

21. SITE SELECTION

21.1 Planning Aspects

Jambi Port includes three public ports, Talang Duku, Muara Sabak, and Kuala Tungkal (Table 21.1.1). Talang Duku and Muara Sabak are developed along the Batang Hari River, while Kuala Tungkal is located at the river mouth of a different river system, the River Tungkal (Figure 21.1.1). Kuala Tungkal is near the provincial border with Riau and about 120 km away from Jambi, the provincial capital. On the other hand, Talang Duku is just 10 km from Jambi, which makes it an appropriate point of loading/unloading of cargo generated around the provincial capital. Talang Duku has a weakness, though. It can provide a draft of only 2.8-3.5m in a dry season due to the shallow draft in the Kelemak Channel between Simpang and Muara Sabak. Muara Sabak is about 120 km away from Jambi but just over 10 km from the river mouth.

Table 21.1.1 Profiles of the Three Public Ports

Item	Talang Duku	Muara Sabak	Kuala Tungkal
Location ¹⁾	10 km from Jambi, 110 km from the River Mouth	120 km from Jambi, 13 km from the River Mouth	120 km from Jambi, Near the Provincial Border with Riau, 210 km from Batam
District/Municipality	Kota Jambi (Population 416,841 in 2000)	East Tanjung Jabung (Population 190,085 in 2000)	West Tanjung Jabung (Population 206,305 in 2000)
Land Access	Paved two-lane Road (20 minutes' drive from Jambi)	Mostly unpaved Road, Improvement is underway (3 hours' Drive from Jambi)	Paved two-lane Road (3 hour's Drive from Jambi)
Navigational Access	12-14 hours from the River Mouth, Vessels with a Deep Draft need a Tide Operation at the Kelemak	Near the River Mouth of the Batang Hari River	Near the River Mouth of the River Tungkal
Maximum Vessel Draft (m) allowed to enter ²⁾	5.0 (Rainy Season) 2.8-3.5 (Dry Season)	6.5	2-3
Expected Port Functions	Container, General Cargo, CPO, Coal	Container, Rubber, CPO, plywood	Passenger

Note: 1) According to the MOC local office

Since many factories are in operation along the Batang Hari River using it as an artery of the provincial economy, development of a deeper port at Muara Sabak has the potential to greatly improve the province's economic environment. All the three public ports have weakness admittedly, but Muara Sabak can overcome most of its weakness if properly developed (Table 21.1.2).

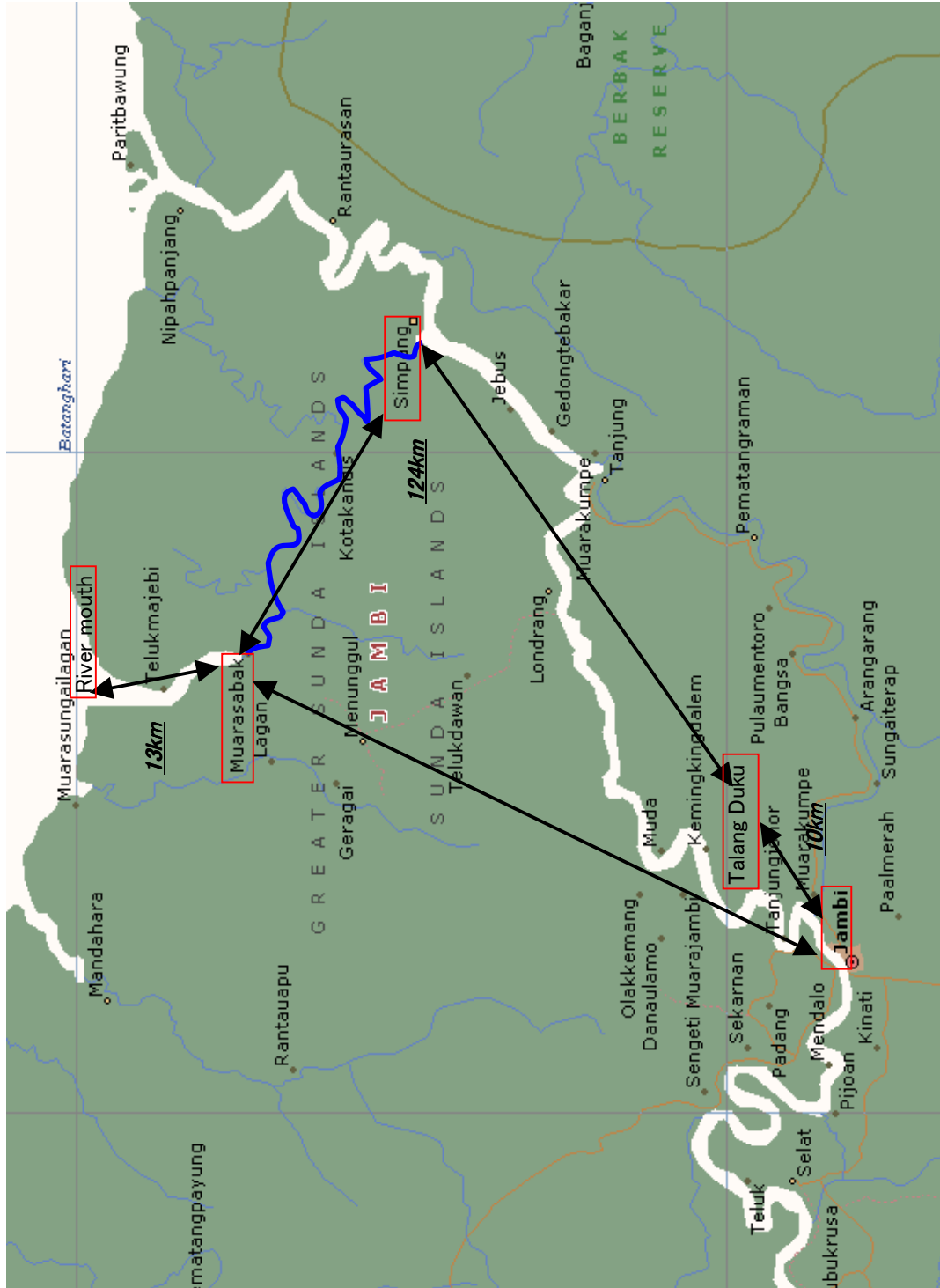


Figure 21.1.1 Jambi and Muara Sabak



Figure 21.1.2 Kuala Tungkal

Table 21.1.2 Strength and Weakness of the Three Public Ports

	Talang Duku	Muara Sabak	Kuala Tungkal
Strength	1)Proximity to the existing port users 2)Established port operation 3)Established facility and equipment	1)Relatively deep draft 2)Large available land area behind the port	1)Proximity to Batam, Bintan, and Singapore 2)Paved road access from Jambi
Weakness	1)Shallow draft 2)Long sailing time from the river mouth 3)Maintenance dredging around the river mouth	1)Unpaved road access from Jambi 2)Lack of equipment and a operator 3)Maintenance dredging around the river mouth	1)Shallow draft 2)Accumulation of private wharves 3)Long distance from the province's economic center

Note: Underlined items are inherent to the port and unlikely to be overcome

Creation of a deep-sea port for common-users is unlikely in Jambi Province as Jambi is classified as a tertiary trunk port for most of the cargo items (See section 8.2.1). A large amount of investment is needed to construct a deep-sea port including an access road. Since a considerable amount of investment is still required to improve the access road to Muara Sabak and to make the port operational, the Study Team recommends that public investment for the port sector should be focused on Talang Duku and Muara Sabak (Table 21.1.3, Figure 21.1.3).

Table 21.1.3 Road Improvement Projects in Jambi Province

Project	Profiles	Costs
Batanghari Bridge 2	1)8.2 km downstream from the existing bridge (Alternative 2) 2)660 m in length 3)Coupled with a new road, it can shorten the distance between Jambi and Muara Sabak from 130 km to 60 km	Rp 52,800 million
Improvement of the Access Road to Muara Sabak	1)Pavement of the existing road 2)7m of surface layer	Rp 65,318 million
Shortcut between Muara Tembesi and Bangko	1)Shorten the distance between Muara Tembesi and Bangko from 148 km to 100 km	Rp 99,000 million

As for Kuala Tungkal, its shallow draft and the long distance from the province's economic centers make a large-scale port development unlikely there. On the other hand, Kuala Tungkal is the nearest port in Jambi Province to Batam, Bintan, and Singapore (Figure 21.1.2). Although Talang Duku is nearest to the province's population center, it takes too much time to sail from there to those destinations. Kuala Tungkal is therefore the most suitable place for a passenger terminal for those destinations.

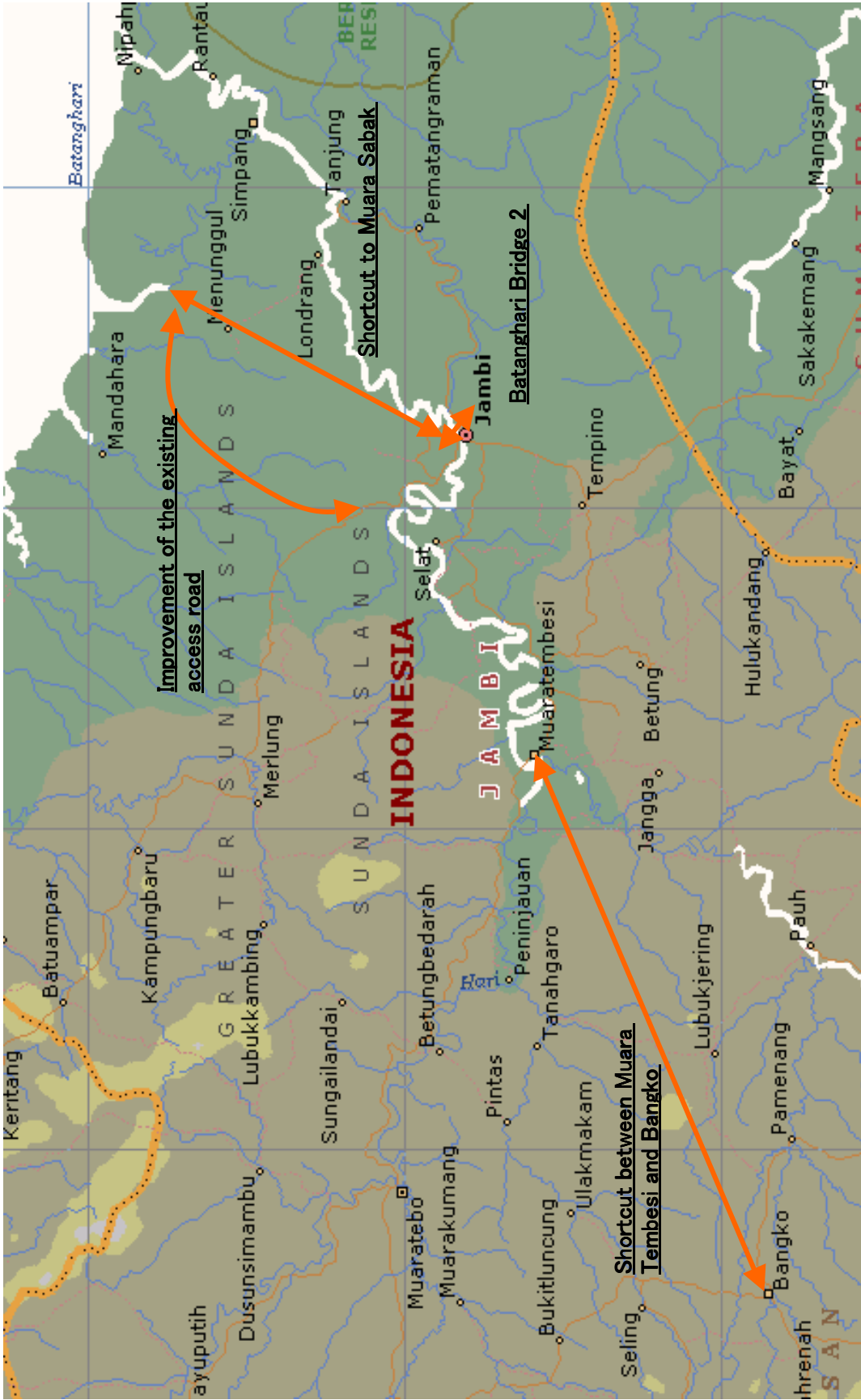


Figure 21.1.3 Road Development Projects relative to Muara Sabak

21.2 Administrative Aspects

21.2.1 Issues arising from Creation of New Jambi Port

(1) Review and Creation of Port Working Area and Port Interest Area

IPC II Jambi Branch Office manages Jambi Port, which is located about 145 km upstream from the mouth of the Batang Hari River. Jambi Port has three areas, which are Talang Duku, Muara Sabak (about 15 km upstream from the river mouth), and Kuala Tungkal (located at the mouth of the Tungkal river). The development of Talang Duku and Muara Sabak started rather recently and quays and yards are already available. The old port facilities in the Jambi city were abandoned after Talang Duku was built in 1997. Now, the old Jambi port is used only for passenger boats and small ships dedicated to local transportation. Jambi ADPEL is responsible for safe navigation in Batang Hari river, while Kuala Tungkal ADPEL is responsible for safe navigation in Tungkal river. In response to the shift in port functions, it is necessary to review the Port Working Area of the old Jambi port, the Talang Duku, and Muara Sabak.

(2) Relocation of Port related Offices in Jambi Port

Talang Duku area and Muara Sabak area are now under construction. IPC II Jambi branch office has already moved to Talang Duku. However, ADPEL office, customs office and other port-related offices still remain in the old Jambi port. In order to increase the efficiency of port administration, those offices should be relocated to Talang Duku or Muara Sabak.

21.3 Engineering Aspects

21.3.1 Talang Duku

(1) Jambi old port

The old port in Jambi City was abandoned in July 1996 and the port function has been moved to the existing Talang Duku location.

According to a port engineer who has served in Jambi Port for over 40 years, the dredging works for the maintenance of harbour basin and navigation channel of Jambi Port were executed only in 1970 and 1972, and there had been no need of dredging in 1960s and before.

Although sedimentation became serious in the Batanghari river channel after 1970s, the expense for the survey and maintenance dredging of the river channel has not been available. From observation, the riverbed has become shallower at the rate of 15 cm/year during the period from the beginning of 1970s to the present.

The sedimentation in the river channel after 1970s can be attributed to the deforestation in the upper river basin of Batanghari River and the consequent erosion of the surface soil.

It is said that eleven shallow points exist along the river channel of Batanghari River from the river mouth to Jambi (refer to Figure 21.3.1). The riverbed has become shallower up to LWS -2.5 to -3 m in those points, and vessels navigating the river channel upstream to Jambi are obliged to wait for high tide.

(2) Talang Duku

Talang Duku is located 155 km upstream from the river mouth and 9 km downstream from the Jambi old port. Although the riverbed of navigation channel at Talang Duku is maintained to LWS -5 to -7 m at present, a sandbar is growing on the opposite left side of the channel.

Due to the shallow water and the meandering of the river channel, the maximum size of the navigable vessels are set by Navigation rules as L_{OA} : 75 m, Maximum Draught: 5.0 m. From the river mouth, vessels take about 15 hours to get to Talang Duku.

Both port sites, Jambi and Talang Duku, have their port facilities on the outer side (the right bank side) of the meandering river channel.

The river flow has greater velocity at the outer side of the meandering channel than the inner side of the channel. The erosion of riverbed and riverbank take place easier at the outer side of the meander, while sandbar grows at the inner side of the meander.

The locations and geophysical conditions of Talang Duku and the Jambi old port have

similarities, and it is believed inevitable that the problem of sedimentation in the navigation channel at Talang Duku will take place in the future.

If the deforestation and the causes of the erosion of the surface soil in the river basin are not resolved, the following is recommended for the future direction of the water transportation in Batanghari River.

- To continue the follow-up observation of the riverbed changes by the periodical bathymetric survey of the river channel,
- To execute the maintenance dredging work of the navigation channel so that shallow draught vessels (such as barges) are navigable,
- To move the major port functions of river transport to Muara Sabak.

(3) Existing Port Facilities

Due to the wide range of water level fluctuation (6 to 7 m between rainy season and dry season) of Batanghari River at Talang Duku, the pontoon type wharf was adopted for the existing quay structures.

For the future expansion, however, the selection of the quay structure should be carefully examined.

Floating pontoon will not be suitable as a foundation of large size wharf crane or mobile crane for the cargo handling, while tall elevated fixed deck on piling will have difficulty for ships handling cargo by their own ship gear especially during dry season.

Pontoon type structure will not be effective for quick container circulation between wharf and container yard because of the slope of access bridges and the detached pier layout.

21.3.2 Muara Sabak

Muara Sabak is located 25 km from the river mouth of Batanghari River. Although a detached pier of open concrete deck on concrete piles exists on the left bank of the river, the pier has not been utilized as a port facility because no supply services or utility facilities are available at present.

There is no meander with large curvature on the river channel from the river mouth to Muara Sabak. Since the navigation channel is maintained by dredging with water depth of 6 – 7 m, the maximum size of the navigable vessels are set by Navigation rules as L_{OA} : 115 m, Maximum Draught: 6.5 m.

In comparison with Talang Duku, the distance from the river mouth is shorter and larger vessels can be put into service in Muara Sabak.

The tidal range at Muara Sabak is about 3.5 m, and it will not be necessary to consider a particular structure, such as pontoon-type of the wharf, to cope with the tidal range,

unlike Talang Duku.

The port development at Muara Sabak is suitable for the construction of a container terminal connected with the road and transportation where the time regularity and rapid service are required.

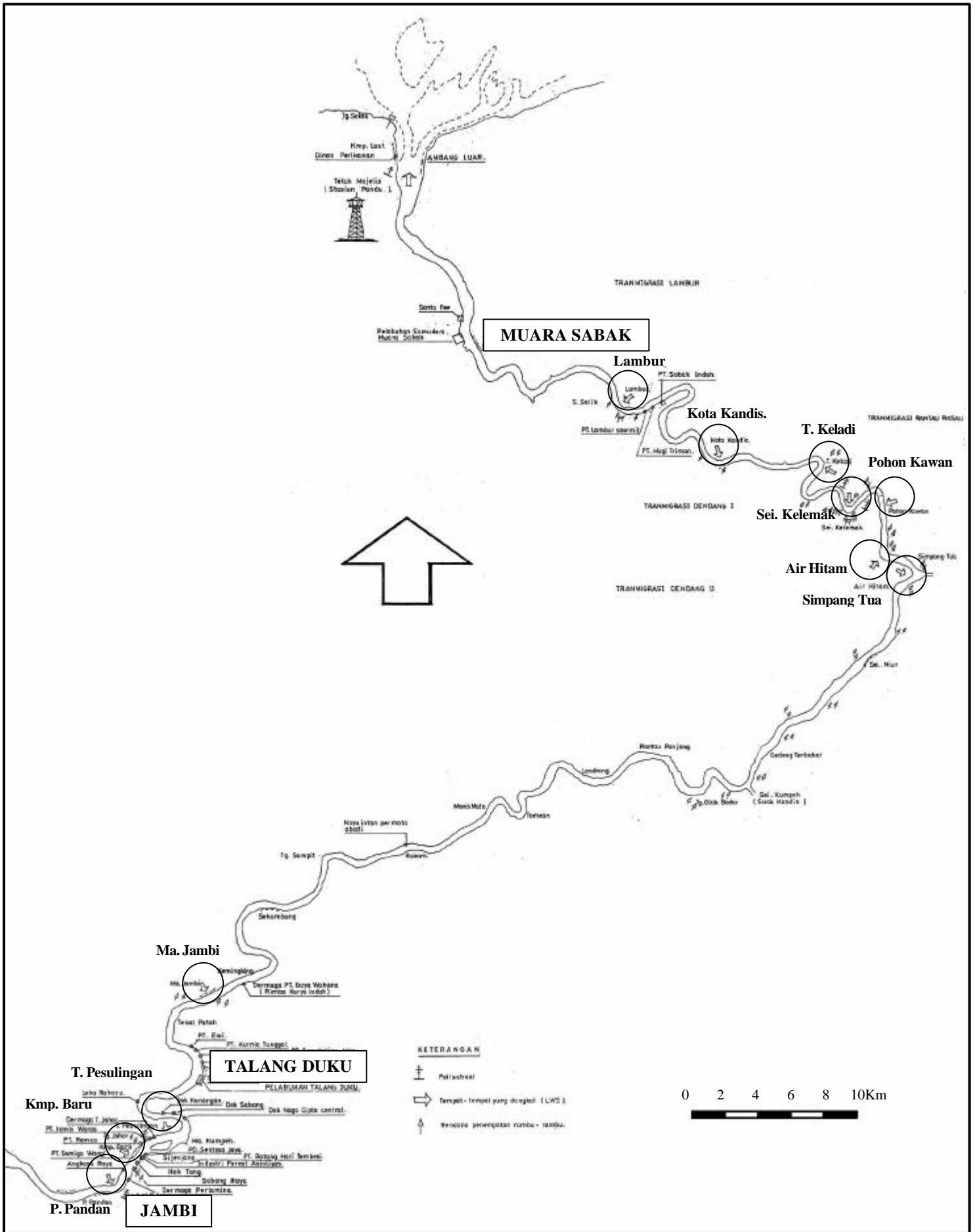


Figure 21. 3. 1 Shallow Points along Batanghari River