

# Pulau Upeh Suffocated



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Date: 04-01-2023



Pulau Upeh suffocated.

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## 1.0 Preface.

The Department of Environment (DOE) published an environmental impact assessment (EIA) for the reclamation of 100 acres of land for comments on 12 December 2022.

This non-holistic EIA includes the scope of work and its single environmental impact on neighbouring important environmental objects (IEOs) only.

A holistic environmental impact on single IEOs by all the past, present, and future reclamation projects are not discussed in the above-mentioned EIA.

The document 'Pulau Upeh suffocated' takes a different approach. It discusses the impact for IEO Pulau Upeh of all the reclamation completed and to be completed in the past, present and the future.

Unnamed reclaimed land is highlighted in this document. These details are only meant to illustrate the discussion and clarify the location of the images used in this document. For the details used, see appendix 2.

Gratitude to: Mdm. Sam Pui Cheng, Mr. Colin Smith, Mr. Dave Smith

This document is supported by:

S.O.S. Melaka

SungaiProject

The Bendahari

Melaka Policy Club

Mataburung.com

Thank you.  
F.D. van Walsem

## 2.0 Introduction:

The overall land reclamation project on the Melaka coastline is split up into multi small subprojects.

Before the work for a subproject can start, the executor of a single subproject must compile and issue an environmental impact assessment document (EIA), for the acceptance by the Department of Environment (DOE).

Such a non-holistic EIA discusses amongst others, the scope of this subproject, how the work is to be completed and the impact of this single subproject on the bordering environment and Important Environmental Objects (IEO) like Pulau Upeh.

It is common that one single IEO is affected by many reclamation subprojects.

- Each EIA for a single subproject, will recognize the acceptable threats for that IEO.
- These acceptable threats will never be grounds to reject a single EIA.
- The aggregate of all acceptable threats of all subprojects might be instrumental in the destruction of an IEO.

## 2.1 Integral threat for Pulau Upeh.

For Pulau Upeh the integral threat, caused by all the surrounding subprojects will be the formation of thick, large mud banks. These mud banks will suffocate the Island and are exposed at low tide. Eventually the island will be disconnected from the sea for many marine species and humans.

### 3.0 What are mud banks and how these are formed.

Mud banks are expanded thick layers of soft river sediment, accumulated on the seabed.

That seabed must meet three conditions for the formation of mud banks:

1 – There is a sediment rich river estuary in the neighbourhood.

2 – There is tidal movement above the seabed.

3- The seabed is in a shallow bay or cove.



Image 1: At rising tide, sediment rich river water is pushed to the shore line.

Location: Pulau Upeh.

The Melaka shoreline, between Tanjung Kling and The Portuguese Settlement comprises three sediment rich rivers that flow into the sea. These are: Sungai Lereh, Sungai Malim and Sungai Melaka.

At falling tide, the sediment rich river water will flow unobstructed into the Straits, carried away by the tidal currents.

At rising tide, the sediment rich river water is obstructed by the rising seawater. The river water is pushed towards the shoreline (See image 1). When the shore is free from bays and coves, a coastal current will carry the sediment rich river water away.

When there are shallow bays and coves, the river water is pushed into these and becomes stagnant for a couple of hours.

The sediment will accumulate and form a mud bank at the bottom of the bay or cove. This tidal event takes place twice a day, 7 days a week, 365 days a year.



Image 2 - Mud Bank formation in Kampong Pinang Coves

This continuous tidal event can form mud banks as thick as 1 meter in a year. Mud banks become exposed at low tide and are inaccessible for many marine species and humans.

These mud banks might be full of **toxics and heavy metals**.

Above mentioned coves and bays in which the mud banks grow are the results of the countless number of reclamation projects.

Image 3: Huge mud bank in front of the Portuguese settlement and Hatten City. The Portuguese settlement is disconnected from the sea.



#### 4.0 Reclamation projects, affecting Pulau Upeh in the past, present and future.

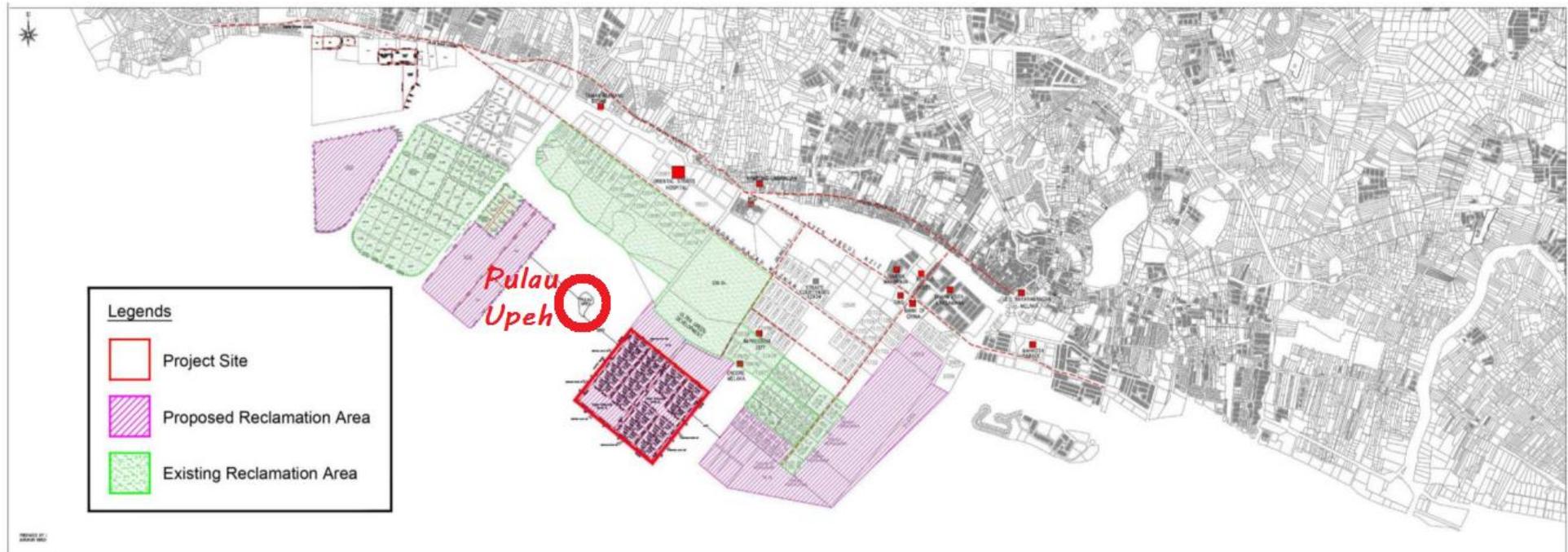


Figure 1.4 Concurrent reclamation projects around project site

Image 4: Page 113 of the (to be updated) EIA for reclamation 300 Acres of land

##### Historical Subprojects (green and white)

- Reclamation Pulau Melaka, Mahkota Land, Gateway, Klebang Land, Shipyard Island, Upeh Land, Pinang Land, Encore Land and Marina Land

##### Present and Future Subprojects (purple)

- 100 Acres of land SW of Encore Land
- 300 Acres of land SW of Encore Land
- Extension of Shipyard Island
- Marina Land, Gateway and M-WEZ

#### 4.1 Present situation at Pulau Upeh around high tide:



Image 5: Current around Pulau Upeh during high tide.

Image Right:

Pulau Upeh, 1 hour before high tide.

The brown sediment rich river water of Sungai Malim flows between the mainland and Pulau Upeh.

Note the very sharp estuarine between sea- and river water. This estuarine will last approximately 2 hours, until high tide.

The sea water pushes the sediment rich river water towards the shoreline by hydraulic pressure.

Image Left:

Three hours before until three hours after high tide, the tidal current flows in a SE direction. Consequently, the sediment rich river water will flow in the same direction between Pulau Upeh and the coastline.

The sediment rich river water will end up in the Sungai Melaka Estuary and the Portuguese Settlement seafront. Sediment will settle out and accumulate there.



Image 6: An estuarine between sea and river water.

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## 4.2 Present situation at Pulau Upeh around low tide:



Image 7: Current around Pulau Upeh during low tide.

Image Right:

Pulau Upeh, 1 hour before low tide.

The brown sediment rich river water flows around Shipyard Island towards the open sea.

There is no estuarine between sea water and river water is visible.

Image Left:

Three hours before until three hours after low tide, the tidal current flows in NW direction.

Consequently, the sediment rich river water is pushed in the same direction around Shipyard Island.

The sediment rich river water will flow towards Tanjung Bruas and Sungai Udang Port.



Image 8: There is no estuarine around low tide.

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### 4.3 Future situation at Pulau Upeh around high tide:



Image 9 – Tidal status, just before high tide around Pulau Upeh

Image Left:

Three hours before until three hours after high tide, the tidal current flows in SE direction.

The sediment rich river water is blocked as it tries to flow out of the created cove. The water is stopped by the newly reclaimed land and the hydraulic pressure.

The river water will be stagnant for considerable time. The sediment will accumulate and forms mud banks all over the cove.

#### Environmental impact of the mud banks:

In no time the cove is filled with river mud to a level above low water neap.

When tidal water levels get under low water neap, these mud banks will be exposed and Pulau Upeh will be inaccessible for humans and many marine species.

River mud is known to contain heavy metals and toxins.

**Pulau Upeh will be suffocated by mud banks. Turtle nesting on this island will stop!**

#### 4.4 Economic impact of the mud banks around Pulau Upeh

Table 7.13 . 2: Total Economic Value of Marine Turtles

		LOW	Medium	High
Indirect use Value: Non Consumptive (Marine tourism attributable to turtles)	Tourism revenue attributable to turtles USD 2014 (USD1=RM3.20)	19,054,204	21	23,408,026
	Value RM 2022 (Inflation 3%, USD1=RM3.20)	98,962,912	110,269,259	121,575,607
	Value RM 2022/nest	109,958.79	122,521.40	135,084.01
	Value adopted in the present study (RM/nest)	12,252.14		
Non-use Value: Existence Value	Value 2014 (USD1-RM3_20)	1,711,737	1,711,737	1,711,737
	value RM 2022 (GDP growth 5%, USD1=RM3.20)	10,368,962	10,368,962	10,368,962
	Value RM 2022/nest	11,521.07	11,521.07	11,521.07

ASPEC/BND(EIA\_MelakaReclamation)/2020

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S2EIA FOR MELAKA RECLAMATION. BANDAR CHAPTER 7 DAERAH MELAKA TENGAH.

(Conservation of marine megafauna)	Value not adopted in the present study (RM/nest)	11,521.07
	Value from CVM study (adopted in the present study (RM/nest))	45,813.31
Total Economic Value/nest		58,065.45

XuV

DAERAH MELAKA TENGAH, MELAKA BANDARAYA BERSEJARAH

Table 7.13.2 in the '100 Acres EIA' quotes a Total Economic Value per turtle nest of RM58,065.45 (\$US 1= RM 3.20)

Corrected for the current value of the US\$ (\$US 1= RM 4.30)

Total economic value of 1 turtle nest = RM 78,025.45

17 new Turtle nests were found in August 2022 over a Period of 10 days, during a turtle survey.

The turtle landing season lasts 90 days. Potential amount of turtle nests in 2022:  $9 * 17 = 153$ .

**Potential Total Economic Value 2022:**  
 $153 * RM 78,025.45 = RM 11,937,893.85$

#### 4.5 Conclusions:

- Pulau Upeh has today already a very high economical potential, although the island is poorly managed and in poor state.
- With a management upgrade its value for tourism, education and job creation can further elevate.
- Upgrading Pulau Upeh to a national or international maritime environmental knowledge center might be economic more attractive than reclamation of 400 acres of land.
- Reclamation of 100+300 Acres of land will destroy the high above-mentioned economical potential of the island.
- For these 400 acres no development is planned yet. No revenue can be expected for the next 10 years.
- Only 10% of all land reclaimed since 1995 is developed.

#### 4.6 Recommendation:

- Reconsider the reclamation of 100 Acres + 300 Acres of land.
- Study first the development of Pulau Upeh into a national or international maritime environmental knowledge center, managed by NGO's.

## 5.0 How to prevent the formation of mud banks around Pulau Upeh:



The formation of mud-banks can easily be prevented.

Lead the source of the mud, sediment rich river water away from the area where it is not wanted.

No accumulation of sediment will then take place. No mud banks are formed.

Options are:

Do not reclaim the 300 acres and 100 acres of land. Then, at high tide the sedimentation rich river waters are not blocked and can flow in a SE direction, beyond Sungai

Melaka Estuary. No accumulation of sediment will take place, no mud banks are formed.

Or:  
Deviate the Sungai Malim River water through a canal between Klebang Land and Shipyard Land.  
Block Sungai Malim from flowing towards Pulau Upeh as soon as possible.  
Extend this canal by means of a dam until the SW embankment of Klebang Land.  
The sediment rich river water will be picked up by the tidal currents in the Strait, far away from the coastline and Pulau Upeh.

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**Appendix 1: Images of mud banks at the Melaka seashores.**

## Locations with mud bank formations:

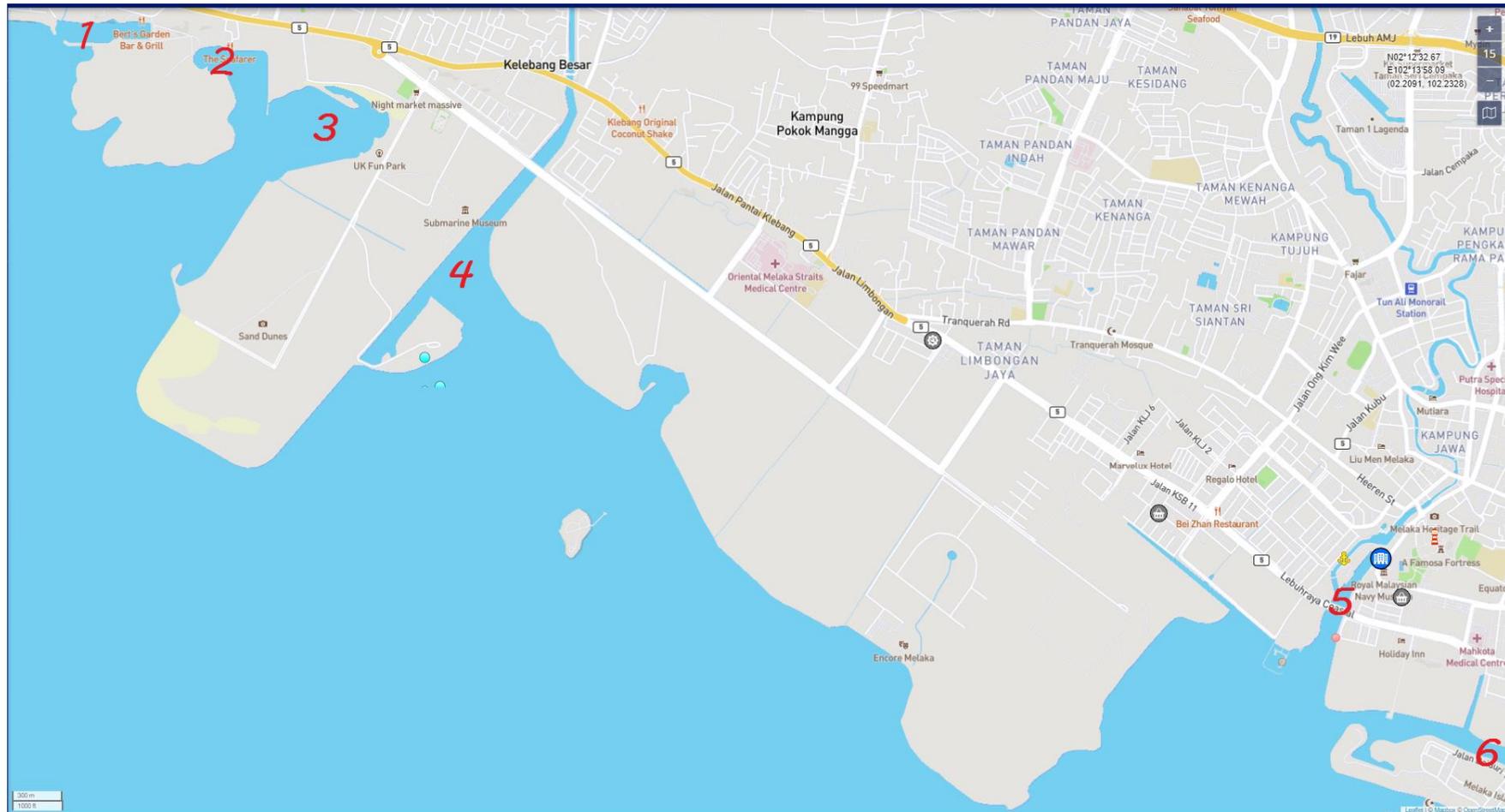


Image A1-1: Locations of mud banks

1 – Kampong Pinang  
2 – Explorer Boating

3 – Klebang Beach  
4 – Sungai Malim Estuary

5-Sungai Melaka Estuary  
6-Hatten and Portuguese S'ment



Image A1-2: Mud bank formation in front of Kampong Pinang.

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Image A1-3: Mud bank between Shipyard Island and Klebang Land. Right, above centre: Sungai Malim

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Image A1-4: Mud bank formation in front of Hatten City and Portuguese square.



Image A1-5: Old abandoned jetty, absorbed by an old mud bank behind Mahkota Hotel

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Appendix 2: Names used in this document for unnamed reclaimed land.

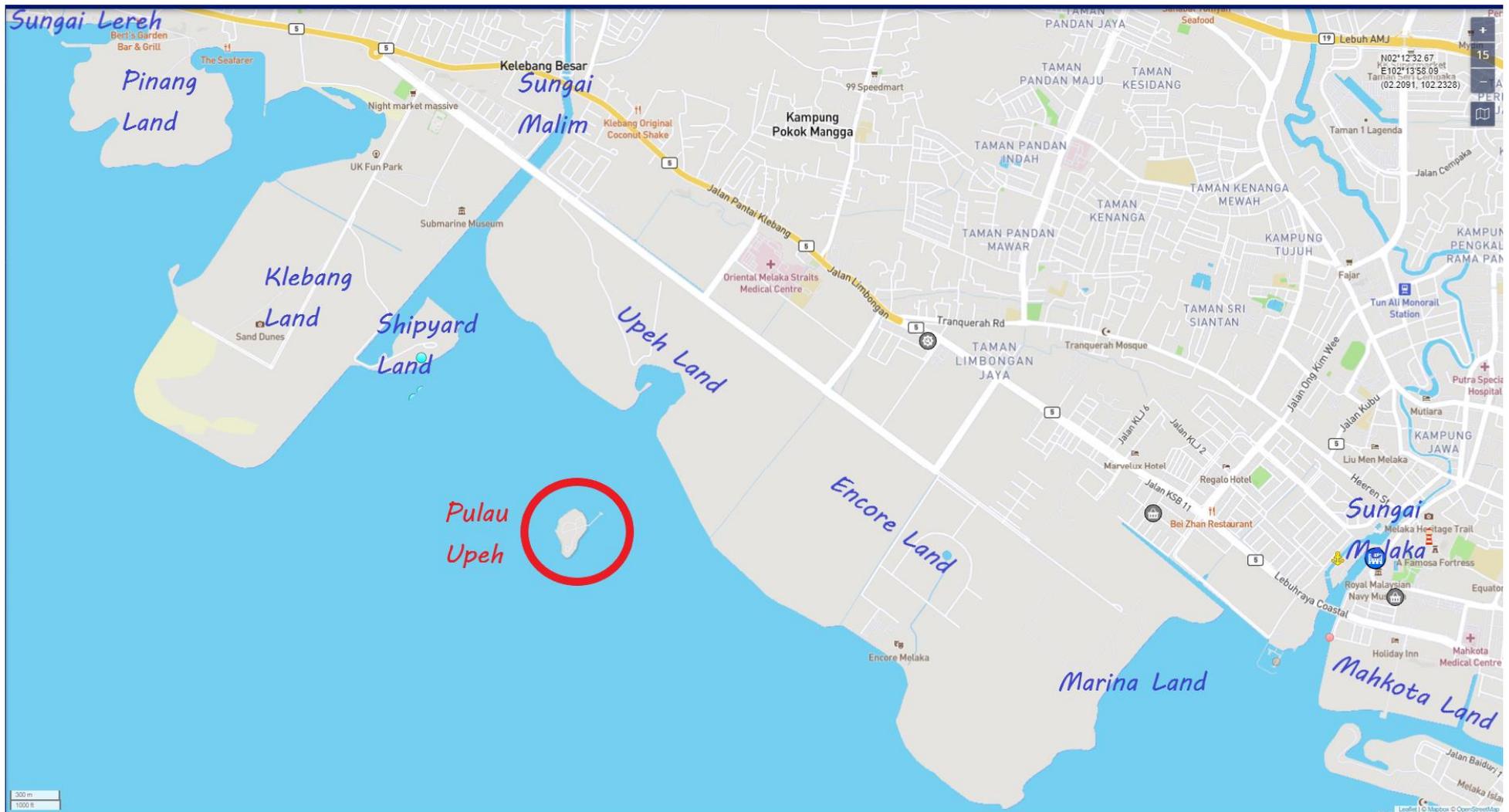


Image A2-1: Names used in this document for unnamed reclaimed land.

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Appendix 3: Situation at Pulau Upeh around high and low tide before 1995 (Before Reclamation)

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## Situation at Pulau Upeh around high and low tide before 1995 (Before Reclamation):



A3-1: Melaka coastline before Reclamation (Source: MarineTraffic.com)  
Marine Navigation Chart Bruas – Pulau Panjang

### Image Right:

Three hours before until three hours after low tide the tidal current flowed in NW direction. A coastal current in the same direction absorbed the sediment rich water from Sungai Lereh, Sungai Malim and Sungai Melaka. There was no stagnant river water. No settling out of sediment took place. Hence: No major mud bank formation.

### Image left:

Three hours before until three hours after high tide, the tidal current flowed in an SE direction. A coastal current in the same direction absorbed the sediment rich water from Sungai Lereh, Sungai Malim and Sungai Melaka. There were no coves. There was no stagnant river water. No settling out of sediment took place. Hence: No major mud bank formation.



A3-2: Melaka coastline before Reclamation (Source: MarineTraffic.com)  
Marine Navigation Chart Bruas – Pulau Panjang