards, it is important to identify areas where special attention should be paid to water quality and water conservation in the current coastal region. Also, guidelines should be prepared for the conservation of sensitive areas in the coastal zone by identifying polluting activities.

The following observations are made in this regard.

(a) In the project proposed by the Central Environmental Authority to the Government of the Netherlands in 1991, the standards for seawater quality have been proposed including four key points in relation to the aforesaid matter but the standards have not been prepared and published as at the date of audit.

(b) Minimizing the impact of ocean acidification and finding solutions to it with scientific cooperation at all levels, the 14 Sustainable Development Goals 14.3 set out the objectives and maintaining the ocean acidity value (PH) 7 by 2030 Coastal Resources, and it had been stated as the target of the Coastal Resource Management Department. The Department of Coast Conservation and Coastal Resource Management had allocated Rs.1,500,000 for the implementation of a program on coastal water quality in the year 2018 and the water quality testing had not been completed by the date of the audit.

(c) The physical, chemical and biological properties of the seawater associated with the bathing dock in the marine zone shall be tested by the Marine Environment Protection Authority. The US EPA standards are used for this. The following matters were observed during the audit in this regard.

i. During the year 2020, 29 seawater ports around Sri Lanka were subjected to monthly water quality tests and the results of these tests are classified into 6 categories. Out of these, water levels in 10 bathing docks were observed to be poor in condition.

ii. Out of the above ports, it was observed that the water quality of 03 main marine bathing docks in the Colombo and Gampaha districts is in a very poor condition.

3.1.4.2. Assessing the technical need for climate change adaptation and technical activity planning

According to Chapter 07 of the Assessment Technical Necessity of Climate Change Adaptation and Technical Activity Plan Report, prepared by the Climate Change Office of the Ministry of Mahaweli and Renewable Energy in the year 2014, the potential impact on future climate change in the coastal region has been identified as follows.

I. Sea level rise by 0.5 m by 2050.

II. Coastal erosion

III. Coastal areas flooded.

IV. Loss of coastal terrestrial habitat.

V. Increased salinity.

VI. Changes in coastal ecosystems.

VII. Changes in coastal topography.

And so on.

The following observations were made in this regard.

(a) The Department of Coastal Survey and Coastal Management has observed that the risks applied to the following areas were insufficient in the present examination of the technical methods used for coastal surveying.

- Restoration of coral reefs

- Sea grass cultivation

- Sand dune rehabilitation

- Floating Marine culture for sea weeds

(b) The above technical requirements assessment had considered the technical strategies used in the coastal inspection on two main criteria.

- Cost criteria

- Benefit Criteria.

The cost criterion was considered to be 25 per cent and the return criterion was 75 per cent.

(C) Benefit analysis in the selection of coastal conservation technologies is outlined in the following sub-sections and the growth of benefits achieved under each section is categorized as follows.

Part	Percentage	Benefits
Cost	25%	
Economic Benefits	15%	• Employment - 5% • Long-term employment • Foreign Earnings - 5% • Infrastructure Development - 5%
Social Benefits	30%	• Earning Income - 10% • Education - 5% • Researches - 3% • Environmental Sensitivity - 5% • Chemicals - 7%
Environmental	30%	• Reduction of Greenhouse Gas - 7% • Reduction of land erosion due to disasters - 10% • Submersion reduction - 5% • Land Rehabilitation - 8%

Table No. 06

(d) Thus, after analyzing the above cost benefits, the following areas were given high priority in the procedures to be followed for coastal conservation.

- Sand Rehabilitation

- Mangrove replanting

- Restoration of coral reefs

- Construction of Greyons and Sea walls

- Sand feedback

According to this cost-benefit analysis, the environmental benefit of implementing technologies for a coastal development proposal was identified as 30% and it was observed that the attention of the Coastal Resource Management Department was not sufficient in applying the right strategies technically.

3.2. Coastal ecosystems

3.2.1. Mangroves

Mangrove is a specialized fruit-bearing plant that adapts to grow in the intertidal zone of lagoon estuaries and covered bays in the tropics and subtropics. Mangrove distribution in coastal ecosystems in Sri Lanka is as follows.

Ecosystem	Jaffna (ha)	Puttalam (ha)	Batticaloa (ha)	Trincomalee (ha)	Mannar (ha)	Total land area (ha)
Mangrove	2427	2114	1921	1707	1502	11,656

Table No. 07

(a) Deforestation and destruction of mangroves are a common environmental problem today and can be identified as, being caused by human activities. Those factors are briefly as follows.

i. large scale use of mangroves for shrimp farming and salt production. The mangrove areas in the north-east and north-west were devastated.

ii. Lowland agriculture, housing, expansion of settlements.

iii. Used beyond sustainable levels for domestic use, wood, firewood, twigs.

iv. Mangrove systems have been destroyed due to the accumulation of silt and pollutants.

(b) The following Active Coastal Zones and Coastal Resource Management Plans have been proposed to prevent damage to mangrove systems due to improperly planned development activities for the above reasons.

I. Management should expeditiously identify the required vulnerable leaf mangrove areas and give priority to such similar conservation.

II. Declaration of conservation areas in accordance with the priority list in collaboration with the Forest Department.

III. Compilation of guidelines for re-cultivation proposal for rehabilitation of identified mangrove degraded areas

IV. Environmental Assessment Reports, Regulation of New Development Activities in Areas through the Basic Environmental Reporting Procedure.

V. Introduction of an existing or future monitoring mechanism for mangrove systems.

VI. To formulate and implement study and awareness programs on existing legal provisions among the parties to protect the existing mangrove ecosystems in the coastal zone in accordance with the existing legal provisions.

VII. Community participation should be encouraged to obtain information on violations.

The following observations are made in this regard.

i. Although mangrove replanting projects have been initiated, guidelines have not yet been prepared. As a result, problems have been aroused in the proper implementation of mangrove replanting projects.

ii. Conservation areas had not been declared on the priority list in collaboration with the Forest Department. As a result, there was a possibility of avoiding areas that needed more attention and conservation.

iii. No plans had been made for the next year to increase the expansion of the spreading of mangroves. It was revealed that the Coast Conservation Department has stopped planting coastal trees in the next years as the Forest Department is implementing an island wide afforestation program at the national level. Although included, it was not. At present the existing coordination between institutions for the conservation mangroves, is not sufficient.

3.2.2. Lagoons and estuaries

The situation in the whole island related to the 04 districts identified according to the Coastal Resources and Coastal Management Plan is as follows.

Ecosystem	Batticaloa (hectares)	Trincomalee (hectares)	Jaffna (hectares)	Puttalam (hectares)	Total land area of the island (hectares)
Lagoon and estuaries	44,132	18,100	43,872	83,581	214,522

Table No. 08

The following observations are made in this regard.

(a) According to the 2018 Coastal Zone Plan, lagoons and estuaries cover an area of 214,522 hectares in Sri Lanka. Sections 31 and 32 of the Fisheries and Aquatic Resources Act No. 02 of 1996 have the legal provisions to establish lagoon management committees and a lagoon management authority for the management activities of a lagoon. And also, the Extraordinary Gazette Notification dated 25th April 1997, the Extraordinary Gazette Notification dated 03rd February 2004 and the Fisheries and Aquatic Resources Amendment Act No. 35 of 2013 are important. Lagoons consist of mangroves, salt marshes, sea grasses and muddy plains. However, it has been observed that the ecosystem services provided by the lagoons and estuaries in this management have been underestimated and the multiple uses and benefits of those locations have not been adequately considered in making policies or decision making.

(b) Certain lagoon areas have been gazetted as Management Areas by Extraordinary Gazette Notification No. 1326/4 dated 03 February 2004. The lagoons and estuaries of Sri Lanka are very valuable ecosystems and are rich in biodiversity. Furthermore, these lagoons and estuaries are currently experiencing severe environmental problems due to increasing coastal populations, increased environmental activity in coastal areas, pollution from the flowing of sewage effluents, untreated industrial waste, municipal waste and fuel oil, invasive plant proliferation, and climatic conditions. The Coast Conservation and Coastal Resources Department had planned to adopt the following strategies to protect lagoons and estuaries that are being degraded due to these reasons.

I. Minimizing the disposal of untreated and fecal waste to lagoons and estuaries by monitoring and enforcement in accordance with existing regulations and guidelines.

II. Minimize depletion of active water areas in lagoons and estuaries through unauthorized seizures, landfills, deforestation and other development activities.

III. Evaluating ecosystem services, developing sustainable management of lagoon and estuary resources through the full participation.

IV. Implement participatory programs to minimize changes in estuaries and lagoons due to proposals for water control and irrigation.

(c) These valuable ecosystems act as a source of income for the fishing community and as an economic support, providing anchorage facilities for parking biodiversity-rich fishing vessels. It was observed that lagoon areas could be polluted due to the following reasons.

I. Increase in coastal population.

II. Increased pollution in coastal areas.

III. Pollution from fecal matter

IV. Unprocessed industrial waste

V. Municipal waste and fuel oil

VI. Waste disposal from shrimp farms

VII. Pollination for the coir industry.

VIII. Sand digging, boat anchoring.

IX. Irrigation Schemes

X. Increased silt deposition due to development activities.

XI. Exceeding the amount of commercially important fish resources.

(c) The estuaries and lagoon ecosystems in the coastal areas of Galle and Moratuwa which were observed during the audit were found to be under the following threats.

i. Ecosystems of Koggala, Goviyapana, Bambagala, Mahamodara, Madampagama, Molapu Oya, Akurala Wetland Lagoon, Rathgama, Dedduwa lagoons are under threat of unauthorized filling, unauthorized constructions, salinization and garbage disposal.

ii. Roads to Koggala, Goviyapana, Tibriya, Bambagala, Ogandha canal estuary, Mahamodara, river, Urawatta, Akurala, Molapu Oya, Mawakada canal estuary, Kuduwe Goda, Dodanduwa lagoon estuary, Madhu river estuary and Duwa river estuary. Extreme levels of flood danger were announced in at least three places.

iii. Threats such as unauthorized construction and garbage disposal due to improper demarcation of lagoon and estuary boundaries.

iv. Facing the threated such as reclamation of Kalu Ganga estuary, Kalpitiya estuary and Silli Ella estuary belonging to the Moratuwa region.

3.2.3. Sea grass

(a) Sea grass is spread over an area of 37,137 hectares in the Northern Province of the island and the maximum area of 21,225 hectares is spread in the Jaffna District.

Ecosystem	Jaffna **(Hectares)**	Mannar **(Hectares)**	Mullaitivu **(Hectares)**	Total land area of the islan **(Hectares)**
Crushed sea grass	21,225	13,349	2,054	37,137

Table No. 09

(b) Many of the sea grass plains are degraded by the use of harmful fishing methods and by fishing nets and seine. Commercial harvesting of polychem worms to feed on prawn farms has caused a great damage to seagrass. In addition, the sludge depositing by sand removal of the deep sea, can be degraded the seagrass.

The following observations were made in this regard.

i. The data needed to identify the degradation status of the sea grass have not been updated.

ii. No program had been implemented to systematically map the severely endangered sea grasslands in the territorial waters unique to Sri Lanka and it was observed that, therefore the priority of conservation needs at present has not been identified.

iii. Selected grassland areas at risk should be declared as conservation areas in accordance with the provisions of the Coast Conservation and Coastal Resource Management Act, but non-compliance was observed to be adversely affected by various human and natural activities.

3.2.4. Establishment of green zones that protect the coast.

Ipomoea pes-caprae, which can be found in along the coasts of tropical countries and also on the southern coasts of Sri Lanka, grows abundantly in the back-dune area, thereby contributing to the prevention of coastal erosion and this has been confirmed by an investigation carried out by the University of Ruhuna.

It was observed that the primary need was to minimize the impact of human activities on the coast, to minimize the damage caused by coastal erosion, to increase the spread of such plant-friendly beaches and to take measures for the conservation of existing areas, but no action has been taken accordingly.

3.3. Plans and actions for the conservation of the coast and coastal resources of Sri Lanka

3.3.1. Coastal Zones and Coastal Resource Management Plan

A detailed plan for the management of the coastal zones was submitted within 03 years after the due date in terms of Section 12 (1) of the Coast Conservation and Coastal Resource Management Act No. 57 of 1981 and Section 09 of the Coast Conservation and Coastal Resource Management (Amendment) Act No. 49 of 2011, the Director General should make arrangements to take steps to revise the plan prepared under Section 12 (1.a) of Section 12 (1.a) of the Coast Conservation and Coastal Resource Management (Amendment) Act No. 49 of 2011 at least once in every 05 years. By the year 2020, the Coastal Zone and Coastal Resource Management Plan had been prepared on 4 occasions in accordance with the above requirement. Prepared in 1990 by The Coastal Management Plan which has been prepared in 1990 was revised and updated in 1997 and 2004 and the Coastal Zone and Coastal Resource Management Plan 2018 was published in the Gazette Notification No. 2072/58 dated 25th May, 2018.

i. Coastal Management

ii. Coastal pollution

iii. Coastal Ecosystem Management

iv. Special Management Areas

v. Regulatory mechanism

It has been identified the nature of that, problems, threats and challenges of each of the areas mentioned above and outlined in detail the management objectives, policies, strategies and proposed activities in those areas. It was observed that this plan lacks the level of coordination in between the institutions required to achieve the desired objectives in the implementation mechanism.

3.3.2. Cabinet decision to strengthen the Coast Guard Act

It was observed that although a Cabinet decision had been taken on 08 November 2016 to prepare a new Act using Act No. 41 of 2009 to strengthen the Coast Guard Act, it had not been acted upon as at the date of the audit.

3.3.3. Project on large marine ecosystems in the Bay of Bengal

The report released in 2015 on the Greater Marine Ecosystems Project launched in the Bay of Bengal in 2009 also identified a marine zone, coral reefs, sea grass and mangrove degradation and pollution as major problems and it had been stated the necessity of preparing a coordinated action plan to mitigate these problems. However, the guidelines had not been prepared for those activities by 20th December 2020 at the date of the audit.

3.3.4. Sea turtle conservation

The following observations were made.

(a) The Cabinet of Ministers dated 06 December 2016, had decided regarding the regulations to regulate the operation of study centers for this purpose. In accordance with these Cabinet decisions, all sea turtles that come to the coast of Sri Lanka and live in the marine areas of the country are listed as strictly protected reptiles under the Wildlife Fauna Ordinance and keeping such an animal is a punishable offense. The turtle conservation centers which are conducted by the private sector, have been in operation since the 1980s with the aim of releasing sea turtle eggs from the coast and releasing them into the sea after hatching, especially those associated with the southern coast about 15 such centers are currently operating along the South Coast and have become popular tourist and conservation centers. The proposals submitted by the Minister were approved by the Cabinet to declare through the regulations, prepared under the Wildlife and Fauna Ordinance for the evaluation by regularizing the operation of these private turtle conservation centers, to register them under the Department of Wildlife Conservation and to allow them to operate under annual licenses.

    Although 04 years have passed since this Cabinet decision, the Department of Wildlife and Forest Conservation has not yet implemented its provisions.

(b) Maintaining a turtle conservation center

Ecologically important factors in turtles can be depicted as maintaining the stability of coral ecosystems, contributing to the establishment of stable food networks in marine ecosystems, and providing soil nutrients to coastal plant communities. Although the turtle is such a unique species that it needs to be properly conserved, it has been become endangered and has been listed in the Red Data List as endangered by human activities associated with the marine and coastal.

Among the marine turtle species of the world, the Olive vidley, the Loggerhead, the Green Turtle, the Hawk sbill turtle, and the Leather back turtle can be seen in the coast of Sri Lanka. It was observed that these turtles, which are attracted to the coast, are collected into the centers without biological conservation, creating a tourist attraction and generating income. Pursuant to Section 30 of Part III of the Fauna and Flora Ordinance, collection of eggs and keeping of turtles is strictly prohibited in accordance with the provisions of Sections C to G.

The details observed in this regard were as follows.

i. It was observed that no approval had been obtained from the Department of Wildlife Conservation for these centers which are currently in operation.

ii. The hatchlings of Sri Lankan turtles, including the turtles those that lay eggs, hatch in the Palk Strait across Mannar. Due to this, the Mannar Sea area has become a haven for hunting the turtle resource which with a high density. For this reason, it was observed that the enforcement of wildlife law in the sea area of Mannar should be done very urgently.

iii. Attempts to carry out conservation work without proper understanding of these biological factors in an event that relies on the “heat” factor, which is crucial for the survival of future generations from the larvae that grow in the turtle egg, have been found to lead to an imbalance in the sex of the turtles.

3.3.5. Measures taken by the Department of Coast Conservation and Coastal Resource Management to prevent sudden coastal erosion

Following are the observations made on the beaches of Galle and Moratuwa in this regard.

i. On the Galle beach

During the period from May 2020 to the month of August 2020, 509.5 m of earthworks and 1725 poly bags were provided as a short-term measure to prevent erosion at 28 locations in the coastal area of Galle.

ii. Moratuwa Beach

During the period from the 15th June 2018 to 18th November 2019, 182 square meters of ground cover and 2000 poly bags were provided as a short-term measure to prevent erosion at 16 locations in the coastal area of Moratuwa.

3.4. Impact of Coast Conservation by Sri Lanka's Major Fisheries Ports

3.4.1. Waste Management in Fisheries Harbors

(a) Solid waste - Dikowita

Dikowita Port (North Terminal) is a Harbor of 240 m length. The terminal handles between 150 and 250 boats per month and it was revealed that the number of boats is more than 40 feet.

It was revealed that there is a vessel repair zone in the terminal and it is possible to carry out repairs on 15 to 20 vessels at a time and that the maximum amount of waste is generated through this vessel repair zone. On 04.09.2020 there were 10 boats in the boat repair zone which were subjected to physical inspection by the audit and several boats were being repaired at that time.

The following observations were made in this regard.

i. Accumulation of fiber waste

It was revealed that the fiber waste that accumulates in the Harbor was found to be the most difficult waste to collect, store, dispose of and recycle. It was revealed that this waste, which accumulates around 5 tons per month, is disposed of by the generators themselves and the fiber waste generated during the repair of boats is ordered to be disposed of by the owners of the boats. However, since the fiber waste should be disposed of only by incineration using incinerators, the waste was removed from the port but no follow-up was done by the relevant authorities regarding the methods of final disposal of the waste.

ii. Abandoned boats

In addition, the owners of 6 fiberglass boats that had abandoned from repairs in the repairing zone of boats and no formal action had been taken against these boats. So far, no plans have been made to implement an eco-friendly program on abandoned boats. From 2016 to 2019, there were vessels that were abandoned for repairs and their average length was about 40 feet. The details are as follows.

Vessel IMULA Number	Vessel Name	Vessel Length (ft)	Date of voyage lifted
0143NBO	Ashani Shanika	40	2016.07.08
0596CHW	Sachini Duwa	45	2016.09.13
0337CHN	Jesu surindu 7	42	2018.02.27
171TCO	Mangala	42	2019.03.19
0450CHW	Madu Rani	40	2019.05.09

Table 10

Although, the 40 feet boat carrying 196 NBO Mutu mal 4, which the owner of the port had not been represented since 05 September 2014, had been landed by a private broker on 6th June, 2020 spending, Rs.30 000, repairs had been halted due to the rising of delaying charges.

iii. Disposable direct foam

It was revealed that this waste, which is generated on a large scale due to the repair of the cold rooms of the boats, generates about 500 kg per month and it has been made mandatory for the owners of the vessels to dispose of this waste at the port and no follow up had been done on which way they dispose them.

iv. Fishing gear material

About 95% of the fishing boats that use the Dikowita fishing Harbor (Northern Terminal) are using longlines. Therefore, gear waste which is collected in the Harbor are the parts of long line, handlines which are used for longline is prohibited in the harbor. Although about 02 kilos of handline parts which are disposed while making equipment, which are collected in a day instead of that the spare parts of the nets of the several small boats which belong to the port by hired waste disposers, there was no evidence that this waste was disposed of in a proper manner.

v. Sewage that collects to the port along the Kelani River

Due to the situation of Dickowita Fisheries Harbor (Northern Terminal) in the proximity to the Kelani River estuary, a large amount of waste that collects into the sea along the Kelani River collects at the Dickowita Fisheries Harbor (Northern Terminal) during the first 06 months of the year. The management plan of Dik Ovita Port (North Terminal) has depicted that this waste composition is a collection of various wastes and it was revealed that this waste is in a very dirty condition which is difficult to collect under cauterization. Although these collected wastes are dumped in to the polythene bags without any sorting and dumped at the harbor by hired waste disposers, no proper procedure had been followed.

(b) Wastewater Treatment Plant

It was revealed that all the sewage waste and wastewater generated in the Dikowita fishing Harbor is discharged through the sewage waste treatment plant installed in the Harbor. Water treatment process is done by algae, which is a wastewater treatment system.

The following observations were made in this regard.

i. This Wastewater Treatment Plant, which was established in 2012, had not obtained the Environmental Protection License (EPL) issued by the Central Environmental Authority.

ii. After refining, the place where the water was discharged into the sea was filled with sand so that the water did not go down and that place was found to be full of water. The rain water drain was connected to the treatment plant, and wastewater was found to have accumulated at other points in the premises of the Harbor. It was observed that the water was released without any treatment.

iii. In accordance with, National Environmental Protection and Quality Regulations 02 (a) issued under Extraordinary Gazette Notification No. 1534/18 and 01

February 2008,which is to be read in conjunction with the Sections 23(a) and 23(b) of the National Environmental Act No. 47 of 1980 , although it should be made only after the laboratory tests have been carried out prior to release into the external environment ,and the relevant parameters have been contained within the storage volume before releasing the wastewater into the external environment, it had not been done any water quality testing for the water released into the external environment after treatment up to the 08th September 2020,the date of audit.

iv. Drying beds, which had been designed for the disposal of sludge, the final stage of the wastewater treatment process, were observed the draining out of the pipeline, and there the liquid-only effluent leaked out of the drywall or covered planks and leaking to the ground. The drying yard should be arranged in a very safety way, and should not be exposed to the external environment in the form of sludge. But the soil can be polluted by leaking, due to the flowing, done from one side which is covered with timber. It was revealed that the sludge collected in the drying yards was used for cultivation in the Harbor and the suitability of the soil had not been tested.

Figure - 01 Dikowita Port Wastewater Treatment Plant

(c) Repairing of the boats

Following were observed

i. The boats brought for repairs in the boat repairing zone were observed to have been kept in the area for a long time without being taken away by the owners of the boats. According to the sample investigation, 6 boats had been kept in the repairing yard for a period of 1 year to 6 years.

The details were as follows.

Vessel MULA Number	Vessel Name	Vessel Length (ft)	Vessel Date	Period which was the vessel in the repairing zone
146 NBO	Muthumal	40	2014.03.05	06 years
0143 NBO		40	2016.07.08	04 years
0596 CHW	Sachini Duwa	45	2016.09.13	04 years
0337 CHW	Pashi surudu 07	42	2018.02.27	02 years and 06 months
171TCO	Manjula	42	2019.03.19	01 year and 05 month
045CHW	Madurani	40	2019.05.09	01 year and 04 month

Table No. 11

ii. Although a boat placed in the boat repairing zone will be charged 50% of the daily anchoring fee, it was observed that, in this system there is no mechanism to increase the fare in line with the increase in the duration of the staying of the boat.

iv. Due to the restriction on lifting of boats, the problems have been aroused, such as reduction of boat lifting revenue, breeding of mosquitoes and the owners of the boats have to remain in waiting lists for the lifting of boats and it was observed that proper methodology had not been prepared for the removal of boats.

(d) Water quality in the basin of the harbor

It has a parking capacity of about 250 fishing boats and it was revealed that 258 boats were parked in the Harbor as on 4 September 2020, the date of audit. The fish in the fishing boats in this pool are washed away by the water in the pool and the water flows back into the pool. Although the quality of the pool should have been checked as the effluent from the fishing boats also flows into the pool, but this had not been done.

(e) Parking of boats as case items.

The raids were carried out by the Coast Guard and it was observed that 13 fishing boats had been parked on one side of the fishing Harbor for a long time.

Figure - 02 boats parked as case items

3.4.2. Impact on coastal stability by sand removal from fishing Harbors

Harbor s of the Coastal region and related infrastructure are considered permissible applications in a protected area unless there is a significant impact on the specific location or adjacent coastal areas and the activities related to that work are governed by the development license. Guidelines had not been prepared on how to remove sand from the coast during the construction of fishing Harbors.

(a) Peraliya fishing Harbor

Peraliya fishing Harbor is a natural fishing Harbor in the Galle district.

It was revealed that, the fishermen of the Peraliya village consisting of 11 fishing villages and have 190 multi-day boats and nearly 150 other small boats. The permissions for sand removal from the above fishing Harbor from the year 2019 to 2020 are as follows.

Date	Quantity to be removed	Relevant Period
2019.08.08	250 cubes	2019.11.22 to 2020.01.21
2020.01.08	250 cubes	2020.01.27 to 2020.02.26
2020.03.10	500 cubes	2020.03.10 to 2020.05.09
2020.06.22	1000 cubes 334 cubes	2020.06.22 to 2020.08.21
2020.09	2000 cubes	-

Table No. 12

The following were the observations.

i. The Ceylon Fisheries Harbor Corporation has been given permission from time to time to remove the sand and prepare the basin to overcome the inconvenience caused to the fishing community in the area due to the inability of the fishing boats to enter the Harbor due to the filling of the basin of the fishing Harbor , with sand. Although the Department of Coast Conservation and Coastal Resources Management has observed that the sand should be dumped back into the sea as it could adversely affect the stability of the beach during the removal of the sand, according to the relevant permit, it has been stated that only 1/3 of the sand that is being excavated should be added to the environment. Accordingly, the audit observes that there is a discrepancy between the licensing conditions and the issues related to the protection of coastal stability.

ii. It was observed that the above licensing condition would allow the release of excavated sand to the market, which would indirectly allow further coastal erosion.

(b) Panadura Fisheries Harbor

Coastal erosion may be exacerbated as the sand in the basin of the Panadura fishing Harbor should be excavated and removed so that the sand does not return to shore.

The relevant observations are as follows.

i. It had been excavated, 11,600.5 cubes of sand from the Panadura Fisheries Harbor Basin from the 18th August, 2016 to 20th May2020 and all the sand had been taken out of the Harbor without being dumping into the beach.

ii. The letter, CC / Plant- pan FM (2018) of the Director General of the Department of Coast Conservation and Coastal Resource Management, dated 24th January 2020 had been informed to the Fisheries Harbor Corporation, that when sand mining is carried out, 1/3 of the excavated sand cube should be dug up and dumped into the sea or beach in addition to the approved sand cube size from 21st January 2020. It was observed that when sand mining is carried out in this manner, sand discharge from the basin of the harbor, exceeds the permitted amount. Accordingly, during the period from 18th August 2016 to 22nd November 2019, a total of 11,120 cubes of sand had been excavated from the Harbor and removed without being dumping on the beach. During the period from the 21st January, 2020 to the 21st May 2020, 480.5 cubes of sand had been removed from the port and an additional 152 cubes of sand had been excavated from the port and dumped on the beach. It was observed that the sand removed from fishing Harbor s without receiving to the coast or to the sea could be exacerbated the coastal erosion, which is a serious social, economic and environmental problem, currently facing Sri Lanka. (Details are given in Schedule 02.)

iii. It was observed that at the time of issuing the permits, the relevant coordinates did not specify the place where the sand excavation should be taken place.

iv. Due to the failure of the Coast Conservation Department in preparing a proper set of guidelines and regulations for sand mining in fisheries Harbors, and it was observed that including the conditions and removing the conditions of the licenses frequently, which were given to the Ceylon Fisheries Harbor Corporation from the year 2016 to the year 2019, to remove sand from the Panadura Fisheries Harbor.

3.5. Beaches of Sri Lanka

3.5.1. Negombo Coast Conservation District Office

(a) The coastal Zone activities of Gampaha, Puttalam and Mannar are carried out by the Negombo Coast Conservation District Office. The distance of the coastal zone belonging to the Puttalam district is approximately 221.5 km and it extends from the Kelaniya estuary to the Malwathu estuary. The highest coastal erosion in Sri Lanka is in the Puttalam district and the Marawila Thudawa coastal zone has been identified as the most erosive area. Conservation work had not been carried out on this coastal zone, which is eroded only once a year, from the year 2016 to the year 2020. It was also revealed that the coconut plantations are rich in this area.

(b) There are 06 lagoons in the Puttalam District and they are identified as Thalwila, Lunawa (Gampaha), Negombo, Bundala, Puttalam and Chilaw.

(c) The general observations in this regard were as follows.

I. No action has been taken so far to remove the boats (fiber) from the fishing Harbors in these lagoons in an environmentally friendly manner.

II. It was revealed that Holism Company is reluctant to accept the removal of the discarded fiberglass boats and due to the charging of a higher amount of Rs.40 000, that method has so far unsuccessful and the fishermen had abandoned the boats in the fishing Harbors and lagoons.

III. Only a limited number of boats can be parked at the jetty of Negombo Lagoon and as of the date of the audit, 08 dilapidated boats were parked at the jetty, which was found to be a hindrance to the operational activity of the jetty.

3.5.2. Ilathandiya “Kasa” Forest Sea Area

The Forest Department had re-expanded the “Kasa”forest to more than 03 km and 200 m width under a afforestation project in 2006. The “kasa” forest serves as a barrier to the massive winds that blow along the northwest coast during the monsoons to invade the villages. The physical examination has revealed that a large number of trees in the “kasa” forest have been washed away due to this severe sea erosion. It was observed that the cemetery in this “kasa” forest has also been subjected to erosion

Figure - 03 Ilathandiya “Kasa” Forest Sea Area

3.5.3. Galle Coastal Zone

The following matters were observed during the audit of the coastal zone boundary belonging to the Galle Regional Engineering Office.

i. There are 08 areas identified as sensitive areas in this zone, out of which 02 places have been declared as sanctuaries and 02 places have been identified as protected areas, and it was observed that the steps taken for the conservation, although Madu ganga, Hikkaduwa coral reef and Rumassala coral reef have been identified as high-risk areas, the steps which have been taken to the conservation of these areas were not adequate.

ii. According to the findings of the Galle Maritime Zone, which is administered by the 06 Main Divisional Secretariats, it was revealed that, there are 09 lagoons, 12 estuaries, 12 archaeological sites, 12 turtle conservation centers, 07 mangrove areas, 01 sanctuary,01 limestone rock and 23 fishing Harbors and ferries in the

region, and it was observed that the regulation and conservation of these sites is not being done adequately. (Details are given in Schedule 03)

3.5.4. Moratuwa Coastal Zone

The following matters were observed during the audit of the coastal zone boundary belonging to the Moratuwa Regional Engineering Office.

i. Although the Bolgoda Lake mangrove environment and the Bolgoda River have been gazetted by the Central Environmental Authority as a sensitive area, it has been observed that the measures taken for the conservation of those areas are not sufficient.

ii. Coastal area is a geographical strip or strip of land that is restricted or significantly restricted in relation to any development work and is located within the coastal zone. The investigation had been conducted by the Moratuwa Regional Engineering Office regarding the 110 complaints of unauthorized construction in these areas up to the 26th of August of the year 2020. It was observed that due to improper maintenance of the coastal boundary, unauthorized constructions have been carried out as above.

Figure – 04 Moratuwa Coastal Zone

3.5.5. Newspaper revelations regarding coastal line

(a) Sea of Mannar

In the Mannar Sea, a unique mammal, the guinea pig, has been caught in nets and are killed for the meat , according to reports,it is revealed that this animal in Mannar sea has faced the threaten of endangered, the dolphins included in the red data list are also killed and the meat is sold.

It has been reported that the Wildlife Department and the Fisheries Department are not investigating the matter, and no one has been arrested by the Navy and it has been reported that it was the responsibility of law enforcement institutions.

The Mannar Sea Zone runs from the Malwathu Oya to Poonaryn (Sign Bridge) and at the district level the Mannar and Kilinochchi Districts are also in charge of administration. It is reported that most of the illegal activities taken place in the shallow waters off the coast and in the Mannar waters, and Indian trawlers are violating our territorial waters 3 days a week and exploiting the seabed with the method of bottom trolleys. It was reported that the turtles, sea urchins and coral resources are exploited with mud because there is no authoritative officer to stop it.

The following are the reasons for the increase in turtle hunting in the Mannar Sea.

i. Failure to enforce wildlife laws or no wildlife law enforcement officer to visit, raid and inspect the sea region of Mannar

ii. In addition, sea leeches are found in the coast of Mannar and have been used for hunting. They are an endangered species and, although they are considered as a part of increasing the fertility of the marine ecosystem, they have become an endangered species up to today.

(b) Sea Temple

Gazette Notification No. 10205 dated 26th January 1951 declaring that the Pottuvil Sea Temple and the surrounding 72 acres, 03 roods and 13 perches belong to the Archaeological Reserve and on 28 May 1965 30 acres, 03 roods and 13 perches were re-gazetted. Subsequently in 1980 the extent of the Sea Temple was declared as 20 acres and in 1990 as 15 acres and roods 03 and 13 perches.

About 405 private houses have been built on the land set aside for the Archaeological Reserve in 1951. The lands have been distributed by awarding deeds of "Jaya Boome". It was reported that not only lands belonging to the Sea Temple but also lands belonging to the Coast Conservation Department were available and even cemeteries had been built on those lands. It was reported that the Minister of Environment and Wildlife had stated in the discussion with the Director General of Archeology, the Director of Coast Conservation and the Surveyor General that there were antiquities and that they had been informed to be gazette.

Figure – 05 Sea Temple

(c) Iranavila coast line

It is reported that the natural coastal environment has been completely destroyed due to pulling seine with 06 tractors daily at the seine ports in Iranavila coast line.

Due to this, it was reported that the rapid erosion of the coast could not be stopped due to the destruction of plants such as hedges, ground squirrels and thorns planted by special projects implemented for the conservation of the coast with the foreign aids.

3.5.6. Coastal water pollution

Lack of solid waste management and wastewater management in major cities such as Colombo, Gampaha, Kalutara, Galle, Matara and Jaffna, which are densely populated, have an impact on coastal surface and groundwater quality. In a future development plan, it is expected that the beaches of these cities will also be developed as tourist zones, so greater attention should be paid to waste management activities.

The following observations were made.

(a) The Wellawatte Wastewater Treatment Plant, which was established in 1950 with a population of 350,000 in the Colombo District, was not operational at the time of the audit. By the year 2020, the population of the Colombo metropolitan area was estimated to be close to 613,000, and it was observed that the quality of the coastal water would deteriorate drastically as the amount of effluent discharged by the population increased and the effluent discharged into the sea without treatment.

(b) The Coastal Zone and Coastal Resource Management Plan had revealed the findings of the Seawater Quality Inspection at 25 locations selected by Lanka Hydraulic in the year 2014 and further inspected the present conditions at these locations and, it was observed that the institutions affiliated to the Department of Coast Conservation and Coastal Resource Management had not established a system to identify the region and take necessary remedial action.

3.5.7. Coastal Soil Planting and Coastal Access

(a) Coastal soil definition

Coastal Resources and Coastal Management reserves the right to mark the existing seaward point from the shoreline until the coast is permanent. Here permanent plants like coconut, Maharawana Rawula, Watakeiyya and Mudilla are used.

Although it was planned to mark this permanent stretch of land covering 10% of the coastal districts by 2018, it was observed that guidelines had not been prepared for the introduction and implementation of plants for those lanes.

(b) Coastal access

Following the enactment of Section III (d) 22E (1) of the Coast Conservation Act No. 57 of 1981 as amended by Section 19 of the Coast Conservation Act No. 47 of 2011, the Director General should identify the, access for the public to the coast and the coastal zone as soon as possible, and a survey should be carried out to identify all accessible road, roads and narrow lanes and a detailed report should be prepared on the basis of it and it should be submitted to the council and a Coastal Access Plan should be submitted to the Council with the relevant amendments. After submitting the proposed plan to the Minister, the Cabinet should approve and plan to publish the access plan in the Gazette. In this regard, coastal access road plans have been prepared for the districts of Puttalam, Gampaha, Galle, Matara and Hambantota by the year 2021, therefore it was revealed that 2021 has been included in the plan.

3.6. Coastal Resource Conservation

3.6.1. Conservation of Coral reef

From the recorded in Sri Lanka about 35 are soft coral reefs, about 208 are hard corals, most of which are found in Jaffna, Mannar, Hikkaduwa, Galle and Pasikudah. Climate change as well as rising ocean temperatures and declining oxygen levels are responsible for the destruction of these coral reefs, which under at specific temperatures. These coral reefs are also being destroyed by human activities associated with the ocean. Research has shown that the use of dynamite and Lyla and seine nets for fishing is also a factor for this.

The following observations were made.

(a) It is observed that coastal pollution due to human activities has a direct impact on the destruction of the coral reefs.

(b) Restrictions on these coral reefs are also included in the Wildlife and Forest Conservation Ordinance (Authority 469) and the Coast Conservation and Coastal Resource Management Act No. 57 of 1981. However, areas not designated as Marine Conservation Areas are not regulated under the Wildlife and Forest Conservation Ordinance and are regulated only 2 km from the coast line towards the sea under the Coast Conservation Act. Accordingly, it was observed while the audit the need to identify institutions with specific management responsibilities for the safety and conservation of coral reefs.

(c) The parties responsible had not prepared guidelines regarding the "snoklin" used for the observation of coral reef and fish. It has been observed that the non-prescribing of guidelines and regulations to be followed when taking visit tourists to visit such places, can pose huge obstacles to the conservation of such places.

(d) No regulations had been issued to prevent mechanical boat anchoring in coral reef areas.

3.6.2. Preservation of Limestone reefs

Although it was proposed to implement 22 activities proposed by the 2018 Coast Conservation and Coastal Resource Management Plan for the conservation of the reefs, no action had been taken to formulate and implement plans for the conservation of the reefs from the year 2018 to the year 2020.

3.6.3. Impact of fisheries

It has been observed that the beaches which are used by the fishing industry are being severely damaged due to the illegal and non-environmental activities of the fishing community.

(a) Use of nets for fishing activities.

Fishing with nets is a traditional fishing method in this country. However, due to the unavailability of manpower to pull the nets at present (in many places along the coast from Udappuwa to Kalpitiya in the Puttalam District), it was revealed that the fishermen were using a tractor to tie the nets and pull them across the beach. The use of tractors in this manner has led to the complete destruction of the natural sand dunes along the coast and the destruction of natural beauty has become a major environmental problem. Survey reports of the National Aquatic Resources Research and Development Organization (NARA) have shown that this can cause serious damage to the coast and seabed.

(b) The use of Lyla and Surukku exorcisms

This system has been declared as illegal since 21 February 2016. It was observed that further use of this method could destroy all the small fish and aquatic resources in the sea due to fishing.

(c) Use of cache nets

The Lyla and Surukku fishing method is a similar method to Lyla and Surukku exorcisms and using this method destroys all the small fish and aquatic resources.

(d) Use of dynamite.

It has been found that it takes about a hundred years for the coral reefs to recover from the devastation caused by the exclusive use of explosives, which are widely used on the northeast coast of the island. Dynamite is used to kill such fish and destroys all the fish in the affected area.

(e) Ritipanna method

Ritipanna fishing method is a traditional method of fishing practiced only in a limited number of areas in Sri Lanka. Fishermen can be found in Galle, Koggala, Kathaluwa, Ahangama, Welipenna, Midigama and other southern and southwestern coastal areas of the island. Fishermen use a pole fixed to the shallow seabed and a rod tied horizontally to it, which is called Ritipanna. It is important for the fisherman to keep a balance of about 2 m above the water surface horizontally with respect to the pole. It was revealed that the coral reefs of Hikkaduwa and Habaraduwa were damaged due to the improper use of the above fishing methods.

3.7. Conservation of Marine National Parks

3.7.1. Provisions of the Wildlife Conservation Ordinance

The number of marine national parks declared is 29, in accordance with the Section 469 of the Fauna and Flora Protection Ordinance (2) Sub-section (1) as at 20th of December 2020.

The following were observed regarding these national parks.

(a) Although the Marine National Parks have been gazetted from time to time, no specific identification methods have been established for the relevant zones.

(b) It was observed that the main problem facing the Marine National Parks is that the boundaries are not established properly and the land ownership has to face problems.

(c) A proper plan for the management of marine national parks had not been prepared.

3.7.2. Marine Reserve Areas

According to the Department of Wildlife, Sri Lanka's coastline is 1340 km, of which 25 percent, or 343.5 km, are declared marine reserves.

The following observations were made.

(a) Out of the 29 sites declared as Marine National Parks, 09 sites have been declared as protected areas for the entire marine surface. Of these, Bar Reef and Adams Bridge were observed as places with very high-water levels.

(b) Three other sites have been identified as marine sanctuaries and should be protected, out of which Mirissa and Wilpattu marine areas were identified as areas of great concern.

(c) According to research conducted by the National Aquatic Resources Research and Development Institute (NARA), the Coral Reefs in the coastal areas of Punnakuda and Dutch Bay have been found to be at high risk, but the Department of Wildlife and Forest Conservation has so far paid attention to this matter. It was observed that there was none.

3.8. Sustainable Development Goals

3.8.1. Conservation and thriftly usen of ocean, marine and marine resources for sustainable development

(a) Prevent and significantly reduce all forms of marine pollution by 2025, especially from marine pollution and nutrient pollution by the activities based on the land.

(b) Sustainable management and protection of marine and coastal ecosystems by empowering them to withstand disasters by 2020 and restoring the oceans in a healthy and productive manner.

(c) Minimize the impact and cost of ocean acidification with all levels of scientific collaboration.

(d) Restoration of fish resources in the shortest possible time and effective control of fishing as determined by the biological characteristics of the fish by 2020 and unrestricted, illegal, ending the unreported and unregulated harmful fishing methods and implementing management plans based on scientifically.

(e) Preservation of 10% of coastal and marine areas by 2020 in accordance with the best scientific information and national and international information laws.

(f) Prohibition of specialized fishing subsidies that cause overfishing by current capacity, removal of subsidies, illegal, unreported, unregulated fishing industry, to be developed in developing countries and at least in developed countries and recognizing the importance of treating existing countries appropriately, effectively, and in other ways, the World Trade Organization has made them an integral part of fisheries subsidy negotiations by 2020.

(g) To sustainably manage the fisheries, aquatic cultural and tourism industries by 2030 and to enhance the economic benefits to the developing of island states and least developed countries by using marine resources in a sustainable manner.

(h) Development of scientific knowledge, taking into account the guidelines for the evolution of marine biodiversity and marine technology in the International Oceanographic Ship to enhance maritime health and specially to enhance the contribution of marine biodiversity to develop the small island states and the least developed countries, and the Development of research capacities and exchange of marine technology.

(i) Providing opportunities for small scale traditional fishermen to sell marine resources to the markets.

(j) The future we want the conservation and sustainable use of the oceans and their resources in accordance with the provisions of UNCLOS, which provides a legal work plan for the conservation and sustainable use of the oceans and their resources as set out in paragraph 158 Improvements.

The following were the observations.

i. The Department of Census and Statistics had not submitted the preliminary data related to Sustainable Development Objectives No. 14.

ii. According to the Sustainable Development Goals 14.5, it is expected to conserve 10 percent of the coastal and marine areas by 2020 in accordance with scientific information and national and international laws, but it was observed that only 2 percent was covered.

4. Recommendations

4.1. Declaration of proposed sites as Special Coastal Management Areas in accordance with the provisions of the Coast Conservation Act.

4.2. Preparation and publication of mangrove replanting guidelines and identification of priorities for mangrove conservation.

4.3. Take necessary measures to minimize filling mouth of estuary and demarcate lagoon, estuary boundaries.

4.4. Carrying out conservation activities of corals and sea grasses plain.

4.5. Conducting meetings of the Coast Conservation and Coastal Resource Management Advisory Council and maintaining the functions of the Advisory Council in accordance with the provisions of the Act.

4.6. Taking necessary action for the conservation of antiquities located in the coastal zone.

4.7. Issuing and complying with seawater quality testing standards.

4.8. Registration of turtle conservation centers and carrying out proper monitoring activities.

4.9. Implementation of methods for disposal of boat, fiber and other waste at fishing harbors and acting accordingly.

4.10. Preparation of guidelines on sand removal techniques by fishing harbors, acting accordingly and monitoring.

4.11. Regulating and monitoring of coastal wastewater treatment and disposal.

4.12. Declaring and conserving marine sanctuaries and taking necessary action for their conservation.

4.13. Maintaining beach landscaping and publishing beach entrances.

4.14. Carrying out all necessary activities to bring the conservation of coastal resources up to 10% in accordance with the Sustainable Development Goals 14.5.

4.15. Maintaining a well-coordinated organizational role related to these issues identified in the report.

Sgd./W.P.C. Wickramaratne
Auditor General

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Auditor General

25 April 2022