

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

ELCCA Properties Sdn. Bhd.

Proposed Reclamation and Capital Dredging for the Sunrise City Mixed Development at Mukim Kuala Nerus, District of Kuala Nerus, Terengganu, Malaysia

Volume II of III



August 2019



This report has been prepared under the DHI Business Management System certified by Bureau Veritas to comply with ISO 9001 (Quality Management)



Proposed Reclamation and Capital Dredging for the Sunrise City Mixed Development at Mukim Kuala Nerus, District of Kuala Nerus, Terengganu, Malaysia

Environmental Impact Assessment Report

Second Schedule

Prepared for Elcca Properties Sdn. Bhd.
 Represented by Mr. Liew Ah Yong



Sunrise City Development

Current Revision Approvals

	Name / Title	Signature	Date
Prepared by	Mohamad Hafiz Yahya, Syed Mohazri Syed Hazari	HAY, SMH	Aug 30, 2019
Reviewed by	Tania Golingi	TAG	Aug 30, 2019
Approved by	Tania Golingi	TAG	Aug 30, 2019

Classification

<input type="checkbox"/> Open	<input checked="" type="checkbox"/> Restricted	<input type="checkbox"/> Confidential
-------------------------------	------------------------------------------------	---------------------------------------

This page is intentionally left blank

Document Information

Project No.	62801461		
Project Title	Proposed Reclamation and Capital Dredging for the Sunrise City Mixed Development at Mukim Kuala Nerus, District of Kuala Nerus, Terengganu, Malaysia		
Subject	Environmental Impact Assessment Report		
Client	Elcca Properties Sdn. Bhd.		
Document No.	62801464-RPT-105	Rev	02

Distribution	Type of Data	No of copies
Department of Environment Putrajaya	Hardcopy+Digital+CD	3 + 1 + 1
Elcca Properties Sdn. Bhd.	Hardcopy	1
DHI Water & Environment (M) Sdn. Bhd.	Hardcopy+Digital	1 + 1

Document Revision History

Rev	Rev Date	Description of Change/ Reason for Issue	Prepared by	Checked by	Approved by
01	Aug 09, 2019	Draft EIA to client	HAY, SMH	TAG	TAG
02	Aug 30, 2019	Final to DOE	HAY, SMH	TAG	TAG

The information contained in this document produced by DHI Water and Environment (M) Sdn. Bhd. is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared. DHI Water and Environment (M) Sdn. Bhd. makes no representation, undertakes no duty, and accepts no responsibility to any third party who may use or rely upon this document or the information.

All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of DHI Water and Environment (M) Sdn. Bhd.

© DHI Water and Environment (M) Sdn. Bhd.

This page is intentionally left blank

LIST OF DOCUMENTS

VOLUME I: EXECUTIVE SUMMARY

VOLUME II: MAIN EIA

Chapter 1	Introduction
Chapter 2	EIA Terms of Reference
Chapter 3	Statement of Need
Chapter 4	Project Options
Chapter 5	Project Description
Chapter 6	Existing Environment
Chapter 7	Evaluation of Impacts
Chapter 8	Mitigation Measures
Chapter 9	Environmental Management Plan (EMP)
Chapter 10	Study Findings
Chapter 11	References

DRAWINGS

No 1	Project location
No 2	Geographic location
No 3	Land use 5 km radius
No 4	ESA

VOLUME III: APPENDICES A TO K

Appendix A	Mesyuarat Penyelarasan Projek PLANMalaysia (MOM)
Appendix B	TOR Approval Conditions
Appendix C	TOR Extension Letter
Appendix D	Hydraulic Approval Letter
Appendix E	Baseline report
Appendix F	Air and Noise Assessment Report
Appendix G	MOM for Agencies Consultations
Appendix H	Reclamation Layout Optimization Report
Appendix I	Socioeconomic report
Appendix J	Public Engagement Report
Appendix K	Marine Traffic Assessment (MRA)

ELCCA PROPERTIES SDN. BHD.

(No. Syarikat : 943562-K)

M602, Blok Mawar, Pangsapuri Permint Harmoni, Jalan Batas Baru

20300 Kuala Terengganu, Terengganu.

Tel : 09-666 6431 Fax : 09-662 2430

e-mail : elccaproperties@gmail.com

PROJECT PROPONENT'S ENVIRONMENTAL PLEDGE

Project Title : Proposed Reclamation And Capital Dredging Of The Sunrise City Mixed Development At Mukim Seberang Takir, District Of Kuala Nerus, Terengganu

Project Proponent : Elcca Properties Sdn Bhd

"I hereby declare that the entire EIA Report is the product of the Qualified Person (i.e. the EIA Consultant) engaged by my company and all the facts stated in the Report and the accompanying information are to the best of my knowledge and belief true and correct, and that I have not withheld or distorted any material facts. I agree and I undertake the responsibility to implement all the pollution prevention and mitigating measures (P2M2s) described in the EIA Report, in the Environmental Management Plan (EMP), and in the LD-P2M2* as proposed by the EIA Consultant. I have allocated sufficient funds for the above purpose.

Name of Project Proponent : CIK HAZLIZAM BINTI ALIAS

Signature :



Date : 27/08/2019

NRIC Number : 790909 - 11 - 5512

Designation : DIRECTOR

Company's Stamp :

ELCCA PROPERTIES SDN BHD
(943562-K)
M 602, BLOK MAWAR,
PANGSAPURI PERMINT HARMONI,
JALAN BATAS BARU,
20300 KUALA TERENGGANU, TERENGGANU.
TEL: 09-6666431 FAX: 09-6622430



DHI Water & Environment (M) Sdn. Bhd.
(535484-V)
3A01 & 02, Block G, Phileo Damansara 1
No. 9, Jalan 16/11
46350 Petaling Jaya
Malaysia

Tel: +603 7958 8160
Fax: +603 7958 1162

dhi@dhi.com.my
www.dhi.com.my

QUALIFIED PERSON'S DECLARATION

Project Title: Proposed Reclamation and Capital Dredging for the Sunrise City Mixed Development at Mukim Kuala Nerus, District of Kuala Nerus, Terengganu, Malaysia

Project Proponent: Elcca Properties Sdn. Bhd.

I declare that the entire EIA Report is the product of my own work and the work of my team members (i.e. other consultants who are also Qualified Persons) who worked under my supervision and all the facts stated in the Report and the accompanying information are to the best of my knowledge and belief true and correct and that I have not withheld or distorted any material facts. I have briefed the Project Proponent on the content of the Report and highlighted to him all the pollution prevention and mitigating measures (P2M2s) described in it, and in the Environmental Management Plan (EMP), and in the LDP2M2, and the Project Proponent has agreed to implement them (i.e. P2M2).

Signature:

A handwritten signature in blue ink, consisting of a series of loops and curves, positioned to the right of the 'Signature:' label.

Date: 29 August 2019

Company's stamp:



Name of EIA Consultant Team Leader: **Tania Golingi**

NRIC Number: 750921-12-5602

Designation: Head, Ecology and Environment Department, DHI Malaysia

CONTENTS

1	Introduction.....	1-1
1.1	Project Title	1-1
1.2	Project Background.....	1-1
1.3	Project Proponent and Qualified Persons.....	1-1
1.3.1	Project Proponent	1-1
1.3.2	EIA Consultant	1-3
1.3.3	EIA Team Members	1-4
1.4	Legal Aspects	1-6
1.4.1	Environmental Quality Act 1974 (EQA 1974)	1-6
1.4.2	Conformance to Government Regulatory Requirements	1-6
2	EIA Terms of Reference	2-1
2.1	EIA Scope	2-1
2.1.1	Project Activities.....	2-1
2.1.2	Focus Issues	2-1
2.1.3	EIA Study Boundaries.....	2-2
2.2	Agencies Comments on TOR	2-5
2.3	Government Stakeholder / Agency Engagement	2-11
3	Statement of Need	3-1
3.1	The State of Terengganu as a Main Player for East Coast Development.....	3-2
3.2	East Coast Tourism Hub.....	3-11
3.3	Benefit of Sunrise City Project to the State and the Country.....	3-13
4	Project Options	4-1
4.1	Project Location	4-1
4.1.1	Methodology for Site Evaluation	4-3
4.1.2	Assessment Results	4-3
4.1.3	Summary and Conclusion	4-7
4.2	Reclamation Layout	4-7
4.3	Reclamation Methodology Option.....	4-10
4.4	No Project Option.....	4-11
5	Project Description.....	5-1
5.1	Project Location	5-1
5.1.1	Project Boundary	5-4
5.2	Project Concept	5-5
5.3	Project Components	5-7
5.3.1	Reclamation	5-7
5.3.1.1	Sand Source	5-8
5.3.2	Capital Dredging	5-11
5.3.3	Breakwater.....	5-12
5.3.3.1	Rock Source	5-12
5.3.4	Roads and Bridges	5-14
5.3.5	Internal Piled Platforms.....	5-14
5.4	Project Activities.....	5-14
5.4.1	Pre-construction Stage	5-14
5.4.2	Construction Stage	5-14
5.4.2.1	Setting up Construction Infrastructure	5-15
5.4.2.2	Reclamation	5-16
5.4.2.3	Capital Dredging	5-22
5.4.2.4	Breakwater Construction	5-24
5.4.2.5	Construction of Roads and Bridges	5-26
5.4.2.6	Construction of Piled Platforms	5-26
5.4.2.7	Management of Construction Activities	5-26
5.4.3	Post-construction Stage.....	5-26

5.4.4	Project Abandonment/Decommissioning.....	5-27
5.5	Development Schedule.....	5-27
6	Existing Environment.....	6-1
6.1	Physiographic Context.....	6-1
6.2	Physical-Chemical Environment.....	6-5
6.2.1	Coastal Hydraulics.....	6-6
6.2.1.1	Water Levels.....	6-6
6.2.1.2	Currents.....	6-8
6.2.1.3	Wave Conditions.....	6-12
6.2.2	Coastal Morphology.....	6-15
6.2.2.1	Coastline Immediately North of Sultan Mahmud Airport runway extension.....	6-15
6.2.2.2	Coastline Between Sultan Mahmud Airport Runway Extension and KT Breakwater.....	6-16
6.2.2.3	Coastline Immediately South of KT Breakwater.....	6-17
6.2.2.4	Conclusions.....	6-18
6.2.3	Hydrology and Drainage.....	6-20
6.2.4	Marine Sediments.....	6-25
6.2.4.1	Physical Characteristics.....	6-25
6.2.4.2	Chemical Content.....	6-27
6.2.5	Water Quality.....	6-28
6.2.6	Air Quality.....	6-31
6.2.7	Ambient Noise.....	6-34
6.3	Biological Environment.....	6-36
6.3.1	Marine Benthic Habitats.....	6-36
6.3.2	Macrobenthos.....	6-39
6.3.3	Plankton.....	6-42
6.3.3.1	Phytoplankton.....	6-43
6.3.3.2	Zooplankton.....	6-45
6.3.4	Fish Fauna.....	6-49
6.3.4.1	Fish Diversity & Abundance.....	6-50
6.3.4.2	Species Composition.....	6-52
6.3.5	Marine Megafauna.....	6-54
6.3.5.1	Sea Turtles.....	6-54
6.3.5.2	Marine Mammals.....	6-56
6.3.6	Terrapins.....	6-56
6.3.7	Mangrove.....	6-58
6.3.8	Terrestrial Ecology.....	6-60
6.4	Human Environment.....	6-63
6.4.1	Land Use.....	6-64
6.4.2	Socioeconomics.....	6-70
6.4.2.1	General Population and Profile.....	6-70
6.4.2.2	Respondents' Profile.....	6-72
6.4.3	Community Perception.....	6-74
6.4.3.1	Socioeconomic Survey.....	6-74
6.4.3.2	Public Engagement.....	6-75
6.4.4	Fisheries.....	6-77
6.4.4.1	Background.....	6-77
6.4.4.2	Fishermen Profile.....	6-80
6.4.4.3	Fishing Activity.....	6-83
6.4.4.4	Focus Group Discussion.....	6-87
6.4.5	Tourism and Recreational Activities.....	6-88
6.4.5.1	Beach Recreation.....	6-90
6.4.5.2	Historical Tourism.....	6-91
6.4.5.3	Cultural Tourism.....	6-94
6.4.5.4	Food Tourism.....	6-97
6.4.5.5	Coastal Attraction – Scenic Drive.....	6-97
6.4.6	Cultural Heritage / Archaeology.....	6-99
6.4.7	Marine Traffic.....	6-102

6.4.7.1	Port Limit and Anchorage Area.....	6-102
6.4.7.2	Traffic Profile.....	6-102
6.5	Environmentally Sensitive Areas (ESA).....	6-105
6.5.1	Definition and Concept.....	6-105
6.5.2	ESA Categories within Study Area	6-106
7	Evaluation of Impacts.....	7-1
7.1	Identification and Prediction of Impacts	7-2
7.1.1	Impact Assessment Framework	7-2
7.1.1.1	Rapid Impact Assessment Matrix (RIAM).....	7-3
7.1.2	Assessment Matrix.....	7-5
7.2	Detailed Examination of Impacts	7-8
7.2.1	Water Quality	7-8
7.2.1.1	Evaluation Framework	7-8
7.2.1.2	Construction Phase.....	7-17
7.2.1.3	Post-construction Phase	7-25
7.2.2	Coastal Morphology	7-30
7.2.2.1	Evaluation Framework	7-30
7.2.2.2	Construction Phase.....	7-31
7.2.2.3	Post-construction Phase	7-35
7.2.3	Hydrology and Drainage	7-40
7.2.3.1	Evaluation Framework	7-40
7.2.3.2	Construction Phase.....	7-40
7.2.3.3	Post-construction Phase	7-42
7.2.4	Air Quality	7-44
7.2.4.1	Evaluation Framework	7-44
7.2.4.2	Construction Phase.....	7-45
7.2.4.3	Post-construction Phase	7-48
7.2.5	Ambient Noise.....	7-48
7.2.5.1	Evaluation Framework	7-48
7.2.5.2	Construction Phase.....	7-54
7.2.5.3	Post-construction Phase	7-58
7.2.6	Primary Producer Benthic Habitats.....	7-59
7.2.6.1	Evaluation Framework	7-59
7.2.6.2	Construction Phase.....	7-62
7.2.6.3	Post-construction Phase	7-67
7.2.7	Macrobenthos	7-68
7.2.7.1	Evaluation Framework	7-68
7.2.7.2	Construction Phase.....	7-69
7.2.7.3	Post-construction Phase	7-74
7.2.8	Plankton	7-74
7.2.8.1	Evaluation Framework	7-74
7.2.8.2	Construction Phase.....	7-75
7.2.8.3	Post-construction Phase	7-77
7.2.9	Fish Fauna	7-78
7.2.9.1	Evaluation Framework	7-78
7.2.9.2	Construction Phase.....	7-79
7.2.9.3	Post-construction Phase	7-80
7.2.10	Marine Megafauna.....	7-81
7.2.10.1	Evaluation Framework	7-81
7.2.10.2	Construction Phase.....	7-81
7.2.10.3	Post-construction Phase	7-84
7.2.11	Mangrove	7-84
7.2.11.1	Evaluation Framework	7-84
7.2.11.2	Construction Phase.....	7-84
7.2.11.3	Post-construction Phase	7-85
7.2.12	Terrestrial Ecology.....	7-85
7.2.12.1	Evaluation Framework	7-85



7.2.12.2	Construction Phase.....	7-86
7.2.12.3	Post-construction Phase	7-86
7.2.13	Socioeconomics	7-89
7.2.13.1	Evaluation Framework	7-89
7.2.13.2	Construction Phase.....	7-90
7.2.13.3	Post-construction Phase	7-94
7.2.14	Fisheries	7-98
7.2.14.1	Evaluation Framework	7-98
7.2.14.2	Construction	7-99
7.2.14.3	Post-construction Phase	7-102
7.2.15	Tourism and Recreation.....	7-103
7.2.15.1	Evaluation Framework	7-103
7.2.15.2	Construction Phase.....	7-104
7.2.15.3	Post-construction Phase	7-104
7.2.16	Cultural Heritage / Archaeology	7-105
7.2.16.1	Evaluation Framework	7-105
7.2.16.2	Construction Phase.....	7-106
7.2.16.3	Post-construction Phase	7-106
7.2.17	Land Use.....	7-107
7.2.18	Marine Traffic	7-107
7.2.18.1	Evaluation Framework	7-107
7.2.18.2	Construction Phase.....	7-108
7.2.18.3	Post-construction Phase	7-111
7.3	Project Evaluation	7-112
7.3.1	Summary of Findings	7-113
7.3.2	Economic Valuation of Environmental Impacts	7-114
7.3.2.1	Methodology	7-115
7.3.2.2	Impacts to Environmental Services	7-116
7.3.2.3	Valuation of Impacts to Environmental Services	7-118
7.3.2.4	Overall Assessment.....	7-131
8	Mitigation Measures	8-1
8.1	Adherence to DOE Guidelines.....	8-1
8.2	Proposed Mitigation Measures	8-1
8.2.1	Water quality	8-1
8.2.1.1	Construction Phase.....	8-1
8.2.1.2	Post-construction Phase	8-5
8.2.2	Coastal Morphology	8-6
8.2.2.1	Construction	8-6
8.2.2.2	Post-Construction Phase	8-6
8.2.3	Hydrology and Drainage	8-6
8.2.3.1	Construction Phase.....	8-6
8.2.3.2	Post-construction Phase	8-7
8.2.4	Air Quality	8-7
8.2.4.1	Construction Phase.....	8-7
8.2.5	Ambient Noise.....	8-8
8.2.5.1	Construction Phase.....	8-8
8.2.6	Primary Producer Benthic Habitat	8-8
8.2.6.1	Construction Phase.....	8-8
8.2.7	Macrobenthos	8-10
8.2.7.1	Construction Phase.....	8-10
8.2.7.2	Post-construction Phase	8-10
8.2.8	Plankton	8-10
8.2.8.1	Construction Phase.....	8-10
8.2.8.2	Post-construction Phase	8-11
8.2.9	Fish Fauna	8-12
8.2.9.1	Construction Phase.....	8-12
8.2.9.2	Post-construction Phase	8-12

8.2.10	Marine Megafauna	8-12
8.2.10.1	Construction Stage	8-12
8.2.11	Mangrove	8-12
8.2.12	Terrestrial Ecology	8-13
8.2.13	Socioeconomics	8-13
8.2.13.1	Construction Phase.....	8-13
8.2.13.2	Post-construction Phase	8-14
8.2.14	Fisheries	8-15
8.2.14.1	Provision of Alternative Fish Landing Area.....	8-15
8.2.14.2	Compensation Payments to Fishermen.....	8-16
8.2.14.3	Offset Compensation of FADs	8-16
8.2.14.4	Residual Impact	8-17
8.2.15	Tourism and Recreational activities.....	8-17
8.2.16	Cultural Heritage / Archaeology	8-17
8.2.17	Marine Traffic	8-18
8.2.17.1	Construction Phase.....	8-18
8.2.17.2	Post-construction Phase	8-18
8.3	Residual Impacts	8-18
9	Environmental Management Plan (EMP).....	9-1
9.1	Introduction	9-1
9.1.1	EMP Objective	9-1
9.2	Land Disturbing Pollution Prevention and Mitigation Measures (P2M2s)	9-1
9.3	Proposed Monitoring Programme.....	9-3
9.3.1	Compliance Monitoring	9-3
9.3.1.1	Water Quality	9-3
9.3.1.2	Hydrology and Drainage	9-6
9.3.1.3	Air Quality	9-6
9.3.1.4	Noise	9-8
9.3.1.5	Primary Producer Benthic Habitat	9-9
9.3.1.6	Plankton	9-9
9.3.1.7	Fish Fauna	9-10
9.3.1.8	Marine Megafauna	9-11
9.3.1.9	Terrestrial Ecology	9-11
9.3.1.10	Social Impact	9-11
9.3.1.11	Fisheries	9-13
9.3.1.12	Tourism and Recreational Activities	9-13
9.3.1.13	Cultural Heritage / Archaeology	9-14
9.3.1.14	Marine Traffic	9-14
9.3.2	Impact Monitoring	9-14
9.3.2.1	Water Quality	9-14
9.3.2.2	Coastal Morphology	9-16
9.3.2.3	Air Quality	9-18
9.3.2.4	Ambient Noise.....	9-20
9.3.2.5	Macrobenthos	9-20
9.3.2.6	Fish Fauna	9-22
9.3.2.7	Social Impact	9-23
9.3.2.8	Fish Aggregation Devices	9-24
9.3.2.9	Fisheries	9-26
9.4	Reporting Requirements	9-27
9.5	Environmental Auditing	9-27
9.6	Waste Management Plan	9-27
9.6.1	Management of Scheduled Waste.....	9-28
9.6.2	Management of Non-Hazardous Waste	9-28
9.6.2.1	Temporary Sullage and Sewage	9-29
9.6.2.2	Disposal of Non-Hazardous Waste.....	9-29
9.6.2.3	Disposal of Biomass Waste	9-29
9.7	Emergency Response Plan (ERP)	9-30

9.7.1	Compliance Monitoring	9-30
9.7.2	Oil Spill	9-30
9.7.3	Collision at Sea	9-31
9.7.4	Injury or Harm to Marine Megafauna	9-31
9.8	Project Closure	9-31
9.8.1	Project Closure, Abandonment or Decommissioning	9-31
9.9	Recommendations for Sunrise City Topside Development Environmental Management...	9-32
9.9.1	Prescribed Activities.....	9-33
9.9.2	Focus Issues	9-33
10	Study Findings.....	10-1
11	References	11-1

FIGURES

Figure 1.1	Regional setting of the Project (see Drawings for A3 figure).	1-2
Figure 1.2	Conurbation plan for Terengganu – Kuala Berang – Marang (Source: RSN Terengganu).	1-14
Figure 2.1	Geographic area of the EIA study (see Drawings for A3 figure).	2-4
Figure 3.1	Proposed Sunrise City conceptual master plan.	3-2
Figure 3.2	Development promotion zones (<i>ZPP</i>) identified in the National Physical Plan (NPP3)	3-3
Figure 3.3	Development corridor and selected cities for development (Source: RSN Terengganu).	3-4
Figure 3.4	Identified coastal corridor for development in Terengganu (Source: RSN Terengganu).	3-5
Figure 3.5	Coastal zone development in Kuala Terengganu (Source: RTD Kuala Terengganu).	3-6
Figure 3.6	Potential areas identified for development in the RSN Terengganu.	3-7
Figure 3.7	Strategic initiatives under ECER Master Plan 2.0	3-8
Figure 3.8	Key Development Areas (KDAs) within ECER.	3-9
Figure 3.9	Artist’s impression of public amenity and facilities in the Sunrise City Development.	3-10
Figure 3.10	Tourism statistics of Terengganu (Source: UPEN Terengganu //).	3-11
Figure 3.11	Growth in cruise tourism in Asia //	3-12
Figure 3.12	Cruise destinations in Malaysia. Source: Indian Ocean Rim Association (IORA) //	3-13
Figure 4.1	Site selection options.....	4-2
Figure 4.2	Human environment features.	4-6
Figure 4.3	Project reclamation layout options assessed.....	4-9
Figure 4.4	Reclamation fill discharge by (a) bottom dumping, (b) rainbowing // and (c) pipeline //	4-10
Figure 5.1	Regional setting of the Project.....	5-2
Figure 5.2	Land use and sensitive receptors within 5 km of the Project site (see Drawings for A3 figure).	5-3
Figure 5.3	Project area which encompasses the reclamation area, dredging area and internal waterways.	5-4
Figure 5.4	Conceptual Sunrise City project topside components.	5-6
Figure 5.5	Reclamation phases.	5-8
Figure 5.6	Location of approved sand source area for phases 1 to 3 //	5-9
Figure 5.7	Alternative sand source areas identified for the Project.....	5-10
Figure 5.8	Project dredging area.	5-11
Figure 5.9	Typical breakwater cross section //	5-12
Figure 5.10	Location of Hexatrend Quarry.	5-13
Figure 5.11	Location of proposed site office.	5-16
Figure 5.12	An example of a trailing suction hopper dredger (Source: PIANC /10/).	5-18
Figure 5.13	Typical revetment cross section.	5-20
Figure 5.14	Long arm excavator for revetment construction	5-20
Figure 5.15	Typical CSD.	5-24
Figure 5.16	Breakwater construction using a combination of floating and land-based equipment.	5-25
Figure 5.17	Placing breakwater armour rock using a specialist crane barge.....	5-25
Figure 5.18	Project implementation schedule.....	5-28

Figure 6.1	A comparison of wind direction, current speed and direction, and waves in the two monsoon periods. Wind roses are monthly estimates for 10 years of CFSR wind (year 2006 to 2015), waves are examples of modelled wave fields and currents are a snapshot of predicted mean current speed over a 28-days simulation during NE monsoon (top) and SW monsoon (bottom) periods.	6-2
Figure 6.2	Mean monthly rainfall recorded in the Terengganu State (2009-2013) (Source: Chew, 2015 //).....	6-3
Figure 6.3	Bathymetry at the Project area (interpolated from bathymetric survey data October 2015 and April 2018, and navigation charts).	6-4
Figure 6.4	Satellite image (Google Earth) of the coastal strip in the immediate area of the Project showing existing coastal interventions. What is clear in this image is that the coastline is already highly modified with a need to defend against the erosion to the north, the extension of the airport runway, the development of the two training walls at the mouth of the Terengganu river and a major highway running very close to the coast.	6-5
Figure 6.5	Example of predicted water levels (in meter MSL) in the study area vicinity based on the harmonic constituents at Sg Terengganu tidal station /17/.....	6-7
Figure 6.6	Snapshot of predicted current flow conditions during NE monsoon - spring flood tide.	6-9
Figure 6.7	Snapshot of predicted current flow conditions during NE monsoon - spring ebb tide.	6-9
Figure 6.8	Snapshot of predicted mean current speed over 28-days simulation during NE (top), SW (middle) and inter-monsoons (bottom).	6-10
Figure 6.9	Snapshot of predicted maximum current speed over 28-days simulation during NE (top), SW (middle) and inter-monsoons (bottom).	6-11
Figure 6.10	Extraction point of wave roses at offshore of Terengganu coastline.	6-12
Figure 6.11	Predicted mean significant wave height over 28-days simulation during NE (top), SW (middle) and inter-monsoons (bottom).	6-13
Figure 6.12	Predicted maximum significant wave height over 28-days simulation during NE (top), SW (middle) and inter-monsoons (bottom).	6-14
Figure 6.13	Results of a study identifying areas of net erosion, stability, or accretion along the Terengganu coastline. Note that the Project site south of the airport is characterised as partially accreting and further to the south is considered stable (abstracted from Ariffin <i>et al.</i> (2019)).	6-15
Figure 6.14	Historical satellite images, for Jul 2008, Aug 2011, Sep 2014 and Aug 2017. The green line denotes the vegetation line digitised from imagery dated Aug 2017. (Source: Google Earth Pro).....	6-16
Figure 6.15	Historical satellite images for Aug 2017 and Dec 2018. The blue line denotes the vegetation line digitised from imagery dated Dec 2018. (Source: Google Earth Pro).	6-17
Figure 6.16	Historical satellite images Jul 2017 and Dec 2018. The blue line denotes the vegetation line digitised from imagery dated Dec 2018. (Source: Google Earth Pro).	6-18
Figure 6.17	Average annual erosion from Kampung Batu Rakit to Kampung Aur, Kuala Terengganu, Terengganu. (Source: NCES 2015) – Red areas indicate critical erosion where infrastructure is at risk.....	6-19
Figure 6.18	Status of the study area coastline based on the present assessment.	6-20
Figure 6.19	River discharge rates based on data collected from the year 1960 to 2000 at station Sg. Terengganu at Kg. Tanggol – 5130432. (Source: JPS).	6-21
Figure 6.20	Flood prone areas identified in the Kuala Terengganu Local Plan 2010. It can be seen that these flood prone areas drain inland to Sg Terengganu. The airport drainage outlets are located to the north and south of the airport.....	6-22
Figure 6.21	Location of soakaways.	6-24
Figure 6.22	Percentage of sediment particle size groups at all sampling stations.	6-26
Figure 6.23	Water quality sampling stations.	6-29
Figure 6.24	TSS concentration at marine water quality stations.	6-31
Figure 6.25	TSS concentration at estuarine water quality stations.	6-31
Figure 6.26	Results for ambient air quality within the vicinity of the Project.	6-33
Figure 6.27	Locations of the fish aggregating devices (FADs) and survey extent.	6-37
Figure 6.28	Marine benthic habitat around the Project area.	6-39
Figure 6.29	Mean macrobenthos density (individuals/m ²) in the study area.	6-41
Figure 6.30	Percent dominance of the classes, including unidentified individuals.	6-42
Figure 6.31	Distribution of key genera over the study area. Stations P1 and P2 are in Sg. Terengganu estuary. “All others” comprise nine genera which are represented by less than 1% of the total cells/L.....	6-44
Figure 6.32	Mean phytoplankton density (cells/L) in the study area.	6-45
Figure 6.33	Mean zooplankton density (individuals/L) in the study area.	6-47

Figure 6.34	Distribution of key genera/classes over the study area. Stations P1 and P2 are in Sg. Terengganu estuary. "All others" comprise 23 genera/class which are represented by less than 1% of the total cells/L.	6-48
Figure 6.35	Fish fauna sampling stations.	6-50
Figure 6.36	Fish fauna abundance during neap and spring. No fish fauna was caught at Station F4 for pre-monsoon and none at Station F3 for post-monsoon.	6-52
Figure 6.37	Species composition recorded throughout the survey including data from separate survey carried out in 2019.	6-53
Figure 6.38	Sea turtle landing sites in Terengganu (Source: NPP-CZ).	6-55
Figure 6.39	Approximate locations of marine mammal sightings near the Project area.	6-56
Figure 6.40	Terrapin landing sites in Terengganu.	6-57
Figure 6.41	Mangrove areas located in Sg. Terengganu.	6-59
Figure 6.42	Vegetation type present within 200 m of the reclamation area.	6-62
Figure 6.43	Districts and <i>mukims</i> around the Project.	6-64
Figure 6.44	Land use features within 1 km of the Project.	6-67
Figure 6.45	Existing land use around the Project as per Kuala Terengganu District Local Plan 2010.	6-68
Figure 6.46	Land use features within 5 km of the Project.	6-69
Figure 6.47	Villages within 1 km of Project.	6-71
Figure 6.48	Social survey carried out with residents within the 5 km radius from Project.	6-72
Figure 6.49	Fish landings retail value according to zones in percentage for the Kuala Nerus district.	6-80
Figure 6.50	Locations of the fishing villages within 5 km of the Project area.	6-81
Figure 6.51	Age distribution of the fishermen.	6-82
Figure 6.52	Distribution of the fishermen's' working experience.	6-83
Figure 6.53	Distribution of working experience according to age groups of the fishermen (n=56). Note that the total is not 64 as some of the respondents did not specify their work experience.	6-83
Figure 6.54	Fishing grounds indicated by fishermen in the socioeconomic survey.	6-85
Figure 6.55	Overall attractions found around Kuala Terengganu.	6-89
Figure 6.56	Activities and facilities found within the northern section of Pantai Teluk Ketapang.	6-90
Figure 6.57	Locations of historical tourism sites within 5 km from the Project area.	6-92
Figure 6.58	Locations of cultural tourism sites with 5 km of the Project area.	6-96
Figure 6.59	Variety of food attraction in Terengganu.	6-97
Figure 6.60	Locations of the historical and cultural heritage sites provided by the Terengganu Museum (March 2018).	6-101
Figure 6.61	Port limit and anchorage area around the Project area.	6-102
Figure 6.62	Ferry route (Kuala Terengganu to Pulau Redang).	6-104
Figure 6.63	Established commercial shipping routes from Kuala Terengganu.	6-105
Figure 6.64	ESAs within study area (see Drawings for A3 figure).	6-109
Figure 7.1	Location of spill sources released during the construction period for Phases 1 to 5.	7-15
Figure 7.2	Release locations with 100% concentration of conservative tracer in the proposed inner channel (Tracer 1; left) and in the proposed dredged basin (Tracer 2; right) before the start of simulation.	7-16
Figure 7.3	Example of maximum excess concentration time series over the period of 28-days near the dredging area. Excess suspended sediment of 50 mg/L and above is mostly instantaneous.	7-19
Figure 7.4	Maximum excess suspended sediment plume excursion for Phase 1a reclamation for all climatic scenarios.	7-20
Figure 7.5	Maximum excess suspended sediment plume excursion for Phase 2 reclamation and dredging for all climatic scenarios.	7-21
Figure 7.6	Maximum excess suspended sediment plume excursion for Phase 3 reclamation for all climatic scenarios.	7-22
Figure 7.7	Percentage exceedance of 50 mg/L during SW monsoon.	7-24
Figure 7.8	Concentration of conservative tracer in the inner channel at the start of simulation, after 12 hours, 24 hours and 48 hours for Tracer 1.	7-26
Figure 7.9	Concentration time series of Tracer 1, released during neap (top) and spring tide (bottom) at four locations within the inner channel as shown in Figure 7.8.	7-27
Figure 7.10	Concentration of conservative tracer in the basin at the start of simulation, after 12 hours, 24 hours and 48 hours for Tracer 2.	7-28
Figure 7.11	Concentration time series of Tracer 2, released during neap (top) and spring tide (bottom) at two different locations within the basin as shown in Figure 7.10.	7-29

Figure 7.12	Predicted annual bed thickness due to siltation of fines generated during construction phases 1a, 1c and 2.	7-33
Figure 7.13	Predicted annual bed thickness due to siltation of fines generated during construction of phases 3, 4 and 5.	7-34
Figure 7.14	Predicted wave heights (top left – existing conditions; top right – with Project) and changes (bottom) during mean sea level condition. Case 1: NE monsoon (wave height of 1.6 m, coming from 55°N). .	7-37
Figure 7.15	Predicted wave-driven-currents (top left – existing conditions; top right – with Project) and changes (bottom) during mean sea level condition. Case 1: NE monsoon (wave height of 1.6m, coming from 55°N).	7-38
Figure 7.16	Predicted littoral transport patterns during mean sea level condition. Left – existing conditions; right – with Project. Case 1: NE monsoon (wave height of 1.6m, coming from 55°N).	7-39
Figure 7.17	Location of affected airport discharge outlet in the Project area.	7-41
Figure 7.18	Predicted maximum water levels for existing (top), with Project (middle) and difference (bottom).	7-43
Figure 7.19	Predominant wind direction during NE monsoon, SW monsoon and inter-monsoon (wind rose shown at bottom right).	7-47
Figure 7.20	Sensitive receptors and baseline ambient noise.	7-51
Figure 7.21	Predicted noise source emission contours during dredging, reclamation and earthworks.	7-55
Figure 7.22	Predicted noise source emission contours during night time earthworks.	7-56
Figure 7.23	FADs within 5 km of the Project.	7-60
Figure 7.24	Predicted duration in exceedance of 5 mg/L excess TSS concentrations for Southwest monsoon during Phase 1c, 2 and 3 development.	7-63
Figure 7.25	Predicted sedimentation rate over 28 days simulation period for Phase 1b, 1c and 2 development during Southwest monsoon.	7-66
Figure 7.26	Exceedance of 10 mg/L excess TSS in % of time during SW monsoon.	7-70
Figure 7.27	Sediment deposition during SW monsoon and NE monsoon.	7-72
Figure 7.28	Marine megafauna sightings and sea turtle nesting sites between the Project area and rock and sand source areas.	7-83
Figure 7.29	Vegetation loss photo location for photos shown in Photo 7.1.	7-87
Figure 7.30	Fishing grounds identified by the fishermen in the social survey.	7-99
Figure 7.31	Fishing grounds identified by the fishermen in the social survey overlaid against sediment plume impact area (duration in exceedance of 50 mg/L TSS).	7-100
Figure 7.32	Sand and rock material source areas for construction in relation to the Project site.	7-109
Figure 7.33	SW Monsoon: Predicted changes in mean current speeds between existing and post-construction.	7-111
Figure 7.34	SW Monsoon: Predicted changes in maximum current speeds between existing and post construction	7-112
Figure 7.35	Summary of RIAM results for construction phase.	7-114
Figure 7.36	Summary of RIAM results for post-construction phase.	7-114
Figure 7.37	Locations of affected fishing villages and assumed preferred fishing ground location.	7-126
Figure 7.38	Affected lots with ocean view along Pantai Teluk Ketapang.	7-128
Figure 7.39	Results of sensitivity analysis – net present value for selected discount rates for the base case, lower estimate and upper estimates.	7-133
Figure 8.1	Conceptual bund and silt curtain placement for Phase 1 reclamation sequence.	8-3
Figure 9.1	Water quality monitoring stations.	9-15
Figure 9.2	Proposed location for the shoreline monitoring profile.	9-17
Figure 9.3	Air quality and noise monitoring stations.	9-19
Figure 9.4	Macrobenthos monitoring stations.	9-21
Figure 9.5	Location of fish fauna monitoring stations.	9-22
Figure 9.6	Proposed FAD monitoring sites.	9-25
Figure 9.7	Hierarchy of control for waste management.	9-28

TABLES

Table 1.1	EIA study team members.	1-4
Table 1.2	Conformance of the Project to existing regulatory requirements.	1-7
Table 1.3	Rank 3 ESA Framework for Peninsular Malaysia (Coastal Areas) (Source: NPP-3).	1-14
Table 2.1	EIA study boundaries for the various environmental components.	2-2
Table 2.2	Comments from agencies.	2-5
Table 2.3	List of engaged agencies.	2-11
Table 3.1	Gross Development Value (GDV) and tax to state.	3-14
Table 4.1	Criteria for site selection.	4-3
Table 4.2	Assessment for Option 1.	4-4
Table 4.3	Assessment for Option 2.	4-4
Table 4.4	Assessment for Option 3.	4-5
Table 4.5	Summary of assessment results.	4-7
Table 4.6	Key differences between layouts.	4-7
Table 4.7	Comparison of reclamation fill placement techniques.	4-10
Table 5.1	Coordinates of the Project boundary (WGS84 - degrees, minutes, seconds).	5-4
Table 5.2	Conceptual topside components.	5-7
Table 5.3	Capital dredging description.	5-11
Table 5.4	Summary of construction activities during the five reclamation phases.	5-14
Table 5.5	Vessels and equipment for reclamation work.	5-21
Table 5.6	Summary of estimated volume and duration of each reclamation phase based on the assumptions that two units of TSHDs with total daily reclamation volume of 30,000 m ³ are applied.	5-22
Table 6.1	Details of data collection for physical-chemical environment.	6-5
Table 6.2	Tidal elevations at Sg. Terengganu /17/.	6-7
Table 6.3	Seasonal changes to mean level in the study area vicinity based on the Sg Terengganu tidal station /17/.	6-8
Table 6.4	Chemical content in sediment against the Dutch Standards.	6-27
Table 6.5	Summary of results for marine and estuarine water quality physical parameters around the project area.	6-29
Table 6.6	Maximum permissible sound level (L _{eq}) by receiving land use for planning and new developments.	6-34
Table 6.7	Baseline ambient noise results (dB(A)).	6-35
Table 6.8	Details of data collection for biological environments.	6-36
Table 6.9	Abundance and total number of species recorded during the sampling. Note that the species listed for juvenile fishes are not exhaustive and are only for species where their maturity stage was able to be determined.	6-51
Table 6.10	Vegetation composition within 200m from Project area.	6-60
Table 6.11	Details of data collection for human environment.	6-63
Table 6.12	Questionnaire survey sampling effort by zone and villages involved.	6-72
Table 6.13	Socio-cultural profile of the survey respondents in the study area (343 respondents).	6-73
Table 6.14	Socioeconomic profile of the respondents.	6-73
Table 6.15	Awareness of respondents by distance from Project.	6-74
Table 6.16	Agreement to Project development by distance from Project.	6-75
Table 6.17	Details of Townhall and FGD.	6-75
Table 6.18	Concerns expressed by MPKK.	6-76
Table 6.19	Fishing zones in Malaysia showing the distance of each zone from the shoreline, vessel size and fishing activity allowed to operate in each zone //.	6-78
Table 6.20	Number of registered fishing vessels according to zones for the Kuala Nerus district.	6-78
Table 6.21	Number of registered fishing vessels according to zones for the Kuala Terengganu district.	6-79
Table 6.22	Fish landings in retail value (RM) for the Kuala Nerus district according to zone.	6-79
Table 6.23	Fishermen interviewed by distance from Project.	6-80
Table 6.24	Concerns and needs expressed by fishermen.	6-87
Table 6.25	ESA categorisation within Project area as per NPP3.	6-106
Table 7.1	Environmental impacts evaluated and chapter outline.	7-2
Table 7.2	Importance of the condition – scoring and Project-specific definitions.	7-3
Table 7.3	Magnitude of the impact.	7-3

Table 7.4	Rating of magnitude.	7-4
Table 7.5	Scale for Group B criteria.	7-4
Table 7.6	Range bands used for RIAM.	7-4
Table 7.7	Summary of construction phase impacts (Note: 'I' – Importance, 'M' – Magnitude, 'P' – Permanence, 'R' – Reversibility, 'C' – Cumulative and 'ES' – Environmental Score).	7-5
Table 7.8	Summary of impact assessment during post-construction (Note: 'I' – Importance, 'M' – Magnitude, 'P' – Permanence, 'R' – Reversibility, 'C' – Cumulative and 'ES' – Environmental Score).	7-7
Table 7.9	Impact assessment methodology.	7-10
Table 7.10	Work package 1 - Reclamation during Phase 1 to Phase 5 - summary of production and spill assumptions.	7-11
Table 7.11	Work Package 2 - dredging works during Phase 1 (along the breakwater) and 2 (navigation channel) and the dredged materials used for reclamation - summary of production and spill assumptions.	7-11
Table 7.12	Work Package 3 - dredging works during Phase 2 (turning basin) and the dredged materials used for reclamation - summary of production and spill assumptions.	7-12
Table 7.13	Details on representative phases applied for modelling purposes.	7-12
Table 7.14	Evaluation of the impact magnitude for suspended sediment – exceedance of 50 mg/L.	7-17
Table 7.15	T ₅₀ at four locations within the inner channel (refer to Figure 7.8).	7-27
Table 7.16	T ₅₀ at two different locations within the basin (Tracer 2), refer to Figure 7.10.	7-29
Table 7.17	Defined offshore wave conditions applied into ST model.	7-31
Table 7.18	Predicted changes in littoral transport capacity (m ³ /hour) for pre- and post-development conditions. Negative values indicate southward transport while positive values indicate northward transport.	7-36
Table 7.19	The New Malaysia Ambient Air Quality Standard.	7-45
Table 7.20	Noise magnitude scoring criteria.	7-49
Table 7.21	DOE guideline Schedule 6: Maximum Permissible Sound Level (L _N and L _{max}) of Construction, Maintenance and Demolition Work by Receiving Land Use.	7-49
Table 7.22	Maximum permissible sound level (L _{Aeq}) to be maintained at the existing noise climate (Schedule 3 of Noise Guideline 2007) adopted for night time limit.	7-50
Table 7.23	Typical noise level from construction equipment //.	7-52
Table 7.24	Predicted ambient noise level at the receiving land uses.	7-57
Table 7.25	Impact severity matrix for suspended sediment on hard corals for near shore waters /89/.	7-61
Table 7.26	Thresholds for sedimentation impact on corals for nearshore waters.	7-61
Table 7.27	Impact magnitude criteria for social impact assessment.	7-89
Table 7.28	Fisheries impact magnitude scoring criteria.	7-98
Table 7.29	Impact significance criteria for tourism and recreational activities impact assessment.	7-103
Table 7.30	Impact magnitude criteria for cultural heritage.	7-105
Table 7.31	Marine vessels involved in the Project construction.	7-109
Table 7.32	Inflation rates for Malaysia applied in this study (Source Knoema World Data Atlas /108/).	7-116
Table 7.33	Summary of environmental services affected by the Project.	7-117
Table 7.34	Ecosystem services provided by the sandy subtidal habitat.	7-119
Table 7.35	Estimated resource value of soft bottom area in RM/ ha / year (2018 price).	7-119
Table 7.36	Total economic value for sandy subtidal area.	7-121
Table 7.37	Assumptions for area loss due to reclamation and dredging over Project implementation.	7-122
Table 7.38	Distances and assumptions used in terms of travel times, based on the preferred fishing area as shown in Figure 7.37.	7-124
Table 7.39	Summary of assumptions used to calculate cost of addition overland travel time.	7-125
Table 7.40	Summary of assumptions used to calculate cost of addition oversea travel time.	7-125
Table 7.41	Average value in Q1 2019 for residential properties by type in Kuala Nerus District //. * indicate values used to calculate an average price for the study area shoreline.	7-129
Table 7.42	Examples of current property listings in the area (various real estate's websites).	7-130
Table 7.43	Value of assessed losses in environmental services and total value over 10 years.	7-131
Table 7.44	Estimates of the total discounted loss in environmental services at the range of discount rates used in the assessment.	7-132
Table 7.45	Variables used in sensitivity analysis.	7-132
Table 7.46	Variables used in sensitivity analysis to value loss of beach access for beach landing – travel distance in metres.	7-133
Table 7.47	Difference in lower and upper estimates compared to the base case.	7-134
Table 8.1	Summary of impact assessment for the construction phase.	8-19
Table 8.2	Summary of impact assessment for post-construction phase.	8-22

Table 9.1	P2M2 to be implemented.....	9-2
Table 9.2	Compliance monitoring activities for suspended sediment control.	9-3
Table 9.3	Water pollution control measures and methods for monitoring compliance.....	9-4
Table 9.4	Drainage control measures and methods for monitoring compliance.	9-6
Table 9.5	Air emissions abatement measures and related compliance monitoring during the construction phase.	9-7
Table 9.6	Noise management measures and compliance monitoring.	9-8
Table 9.7	Compliance monitoring for FADs.....	9-9
Table 9.8	Compliance monitoring programme for plankton.	9-10
Table 9.9	Compliance monitoring for marine megafauna.	9-11
Table 9.10	Compliance monitoring programme for terrestrial ecology.	9-11
Table 9.11	Socioeconomics compliance monitoring programme.	9-11
Table 9.12	Compliance monitoring programme for mitigation of impacts to fisheries.....	9-13
Table 9.13	Compliance monitoring programme for mitigation of impacts to tourism and recreational activities. ...	9-13
Table 9.14	Water quality monitoring frequency.	9-14
Table 9.15	Geographical coordinates and description of the water quality stations (WGS84 – degrees, minutes, seconds).....	9-15
Table 9.16	Water quality parameters to be monitored.....	9-16
Table 9.17	Coordinates of the shoreline monitoring profile (WGS84 – degrees, minutes, seconds).....	9-18
Table 9.18	Coordinates of air quality and noise station (WGS84 - degrees, minutes, seconds).	9-18
Table 9.19	Parameters to be measured in the air quality monitoring and monitoring schedule.	9-19
Table 9.20	Coordinates of the macrobenthos monitoring stations (WGS84 – degrees, minutes, seconds).	9-21
Table 9.21	Coordinates of fish fauna sampling stations (WGS84 – Degrees, minutes, seconds).	9-23
Table 9.22	CWG discussion points.	9-24
Table 9.23	FAD monitoring frequency.....	9-24
Table 9.24	Coordinates of FAD monitoring stations (WGS84 – Degrees, minutes, seconds).....	9-25
Table 9.25	Parameters used to assess the relative condition of each FAD.	9-26
Table 9.26	Audit for Project closure or abandonment during construction phase (monthly during decommissioning).....	9-31

PHOTOS

Photo 5.1	Hydraulic pumping of sand through floating pipeline.	5-19
Photo 5.2	Example of temporary shore protection //.....	5-21
Photo 6.1	Sultan Mahmud Airport's drainage outlet, draining into the reclamation area.	6-23
Photo 6.2	Soakaway No. 1 located by the roadside northern shoreline of Pantai Teluk Ketapang.	6-23
Photo 6.3	Soakaway No. 3 located approximately 650 m from Soakaway No. 1.	6-24
Photo 6.4	Examples of sediment physical attributes.....	6-25
Photo 6.5	Turbid water at station WQ3 which is approximately 1 km from the Sg. Terengganu river mouth (left) versus clear water at station WQ5 located approximately 1 km from the sandy shoreline of Teluk Ketapang beach (right) taken on 29 September 2017.	6-30
Photo 6.6	Soft corals and barnacles associated with concrete FAD (left) and a screen shot of FAD (concrete) identified from the side scan mosaic.....	6-37
Photo 6.7	Unjam FAD.....	6-38
Photo 6.8	Concrete FAD covered with algae.....	6-38
Photo 6.9	Concrete FAD.....	6-38
Photo 6.10	Tyre FAD that are separated and scattered.	6-38
Photo 6.11	<i>Ditrupea</i> sp. (left) and <i>Athanas</i> sp. (right).....	6-42
Photo 6.12	<i>Evadne</i> sp. (left) and <i>Oithona</i> sp. (right).....	6-48
Photo 6.13	Juvenile Ikan Biji Nangka, <i>Upeneus moluccensi</i> (left) and Ikan Kekek, <i>Leiognathus brevisrostris</i> (right) caught during neap tide.	6-53
Photo 6.14	Ikan Duri, <i>Arius</i> sp. (left) and Ketam Batu, <i>Charybdis lucifera</i> (right) caught during spring tide.	6-54
Photo 6.15	<i>Glochidion littorale</i> near station M1 (left) and disturbed <i>Nypa fruticans</i> at station M4 (right).	6-59
Photo 6.16	Kingfisher (left) and monitor lizard (right) observed during the mangrove assessment.	6-60

Photo 6.17	Clockwise from top left: Large areas covered with creepers and grasslands which are categorised as herbaceous type vegetation; coconut (<i>Cocos nucifera</i>) saplings observed in some areas; Shrubland, with 0.5- 5 m tall shrubs and trees comprising less than 10% cover; Rows of planted <i>Casuarina</i> sp. trees classified woodland (trees with generally more than 25% canopy cover).	6-61
Photo 6.18	Pantai Teluk Ketapang.	6-65
Photo 6.19	New coastal road along Pantai Teluk Ketapang (photo taken in June 2019).	6-65
Photo 6.20	Sultan Mahmud airport (top) and Universiti Malaysia Terengganu (bottom).	6-66
Photo 6.21	FGD sessions with MPKK and fishermen.	6-76
Photo 6.22	Townhall session on 28 June 2019.	6-77
Photo 6.23	Fish landing at Tok Jembal breakwater.	6-86
Photo 6.24	Fish landing at Pantai Teluk Ketapang stretch.	6-87
Photo 6.25	Fish landing for Kg. Seberang Takir inside Sg. Terengganu (tributary).	6-87
Photo 6.26	Entrance gate of Istana Maziah.	6-93
Photo 6.27	Masjid Abidin Kuala Terengganu.	6-93
Photo 6.28	Gateway of China Town Kuala Terengganu.	6-94
Photo 6.29	Entrance to Pasar Payang.	6-95
Photo 6.30	Hawker stalls along Jalan Pantai Teluk Ketapang surrounded by rhu trees.	6-98
Photo 6.31	Jalan Pantai Teluk Ketapang along 1 km northern stretch flanked by rhu trees.	6-98
Photo 6.32	Jalan Pantai Tok Jembal surrounded by coconut and rhu trees. The Tok Jembal breakwater can be seen in the background.	6-99
Photo 6.33	Fishing trawlers berthed inside the northern breakwater at the Kuala Terengganu Port.	6-103
Photo 7.1	Trees that will be cleared.	7-88
Photo 7.2	Typical low cost houses around Jalan Pantai Teluk Ketapang.	7-130
Photo 8.1	An example of a double-layer silt curtain surrounding a reclamation site in Johor.	8-4
Photo 8.2	Example of navigation/demarcation buoys.	8-9

APPENDICES

A	Mesyuarat Penyelarasan PLANMalaysia
B	TOR Approval Condition
C	TOR Extension Letter
D	Hydraulic Approval Letter
E	Baseline Report
F	Air and Noise Assessment Report
G	MOM for Agencies Consultations
H	Reclamation Layout Optimization Report
I	Socioeconomic Report
J	Public Engagement Report
K	Marine Traffic Assessment (MRA)

DRAWINGS

No 1	Project Location
No 2	Geographic Location
No 3	Land use 5 km radius
No 4	ESA

1 Introduction

1.1 Project Title

This Second Schedule Environmental Impact Assessment (EIA) is prepared for the Proposed Reclamation and Capital Dredging for the Sunrise City Mixed Development at Mukim Kuala Nerus, District of Kuala Nerus, Terengganu, Malaysia (hereafter referred to as 'the Project').

1.2 Project Background

The Project is located along the shoreline of the State of Terengganu between the Sultan Mahmud Airport and the Kuala Terengganu Breakwater, known as Pantai Teluk Ketapang (Figure 1.1). Administratively, the Project is within Mukim Kuala Nerus, District of Kuala Nerus. The reclaimed land is intended for the Sunrise City mixed development which will be geared towards developing commercial districts for retail, office uses, residential use and also for tourism.

The Project comprises three main activities, namely reclamation, capital dredging, and construction of breakwater, bridges, roads and piled platforms. The total area to be reclaimed is 1,898 ac (768 ha) which will be divided into five phases. Sand for reclamation will be sourced from an approved marine borrow site located approximately 124 km away from the Project, in the Kemaman district. The sediment from this borrow site is sand with very small amounts of clay and silt (< 1%).

1.3 Project Proponent and Qualified Persons

1.3.1 Project Proponent

The Project Proponent is Elcca Properties Sdn. Bhd. with the contact details provided below:

Project Proponent	ELCCA Properties Sdn. Bhd. M602, Blok Mawar, Pangsapuri Permint Harmoni, Jalan Batas Baru, 20300 Kuala Terengganu, Terengganu Darul Iman, Malaysia Tel.: 609 – 6666 6431 Fax.: 609 – 6622 430
Contact Person:	Mr Liew Ah Yong
Designation:	Director

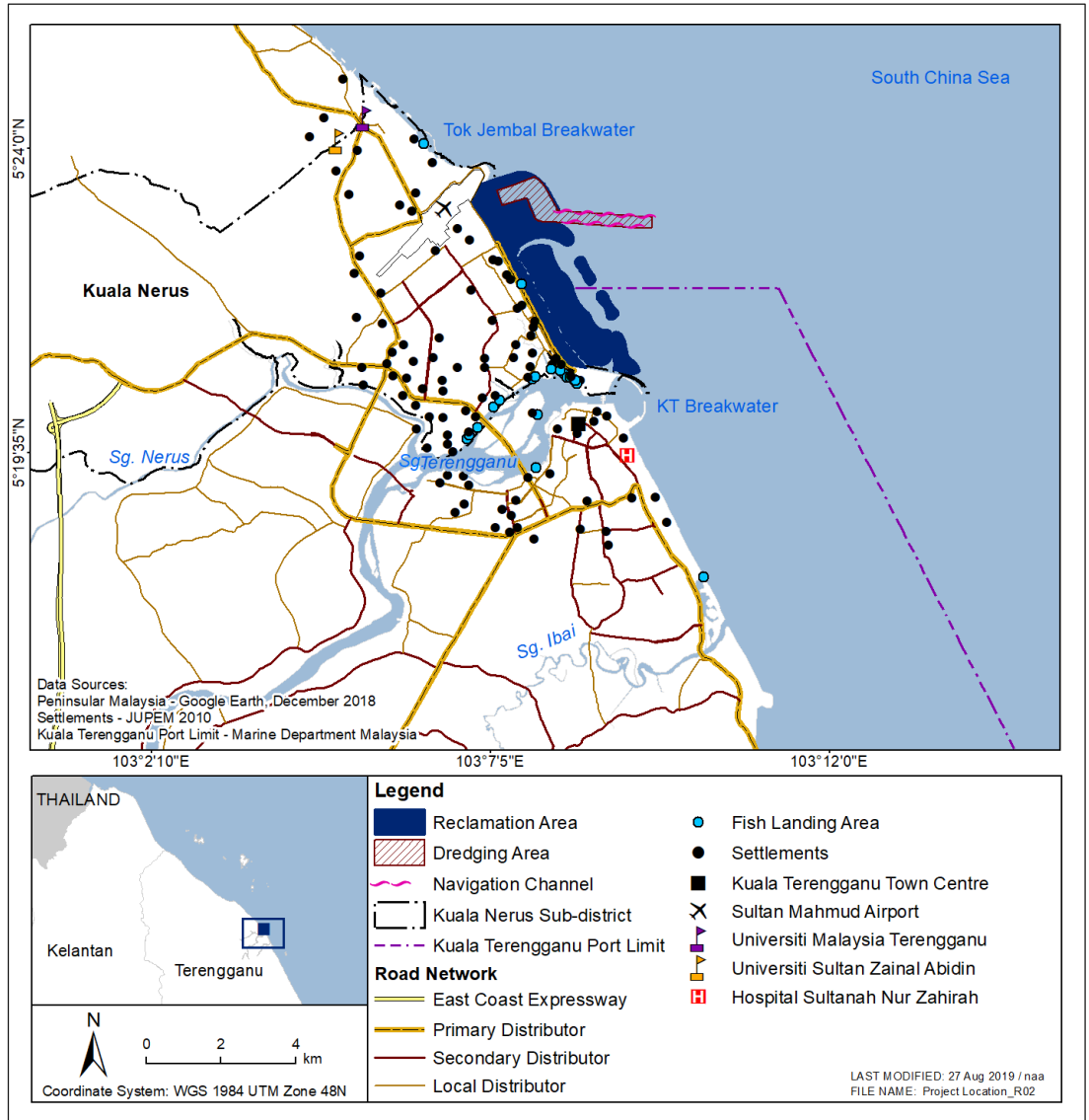


Figure 1.1 Regional setting of the Project (see Drawings for A3 figure).

1.3.2 EIA Consultant





This document has been prepared by DHI Water & Environment (M) Sdn. Bhd. with details as follows:



EIA Consultant	DHI Water & Environment (M) Sdn. Bhd. (592006-K) 3A01 & 3A02, Block G Phileo Damansara 1 No. 9 Jalan 16/11 46350 Petaling Jaya Selangor Tel.: 03 7958 8160 Fax: 03 7958 1162
Contact Person:	Tania Golingi, EIA Team Leader (Tel.: 088 260 780) Mohamad Hafiz bin Yahya, Coordinator (Tel.: 03 7958 8160)

1.3.3 EIA Team Members

The EIA study team members comprise of EIA consultants as listed in Table 1.1.

Table 1.1 EIA study team members.

No.	Name	Qualification	Registration with DOE				Study area	Signature
			Category	Area/ field	ID No.	Registration Expiry Date		
EIA Study Team Leader								
1.	Tania Golingi	B.SC. (Hons) (Environmental Science)	<ul style="list-style-type: none"> EIA Consultant Subject Consultant 	<ul style="list-style-type: none"> Water quality monitoring and assessment Ecological study 	CS0219	31-05-2022	<ul style="list-style-type: none"> Water Quality Impact Assessment 	
EIA Team Member								
1.	Syed Mohazri Syed Hazari	BSc. (Hons.) Biochemistry MSc. (Conservation Biology)	EIA Consultant	<ul style="list-style-type: none"> Ecological Study Water Quality 	C0200	30-5-2021	<ul style="list-style-type: none"> Ecology Impact Assessments 	
2.	Dr. Juan Carlos Savioli	MSc. & PhD. (Hydraulic Engineering)	Subject Consultant	Coastal Zone Processes and Hydroinformatics	SS0371	31-07-2020	Hydraulic modelling	
3.	Wong Lie Lie	B.Sc (Computer), M. (Environment and Business Management)	<ul style="list-style-type: none"> EIA Consultant Subject Consultant 	<ul style="list-style-type: none"> Solid and scheduled waste management Industrial processes 	CS0259	31-05-2022	Waste management	

No.	Name	Qualification	Registration with DOE				Study area	Signature
			Category	Area/ field	ID No.	Registration Expiry Date		
4.	Hung Yee Hon	Bachelor of Civil Engineering (Hons) Master in Environmental Management	EIA Consultant	<ul style="list-style-type: none"> Quantitative Risk Assessment Air quality monitoring and assessment Hydrology Noise monitoring and assessment 	C0096	31-05-2022	<ul style="list-style-type: none"> Air quality Noise 	
5.	Mohd Nawahidudin Mahamad Isa	Dip. Town Planning) BSc Construction Management	EIA Consultant	<ul style="list-style-type: none"> Traffic impact assessment Socioeconomic 	C0350	30/08/2021	Socioeconomic assessment	

1.4 Legal Aspects

1.4.1 Environmental Quality Act 1974 (EQA 1974)

The Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 requires that an impact assessment is carried out for any developments with potential impacts to the environment, which are categorised as “prescribed activities”. The prescribed activities are categorised under two schedules, namely First Schedule and Second Schedule. The Project encompasses prescribed activities under both the First and Second Schedule:

- First Schedule – Item 15 (a) Capital dredging
- Second Schedule – Item 7 Land Reclamation:
 - (a) Coastal reclamation involving an area of 50 hectares or more.
 - (c) Reclamation for man-made island

Given that the reclamation activity associated with the Project falls under the Second Schedule, a Second Schedule EIA has been prepared to comply with the legal requirement under Section 34A of the Environmental Quality Act 1974.

The topside development components of the Sunrise City project are also prescribed activities under the First Schedule of the EIA Order 2015. Given that only conceptual details are available on these developments at the time of writing, these topside developments **are not addressed in the present EIA**, and separate EIAs will be carried out for these components as further details become available. The relevant prescribed activities under the First Schedule subject to separate EIA are as follows:

- Item 12: Development in Coastal and Hill Area
 - Construction of building or facilities with 80 rooms or more in coastal area
- Item 14: Waste Treatment and Disposal
 - (c) Sewage: (i) Construction of sewage treatment plant with 20,000 population equivalent or more
- Item 18: New Township
 - Construction of new township consisting of 2,000 housing accommodation units or more or covering an area of 100 hectares or more.

1.4.2 Conformance to Government Regulatory Requirements

The Project is in line with the Terengganu State developments plans and policies, in particular, the State Structure Plan Terengganu (2005-2020) which aims to achieve Vision 2020 and to place Terengganu as a developed state by 2020. This is further detailed in Section 3. A brief summary of these and other regulatory requirements of relevance to the overall Sunrise City development project and its conformance thereto is listed Table 1.2.

Table 1.2 Conformance of the Project to existing regulatory requirements.

Aspects of Control / Strategies	Project Conformance
Legal Documents	
Waters Act P920 (Act 418)	
<ul style="list-style-type: none"> Prohibition 5(1) specifies that NO person shall in any manner obstruct or interfere with any river; build any bridge, jetty, or landing stage (other than a bath-house) over or beside any river at a point where the width of such river exceeds twenty feet and 5(2) states that licences to do the above may be issued by the District Officer. Reclamation activities at the river mouth or along the coast needs to adhere to this provision. 	<p>The Project is located immediately north of the Kuala Terengganu breakwater and does not obstruct the Sg. Terengganu and its tributaries, or its river mouth.</p>
National Physical Planning Council (NPPC)	
<p>Matters referred by the State Government, including providing advice to the State Planning Committee on applications for planning permission under Section 22 (A), Act 172, namely to:</p> <ul style="list-style-type: none"> Development of a new township whose population exceeds 10,000 or areas exceeding 100 hectares, or both; Development for the construction of any infrastructure / key facilities; and Development involves the peak/hill in the area designated as environmentally sensitive areas. Any coastal reclamation planned has to be referred to the NPPC for advice. 	<p>The Project will be referred to the NPPC for advice as per Paragraph 2A(2)(b). An application will be made to the <i>Mesyuarat Jawatankuasa Perancang Negeri (JPN)</i> for State's recommendation before being brought to the Council for deliberations. Based on a coordination meeting for the Project by PLANMalaysia Terengganu on 11 January 2018, PLANMalaysia Terengganu has stated that EIA approval is required before the project can be tabled to the NPPC as per Item 4.1.1 (j) of the Minutes of Meeting (Appendix A).</p>
Planning Control- Planning Permission	
<ul style="list-style-type: none"> In the TCPA 1976 (Act 172), the development control system is provided under Part IV of Act 172 which includes the Planning Permission. Part IV Section 19 on Planning Control; Prohibition of development without planning permission specifies that No person, other than a local authority, shall commence, undertake, or carry out any development unless planning permission in respect of the development has been granted. Any coastal reclamation done without planning permission are considered as against the legal provision of the act. 	<p>As described above, the Project will be referred to the NPPC for its advice. Once this is resolved, the <i>kebenaran merancang (KM)</i> application will be submitted to the Kuala Terengganu City Council (MBKT).</p>
Planning Policy Documents	
National Physical Plan 3 (NPP-3)	
<ul style="list-style-type: none"> NPP-3 specifies Core 1: Urban Dynamics and Rural Growth with <i>Pertubuhan Dinamik Bandar dan Luar Bandar (PD)</i>1: Balanced Urban Growth and PD1.5 Strengthening Entrance Ports and Logistics Industry as one of the measures. PD3: Improved Access and Access states the measures as in PD3.3 Enhancing Water Transport Services. The plan clearly promotes strengthening of ports and water transport to serve as a catalyst for economic 	<p>Although this EIA does not assess the top side development, the conceptual development for the reclamation includes among others residential areas, commercial areas (i.e. town centre, mixed development and hotels/resorts), marine facilities (i.e. cruise terminal and fishing wharf) and light industrial area (Section 5.2). These facilities may stimulate urban growth and integrate</p>

Aspects of Control / Strategies	Project Conformance
<p>development and growth for a city. These facilities will promote agglomeration of nearby industrial and service activities and enables the growth of logistics and tourism industry. Therefore, dredging and reclamation, and development of ports need to be in sustainable manner so as to minimise adverse impacts on the environment.</p> <ul style="list-style-type: none"> • NPP-3 Core 2: Spatial Sustainability and Resilience to Climate Change specifies <i>Kemampuan Spatial dan Daya Tahan Terhadap Perubahan Iklim</i> (KD)1: Management of Natural Resources, Food Sources and Heritage Resources as the strategy. The measures include KD1.2 Managing and Controlling Development in ESA. This cover gazetted threatened habitats as a protected area including wetlands, sea grass plains, turtle landing sites and coral sites and to establish and strengthen the implementation of land and marine ecology corridors by Establishment of the Marine Protection Area Network. <p>Other related actions are:</p> <ul style="list-style-type: none"> • Action KD1.3A: Strengthen river basin management include management of river reserves and development along the river corridor. • Action KD1.4B: Develop sustainable mineral resource mining. • According to the ESA guidelines, new mining and quarrying activities are not permitted except in the ESA Level 3 managed area according to the guidelines provided. However, for activities currently operating within the Level 1 and 2 ESA areas, mining practices using Best Available Technology Not Entailing Excessive Costs (BATNEEC) should be implemented by the developer. <p>On KD2: Holistic Land Use Planning, a strategy KD2.2 Manage Natural Disaster Risk Area is outlined with the following actions:</p> <ul style="list-style-type: none"> • Action KD2.2B Conserve the coastal area. • Development Control in Coastal Areas. • Conservation of Coastal Areas in Critical Situations. • Controlling Reclamation and Reclamation Activities in Coastal Areas. <p>The later strategies state that the coastal zones need to be preserved and conserved in order to avoid the loss and degradation of natural habitats and increase of soil erosion in coastal areas as a result of physical development activities including reclamation and reclamation activities. Hence, reclamation and land reclamation activities need to be well planned and controlled.</p>	<p>with existing Kuala Terengganu urban areas. Additionally, the marine facilities, particularly the proposed cruise terminal may spur water transport services and further enhance the state's coastal and heritage tourism. This is also particularly significant with the proposed water taxi services.</p> <p>No ESA Rank 1 or Rank 2 can be found within 5 km from the Project area (Section 6.5). The nearest ESA Rank 1 from the Project area is Pulau Kapas Marine Park. According to the National Physical Plan for Coastal Zone (NPP-CZ), the coastline where the Project is located has been categorised as ESA Rank 3. The management criteria for Rank 3 require adherence to the NPP-CZ and other relevant guidelines.</p> <p>Not applicable.</p> <p>Sand for reclamation will be obtained from an approved marine sand source site as described in Section 5.3.1.1 Sand Source.</p> <p>This Second Schedule EIA has assessed the potential impacts to coastal morphology (e.g. erosion and sedimentation), ecology, water quality and others (as detailed in Section 7).</p>

Aspects of Control / Strategies	Project Conformance
<p>For those purposes, any reclamation and reclamation activities are not permitted, except where:</p> <ul style="list-style-type: none"> • The needs and benefits of such activities can be clearly demonstrated in contributing significant socioeconomic contributions at state and country level (such as infrastructure development); and • Does not affect the environment significantly. 	<p>The Sunrise City project is anticipated to bring in significant capital investment estimated at RM 2.1 billion in Domestic Direct Investments (DDIs) and Foreign Direct Investment (FDIs) and is in line with State development planning (refer to the State Structure Plan Terengganu 2005-2020).</p>
<p>However, reclamation and land reclamation are not permitted in the following areas:</p> <ul style="list-style-type: none"> • Mangrove forest areas and wetlands that have been gazetted as protected areas. • Environmental sensitive areas according to the Planning Guidelines (refer to KD1.2). • Conservation and Development of Coastal ESAs. • Other recognized areas have high ecological, cultural and economic value. • Coastal Protection Zone that has been identified in the NPP-3. 	<p>As mentioned earlier, no Rank 1 or Rank 2 ESAs will be affected by this Project. The coastline where the Project is located falls under ESA Rank 3 (Coastal Areas). The Project conforms to the management criteria for Rank 3 which requires adherence to the NPP-CZ and other relevant guidelines (Figure 1.2).</p>
<p>In addition to meeting the existing development requirements, any reclamation and land reclamation activities should conduct studies taking into account the following aspects:</p> <ul style="list-style-type: none"> • Impact on erosion and sedimentation along the shores of the coast, namely through hydrological and hydraulic engineering analysis of the coast. • Impact on animal and plant population and natural habitats. • Impact of climate change, including sea level rise for a period of not less than 100 years. • The suitability of the design with the existing shoreline. • The use of unrefined reclamation material, which may negatively impact natural coastal and ocean habitats. • Availability of access to locals to coastal areas (except for prohibited areas). 	<p>A project optimization study was done as described in Section 4. Among the options taken into consideration were (a) project location, (b) reclamation layout, (c) reclamation methodology, and (d) no project.</p> <p>The current reclamation layout including the existing project location has been optimized to ensure minimal impact to the coastal environment.</p> <p>A hydraulic study has been carried out which assessed in detail the impact on erosion and sedimentation around the Project area.</p> <p>The reclamation platform level is +3 MSL which is based on the level of existing shoreline. Further consideration of sea level rise is a requirement for the design of the topside development.</p> <p>The present EIA assesses the Project's impacts on natural habitats and communities.</p> <p>The reclamation material is from an approved marine sand source, with less than 1% fines.</p> <p>The conceptual topside Project components (refer to Figure 5.4) include beaches that will be open to public access.</p>
<p>National Physical Plan for Coastal Zone (NPP-CZ)</p>	
<p>NPP-CZ outlined 10 Strategies under five themes have been formulated to guide the sustainable planning, development and management of the coastal zone. Two themes relate directly to reclamation and dredging i.e. Theme 3 and Theme 4 as follows:</p>	
<p>Theme 3: Sustainable Coastal Development</p>	

Aspects of Control / Strategies	Project Conformance
<p>NPP-CZ 4: The development of coastal settlements shall be planned to maximize socio-economic benefits, in a form and scale that is appropriate to safeguard sensitive coastal resources and in is harmony with natural coastal processes.</p>	<p>The Sunrise City project will bring in an estimated 500 jobs and 155,400 jobs during construction and operation.</p> <p>The job opportunities provided will expand the capability and capacity of the local supporting industries, through the growth of local small and medium-sized enterprises (including tourism and service companies) which are the backbone of the state and country's economy.</p> <p>As described earlier, a project optimization study was done as described in Section 4. Among the options taken into consideration were (a) project location, (b) reclamation layout, (c) reclamation methodology, and (d) no project. As such, the current reclamation layout including the existing project location has been optimized to ensure minimal impact to the coastal environment.</p>
<p>NPP-CZ 5: Infrastructure development along the coastline shall be planned and managed with strict adherence to the principles of public good, avoidance of harm to the natural environment and minimization of disruption to natural coastal processes.</p>	<p>As above.</p>
<p>Theme 4: Wise Use of Coastal Resources</p>	
<p>NPP-CZ 6: Coastal land reclamation shall only be undertaken when it is proven that the economic benefits significantly outweigh the environmental; and social costs.</p>	<p>The objective of this EIA is to outline the environmental costs of the Project for the consideration of the project approving authority against the economic and social aspects.</p>
<p>Other related themes are as follows:</p>	<p>Mining of sand for reclamation will be obtained from an approved marine sand source site as described in Section 5.3.1.1 Sand Source.</p>
<p>Theme 1: Conserving Coastal Biodiversity</p>	
<p>NPP-CZ 1: Terrestrial and marine biodiversity in the coastal zone, including species, habitats and ecosystems shall be conserved and sustainably managed.</p>	<p>While all development incurs environmental trade-offs, no significant negative impacts to species, habitats and ecosystems have been predicted as outlined in Section 7. Suitable mitigation measures (refer to Section 8) have been proposed to minimize the impacts.</p>
<p>NPP-CZ 2: The economic value of ecosystem services as well as the trade-offs associated with development shall be incorporated into planning and development decisions.</p>	<p>As part of the scope of the EIA, an ecological evaluation has been conducted (refer to Section 7.3 Project Evaluation).</p>
<p>Theme 2: Designing for a Dynamic Coastline</p>	
<p>NPP-CZ 3: The coastline and its economic assets shall be protected from coastal hazards through the incorporation of precautionary measures.</p>	<p>To protect the newly reclaimed land, the shoreline will be protected using rock armoured revetments (refer to Section</p>

Aspects of Control / Strategies	Project Conformance
<p>NPP under Section 6: Coastal Processes and Hazards highlighted that human activities have a great impact on the dynamics of the river mouth and adjacent coastlines. Dredging has been identified as an activity that can impact directly on the coastal processes and morphology. Structures built with dredging activities pose similar impacts include:</p> <ul style="list-style-type: none"> • Ports and marinas. • Active coastal protection structures (groynes breakwaters, and all other structures occupying part of the foreshore and/or the shore face). • Passive coastal structures (revetments, seawalls and all other structures). • Reclamation works • Dikes Inlet jetties at tidal inlets. • Sea works at river mouths. • Embankment for bridges and runways. • Intake and outlet structures crossing the littoral zone. • Sewerage outfalls and pipelines. <p>NPP-CZ highlighted that coastal developments along the coastline such as coastal reclamations and dredging have been identified as the potential threat to marine ecosystem including river terrapins from sand mining activities along sandy riverbanks.</p> <p>Management Criteria related to coastal reclamation as according to NPP are:</p> <p>“No new development, expansion of existing development or resource extraction (all forms of mining) shall be permitted in the Coastal ESA (CESA) Rank 1 areas, which includes the existing permitted areas, proposed protected areas of NPP-CZ and marine park islands.”</p> <p>“No new development, expansion of existing development or resource extraction (all forms of mining) shall be permitted in the CESA Rank 2 areas, which includes all other natural habitats outside of CESA 1”.</p> <p>For CESA 3; all other areas outside of CESA Rank 1 and Rank 2, within 1 km inland from the Mean High Water Level (but further inland at river mouths, depending on local flood regimes) the management criteria are:</p> <ul style="list-style-type: none"> • Land use zoning shall take into consideration the severity of coastal hazards and the impact of the development on coastal habitats and coastal morphology. • Land use zoning and coastal management options recommended are tabulated in the Coastal Hazard Guidance and Land Use Zoning Guidance of NPP-CZ. 	<p>5.4.2.2). The hydraulic study has indicated that the Project will not result in increased erosion risk to adjacent coastlines.</p> <p>No Rank 1 or Rank 2 ESAs as defined in the NPP-3 and NPP-CZ will be affected by this Project. The Project coastline falls under ESA Rank 3 (Coastal Areas), see also Table 1.3 below on ESAs.</p> <p>The potential impacts of the Project to coastal habitats, coastal morphology and river flow have been assessed in the present EIA (Sections 7.2.6, 7.2.2 and 7.2.3).</p> <p>The hydraulic report detailing impacts to coastal morphology was submitted to the Department of Irrigation and Drainage (DID) on 17 June 2019 (ref.: 62801461-LET-039-JPS).</p> <p>As detailed in Section 7 of this EIA, no significant negative impacts to the environment are anticipated. Suitable mitigation measures (refer to Section 8) have been proposed to minimize the impacts.</p>

Aspects of Control / Strategies	Project Conformance
<p>Reclamation in lower river systems will reduce the size of the river channel along with the amount of water flowing in and out the system, therefore reducing the self-cleansing flushing capacity of the system.</p> <p>Land reclamation and construction of structures such as piers directly on top of coral reefs result in landscape alteration and destruction of coral reefs.</p>	
<p>State Structure Plan (RSN) Terengganu 2005-2020</p>	
<p>4.0 Strategy and Concept of Development</p>	
<p>4.12 Environmental Preservation of the State – Objectives and Targets:</p> <ul style="list-style-type: none"> • To make Terengganu a “Negeri Maju Bestari 2020” based on sustainable development of the environment and sustainable management of resources. • Encourage continuous development growth in a sustainable and controlled manner • Conserve ESAs that have been identified and improve the environment <p style="padding-left: 40px;">4.12.2 Strategy for Environmental Development and Sustainable Resources:</p> <ul style="list-style-type: none"> i. Control all forms of air, noise and water pollution to guarantee the health and safety of residents. v. Control water pollution to ensure the river and marine water quality is in accordance to the standards set by the DOE. xi. Take measures to reduce coastal erosion issues. <p style="padding-left: 40px;">4.13 Management and Implementation:</p> <ul style="list-style-type: none"> x. Encourage participation of private sectors in the State’s development. 	<p>The Project area falls under ESA Rank 3; ESA Rank 1 and 2 areas are avoided.</p> <p>Mixed developments such as the proposed Sunrise City project have various benefits which include convenience, easy access and opportunities for sustainable and green efforts. For example, resources such as energy, trash disposal and sewage can be used more efficiently whereas the reduced sprawling development will encourage walking or cycling, positively impacting the environment.</p> <p>The Project construction activities have been designed in a way that will minimize any potential impacts to the environment. Throughout the construction phase, the Project Proponent is committed to adhere to the recommendations and guidelines provided in this present EIA, and any other related guidelines to ensure the environment is protected. Mitigation measures recommended can be found in Section 8 and includes measures for water quality, coastal morphology, air quality, noise quality, marine ecology and marine traffic and navigation.</p> <p>The project supports the State Government’s intention in encouraging private sectors to contribute in the State’s development.</p>
<p>4.3 Population Growth and Human Resource Development:</p> <ul style="list-style-type: none"> • Create employment and business opportunities in the industrial and services sector to generate population growth and reduce emigration; and • Develop and expand the existing urban and city areas whilst creating new development areas to accommodate population growth. 	<p>The Project is located within the coastal corridor which has been identified in the State Structure Plan (RSN) Terengganu 2005-2020 and Local Plan (RTD) Kuala Terengganu (2010) as an area where development in Terengganu will continue to focus on (refer to Figure 3.4 and Figure 3.5). The development is in line with the Kuala Terengganu conurbation plan (refer to Item 5.0 – Proposed Land Use Development).</p> <p>The Sunrise City project is a mixed development which will provide job opportunities to the locals and further</p>

Aspects of Control / Strategies	Project Conformance
	stimulate urban development growth in Kuala Terengganu. There will be residential lots allocated on this new development to accommodate the influx of workers.
<p>4.7 Tourism:</p> <ul style="list-style-type: none"> Revitalise Terengganu's tourism destinations/products that were once famous through a "repositioning" program in line with changes in tourism demands. 	<p>The Sunrise City project will provide locals an avenue for selling heritage and cultural products (e.g. "batik", "bubu lambat", music performances) to a larger audience in a modern, creative setup, thus contributing to Terengganu's tourism sector.</p> <p>The cruise liner terminal will also bring a refreshing touch to the tourism sector in Terengganu in addition to utilizing other services such as water taxi/boat rides.</p>
5.0 Proposed Land Use Development – Main Diagrams	
<p>5.38 Kuala Terengganu will function as the regional and international centre for the finance, trade, tourism and communications sector by 2020.</p> <p>Figure 5.5. (b) of the RSN (shown here in this EIA as Figure 1.2):</p> <p>Expansion of Kuala Terengganu (KT) is centred within a 13 km radius from the city and will continue to serve as the administrative capital and main economic, trade and service, tourism and education centre.</p>	<p>The Sunrise City project is located within an 8 km radius from Kuala Terengganu city and will complement the existing developments nearby which will support Terengganu's aim towards being a developed state by 2020.</p>
Local Plan (RTD) Kuala Terengganu (2010)	
<p>The Kuala Terengganu development strategies were formed based on zones identified for potential development and ESA zones. Amongst the potential development areas, the State Government supports reclamation projects as a new economic growth engine to boost the position of Kuala Terengganu as a Waterfront City (refer to Figure 3.5).</p>	<p>The Project is in line with the RTD Kuala Terengganu's strategy as it is a reclamation project.</p>

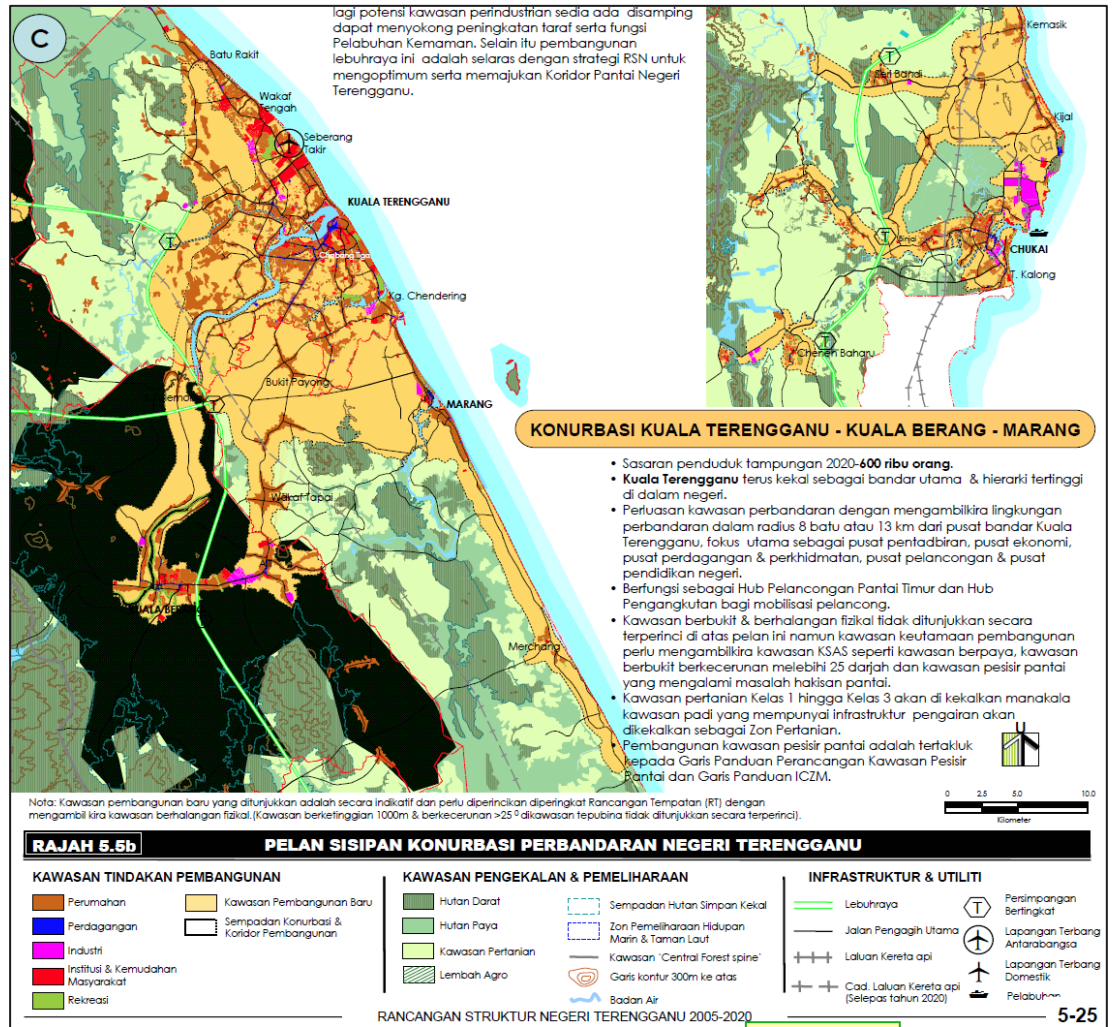


Figure 1.2 Conurbation plan for Terengganu – Kuala Berang – Marang (Source: RSN Terengganu).

Table 1.3 Rank 3 ESA Framework for Peninsular Malaysia (Coastal Areas) (Source: NPP-3).

Environmental Sensitive Areas	Management Criteria	Project Conformance
Buffer zone 500m around Level 2 ESA	Controlled development where the type and intensity of development should be subject to limitations. The limitation features include coastal zone erosion and areas exposed to flood threats.	Not applicable.
Water catchment area and groundwater recharge zones	Water catchment areas and recycling zones should be identified at the level of the State Structure Plan and Local Plan.	Not applicable.
Islands and Marine Parks	All development on islands and marine parks must comply with existing and future guidelines.	Not applicable.
Coastal area	All coastal development needs to comply with NPP-CZ Integrated Shoreline Management Plan (ISMP) state, existing and future guidelines	Guidelines that have been referred to during the preparation of this

Environmental Sensitive Areas	Management Criteria	Project Conformance
		present EIA are listed in Table 1.2 which includes the NPP-3, NPP-CZ, RSN and RTD. There is presently no ISMP for Terengganu.

2 EIA Terms of Reference

The Terms of Reference (TOR) for the EIA was submitted to the Department of Environment (DOE) Putrajaya on 16 May 2017. Based on the comments received from DOE, a revised Terms of Reference (TOR) was submitted to the Department of Environment (DOE) Putrajaya on 5 July 2017.

The TOR was endorsed on 24 August 2017 by letter (Ref.: JAS. 50/013/100/082 (14)); see Appendix B. An extension to the validity of the TOR was subsequently granted for a period of one year from 20 August 2018 (Appendix C).

The scope and focus on the EIA as per the endorsed TOR are summarised in the following sections, while the comments from the agencies to the TOR and where they are addressed in the EIA are listed in Section 2.2.

2.1 EIA Scope

2.1.1 Project Activities

The present Second Schedule EIA study covers the impacts arising from the following main activities:

- reclamation of land,
- capital dredging,
- construction of breakwaters,
- construction of roads and bridges; and
- construction of piled platforms.

The source of the reclamation material is marine sand from an offshore borrow site with current approvals; as such the borrow dredging activity is not included in the assessment. The dredged materials from the capital dredging are suitable for reclamation fill and will be used in the reclamation, hence no assessment of dredge spoil disposal is required.

It should be emphasized that this EIA does not assess the impacts of the topside development (both construction and operation). As outlined in the TOR, the planning for these components is in the conceptual phase and as such will be assessed in separate EIA(s).

2.1.2 Focus Issues

Per the endorsed TOR, this EIA focuses on the following key impacts:

- Coastal hydrodynamic and associated morphological impacts of the Project footprint;
- Water quality, particularly suspended sediment plume impacts during reclamation and capital dredging;
- Socioeconomic impacts; and

- Impacts on marine ecology, principally the loss of marine habitat, due to the Project footprint.

2.1.3 EIA Study Boundaries

The EIA study area, or zone of potential impact, is shown in Figure 2.1. It is noted that the study scope generally covers an area within a 5 km radius from the Project site as a minimum. However, in this assessment several different spatial levels have been used, depending on the study component, as the zone of primary impact and potential interaction pathways may differ (e.g. marine vs. terrestrial) (Table 2.1). For some components of the marine impact assessment, the study area extends well beyond the 5 km zone, for example the potential zone of impact from the suspended sediment plume and the sensitive receptors.

Table 2.1 EIA study boundaries for the various environmental components.

Component	Study Area (Physical Boundary)	Remarks
Marine and estuarine physical environment	<ul style="list-style-type: none"> • 5 km from Project site • Extent of sediment plume 	<ul style="list-style-type: none"> • Water quality • Sediment quality and characteristics • Bathymetry • Water level
Physical environment	5 km from Project site	<ul style="list-style-type: none"> • Air and noise
Hydrodynamic	Hydrodynamics <ul style="list-style-type: none"> • Regional model: Extends from the Malaysia-Thailand border to the southern part of Terengganu • Local model: Extends approximately 130 km southward from the Kelantan-Terengganu state border Waves <ul style="list-style-type: none"> • Global model: Covers South China Sea • Regional model: Covers 160 km southwards from the Kelantan-Terengganu state border 	<ul style="list-style-type: none"> • Wave • Current
Ecology	<ul style="list-style-type: none"> • 5 km from Project site 	<ul style="list-style-type: none"> • Mangrove • Seagrass • Coral • Fish fauna • Sea Turtle • Terrapins
	1 km from the Project site	Terrestrial ecology
Socioeconomics	Land area covering 5 km from Project site	Population area and fishermen
Land use	5 km from Project site	<ul style="list-style-type: none"> • Sensitive receptors

Component	Study Area (Physical Boundary)	Remarks
		<ul style="list-style-type: none"><li data-bbox="1117 282 1404 403">• Existing land use as per Local Plan (RTD) Kuala Terengganu (2010)

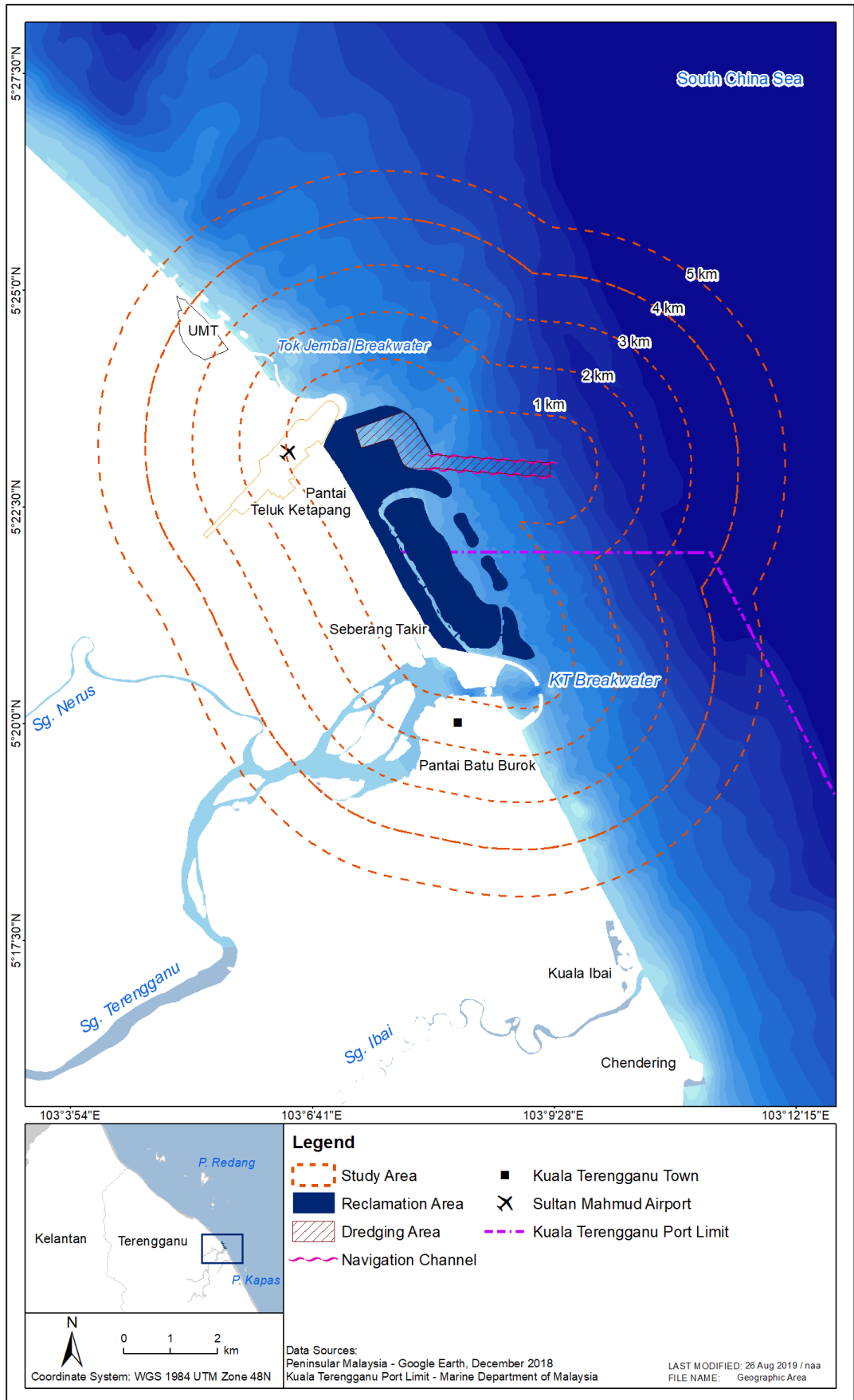


Figure 2.1 Geographic area of the EIA study (see Drawings for A3 figure).

2.2 Agencies Comments on TOR

The Revised TOR outlines the scope of the EIA based on the scoping process and comments from DOE and related agencies. Table 2.2 lists the comments from agencies and how these were addressed in the EIA.

Table 2.2 Comments from agencies.

No.	Comment	Remarks / Reference in this EIA
Department of Environment, Putrajaya (ref.: JAS. 50/013/100/082 (14))		
1.	Kesemua ulasan bertulis daripada agensi dan pakar pengulas individu yang dikemukakan kepada pihak tuan termasuk ulasan sama ada secara bertulis atau yang dibincangkan hendaklah diberi perhatian yang sewajarnya dalam Laporan EIA. Format maklumbalas kepada ulasan bertulis yang akan diterima kelak adalah seperti di Lampiran 1.	All comments from agencies and individual expert reviewers have been considered in this EIA as listed in this table (Table 2.2).
2.	Kajian pelupusan bahan buangan yang dikorek hendaklah diambil kira dalam kajian EIA ini memandangkan penggorekan induk merupakan komponen projek dalam proses penambakan.	Not applicable as all dredged materials will be used for reclamation as described in Section 5.4.2.2.
3.	Cadangan pembangunan projek ini perlu dirujuk kepada Majlis Perancang Fizikal Negara serta selaras dengan Pelan Struktur atau Pelan Rancangan Tempatan (Local Plan) Kawasan berkenaan sebelum kajian EIA dijalankan.	<p>National Physical Plan Council (NPPC):</p> <p>Based on a coordination meeting for the Project by PLANMalaysia Terengganu on 11 January 2018, PLANMalaysia Terengganu has stated that EIA approval is required before the Project can be tabled to the NPPC as per Item 4.1.1 (j) of the Minutes of Meeting (Appendix A).</p> <p>Conformance with existing development plans:</p> <p>Although the Project is not yet gazetted in any of the development plans at the Federal, State and Local levels, it is located within the beach corridor identified as the main corridor for development. Apart from that, it is in line with the Kuala Terengganu conurbation plan as detailed in the <i>Rancangan Tempatan Daerah (RTD) Kuala Terengganu</i> as stated in Section 1.4.2.</p>
4.	Hasil kajian hidraulik secara menyeluruh yang menggambarkan keadaan sebenar apabila projek tambakan yang telah mendapat kelulusan daripada JPS perlu dimasukkan ke dalam Laporan EIA.	A hydraulic study was carried out and the report was submitted to Department of Irrigation and Drainage (DID) on 17 June 2019

No.	Comment	Remarks / Reference in this EIA
		<p>and was approved on 30 August 2019 (Appendix D).</p> <p>Results of the hydraulic study form the basis of the assessments presented in Section 7.</p>
5.	<p>Kajian berkenaan <i>Best Available Technique</i> untuk kaedah penambakan dan pengorekan untuk mengawal hakisan dan sedimen.</p>	<p>Dredging and reclamation activities will be carried out based on the best available techniques which were assessed as per Section 4.3. Details of the dredging activities are as per Section 5.4.2.3.</p>
6.	<p>Kajian EIA bagi cadangan projek ini hendaklah dijalankan secara kuantitatif, komprehensif dan langkah-langkah kawalan pencemaran yang dicadangkan juga perlu dijelaskan dengan spesifik dan terperinci bagi isu-isu kritikal yang dikenalpasti.</p>	<p>Noted. This Second Schedule EIA study has been carried out based on the results from numerical modelling, and all the potential identified impacts will be mitigated through proactive management process as described in Section 8 of this report.</p>
7.	<p>Pihak tuan bolehlah berpandukan kepada senarai semak pematuhan kepada Bidang Rujukan yang disahkan mengikut format seperti di Lampiran 1 bagi memastikan kesemua skop kajian yang dinyatakan di atas diambilkira di dalam Kajian EIA kelak. Kajian dan laporan EIA yang disediakan juga perlu mengikut garispuandu <i>Environmental Impact Assessment Guidelines in Malaysia 2016</i> yang diterbitkan oleh Jabatan Alam Sekitar.</p>	<p>This EIA has been prepared based on the comments from agencies for the TOR document as duly listed and cross referenced in this table.</p> <p>The EIA was also prepared in accordance to the Environmental Impact Assessment Guidelines in Malaysia 2016 /1/ and Environmental Impact Assessment Guidelines for Land Reclamation and Dredging in Malaysia 2018 /2/.</p>
8.	<p>Dimaklumkan bahawa Laporan EIA yang lengkap yang sedang dinilai perlu dipaparkan di laman web rasmi Jabatan ini. Oleh yang demikian, sesalinan CD yang mengandungi "<i>soft copy</i>" Laporan EIA berkenaan (format pdf) hendaklah dikemukakan kepada Jabatan Alam Sekitar Ibu Pejabat dan sesalinan kepada Jabatan Alam Sekitar Negeri Terengganu. Di samping itu, Ringkasan Eksekutif dalam bentuk "<i>soft copy</i>" juga hendaklah dikemukakan secara berasingan dengan "<i>soft copy</i>" Laporan EIA untuk tujuan paparan di laman web rasmi Jabatan ini.</p>	<p>CDs containing soft copies have been provided to DOE Putrajaya and DOE Terengganu.</p>
9.	<p>Selain daripada ringkasan isu dan keputusan kajian, kandungan Ringkasan Eksekutif hendaklah juga mengandungi perkara-perkara berikut:</p> <ul style="list-style-type: none"> • Name/Title of Project • Name of the Project Proponent • Name of the EIA Consultant (firm) 	<p>Included in Executive Summary, see Volume I.</p>

No.	Comment	Remarks / Reference in this EIA
	<ul style="list-style-type: none"> Location of the project (including where applicable, coordinates, lot numbers, mukim and district name) Relevant maps showing project location and sensitive receptors Summary of impacts, mitigation measures and implementation method 	
10.	<p>Pihak tuan juga hendaklah mengemukakan semua data mentah (<i>raw data</i>) yang digunakan sebagai input di dalam kajian EIA, dalam bentuk "<i>hard copy</i>" di dalam "<i>EIA Main Report</i>" atau sebagai apendiks. Manakala sesalinan CD yang mengandungi "<i>soft copy</i>" data berkenaan hendaklah dikemukakan kepada Jabatan Alam Sekitar Ibu Pejabat. Hanya analisa yang dijalankan oleh makmal yang mempunyai Sijil Akreditasi (SAMM) diterima di dalam kajian EIA dan keputusannya hendaklah dimasukkan ke dalam Laporan EIA.</p>	<ul style="list-style-type: none"> Raw data used in this EIA are attached in Appendix E and Appendix F. CD containing soft copy of the raw data has been provided to DOE Putrajaya. Analysis of water, sediments and air quality were carried out by accredited laboratories.
Marine Department of Malaysia (Eastern Region) (ref.: JLWT 21/43 (2))		
1.	<p>Pemohon perlu melaksanakan kajian "<i>Marine Risk Assessment</i>" (MRA) yang mana laporan MRA tersebut perlu dijalankan dengan mengambil kira pelbagai aspek bagi mengenalpasti risiko yang mungkin, akan dan telah sedia wujud serta kaedah-kaedah bagaimana menanganinya bagi meminimakan atau mengatasi risiko-risiko tersebut.</p>	<p>An MRA has been carried out in accordance with Marine Department requirements. The subsequent comments are addressed in this MRA, however, the key findings are summarized in this EIA:</p> <ul style="list-style-type: none"> Existing risks - Section 6.4.7 and Section 7.2.18 Mitigation measures - Section 8.2.17
2.	<p>Antara terma-terma rujukan untuk menyediakan laporan MRA adalah merangkumi perkara-perkara berikut:</p> <ul style="list-style-type: none"> Mengenalpasti aktiviti-aktiviti perkapalan dan risiko-risiko marin yang telah sedia ada wujud di lokasi yang dicadangkan serta menilai terhadap risiko perlanggaran dan kemalangan dengan mengambil kira kepadatan dan kesibukan trafik laut di kawasan operasi dan kawasan berhampiran serta kewujudan vessel-vessel bekerja. Menilai kesan-kesan atau impak terhadap industry perkapalan dan aktiviti marin yang sedia ada jika kawasan tersebut dibangunkan. Mengenalpasti dan menilai risiko-risiko yang akan wujud secara jangka panjang jika lokasi tersebut dibangunkan berdasarkan aktiviti-aktiviti perkapalan dan marin yang diwujudkan setelah ianya dibangunkan. Kesan-kesan atau impak hidrologi dan hidrografi jangka panjang terhadap lokasi yang 	<p>The MRA was prepared based on the MRA TOR endorsed by the Marine Department Terengganu and encompasses all the listed items.</p>

No.	Comment	Remarks / Reference in this EIA
	<p>dicadangkan beserta perairan sekitarnya dalam radius yang tertentu sekiranya pesisiran semulajadi, topografi dan contour dasar laut diubah daripada asal.</p> <ul style="list-style-type: none"> • Melaksanakan kajian hidrolik dan hidrografi terperinci termasuk melaksanakan simulasi computer bagi mengenalpasti sifat-sifat arus seperti kederasan dan arah arus, kesan-kesan hakisan di lokasi yang dicadangkan sebelum dan setelah projek dilaksanakan secara berterusan. Ini bertujuan mengenalpasti risiko-risiko yang akan wujud kepada pelayaran. • Kajian dari segi aspek keselamatan pelayaran semasa projek sedang dilaksanakan samada kehadiran vessel-bessel kerja beserta kelengkapannya mewujudkan halangan pelayaran, alur navigasi menjadi sempit, kesan-kesan negative yang terhasil akibat perubahan dasar laut. • Menilai penempatan, pemindahan atau pengwujudkan baru Alat Bantuan Pelayaran (ABP) di lokasi yang akan dibangunkan. • Melaksanakan cerapan laluan trafik dan seterusnya membuat kajian "<i>Ship Simulation & Navigation</i>" (tertakluk kepada keperluan). • Keperluanewartakan "<i>Marine Facilities</i>" di bawah <i>International Ship & Port Security Code</i> (ISPS Code) mengikut Akta A 1316 Ordinan Perkapalan Saudagar 1952 (MSO1952) dan Akta Lembaga Pelabuhan 1963. • Menyediakan plan kontigensi terlebih dahulu bagi mengatasi sebarang kes-kes kecemasan dan kemalangan laut termasuk pencemaran laut dan pengalihan <i>wreck</i> yang mungkin akan berlaku semasa operasi. • Menyediakan Pelan Pengurusan Marin yang efektif oleh pengerak projek, pemaju atau pemilik projek bagi mengkaji risiko-risiko baru dan menambahbaik risiko-risiko sedia ada secara berterusan bagi jangka masa panjang. • Menenalpasti dan menilai kaedah-kaedah yang terbaik bagi mengatasi dan meminimakan risiko-risiko yang telah dikenalpasti. 	
3.	Semua vessel dan loji yang digunakan haruslah mematuhi kehendak Ordinan Perkapalan Saudagar 1952 (MSO1952) dan semua undang-undang yang diterimapakai oleh Kerajaan Malaysia semasa operasi dijalankan.	Noted.
Department of Irrigation and Drainage, Terengganu (ref.: JPS.TR.T5.2 Jld.37 (7))		
1.	Kajian hidraulik perlu dijalankan bagi cadangan pembangunan di hadapan garisan pantai sebagaimana yang digariskan di dalam Garis	The hydraulic study was carried out in accordance with DID guidelines and was submitted to DID Malaysia

No.	Comment	Remarks / Reference in this EIA
	Panduan Kawalan Hakisan Berikutan Dari Pembangunan Di Kawasan Pantai. Jurutera Perunding hendaklah mendapat ulasan dan persetujuan secara rasmi daripada Jabatan Pengairan Dan Saliran Malaysia terlebih dahulu sebelum melaksanakan pengumpulan data di tapak.	on 17 June 2019. The hydraulic report was approved on 30 August 2019 (Ref: (27) dlm.PPS 14/7/T35).
2.	Sistem saliran yang sempurna perlu disediakan dalam kawasan yang akan dibangunkan dengan mengambilkira air larian hujan daripada “catchment area” yang berkenaan dan “road side drain” supaya kawasan sekitarnya tidak terdedah kepada ancaman banjir dan saluran keluarnya hendaklah dialirkan ke parit/alur yang berdekatan.	Not applicable at this stage. The topside drainage plan will be developed as part of the detailed engineering design and included in the planning submissions.
3.	Pengerak Projek adalah bertanggungjawab mengambil langkah-langkah kawalan untuk mengelak daripada berlakunya hakisan pantai akibat daripada pelaksanaan projek ini dan sebarang kerja pengawalan hakisan yang dicadangkan hendaklah direkabentuk oleh Jurutera Perunding bertauliah dan perlu mendapat kelulusannya terlebih dahulu daripada Jabatan Pengairan Dan Saliran Negeri Terengganu.	Coastal erosion assessment has been quantitatively assessed in the approved hydraulic study report and is discussed in Section 7.2.2 of this Second Schedule EIA report.
4.	Mengemukakan senarai semak Pengurusan Air Larian Hujan Untuk Permohonan Pemajuan Tanah Di Malaysia yang disediakan oleh Jurutera Profesional Berdaftar sebagaimana di bawah:- <ul style="list-style-type: none"> • Permohonan Kebenaran Merancang – Annex A • Permohonan Pelan Saliran – Annex B • Pelan Kerja Tanah dan Pelan Kawalan Hakisan & Kelodak (ESCP) – Annex C 	This is noted as a requirement for the design of the topside development.
5.	Cadangan sistem saliran hendaklah berpandukan Manual Saliran Mesra Alam Edisi Ke 2 Tahun 2012. Pengerak Projek dikehendaki membuktikan dengan perkiraan hidraulik bahawa kadaralir selepas pembangunan (Qpost) adalah kurang atau sama dengan kadaralir sebelum pembangunan (Qpre). Pengiraan hidraulik dan hidrologi oleh Jurutera Profesional yang bertauliah bagi cadangan sistem saliran kawasan projek hendaklah dikemukakan ke Jabatan ini untuk penelitian.	This is noted as a requirement for the design of the topside development.
6.	Rekabentuk terperinci “Erosion and Sediment Control Plan” (ESCP) beserta pelan-pelan kerja tanah yang lengkap oleh Jurutera Perunding Profesional yang bertauliah yang memiliki pertauliah “Certified Professional in Erosion and Sediment Control” (CPESC) perlu dikemukakan ke Jabatan ini untuk penelitian sebelum projek di atas dilaksanakan. Rekabentuk ESCP hendaklah berpandukan Manual Saliran Mesra Alam Malaysia (MSMA) Edisi ke 2 Tahun 2012.	This is noted as a requirement for the design of the topside development.

No.	Comment	Remarks / Reference in this EIA
7.	"Platform level" bagi cadangan projek ini hendaklah diselaraskan dengan keadaan sekitarnya serta melepasi paras banjir dan dipersetujui oleh Pihak Berkuasa Tempatan (PBT).	The reclamation platform level is +3 MSL which is based on the level of existing shoreline. As such, this is noted as a requirement for the design of the topside development.
8.	Pembetong jalan disyorkan berukuran minima bergarispusat 900mm atau lebih besar berpandukan perkiraan hidraulik.	This is noted as a requirement for the design of the topside development.
9.	Kelulusan ini kelak hanya sah selama dua (2) tahun dari tarikh surat kelulusan dikeluarkan.	Noted.
PLAN Malaysia, Terengganu (ref.: JPBD.Tr. 02/4740(8))		
1.	Membuat Penilaian Impak Sosial (Social Impact Assessment) terutamanya yang melibatkan penempatan dan aktiviti nelayan serta ciri-ciri budaya di tapak cadangan dan sekitar yang terkenal dengan keenakkan makanan tradisi Terengganu.	<p>Consultation with PLANMalaysia on 29 April 2019 indicated that a Social Impact Assessment (SIA) shall be prepared covering the full Sunrise City Development (including topside) after approval of this EIA and prior to the submission of <i>Kebenaran Merancang</i> (refer to MOM in Appendix G).</p> <p>A socioeconomic study was carried out by Nilaimas Services to address impacts of the reclamation and dredging activities (see Appendix I); the results of this study have been incorporated in in this EIA.</p>
2.	Perlu mengambil kira kriteria pengurusan yang terkandung dalam jadual 4.4 Rancangan Fizikal Negara ke 3 (RFN ke-3) iaitu rangka kerja Kawasan Sensitif Alam Sekitar (KSAS). Dimana jenis dan intensity pembangunan perlu tertakluk kepada ciri-ciri halangan termasuklah zon pesisir pantai yang mengalami hakisan pantai bagi kawasan Tok Jembal dan yang mudah terdedah kepada ancaman banjir.	As above.
3.	Membuat kajian impak kepada identiti bandar serta kawasan tarikan pelancongan negeri yang unik kerana cadangan pembangunan akan menutup sepenuhnya fungsi jalan sebagai <i>scenic drive</i> untuk ke lapangan terbang Sultan Mahmud. Selain itu fungsi <i>corniche road</i> sebagai jalan persiaran dan pelancongan juga akan terjejas.	As above.
4.	Mengkaji impak kepada pembangunan komited sekitar tapak cadangan kerana aktiviti penambakkan laut berkemungkinan boleh menjejaskan pandangan estetik mengadap laut terutamanya kepada cadangan <i>waterfront</i> oleh ECER serta pembangunan muara utara KTCC.	As above.

No.	Comment	Remarks / Reference in this EIA
5.	Mengkaji secara terperinci kesan terhadap alam sekitar terutamanya bagi cadangan pembangunan <i>shipyard</i> yang berdekatan dengan kawasan tumpuan seperti lapangan terbang Sultan Mahmud dan Kem Tentera Sri Pantai.	As above.

2.3 Government Stakeholder / Agency Engagement

Engagement with relevant government agencies have been carried out involving agencies as tabulated in Table 2.3. This is to fulfil the DOE requirement as per 'Notice 1/2017' that consultation with relevant agencies shall be carried out to discuss the EIA study findings.

Table 2.3 List of engaged agencies

No.	Agency	Date	Remarks / Reference in this EIA
1.	DOE Putrajaya	18 March 2019	Meeting with <i>Unit Penilaian</i> , DOE was held to discuss the scope of EIA and other EIA requirements (refer to Appendix G).
2.	PLANMalaysia Federal	29 April 2019	Social Impact Assessment (SIA) shall be prepared covering the full Sunrise City Development (including topside) after approval of this EIA and prior to the submission of <i>Kebenaran Merancang</i> . (refer to MOM in Appendix G).
3.	Marine Department Eastern Region	<ul style="list-style-type: none"> • 8 July 2019 • 21 August 2019 	<ul style="list-style-type: none"> • Meeting with Marine Department Eastern Region was held to discuss the Term of Reference of the MRA report and to consult Marine Department on their concerns and stakeholders involvement in the HAZID workshop (refer to MOM in Appendix G). • HAZID workshop was held on 21 August 2019 at Hotel Tanjung Vista Kuala Terengganu to present findings of the potential navigation risks, assessment the level of risks and proposed mitigation measures to the key stakeholders (refer to MOM in Appendix K).
4.	LKIM Chendering	21 August 2019	Meeting with LKIM Chendering and Fishermen's Association was held to discuss EIA findings focusing on issues related to fisheries and fishermen due to the Project activities (refer to MOM in Appendix G).

3 Statement of Need

As mentioned in Section 1.4, the current Second Schedule EIA assesses only the reclamation and capital dredging while the proposed topside development is excluded from the assessment because these activities will be assessed under separate EIAs under the First Schedule of the EIA Order 2015. Consequently, these activities fall under the purview of DOE Terengganu. Although this is the case, the need for the Project must consider the need for the Sunrise City project, since the reclamation is carried out to prepare for land for the overall development.

The Sunrise City project aims to improve the economy and alleviate the present crowded environment within Kuala Terengganu by providing residential and community facilities, commercial, hospitality, tourism and industrial facilities near to the city centre. It has been designed based on the intention to enhance the area with canals and waterbodies, creating additional waterfront for sporting activities and festive celebrations for the enjoyment of both local and international communities.

Public facilities such as beaches, recreational tracks for jogging and cycling, sports venues and swimming pools will aid in improving the quality of life of the communities whereas facilities such as the cruise liner terminal and new tourism products (e.g. oceanarium, water theme park) are expected to attract significant tourists into the region thus furthering the growth of Terengganu tourism at a national scale (see Figure 3.1).

To ensure that the local Terengganu communities are not marginalized from this development, there will be provision for a fishing wharf in the marine facilities area, a designated cultural and food hub area and incorporation of local heritage elements in the overarching design concept. This is anticipated to not only boost the income of the locals, but will also promote local products such as delicacies, culture and textiles to larger audiences in the global arena. It is envisioned that the society will transition into a high-income society through these modernised economic sectors.



Figure 3.1 Proposed Sunrise City conceptual master plan.

3.1 The State of Terengganu as a Main Player for East Coast Development

The State of Terengganu has been earmarked as one of the main players in the East Coast region. Under PD1 (Balanced Urban Growth) of Core 1 (Dynamic Urban and Rural Growth) of the National Physical Plan 3 (NPP3), six strategic directions have been identified. PD1.1 details the actions to ensure dynamic urban development that stimulate urban economic growth by creating investment and trade hubs across the country. Action PD1.1A identifies 17 *Zon Promosi Pembangunan (ZPP)* that includes 12 ZPP in Peninsular Malaysia and five ZPP in Sabah and Labuan. Kuala Terengganu has been identified as one of these 17 ZPP (Figure 3.2).

Jadual 3.1 Kawasan Pertumbuhan yang Dikenal Pasti

Konurbasi	Zon Promosi Pembangunan (ZPP)	Pusat Katalis	
6 Konurbasi <ul style="list-style-type: none"> Empat (4) Konurbasi di Semenanjung Malaysia Dua (2) Konurbasi di Sabah dan Sarawak 	17 ZPP <ul style="list-style-type: none"> 12 ZPP di Semenanjung Malaysia Lima (5) ZPP di Sabah dan Labuan 	48 Pusat Katalis <ul style="list-style-type: none"> 37 Pusat Katalis di Semenanjung Malaysia 11 Pusat Katalis di Sabah dan Labuan 	
<ol style="list-style-type: none"> Konurbasi Nasional (Lembah Klang termasuk Kuala Lumpur, Putrajaya dan sebahagian daripada Selangor) Konurbasi Selatan (Sekitar Johor Bahru termasuk Iskandar Puteri, Senai, Kulai, Skudai, Pasir Gudang, Tanjung Pelepas, Pontian, Kota Tinggi, Desaru dan Pengerang) Konurbasi Utara (Pulau Pinang (Pulau) dan sebahagian Seberang Perai) Konurbasi Timur (Sekitar Kuantan, Pekan dan Gambang) Konurbasi Kota Kinabalu (Sekitar Bandaraya Kota Kinabalu, Tuaran, Putatan dan Papar) Konurbasi Kuching (Sekitar Bandaraya Kuching) 	<ol style="list-style-type: none"> Padang Besar-Lembah Chuping Kangar-Arau-Kuala Perlis Alor Setar-Jitra Sungai Petani Ipoh Lumut-Sitiawan-Seri Manjung Kota Bharu Kuala Terengganu Seremban-Nilai-Port Dickson (<i>Malaysia Vision Valley</i>) Bandaraya Melaka Bersejarah Bandar Maharani Bandar Diraja Bandar Penggaram-Kluang <p><u>Sabah dan Labuan</u></p> <ol style="list-style-type: none"> Keningau Sandakan Lahad Datu Tawau Labuan 	<ol style="list-style-type: none"> Kaki Bukit-Wang Kelian Beseri Pauh Putra Kuah Bukit Kayu Hitam Kulim Parit Buntar Kamunting-Taiping Gerik Lenggong Teluk Intan Tanjung Malim Tumpat Rantau Panjang Tok Bali Jeli Machang Gua Musang Jerteh Kerteh Chukai Jerantut Bandar Tun Abdul Razak (Jengka) Bentong Bandar Muadzam Shah Temerloh-Mentakab 	<ol style="list-style-type: none"> Sungai Besar Kuala Selangor Kuala Kubu Bharu Seri Jempol Gemas Tampin Pulau Sebang Kuala Linggi Sungai Rambai Segamat Mersing <p><u>Sabah</u></p> <ol style="list-style-type: none"> Kudat Kota Belud Kota Marudu Ranau Kimanis Beaufort Tenom Sipitang Kota Kinabatangan Tongod Semporna

Figure 3.2 Development promotion zones (ZPP) identified in the National Physical Plan (NPP3)

The *Rancangan Struktur Negeri Terengganu 2005-2020* (RSN Terengganu) has earmarked the Kuala Terengganu Conurbation as an important development area. The Kuala Terengganu conurbation plan has identified Kuala Terengganu-Kuala Berang-Marang conurbation (Figure 3.3) as the most important conurbation in Terengganu and will serve as the East Coast Tourism Hub. The Sunrise City project, located in the coastal area in close proximity to Kuala Terengganu City Centre (KTCC) and Sultan Mahmud airport, is within the corridor for development gazetted in the RSN Terengganu and the Local Plan (RTD) Kuala Terengganu 2010 (Figure 3.4 and Figure 3.5).

In addition, according to the RTD Kuala Terengganu, the State Government supports reclamation projects as a new economic growth engine to boost the position of Kuala Terengganu as a Waterfront City and the location where the project will be developed has been identified as an area with medium to high potential for development in the RSN Terengganu (Figure 3.6).

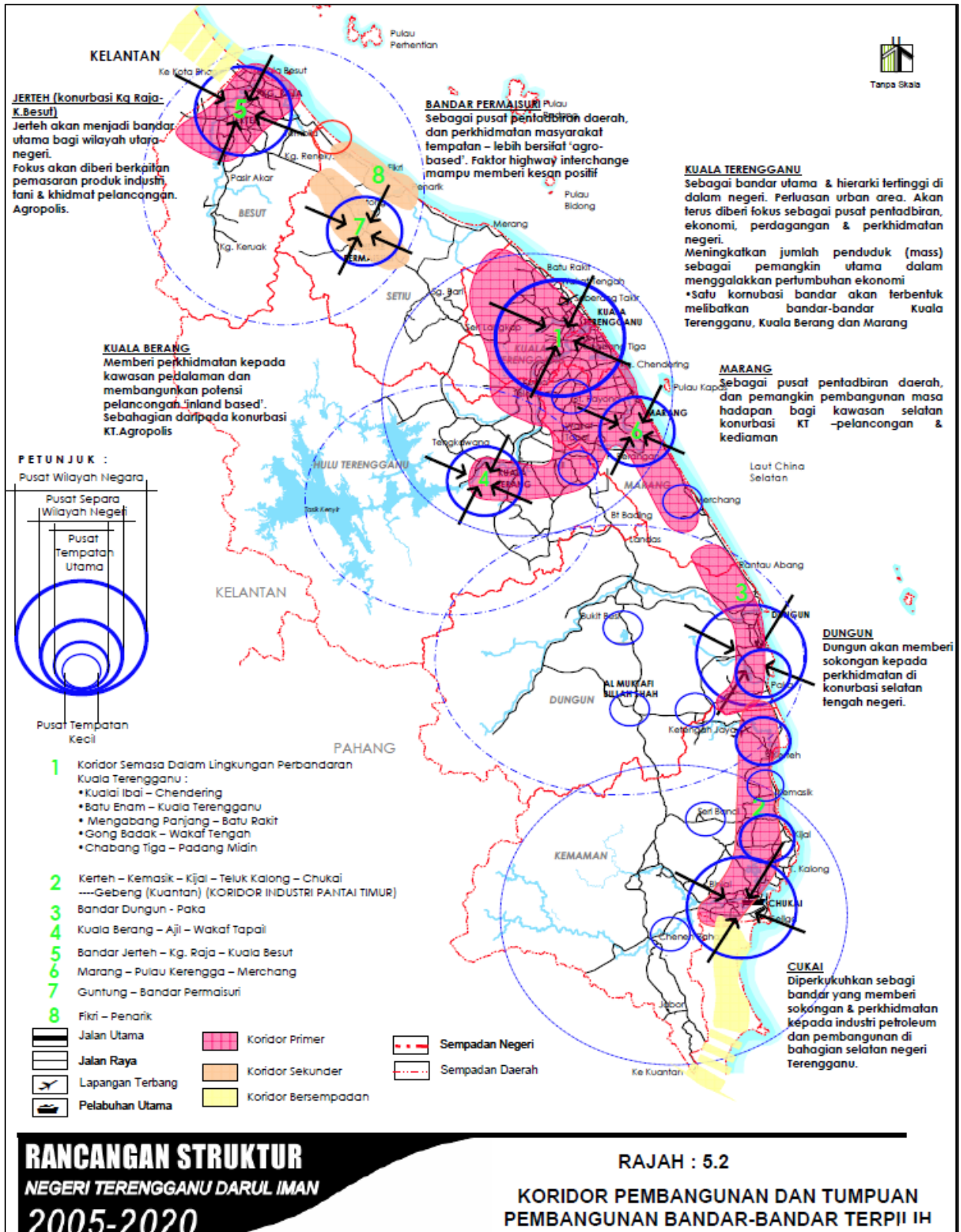


Figure 3.3 Development corridor and selected cities for development (Source: RSN Terengganu).

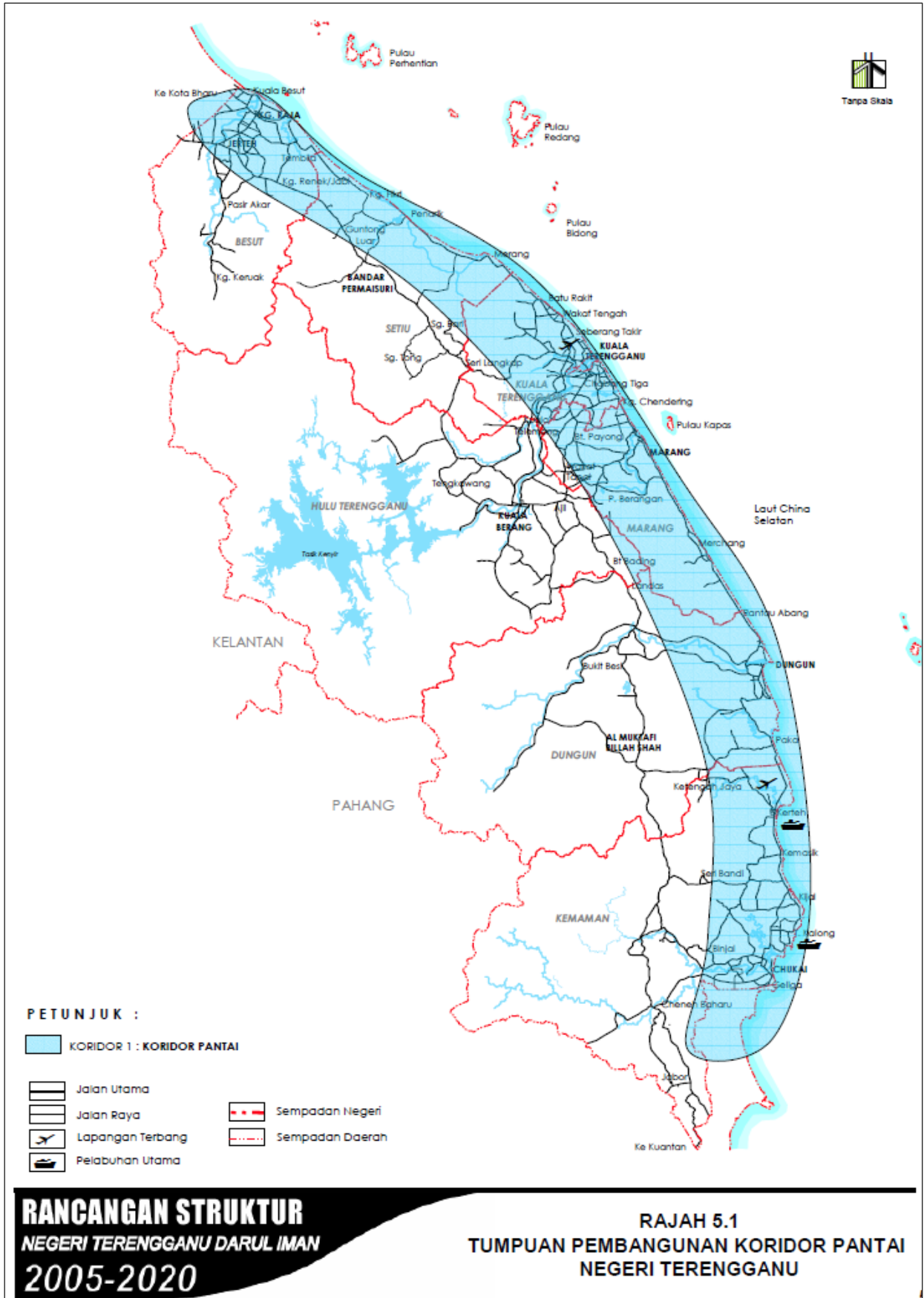


Figure 3.4 Identified coastal corridor for development in Terengganu (Source: RSN Terengganu).