

SOCIO-ECONOMIC STUDY FOR PROPOSED RECLAMATION AND DEVELOPMENT OF THE SUNRISE CITY MIXED DEVELOPMENT AT MUKIM SEBERANG TAKIR, DISTRICT OF KUALA NERUS, KUALA TERENGGANU, TERENGGANU



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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

This document is prepared as a Socio-Economic study for Proposed Reclamation and Development of the Sunrise City Mixed Development at Seberang Takir, Mukim of Kuala Nerus, Kuala Terengganu. This socio-economic study is provided for reclamation and the top side development. Therefore, the proposed project is referred to as 'The Project'.

This will study the population in the vicinity of the project area and their socio economic and predict the possible impacts that may occur. For this purpose, a list of criteria has been developed to ensure that the necessary social parameters are documented in the study. Examples of the parameters are demographic and population effects, housing status, labor force effect, economic status, public health, family status effect and public safety.

1.2 PURPOSE

Socio-economic study is described as a systematic analysis of social, economic and cultural impacts of a proposed development project and programs onto individuals and communities where they live. It is undeniable that when a project is constructed, the resulting impacts will eventually affect, directly or indirectly on the surrounding environment and hence, the inhabitants living therein, whether positive or negative. Socio-economic intends to assess impacts that focus specifically on the social considerations, which relates on the bio-physical (environmental) issues.

1.3 GOALS AND OBJECTIVE OF THE STUDY

The main objectives of socio-economic study are:

- a) To identify the social profiling in surrounding area of proposed project.
- b) To assess the probable impact of the project, with particular attention to demographic, socio-cultural issues and land use including the recent history of change in land use.
- c) To propose mitigation to any potential negative socio-economic effects of the project and to ensure incorporation of local perception in the project.
- d) To proposed social impact monitoring plan for proposed project.

1.5 ADVANTAGES OF SOCIO-ECONOMIC STUDY

Besides of having the socio-economic as part of the compulsory measure in Environmental Impact Assessment (EIA), there are diverse group that can benefit from the preparation of the study. The benefits are as follows:

- i. Tackle critical areas which affect the community development and their needs in each phase of the project.
- ii. Increasing project's effectivity by acknowledgment and experience of the locals.
- iii. Assessment of the community's perspective on the proposed project.
- iv. Protecting the vulnerable group.
- v. Improving the quality of life through the presentment of mitigation measures.
- vi. The project will be conducted in a respectful manner and without any objection during the construction period.

1.6 RELATING POLICIES

1.6.1 National Physical Plan 3 (RFN3)

High scale projects possess great impacts to the environment and its inhabitants, whereby there needs to be a code of policies that control the practice to avoid future implications. The main focus of the Third National Physical Plan orientates towards the citizens and their welfares, in conjunction with efficient physical management and sustainability. The proposed project which enquires the study will need to adhere to the National Physical Planning policies that mainly describes the strategies planned for the betterment of community. Below in **Table 1.1** are the policies that are corresponding with the preparation of the study:

Table 1.1: National Physical Plan 3 Policies

Thrust	Strategies
PD: Urban and Sub-Urban Dynamic Growth	PD1: Balanced Urban Growth PD2: Integrated Sub-Urban Growth PD3: Upgraded Access and Connectivity
KD: Spatial Sustainability and Resilience to Climate Change	KD 1: Sustainable Management of Natural Resources, Food Sources, and Legacy Resources KD 2: Holistic Land Use Planning KD 3: Low Carbon City And Sustainable Infrastructure
KI: Establishment of an inclusive and resilient community	KI 1: Adequate and Quality Living Environment KI 2: Livable Community Environment KI 3: Community Engagement and Collaboration

Source: National Physical Plan 3, 2017.

KI, as being the third policy mainly highlights towards the betterment of population wellbeing. The emphasis on the social improvements as the main focus of sustainable development. Empowerment of individuals and social groups with the skills they acquire to create change within their communities, building better facilities and towards liveability of all walks of life.

“KI2: Persekitaran Komuniti Berdaya Huni” have elements of livelihood and community integration, which aim to foster a progressive, concerned and active community on the local and national development agenda. Through the study, community may alert any future development happened to be in their community area.

1.6.2 The Eleventh Malaysia’s Plan (RMKe-11)

The policy framework are concerned with the steps the government make to meet people needs for security, education, work, health, and wellbeing. The plan also addresses how the government responds to national challenges of social, demographic and economic change, and of infrastructures, and globalization.

The essential topics featured in RMKe-11 that focuses on the community and social developments are as follows:

1. Reinforcing inclusivity towards an equitable society.
2. Improving the well-being of the people.
3. Enhance human capital development for developed countries.
4. Strengthening infrastructure to support economic growth.
5. Engineered economic growth to improve prosperity.

In the context of the project, the fifth objective are the most associated with the improvement of the economy to improve prosperity and the social well-being as in the second objective.

1.6.3 National Urbanization Policy 2 (DPN2)

The policy takes on the strategies which encompass on the aspects of realizing a safe, systematic, modern and attractive city. The most relatable policy with the preparation of socio-economic study is **Fifth Core: Establishing Prosperous and Environmentally-Friendly City Environment**, through the formation of **Principle 4: Inclusive and Fair Urban Development**. In this principle, the main objectives are to promote household welfares, increment of the income, Bumiputera group improvement program, increasing youth capability in contribution and accepting benefits from urban developments, and provision of

OKU and senior citizens needs in various urban developments. The policies planned mainly targeting the people regardless of the location and socio-economic status, where every walks of life will enjoy the future planning components, in tandem with the policies. These are the intended programs for the social group in the study areas involved in the Social Impact Assessment conduct.

1.6.4 National Social Policy

National Social Policy was established in 2003 and its main focus solely on enhancing quality of life. The strategies comprising few objectives and are implemented in the lower scale sociological studies. Among the objectives covered as per **Table 1.2** below:

Table 1.2: National Social Policy and the Relating Strategies

Objectives		Related Strategies
Objective 1	Ensuring individuals, families, and communities basic necessities are fulfilled	<ol style="list-style-type: none"> 1. Creating multiple opportunities and facilities for every individual, family, and communities can enjoy the basic needs of life and join the stream National development. 2. Ensure that every individual gets the right of survival, protection, development, and participation as well as to enjoy the needs life-long, not marginalized and excluded from development flows.
Objective 2	Lifelong People Building and Empowering	<ol style="list-style-type: none"> 1. Ensure the right of future generation to live and grow in safe and healthy conditions without being bullied by threats and exploits. 2. Establishing individuals who have reached the age of 18 years, who have begun to achieve independent self-reliance in certain economic aspects, are given support, guidance, knowledge, and skills to make decisions about education, employment, family and social relations. 3. Taking steps to ensure that each program planning and drafting of each group is planned and drafted with members' related groups.
Objective 3	Strengthen and Develop Social Support System and Social Services	<ol style="list-style-type: none"> 1. Recognize the identity, importance and needs of various ethnic groups within the people of Malaysia to create tolerance and mutual assistance in and between different races. 2. Ensuring that an organization or agency provides basic social needs as well as providing support and guidance to its staff as one basic responsibility. 3. Ensuring the organization or agency that provides social services emphasizing staff equipped with social skills

Objectives		Related Strategies
		<p>and latest technology as well as those directly related to the target group.</p> <p>4. Making Social Impact Assessment (SIA) applicable to the planning and implementation of all programs and public and private development activities.</p> <p>5. Determining some social issues reviewed, investigated and analyzed in detail the objective, its rationality over all aspect professionally and disseminating the understanding of the social issues to the whole community so that every effort taken to handle it is efficient and effective.</p> <p>6. Provides facilities for all sectors to carry out services assistance in approaching any party that needs help and guidance.</p> <p>7. Encourage and support the active participation of the community in the effort creating various types of recovery services for all groups target.</p>
Objective 4	Generating Multi-Sectorial Synergy	<p>1. Enhance and strengthen the role and function of the social development division at all levels of state, district/district and community administrations.</p> <p>2. Encouraging Local Authorities to create programs and facilities organized and complete social order in line with physical development and the rapid economy.</p> <p>3. Awareness of various levels of society to be proactive, deep globalization process by exploiting various opportunities and potential for advancing themselves, families and communities.</p>

Source: National Social Policy, 2003.

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

The proposed project involve in this study, which is:

- i. Proposed Reclamation and Development of the Sunrise City Mixed Development at Mukim Seberang Takir, District of Kuala Nerus, Kuala Terengganu, Terengganu, Malaysia.

Administratively, the project is within Mukim Kuala Nerus, District of Kuala Nerus. The reclaimed land is intended for a mixed development and will be geared towards developing commercial districts, for government use and also for tourism purposes.

The proposed project is located at Seberang Takir, Kuala Nerus, which is approximately 10 km from Kuala Terengganu. The project site is exactly located along the southern shoreline of the State of Terengganu between the Sultan Mahmud Airport and the Kuala Terengganu Breakwater.

This project's location and boundary can be referred in **Figure 2.1** while the coordinates of the site location can be referred in **Table 2.1**. These boundary points show the area which has been approved for the development by the State Government (2,994.2 ac /1,211.7 ha). It should be noted that the Project footprint of does not extend beyond the title boundary and will cover an area of 1,860 ac (753 ha). Coordinates for the navigation channel boundary points are listed in **Table 2.2**.

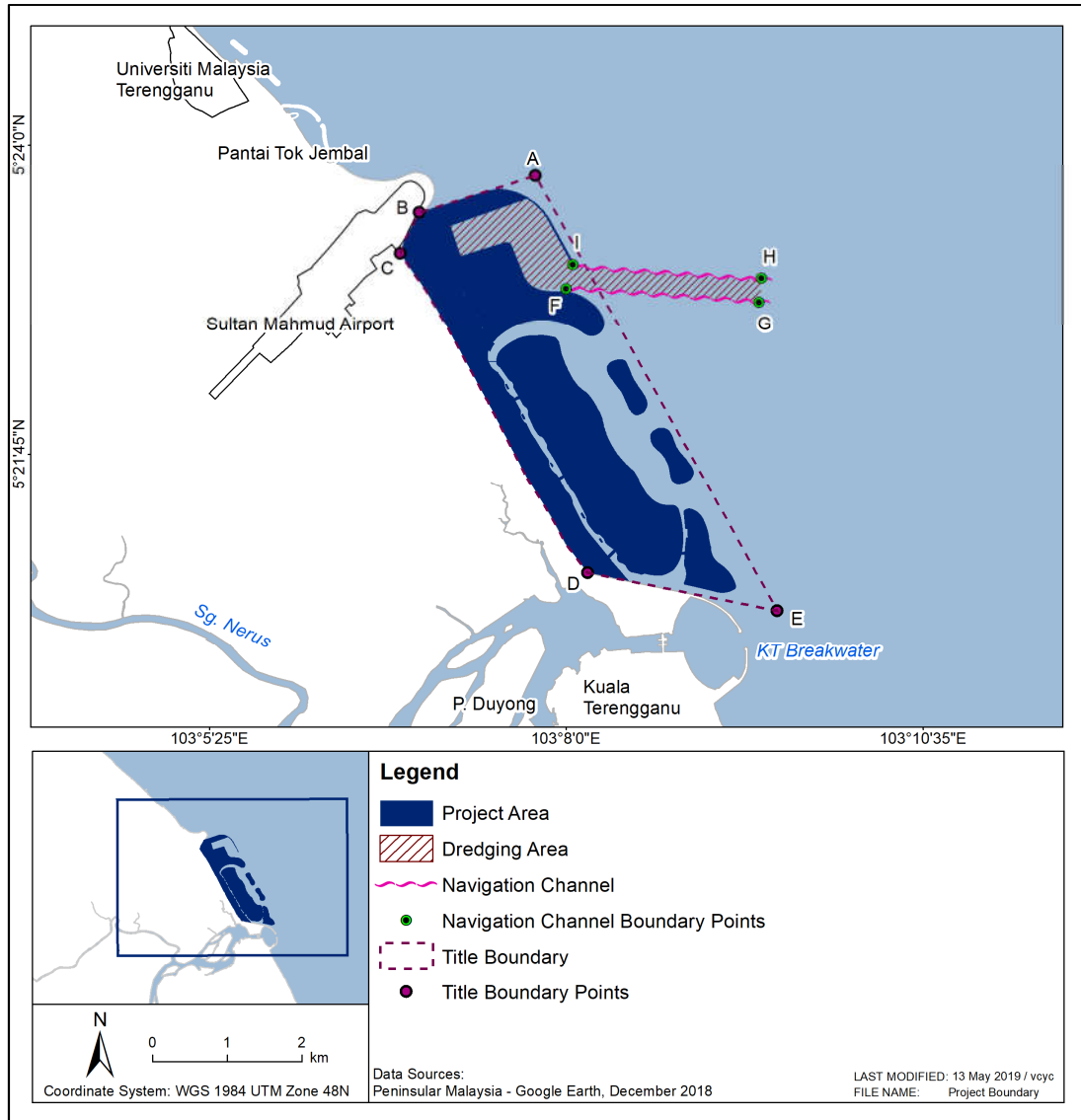


Figure 2.1: Title Boundary Awarded by the State Government and Actual Project Area Boundary (Project Footprint)

Table 2.1: Boundary Coordinates of the Project Title Area Approved by the State Government

Point	Geographic Coordinates (WGS84 - degrees, minutes, seconds)	
	Latitude (N)	Longitude (E)
A	5° 23' 46.93"	103° 7' 45.94"
B	5° 23' 30.76"	103° 6' 55.67"
C	5° 23' 13.00"	103° 6' 47.37"
D	5° 20' 53.86"	103° 8' 09.18"
E	5° 20' 37.57"	103° 9' 31.60"

Table 2.2: Boundary Coordinates of the Navigation Channel

Point	Geographic Coordinates (WGS84 - degrees, minutes, seconds)	
	Latitude (N)	Longitude (E)
F	5° 22' 55.14"	103° 8' 14.73"
G	5° 22' 50.37"	103° 9' 26.29"
H	5° 23' 04.92"	103° 9' 26.42"
I	5° 23' 09.82"	103° 8' 06.74"

2.1.1 PROJECT CONCEPT

The project is a mixed development with marine facilities, to be sited on reclaimed land. The reclamation covers an area of 1,898 ac (768 ha) and extends along the shoreline between the Sultan Mahmud International Airport to the north and the Kuala Terengganu breakwater to the south.

The construction of the project will involve the following activities:

- Reclamation of 768 ha over five phases. Approximately 60 million m³ of fill material will be sourced from an approved marine borrow site.
- Capital dredging for navigation channel for the cruise terminal, approximately 2.6 km in length, with an anticipated 8 million m³ of dredged material to achieve a depth of -12m CD; and
- Construction of breakwater.

The onshore development includes residential, tourism, ferry terminal, light industry, public facilities and other components as shown in **Figure 2.2** and **Table 2.3**.

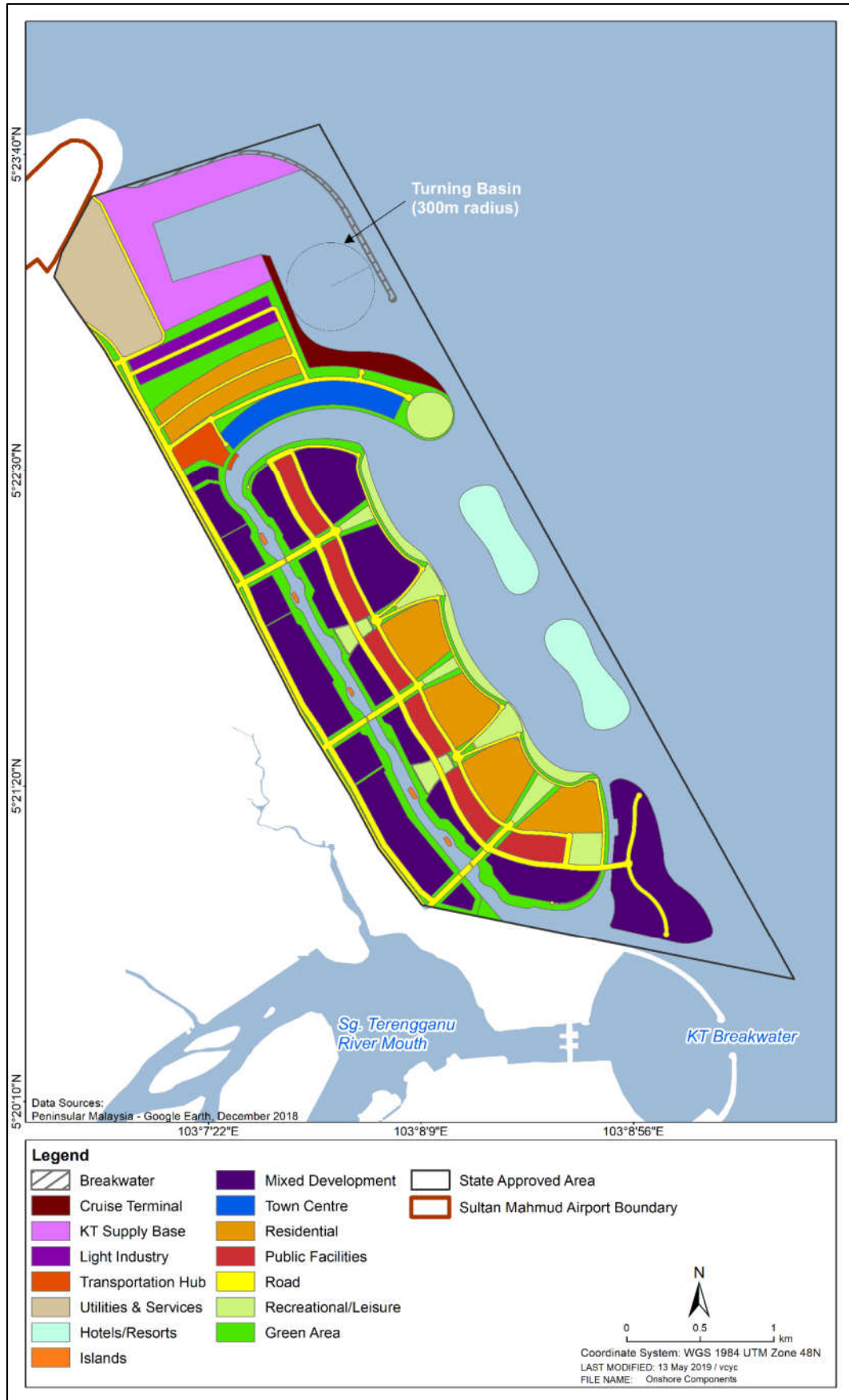


Figure 2.2: Onshore Concept Plan

Table 2.3: Onshore Components

Description	Approximate Area		
	Ha.	Ac.	%
Residential	84.60	209.06	11.0
Commercial			
- Main Town Centre	20.15	49.78	2.6
- Neighbourhood Centre / Mixed Development	185.24	457.75	24.1
- Hotels / Resorts	40.65	100.44	5.3
Industrial (Light Industry)	16.34	40.38	2.1
Recreational/Leisure	47.43	117.20	6.2
Public Facilities	36.95	91.30	4.8
Transportation	22.74	56.20	3.0
Utilities and Services (TNB, Reservoir, STP etc)	39.65	97.98	5.2
Green Area	111.25	274.90	14.5
Roads	93.88	231.99	12.2
KT Supply Base (Fishing Wharf and Marine Facilities)	60.99	150.71	7.9
Breakwater	7.06	17.44	0.9
Islands	1.02	2.51	0.1
Total	768	1,897.65	100.0

2.1.2 PROJECT COMPONENTS

2.1.2.1 Reclamation

An area of 1,898 ac (768 ha) will be reclaimed, which is 63% of the total area defined by the State Government for the project proponent. It is estimated that a total of 62 million m³ of sand is required to form the land to a platform level of +4.45 m CD. Reclamation will be carried out in five (5) phases as shown in **Figure 2.3**. The land areas to be reclaimed according to phase are:

- Phase 1 – 612 ac
- Phase 2 – 460 ac
- Phase 3 – 240 ac
- Phase 4 – 383 ac
- Phase 5 – 233 ac

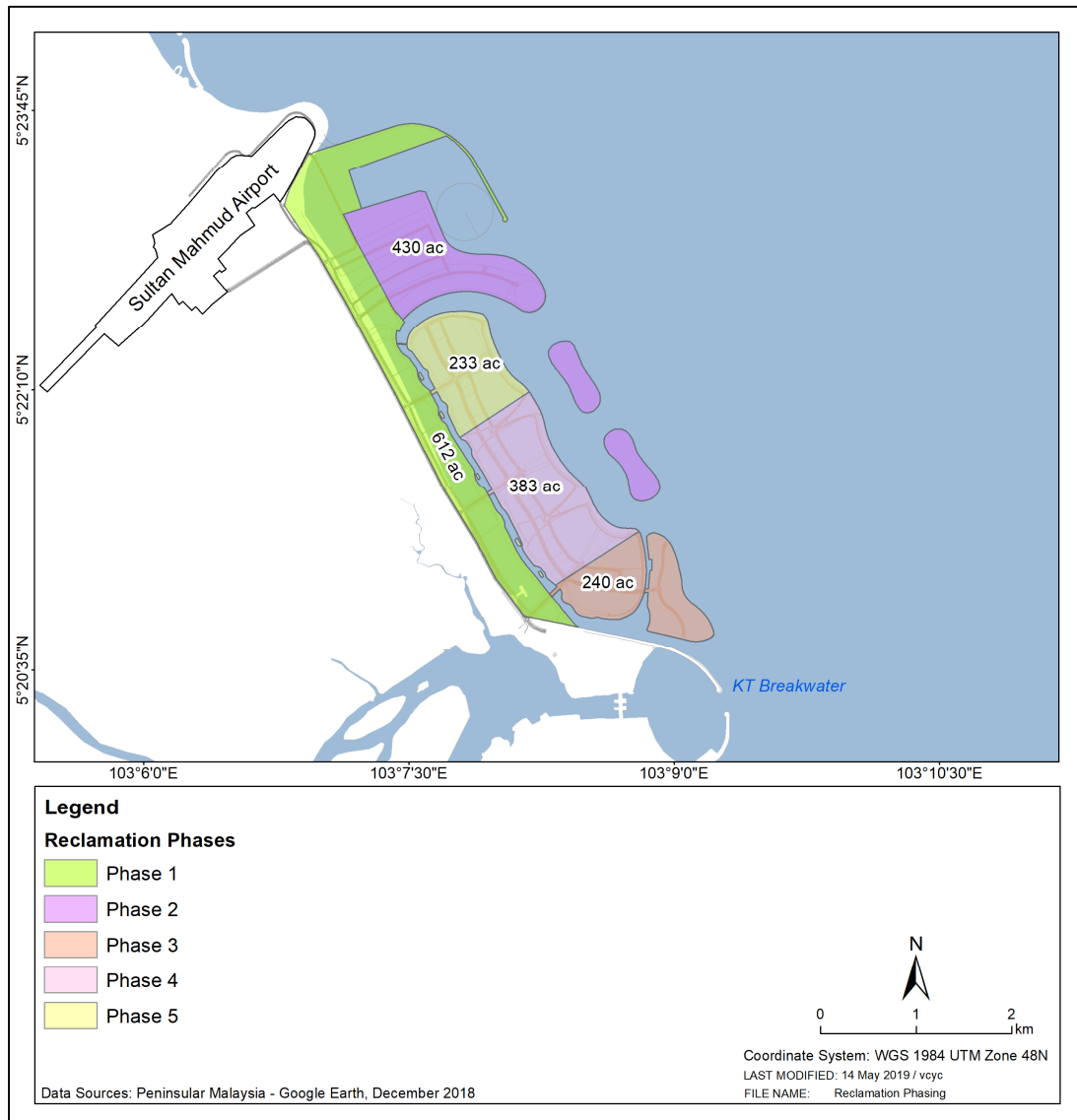


Figure 2.3: Reclamation Phases

The sand will be transported from the approved sand source area which is located approximately 124 km south of the project (**Figure 2.4**).

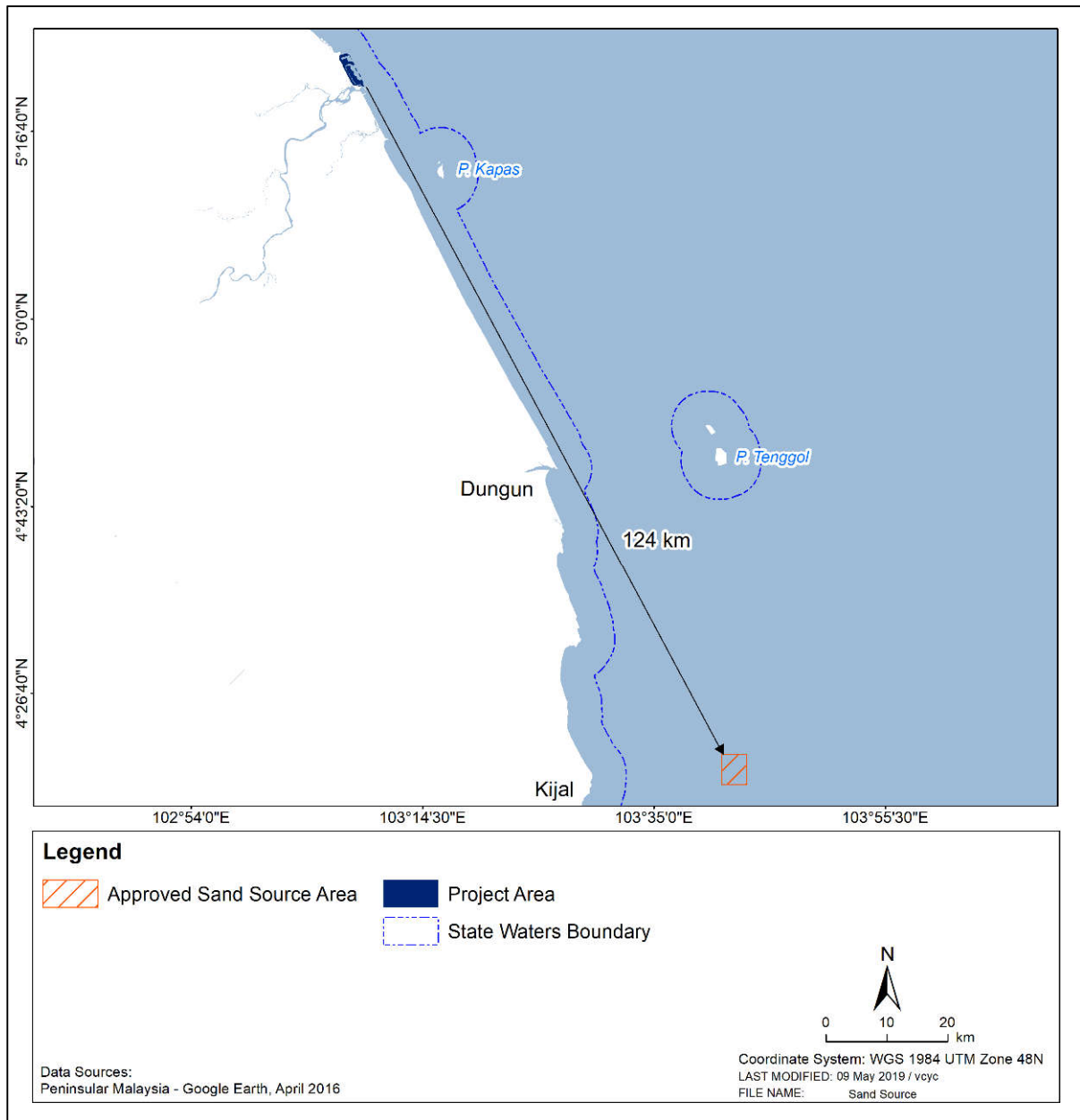


Figure 2.4: Location of Approved Sand Source Area

2.1.2.2 Capital Dredging

Capital dredging will be carried out within the marine facilities area for the navigation channel and turning basin for the cruise terminal to a depth of up to -12m CD, as shown in **Figure 2.5**. The estimated quantity of dredged materials is 8.3 million m³. All dredged materials will be reused within the proposed reclamation.

Capital dredging will be carried out in two (2) phases. Details of each phase are summarised in **Table 2.4**.

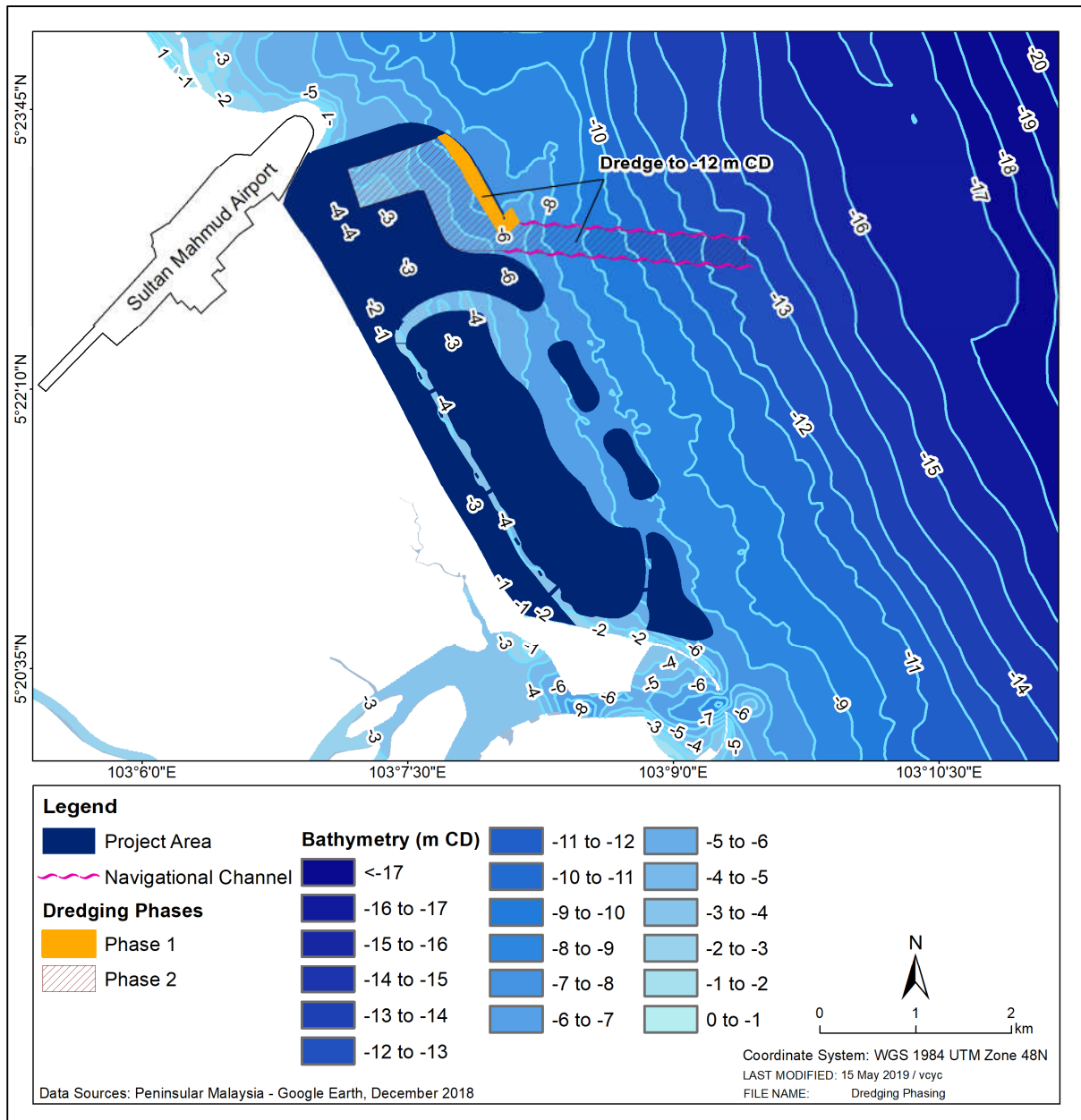


Figure 2.5: Project Dredging Area

Table 2.4: Capital Dredging Description

Phase	Estimated Dredged Volumes from Capital Dredging (million m ³)	Estimated Duration for Capital Dredging (months)	Dredged Depth (m CD)
1	0.6	0.5	-12
2	7.7	6.8	-12

2.1.2.3 Breakwater

A breakwater will be constructed at the northern part of the project to provide shelter against waves at the KT supply base, cruise terminal and turning basin (refer to previous **Figure 2.2**).

The breakwater of approximately 2.4 km will be a rock armored rubble mound structure with a rock core.

2.2 PROJECT LOCATION

2.2.1 Kuala Nerus District

The Project site is located at the Seberang Takir in District of Kuala Nerus, Terengganu Darul Iman. To be exact, the proposed reclamation project will be held at the shoreline along Pantai Teluk Ketapang, which between the Sultan Mahmud International Airport and to the north and the Kuala Terengganu Breakwater to the south.

Kuala Nerus is a new district in Terengganu state. This district has been officially declared as a new district on 18th September 2014 by former Prime Minister, Dato' Sri Haji Mohammad Najib bin Tun Haji Abdul Razak.

Kuala Nerus District boundary covers the Northern Sungai Nerus to the boundary of the Setiu District. This district consists of four mukims, which are Mukim Kuala Nerus, Mukim Batu Rakit, Mukim Pulau Redang and Mukim Pakoh. Mukim Pakoh is a new mukim that originally located in Mukim Belara. **Figure 2.6** shows the District of Kuala Nerus and its four mukims. The acreage of Kuala Terengganu District reduced to 21,021.47 hectares from 60,773.60 hectares while 39,752.13 hectares (65%) is now in the new district of Kuala Nerus. The district has an estimated population of 200,000 and there are 105 JKK in the Kuala Nerus administration.

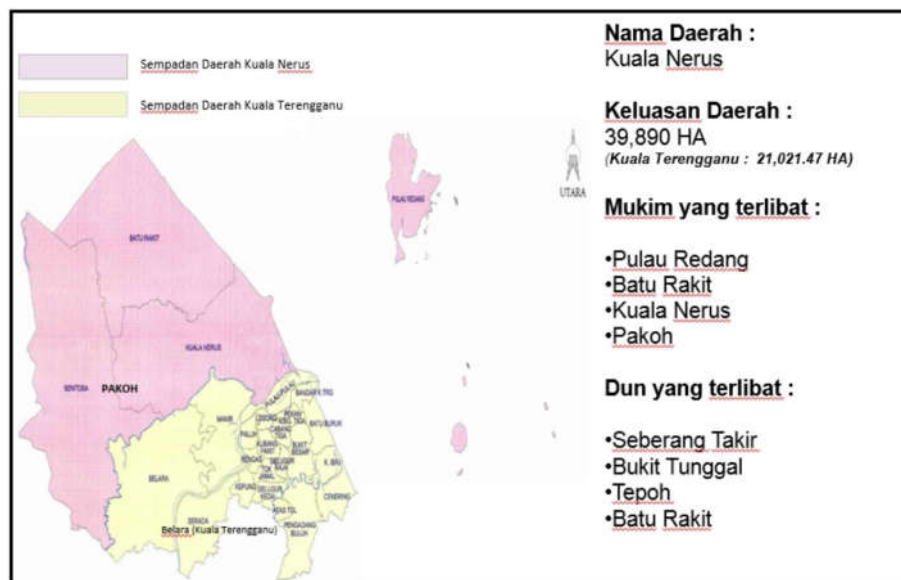


Figure 2.6: District of Kuala Nerus and its Four Mukims

Source: District and Land Office Kuala Nerus Official Website.

However, any planning development in Kuala Nerus need to be referred from the Kuala Terengganu Local Plan, as Kuala Nerus District is still a part of Kuala Terengganu District when the Kuala Terengganu Local Plan gazetted (**Figure 2.7**). PLANMalaysia Terengganu will gazette new local plans for both districts, which known as Kuala Terengganu Local Plan 2030 and Kuala Nerus Local Plan 2030.



Figure 2.7: Kuala Terengganu Local Plan 2020

2.2.2 Pantai Teluk Ketapang

As been mention before, the proposed project is located at the Pantai Teluk Ketapang. Pantai Teluk Ketapang is one of tourism attractions in Kuala Terengganu, which can be classified as recreational tourism attraction. **Figure 2.8** shows the Pantai Teluk Ketapang and the proposed reclamation site.

Pantai Teluk Ketapang is located next to the Sultan Mahmud International Airport, approximately 4 kilometer from Breakwater Kuala Terengganu and 22 kilometer from the Kuala Terengganu City Centre. From Kuala Terengganu city centre, the Project site can be reach by accessing via Federal Road 65 (FT65) and State Road 143 (T143) and pass along Jalan Pantai Teluk Ketapang, Jalan Ketapang Pantai and Jalan Melati Ulung.



Figure 2.8: Pantai Teluk Ketapang

Source: Drone Footage, 2019

2.3 RELATING POLICIES

2.3.1 National Physical Plan 3 (NPP3)

High scale project possess great impacts to the environment and its inhabitants, whereby there needs to be a code of policies that control the practice to avoid future implications. The main focus of the Third National Physical Plan orientates towards the citizens and their welfares, in conjunction with efficient physical management and sustainability. The proposed project which enquires the study will need to adhere to the National Physical Planning policies that mainly describes the strategies planned for the betterment of community.

2.3.1.1 Natural Disaster Risk Area

According to the NPP3, PPS3 – *Pelan Pengurusan Kawasan Berisiko Bencana Semula Jadi* need to be referred to ensure that the project is in line with the management plan. The purpose of identifying of natural disaster risk areas is to anticipate the calamity and inclusion of risk management measures during the development planning. Impact of natural disaster is needed as one of the important factor in planning and decision making of any development. By referring to the NPP3, three types of natural disasters that need to be focused within the study area are flood, landslide and beach erosion. The severity level for every types of natural

disaster in Terengganu can be referred in **Figure 2.9** gazetted Seberang Takir coastal area has been gazetted as stage four beach erosion and flood risk.



Figure 2.9: Natural Disaster Risk Areas in Terengganu

Source: National Physical Plan 3 (NPP3)

2.3.1.2 Gazetted Endanger Habitat

Terengganu is well known as the habitat for one of now endangered species, sea turtle. The habitats for this endanger marine wildlife need to be protected against the threat of development of surrounding land and receive impact from the impact of climate change. This can undermine the ability to provide ecosystem services for humans and cause habitat loss for various endangered species of animals or plants. It justifies the need to gazette these important land and marine habitats for conservation and conservation efforts. Currently, there are nine area identified as turtle landing area in Terengganu, which classified as important endangered habitat in Peninsular Malaysia. None of them are located within the

project site as well as its surroundings (**Figure 2.10**). The nearest turtle landing area is Pantai Penarik, which located approximately 44 kilometers from the project site.

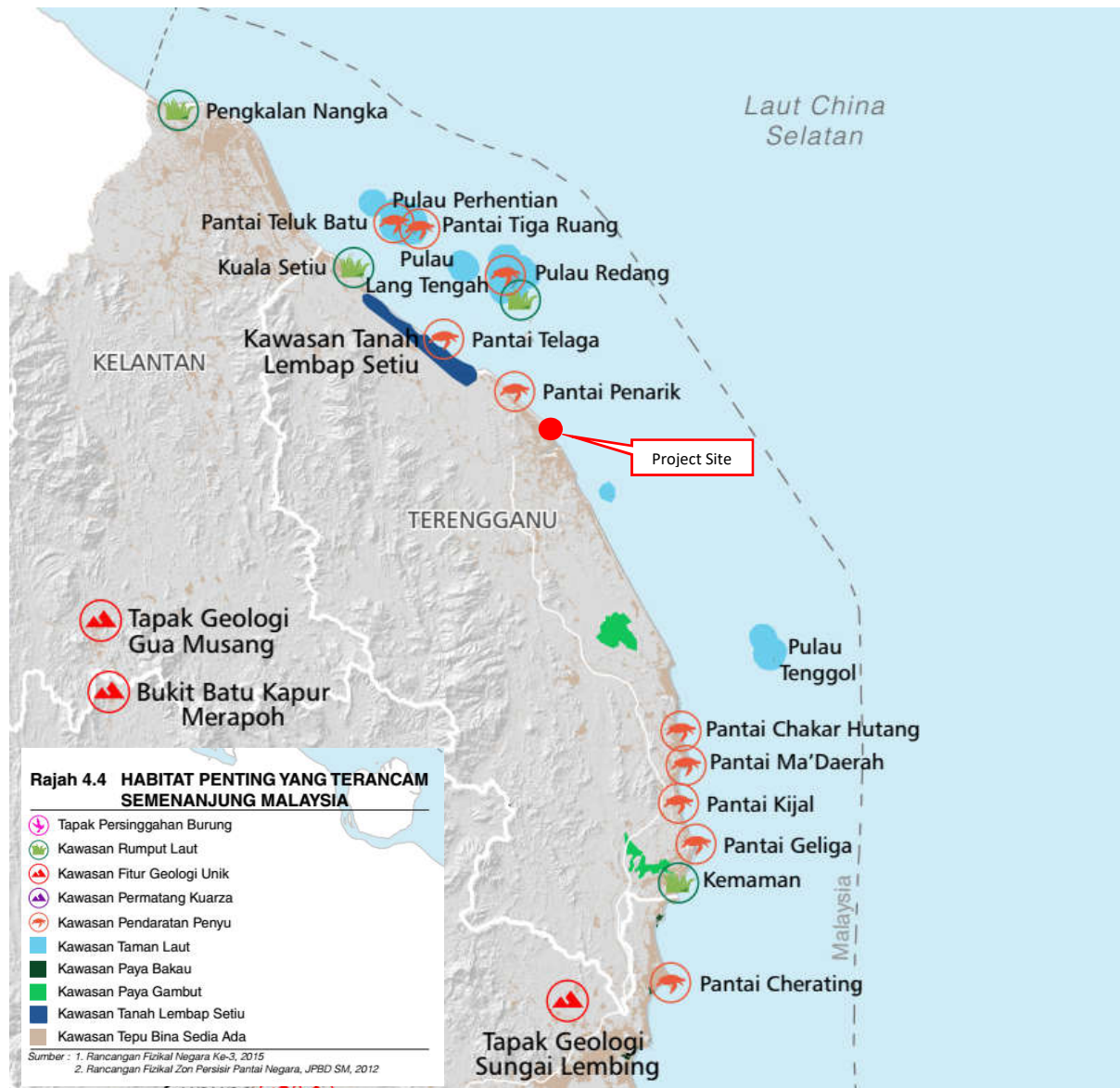


Figure 2.10: Natural Disaster Risk Areas in Terengganu

Source: National Physical Plan 3 (NPP3)

2.3.2 Terengganu Structure Plan 2005 – 2020

2.3.2.1 Tourism Sector

Terengganu has set the main goals of tourism development, which are providing good tourism infrastructure, developing, promoting and marketing products and systematic, integrated and effective tourism activities based on the dimensions of nature beauty, tradition and heritage.

Based on these goals, the Structure Plan has outlined a through and deep-rooted for the targets, strategies and programs to be implemented to realize the vision by the year 2020.

Terengganu is rich in natural tourism resources and unique cultural heritage. It has a group of famous and attractive islands, white beaches from Besut to Kemaman, tropical rainforest which rich in flora and fauna, the largest man-made lake in Southeast Asia and its own Malay Cultural Heritage. In order to optimize the resources and products, tourism sector need to be reintegrated and strengthened from any aspects that can contribute positively. One strategy that can relate to proposed project is;

h; Memberi nafas baru (revitalise) kepada produk-produk tradisional Negeri Terengganu (seperti Rantau Abang, Pantai Batu Buruk, Pantai Chendering, Tasik Kenyir) melalui langkah-langkah 'repositioning' dan 'rebranding'

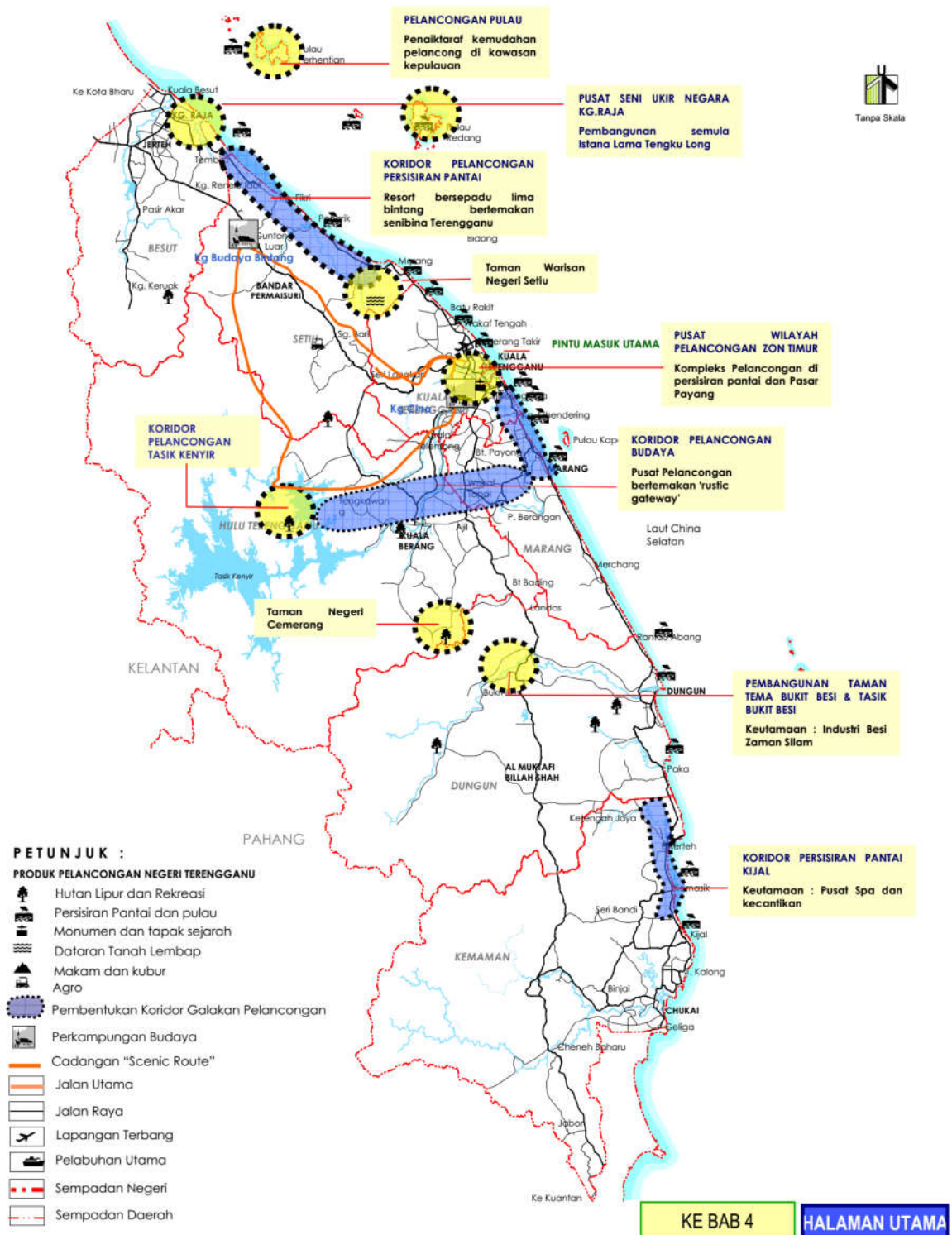


Figure 2.11: Proposed Tourism Area in Terengganu

Source: Terengganu Structure Plan 2005-2020

2.3.2 The Eleventh Malaysia's Plan (RMKe-11)

The policy framework are concerned with the steps the government make to meet people needs for security, education, work, health, and wellbeing. The plan also addresses how the government responds to national challenges of social, demographic and economic change, and of infrastructures, and globalization.

The essential topics featured in RMKe-11 that focuses on the community and social developments are as follows:

1. Reinforcing inclusivity towards an equitable society.
2. Improving the well-being of the people.
3. Enhance human capital development for developed countries.
4. Strengthening infrastructure to support economic growth.
5. Engineered economic growth to improve prosperity.

In the context of the proposed project, the fifth objective are the most associated with the improvement of the economy to improve prosperity and the social well-being as in the second objective. Both objectives can be achieved through the creation of job opportunities from the new development of township on top of the proposed reclamation area. The new township is offering job opportunities through provision of commercial, main town centre, hotels and resorts and light industry area.

2.3.3 National Urbanization Policy 2 (DPN2)

The policy takes on the strategies which encompass on the aspects of realizing a safe, systematic, modern and attractive city. The most relatable policy with the preparation of the study is **Fifth Core: Establishing Prosperous and Environmentally-Friendly City Environment**, through the formation of **Principle 4: Inclusive and Fair Urban Development**. In this principle, the main objectives are to promote household welfares, increment of the income, Bumiputera group improvement program, increasing youth capability in contribution and accepting benefits from urban developments, and provision of OKU and senior citizens needs in various urban developments. The policies planned mainly targeting the people regardless of the location and socio-economic status, where every walks of life will enjoy the future planning components, in tandem with the policies. These are the intended programs for the social group in the study areas involved in the Social Impact Assessment conduct.

2.3.4 East Coast Economic Region Development (ECER)

Tourism is one of the key economic drivers in ECER. The Region's natural beauty of enchanting islands, pristine beaches and ancient rainforests as well as its rich cultural heritage have immense tourism potential. Five distinct segments have been identified for further development based on their unique selling proposition and target markets. They are: urban and coastal tourism, ecotourism, culture and heritage tourism, island tourism, and hallmark events.

With its rich natural assets and heritage, ECER has great tourism potential to generate economic growth, investment and employment opportunities in the Region. ECERDC has identified more than 30 tourism projects and packages for implementation to generate a gross national income of RM2.5 billion and RM9.4 billion worth of private investments by 2020. A developed tourism sector is expected to provide 35,403 jobs by 2020.

Kuala Terengganu City Centre (KTCC) is one of ECER flagship project in Terengganu. KTCC is an Entry Point Project to develop and boost urban and coastal tourism in the Region. It will also enhance the role of Terengganu as the tourism gateway of ECER. The KTCC development will integrate the most active urban areas on both sides of the Terengganu River, merging them into a culturally unique and vibrant Heritage Waterfront City. This will strengthen the image of Kuala Terengganu as a vibrant new growth area.



Figure 2.12: Kuala Terengganu City Centre (KTCC)

As can be seen in **Figure 2.12**, the proposed project is located next to KTCC. The development of KTCC may help proposed project to be develop as one of KTCC's function is develop and boost the coastal tourism in Terengganu. Both KTCC and proposed project can enhance the tourism attraction in Kuala Terengganu.

2.4 EXISTING ENVIRONMENT

2.4.1 Marine Ecology

There are no reported for any sensitive marine habitats or communities within 500 meter of the proposed reclamation project.

2.4.1.1 Corals

The nearest coral areas are around islands such as the Perhentian Island, Redang Island, Bidong Island, Gemia Island and Kapas Island. The nearest of these are Gemia Island, which is approximately 18 km to the south of the Project area. Soft corals may be associated with Fish Aggregating Devices (FAD) which are found in the area. The FADs observed in the site particularly those made of cement blocks provide suitable surface for coral (especially soft coral and whip coral) and algae attachment.

2.4.1.2 Turtles

At present, two species of sea turtles - green turtles and hawksbill turtles - nest on beaches in proximity of Terengganu. The green turtle is classified by the IUCN Red List of Threatened Species as endangered while the hawksbill is critically endangered.

No nesting sites are however recorded in the vicinity of the Project location as shown in **Figure 2.13**. The Kuala Terengganu District Fisheries Office has also confirmed during consultations in December 2016 that there are no nesting sites located within 10 km of the Project area. The closest nesting area to the Project area is at Kapas Island, located approximately 19 km away.

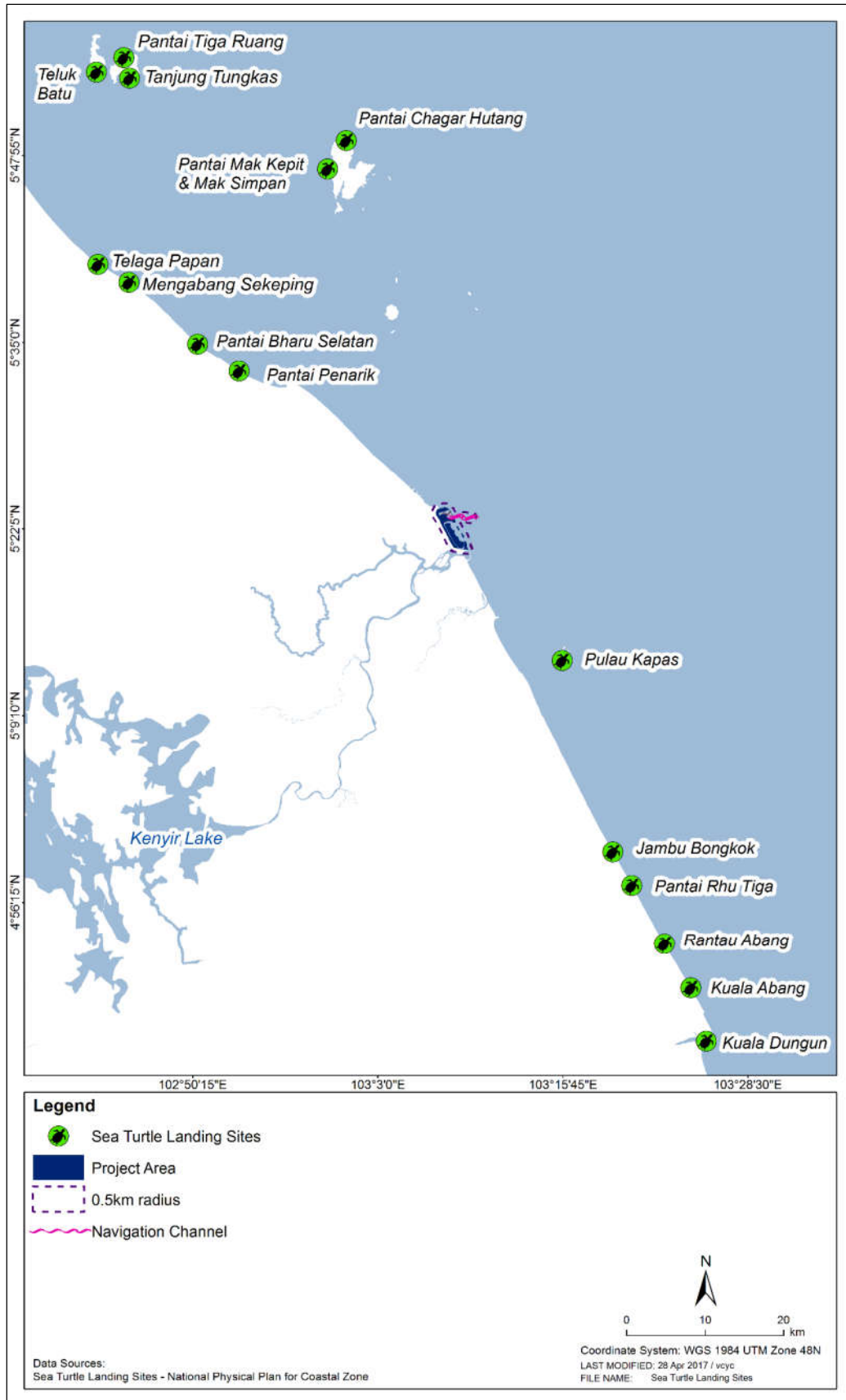


Figure 2.13: Sea Turtle Landing Sites in Terengganu

2.4.1.3 Marine Mammals

Based on compilation of information from various sources, several live sightings and strandings of cetacean species have been observed along the coast of Terengganu. These include dugong (*Dugong dugon*), Pygmy sperm whale (*Kogia breviceps*), Indo-Pacific bottlenose dolphin (*Tursiops aduncus*), False killer whale (*Pseudorca crassidens*) and Indo-Pacific humpback dolphin (*Sousa chinensis*). The approximate locations of these sightings are shown in **Figure 2.14**.

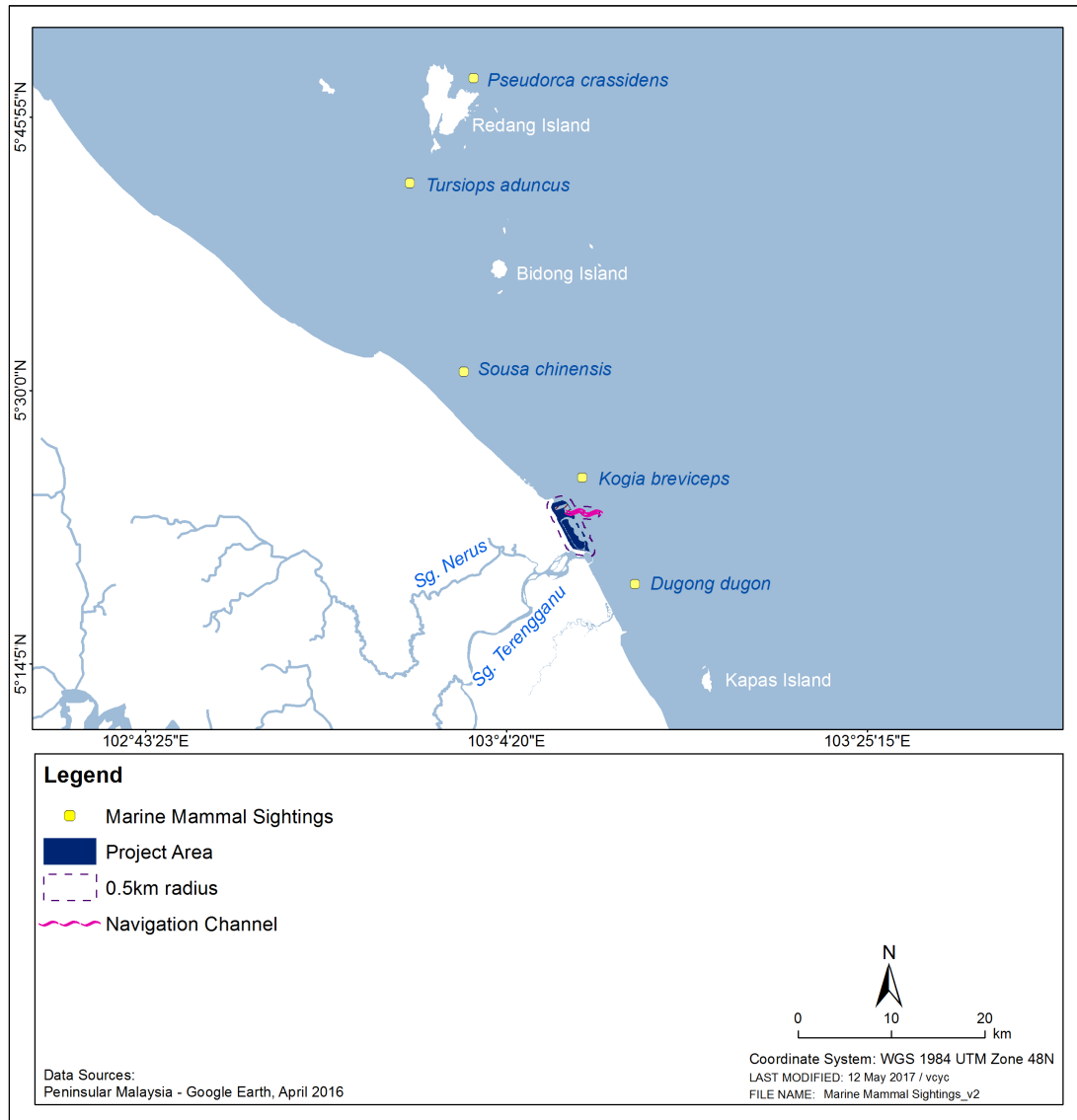


Figure 0.14: Approximate locations of marine mammal sightings near the Project area

2.4.2 Riverine Ecology

For this Project, riverine ecology will focus on mangroves, seagrass and terrapins. Preliminary satellite image analysis shows that mangroves are present within 500 m of the Project area. These are however in the Sg. Terengganu estuary where no impact is envisaged from the Project. Similarly, no impact is anticipated on the reported seagrass area or the river terrapin nesting areas upstream Sg. Terengganu.

2.4.2.1 Mangroves

There are no mangroves along the shoreline within the Project site as shown in **Figure 2.15**. Mangrove areas occur inside Sungai Terengganu, with the nearest mangrove to the Project site occurring along a small tributary running parallel to the shoreline approximately 500 m inland of the coastline (see inset in **Figure 2.15**). A little farther upstream, mangroves line Pulau Besar, Pulau Tengah and the other islands around Pulau Duyong. There is no available information of the type of mangroves present and their health condition.

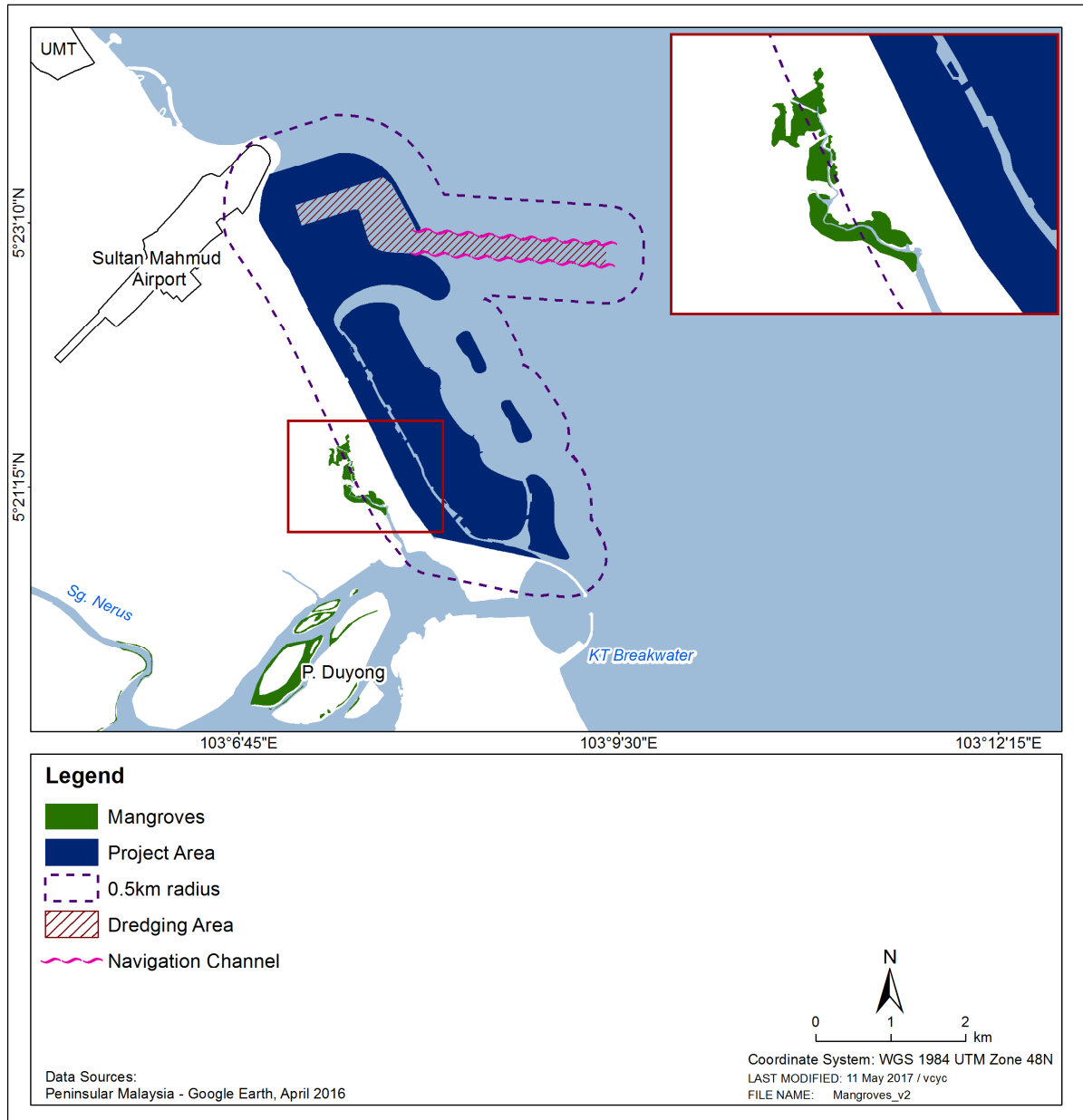


Figure 2.15: Preliminary map of mangroves within 500 m of the Project site based on satellite imagery (dated April 2016)

2.4.2.2 Seagrass

The presence of seagrass, *Halophila beccarii* has been reported by UNEP (2008, /4/) upstream of Sg. Terengganu. *Halophila beccarii* is listed on the IUCN red list as vulnerable / /. The seagrass area is estimated to be 0.6 ha / / and is located 7.5 km from the Project site. Other reported seagrass areas in Terengganu are located around 43 km from the Project site, well beyond the anticipated impact area.

2.4.2.3 Terrapins

Terrapins nest on sandy beaches but live mainly in estuaries, mangrove creeks and other areas influenced by tidal actions. Two species of terrapins, which are classified as critically endangered by IUCN, are found in Peninsular Malaysia – the painted terrapin (*Batagur borneoensis*) and the river terrapin (*B. baska*). No painted terrapins are reported to nest in the vicinity of the Project site; the nearest nesting sites are reported at Sg. Setiu (52 km north of the Project) and Sg. Dungun (67 km south of the Project).

As shown in **Figure 2.16**, river terrapins are found in Sg. Terengganu, where they are known to nest at Pasir Temir and Pasir Lubuk Kawah, sites protected under the state legislation. These sites are located more than 30 km upstream of Sg. Terengganu. Pasir Lubuk Kawah was known to be the most productive nesting beach for river terrapins but erosion due to upstream development of a dam led to nesting numbers plummeting. More recent data, however, showed that nest numbers have increased and ranges between 80 to 97 nests annually from years 2009 to 2013 /5 /.

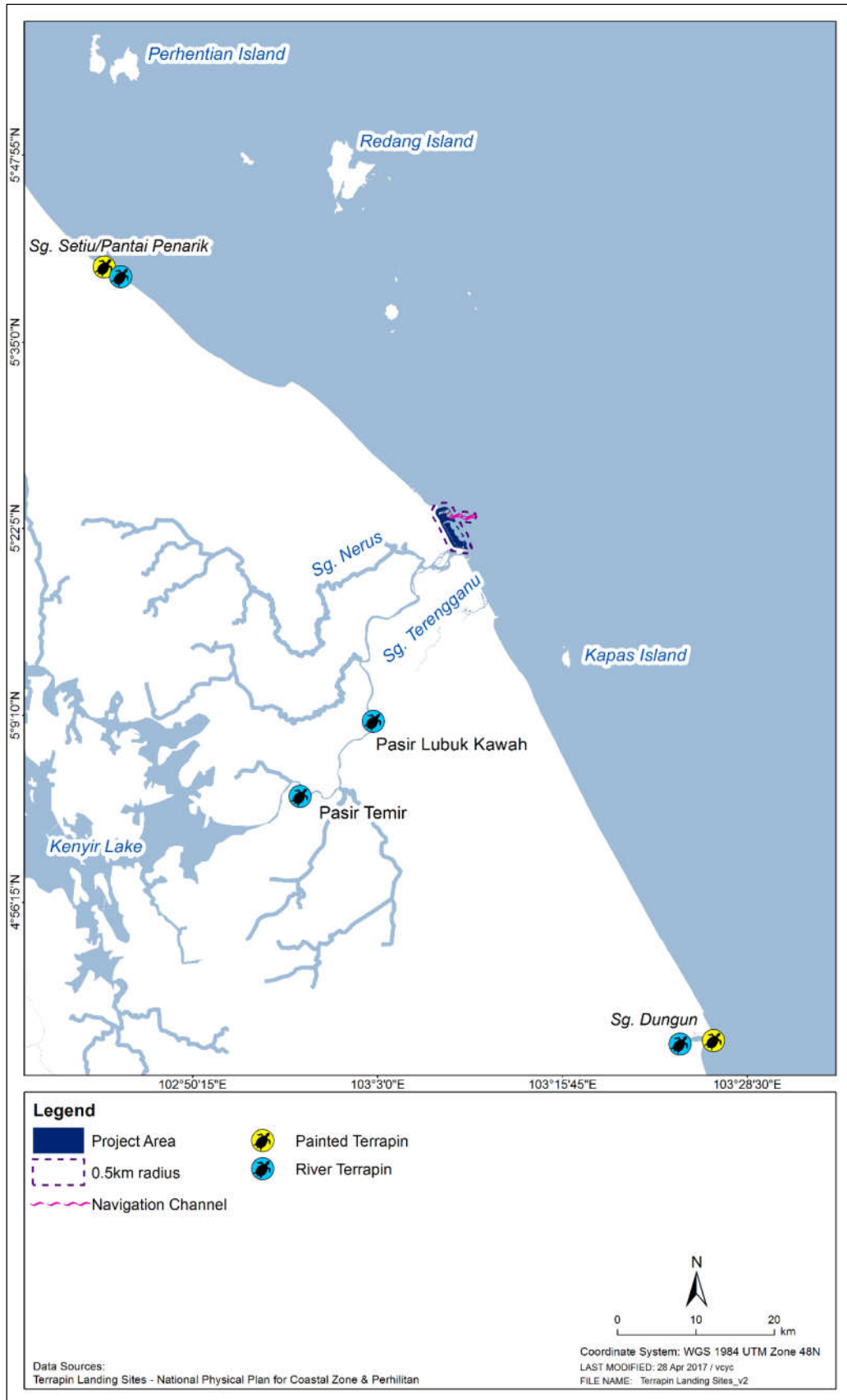


Figure 2.16: Terrapin Landing Sites in Terengganu

2.4.3 Environmentally Sensitive Areas

Figure 2.17 summarizes the environmentally sensitive areas and receptors around the Project area. The receptors comprises settlements of local residents, public and private facilities and natural risk areas.

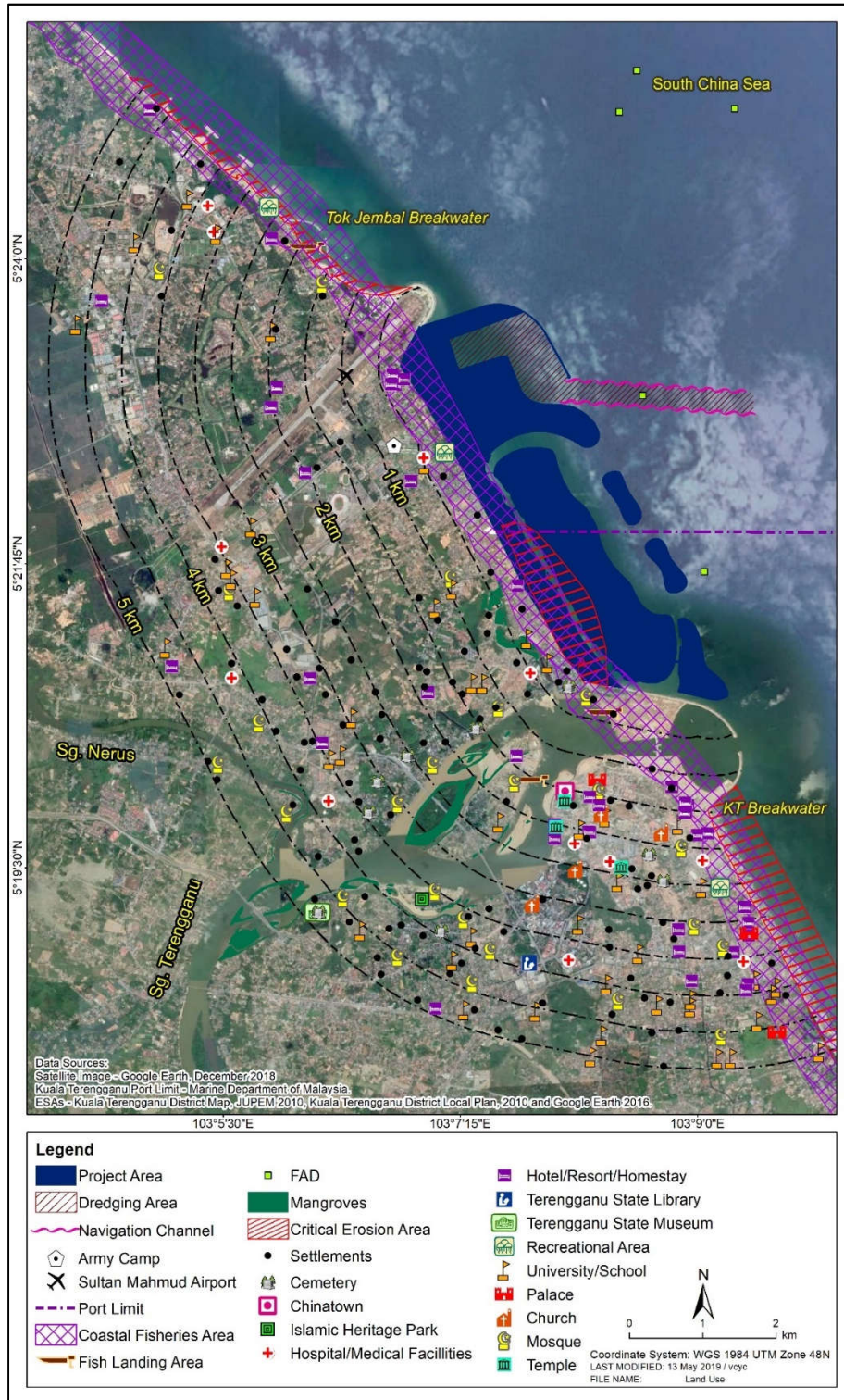


Figure 2.17: Sensitive Receptors located within 5km from the Project Boundary

CHAPTER 3: STUDY APPROACH AND METHODOLOGY

3.1 INTRODUCTION

This report has taken recognizance of the social and human environment therein to systematically gather and analyses the quantitative and qualitative information to determine the probable change that will be brought to the communities and stakeholders living within or surrounding the Project area. Basically, the methodology and approach undertaken in this report are community and people-centric based.

The preparation process is as shown in **Figure 3.1**.

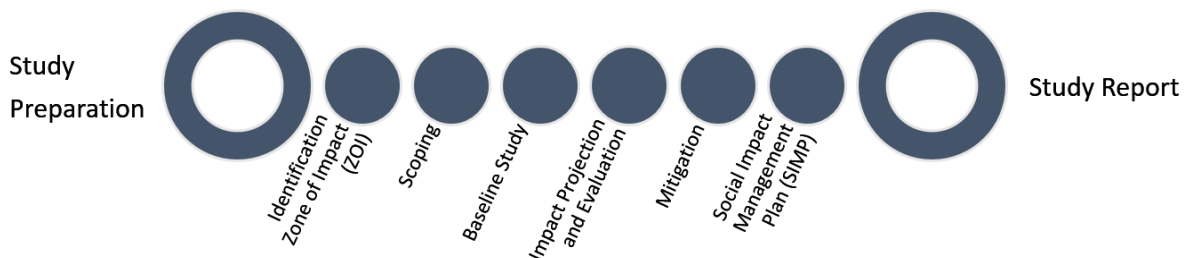


Figure 3.1: Preparation Process

3.2 STUDY BOUNDARY

An importance step in the study is to determine the areas that would be affected by the proposed Project. This would involve individuals or group of individuals near the proposed project site. The study area, which also known as Zone of Impact (ZOI) covers a 5-km concentric zone. The impacted areas are divided into two zones of impacts, which are the primary and secondary impact zones.

The primary impact zone refers to people living or working in premises close to the Project and consequently would be directly affected by the reclamation project, for example impacts due to land acquisition, displacement, loss of jobs or income, accessibility to premises, traffic disruption and dust and noise health and annoyance problems especially during the construction phase. The primary impacts may be temporary or permanent in nature. The extent of the primary impact area is set at 3-km radius from the proposed reclamation project.

The secondary impact zone refers to the indirect impacts on communities such as traffic disruption, accessibility and environmental nuisance and defined as areas next to the primary zone of impact, which is up to 5-km radius away.

Figure 3.2 shows the 5-km ZOI from the site boundary. Technically, the ZOI buffer comprises of eight mukims from Kuala Terengganu District, which are;

- i. Bandar Kuala Terengganu
- ii. Batu Buruk
- iii. Batu Rakit
- iv. Bukit Besar
- v. Cabang Tiga
- vi. Kuala Nerus
- vii. Losong
- viii. Manir

All eight mukims are fulfilled with residential areas, which consists of planned and traditional housing, public facilities and open spaces and recreational land uses. For sampling method, all settlement areas in every eight mukims have been categorized according to the ZOI as can be seen in **Figure 3.3**.

3.3 SCOPING

Scoping is one of the process at the beginning of the study, which use to identify any issues that need to be addressed. Scoping also aims to;

- i. Identify early issues that need to be addressed regarding to the proposed project;
- ii. Identify the key stakeholders; and
- iii. Identify suitable research and methodologies and surveys that need to be implemented.

Scoping issues are potential impacts and social changes that may arise from development, from pre-construction to operational phase. It is detailed through the Social Indicators that are categorized according to its subject in the social variables and social change variables as can be seen in **Table 3.1**. Later, the social variable will be detailed discussed in data findings and analysis. **Table 3.2** shows the scoping matrix of potential impact according to the impact recipients.

Table 3.1: Social Impact Variable and Social Change Variable

Variable	Definition	
Social Impact	Referring to the actual impact that affected the individual and community in term of physical or perceptual aspects.	<ul style="list-style-type: none"> • Health and Social Well-Being • Environmental Quality • Economic and Material Wellbeing • Culture • Family and Community
Social Change	Occurs without being affected by the local situation. Social change variable can generate social impact on individual or community based on the local social characteristic and mitigation measure that been set.	<ul style="list-style-type: none"> • Demography Process • Economic Process • Geography Process • Socio-Cultural Process

Table 3.2: Social Variable and Impact Recipient

Social Variable	Impact Recipient	
	Local Community within 5KM radius of the Site	Fishermen Community
Social Impact Variables		
1. Health and Social Wellbeing		
Community Health	✓	✓
Ability of Self-Reliance	✓	
Stigma		✓
Project Perception	✓	✓
2.Environmental Quality		
Environmental Value	✓	✓
Leisure and recreation facilities	✓	
Aesthetic Value	✓	
Residence Physical Quality	✓	
Homeliness	✓	✓
Safety	✓	✓
Crime and Violence	✓	
3.Economic and Material Wellbeing		
Standard of Living	✓	✓
Economic prosperity and durability	✓	✓
Income	✓	✓
Property Value	✓	✓
Employment and Business	✓	✓
4. Culture		
Change in Cultural Value	✓	✓
Loss of Local Language and Dialect	✓	
5.Family and Community		
Differences and social inequality	✓	
Social Changes		
1. Demographic Process		
In-Migration	✓	

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Social Variable	Impact Recipient	
	Local Community within 5KM radius of the Site	Fishermen Community
2. Economic Process		
Job Opportunities	✓	✓
Changes and diversification of economic activity	✓	
Contribution to local and state economic improvements	✓	
3. Geography Process		
Increase Land Area	✓	
Increased transportation and rural accessibility	✓	
Urbanisation	✓	
4. Socio-Culture Process		
Culture Differences	✓	✓



Figure 3.2: Mukims within Zone of Impact (ZOI)

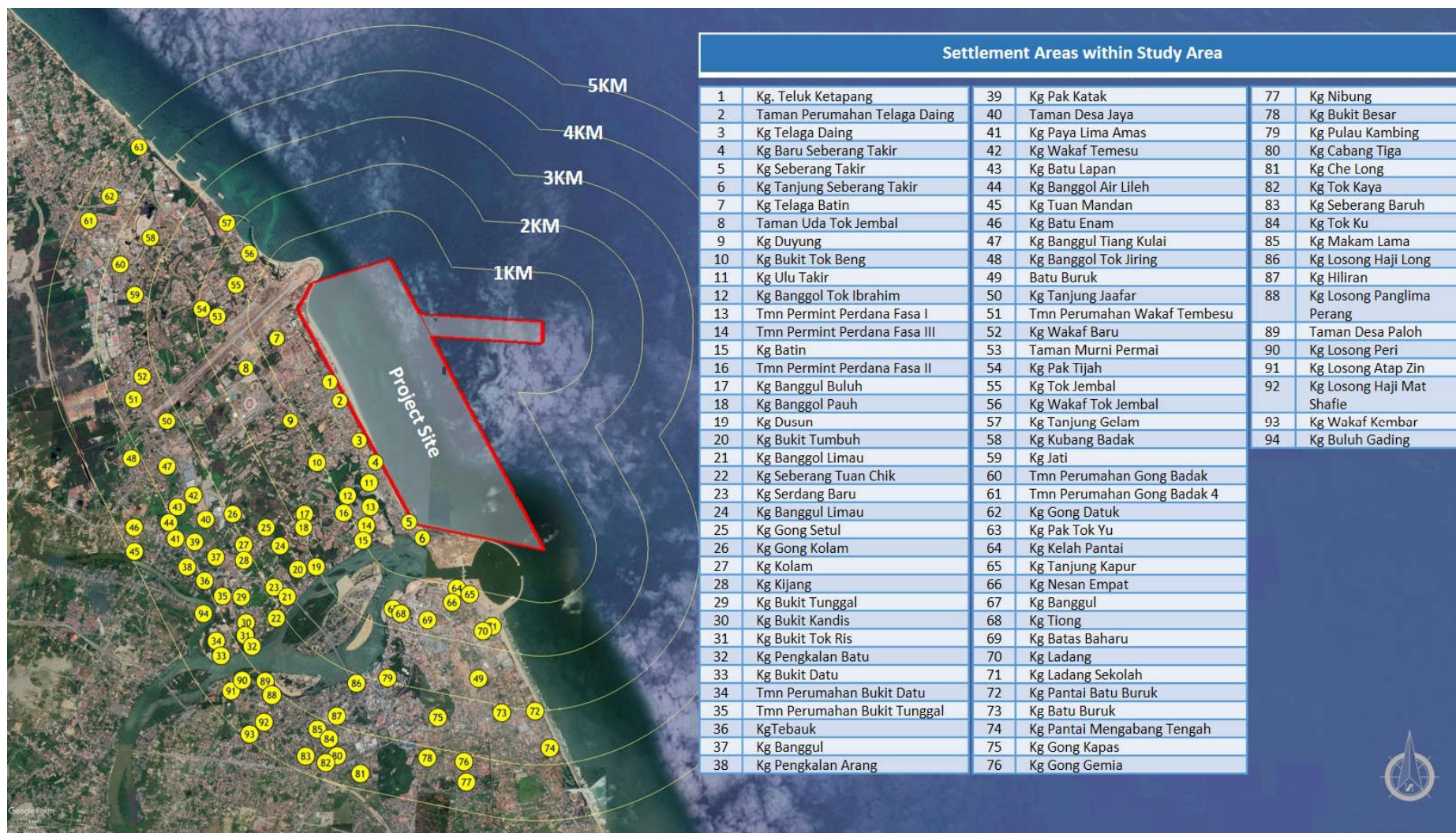


Figure 3.3: Settlements within Zone of Impact (ZOI)

3.4 QUANTITATIVE AND QUALITATIVE ASSESSMENT

Some of the social impacts that have been identified would not be easily quantified due to its subjective in nature as it involves social behaviour and well-being. Therefore, this intangible nature of human behaviour would be evaluated subjectively. Social indicators such as social displacement, psychological well-being and others are manifested in various behavioural patterns in the community which will be in the form of anxiety or worries, latent or direct social action, hardships and etc. For example, a number of displaced individuals or families would response positively or negatively depending on the approaches taken up by the government or the project proponents. If the proposed compensation does not meet the agreed values, there would be a strong objection and at times rally or social protest may be triggered. Social interaction, for example, is determined whether the individuals are being cohesive or disintegrated. Social change can be temporary or permanent depending on the degree of changes that would be experienced by the community. Qualitative approach includes the interview session with *Lembaga Kemajuan Ikan Malaysia (LKIM)* and Department of Fishery (DOF) to obtain additional information about possible impacts that may incurred from the economic, environmental and social aspects.

3.5 PUBLIC PARTICIPATION TECHNIQUES

Public participation techniques is one of the technique that been used to collect the primary data. This technique comprises three methods, which are;

- i. Social or questionnaire surveys;
- ii. Focus Group Discussion (FGD); and
- iii. Informal conversations.

The summary for all three methods are can be seen in **Table 3.3** below.

Table 3.3: Public Participation Techniques

Social Survey	FGD	Informal Conversation
<ul style="list-style-type: none"> • 400 sample size instead of 387 sample. • 2 social survey been conducted; <ol style="list-style-type: none"> i. 28th – 30th March 2018 ii. 12th – 15th March 2019 	<ul style="list-style-type: none"> • Two FGD will be held for certain social groups, which are; <ol style="list-style-type: none"> i. <i>Majlis Pengurusan Komuniti Kampung (MPKK)</i> for Kampung within the 5KM ZOI radius. ii. Fishermen community 	<ul style="list-style-type: none"> • Had been done during the social survey. • Local people been interviewed without using the survey form.

3.5.1 Questionnaire Surveys

3.5.1.1 The Sampling Method

The sample of the target populations was selected using a two-stage procedure. In stage one, prior to the actual fieldwork, a preliminary and on-site observation was made to determine the locality of the survey site, its physical components and the people perceived to be impacted by the implementation of the proposed project. In stage two, the individual adult respondents were then identified and interviewed.

The data were recorded using specially designed questionnaire, which were used to collect the social profile and the perception of affected community towards the development proposed. Each of the respondent selected were interviewed to gather information pertaining the questionnaire can be referred in **Appendix 1**.

The sampling framework was established using population of the 8 mukims involved within the ZOI radius. The information pertaining the total number of population per mukim was derived from Department of Statistic Malaysia. Information in **Table 3.4** below shows the total population per mukim included. The total population of settlements inside the ZOI was not selected as total population in determining the sample size as the population for each settlement was not fully derived.

Table 3.4: Mukim's Population within 5-km ZOI

No.	Mukim	Population	%
1.	Bandar Kuala Terengganu	12,279	5.5
2.	Batu Buruk	13,852	6.2
3.	Batu Rakit	37,163	16.7
4.	Bukit Besar	22,929	10.3
5.	Cabang Tiga	14,448	6.5
6.	Kuala Nerus	83,793	37.7
7.	Losong	9,401	4.2
8.	Manir	28,428	12.8
Total		222,293	100.0

Source: Department of Statistic Malaysia, 2010.

Based on the data derived, the total population within Mukims involved was 222,293 people. The targeted total number of sample size is determined based on sampling calculation using the estimated population of the mukims as the total population. Based on 5% margin of error and 95% level of confidence, 387 total sample size for survey is determine. Referring to Krejcie and Morgan (1970), the recommended sample size for total population size of

222,293 is 384. However for this study, the sample size adopted is 375 respondents (**Table 3.5**)

The calculation method below is used in determining the sample size. The surveys were done using stratified sampling technique. The respondents were stratified randomly into 5 circular stratum based on the residential area they lived in within the radius of the zone of influence (5KM from proposed site). The survey was conducted on 28th until 30th March 2018 for. The photos during the survey session are shown in **Figure 3.4**.

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right)}$$

- N* = Population Size= 222,293 people
- e* = Margin of Error=5%
- z* = Z-Score=1.69
- p* = Percentage Picking a Choice (in decimal) =50%

The surveys were done using stratified sampling technique The respondent were stratified randomly into 5 zones based on the residential area they lived in within the radius of the zone of influence (5KM from proposed site).

Table 3.5: Proposed Sample Distribution and Size by Mukims in the Study Area

No	Settlement	Household	Estimated Population	Sample Household	%
0-1km					
1	Taman Permint Perdana	540	2322	25	6
2	Kampung Telaga Daing	430	1849	20	5
3	Kampung Baru Seberang Takir	749	3220.7	35	9
4	Kampung Ulu Takir	167	718.1	8	2
5	Kampung Teluk Ketapang	590	2537	28	7
1-2km					
6	Kampung Nesan Empat	150	645	7	2
7	Kampung Tanjung Paya	130	559	6	2
8	Kampung Ladang Tok Pelam	200	860	9	2
9	Kampung Tiong	40	172	2	0
10	Kampung Tok Jembal	240	1032	11	3
11	Kampung Tanjung Kapur	100	430	5	1
12	Kampung Banggul Pauh	160	688	8	2
13	Kampung Banggul	40	172	2	0
14	Kg Bukit Tok Beng	80	344	4	1
15	Kampung Batin	165	709.5	8	2

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16	Kampung Ladang Sekolah	50	215	2	1
17	Kampung Telaga Batin	80	344	4	1
18	Taman Murni Permai	35	150.5	2	0
19	Kampung Batas Baru	135	580.5	6	2
2-3km					
20	Batu Buruk	340	1462	16	4
3-4km					
21	Kampung Mengabang Tengah	200	860	9	2
22	Kampung Wakaf Tembesu	380	1634	18	4
23	Kampung Gong Kijang	130	559	6	2
24	Kampung Losong Wan Nik	130	559	6	2
25	Kampung Losong	240	1032	11	3
26	Kampung Kubang Badak	60	258	3	1
27	Kampung Jati Gong Badak	130	559	6	2
28	Kampung Batu Burok	180	774	8	2
29	Kampung Pantai Burok	110	473	5	1
30	Kampung Pengkalan Batu	135	580.5	6	2
31	Kampung Banggul Bunut	98	421.4	5	1
4-5km					
32	Kampung Bukit Datu	40	172	2	0
33	Kg Losong Haji Awang	75	322.5	4	1
34	Kampung Kubur Kecil	40	172	2	0
35	Kg Losong Panglima Perang	105	451.5	5	1
36	Kg Losong Hj Mat Shafie	300	1290	14	4
37	Kampung Gong Gemia	95	408.5	4	1
38	Kg Losong Atap Zin	90	387	4	1
39	Kampung Nibung	210	903	10	2
40	Kampung Seberang Baruh	220	946	10	3
41	Kg Banggol Tok Jiring	88	378.4	4	1
42	Kampung Tok Ku	300	1290	14	4
43	Taman Sri Pantai	30	129	1	0
44	Kg. Batu Enam	200	860	9	2
45	Kg. Gong Datuk	150	645	7	2
Total		8,472	36,429.60	400	100

Note: Household size is 4.3 persons/family.

3.5.1.2 Sampling Consideration

Three considerations were given in this process. Firstly, is to ensure that the coverage is wide enough to incorporate all those information pertaining to the affected population. Secondly, to ensure that only the respondents from the targeted population were included, and thirdly the data collected are relevant to the subject matter being studied. The sincerity is shown by the respondents during their interviews and small talks that followed prove that they understood the questions and hence their answers could be considered as reliable.



Figure 3.4: Interview Session held with the Fishermen, Stakeholders and Residents

CHAPTER 4: BASELINE OF SOCIAL AND SOCIO-ECONOMIC ENVIRONMENT

4.1 LAND USE

4.1.1 Introduction

As been mention before in **Chapter 2**, the proposed reclamation project is located in Kuala Nerus district. However, any development in the Kuala Nerus district, can be referred in Kuala Terengganu Local Plan 2008 – 2020, as the district before is part of the Kuala Terengganu district.

Referring to the Kuala Terengganu Local Plan 2020, Kuala Nerus is set as Blok Perancangan 7, comprises of 6 Blok Perancang Kecil (BPK) which is;

- i. BPK7.1: Lapangan Terbang
- ii. BPK7.2: Seberang Takir
- iii. BPK7.3: Tepuh
- iv. BPK7.4: Gong Badak
- v. BPK7.5: Gemuruh
- vi. BPK7.6: Lerek.

The proposed development falls under BPK7.2: Seberang Takir.

Seberang Takir has an area of about 1,593.97 hectares out of the total acreage of Kuala Terengganu which is 60,528.60 hectares. Seberang Takir is a small fishing town that located at the mouth of Sungai Terengganu and along the South China Sea coast.

Seberang Takir can be reach through State Road T143 and Federal Road FT65, which connecting the village to Kuala Terengganu City Centre. Adjacent to the area is the Kuala Terengganu breakwater which are the main zone for jetty and fishermen landing areas.

The current land use of Kuala Nerus is shown in **Figure 4.1** and the site location is in the red circle as marked. From the current land use map, there are traditional village settlements along Pantai Teluk Ketapang.

Referring to the land use map, between 0 – 1 kilometer radius is mainly occupied by residential areas and institution and public facilities. Overall within 5 kilometer radius land use, development is more focused in Kuala Terengganu district area, which dense with residential areas and government institution and public facilities too. The development also seen to be more develop along the coastal area compare to the inland area.