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REDESIGN OF THE UJUNG BATU FISH AUCTION HUB (TPI) IN JEPARA

TUMATA KALINYAMAT

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Auction Hub (TPI) in Jepara

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Yogyakarta, 15 June 2026



Farash Diva Larasati Ekanto

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TITLE CLARITY

TITLE

TUMATA KALINYAMAT

SUB TITLE

Redesign of the Ujung Batu Fish Auction Hub (TPI)
in Jepara

EMPHASIS

The word "Tumata," meaning "organized," reflects the project's main idea of restructuring the spatial system, activities, and the TPI area to make it more organized and efficient. The word "Kalinyamat" connects the project to Jepara's maritime history as the region's local identity. The term "Redesign" indicates that the design focuses on reorganizing the still-active area without changing its primary function as a Fish Auction Place.

Meanwhile, the mention of "TPI Ujung Batu Jepara" clarifies the location and object of the design. Overall, this title illustrates the effort to create a more organized, adaptive, and integrated fisheries area with the character of the Jepara coast.

DEFINITION

TUMATA	Comes from the Javanese language Tumata which means orderly, structured, regular, not chaotic
KALINYAMAT	Placing this project as a continuation of the port tradition at the Ujung Batu TPI location, which is called Kalinyamat Port.
REDESIGN	Redesign of existing areas that are still active while maintaining the main function of TPI
UJUNG BATU	The name of the area where TPI Ujung Batu is located
FISH AUCTION HUB (TPI)	A fish auction place that functions in an integrated manner with supporting facilities
JEPARA	As a coastal area with fisheries potential and maritime traditions which are the basis for the development of the Ujung Batu TPI.

ABSTRACT

The Ujung Batu Fish Auction Hub (TPI) in Jepara is a fisheries area that serves as a center for landing, auctioning, processing, and distribution of fishery products. However, this area still faces various problems, such as circulation conflicts, limited supporting facilities, and a suboptimal relationship between fisheries activities and the coastal economy. Furthermore, coastal conditions influenced by sedimentation, tides, and ocean weather also impact the area's operations. This project aims to redesign the Ujung Batu Fish Farm (TPI) through an Adaptive Architecture approach.

The design concept was developed through the arrangement of water zones (Water Zone Arrangement) and the organization of the flow of fisheries activities from sea to land (Fisheries Workflow: Sea–Land). The resulting design is a more integrated fisheries area with the provision of boat mooring areas, boat maintenance facilities, separation of operational and public circulation, and integration of fisheries, MSMEs, and public space functions. This design is expected to improve operational efficiency, strengthen the coastal economy, and create an area that adapts to the dynamics of the coastal environment.

Keywords: TPI Redesign, Adaptive Architecture, Fisheries Area, Fisheries Workflow, Jepara.

1 INTRODUCTION



1.1 BACKGROUND

1.1.1 DESIGN PREMISE

The redesign of the Ujung Batu Jepara Fish Auction (TPI) is based on the understanding that the TPI area is an active fisheries infrastructure that plays a vital role in the coastal economic system. Therefore, its primary function as a fish auction site does not need to be changed, but rather strengthened through a reorganization of its space and working systems. This design premise places the waterfront as a central element in the design, applying a waterfront architecture approach, where the relationship between water and land activities is designed in an integrated and functional manner. The design aims to establish an efficient fisheries system through auction, processing, trading, and distribution channels, directly connected to the port basin as a parking area for fishing boats.

By utilizing the port basin as the primary workspace for fishermen, the design responds to coastal environmental dynamics such as siltation, tides, and extreme weather, while simultaneously mitigating circulation conflicts between vessels, logistics, and visitors. Through a clear arrangement of building mass, circulation, and zoning, this redesign aims to improve the operational quality of the TPI, the comfort of fishermen, and the visibility of the area as a center of Jepara's coastal fisheries activity.



Figure 1.1 Ujung Batu Jepara
Source: Author, 2025

1.1 BACKGROUND

1.1.2 COASTAL CITY



Figure 1.2 Jepara

Source: Google.com, 2025

A coastal city is a city located in a coastal area and has a direct relationship with the sea, both ecologically, socially, and economically. Coastal cities typically rely on activities such as fishing, maritime trade, tourism, and sea transportation, and serve as centers of interaction between land and ocean systems. According to the World Bank (2019), coastal cities are defined as "urban areas located adjacent to coastlines, whose economic, social, and environmental systems are strongly influenced by marine-coastal dynamics." Meanwhile, research by Neumann et al. (2015) in *Nature Climate Change* states that coastal cities are areas that function importantly as global economic centers but are highly vulnerable to environmental changes such as sea-level rise, tidal flooding, erosion, and coastal storms.

Another study by Hinrichsen (1998) explains that coastal cities are urban areas affected by migration flows, sea-based economic growth, and ecological pressures, thus requiring spatial planning that is sensitive to coastal dynamics. Thus, a coastal city is not simply a city located on the seashore, but a complex urban ecosystem defined by the intensive interaction between the coastal environment and human activities.

1.1 BACKGROUND

1.1.3 UJUNG BATU AS FISHERIES AREA

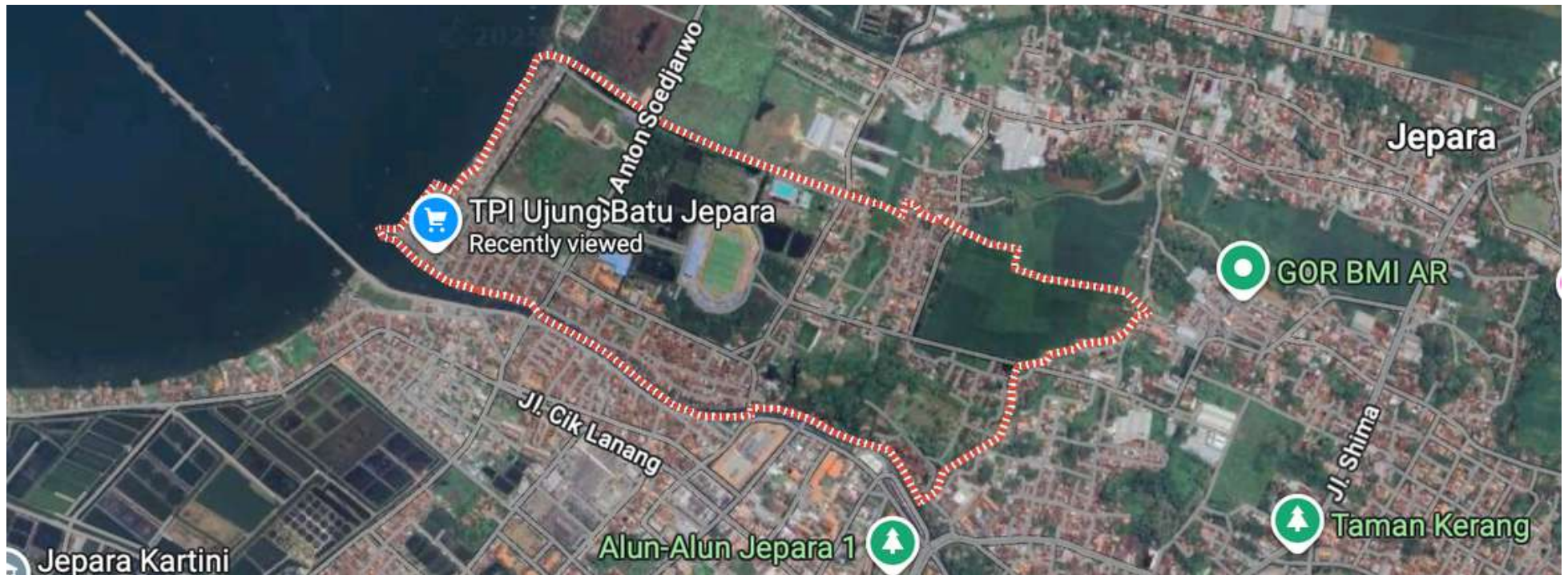


Figure 1.3 Ujung Batu Map

Source: Google maps, 2025

Ujung Batu is a coastal area in Jepara that has long served as a center for capture fisheries activities. This area has direct access to the fish-rich Java Sea, making it a strategic location for fishermen to anchor, load and unload their vessels, and distribute their catch to local and regional markets. This function aligns with a study of fishing ports in Indonesia, which stated that they are "the main nodes in the fisheries supply chain connecting fish capture, distribution, and marketing activities" (Susanto & Yulianto, 2021 Journal of Fisheries Sciences).

Furthermore, a study by Nugroho et al. (2023) showed that coastal areas with fish landing facilities such as fish landing facilities (TPI) generally develop into economic centers for coastal communities because they

serve as gathering places for fishermen, traders, MSMEs, and processing industries. The existence of the Ujung Batu TPI itself strengthens the area's identity as an active fishing area, as it serves as a formal space for recording, weighing, auctioning, and distributing catches.

1.1 BACKGROUND

1.1.4 FISH AUCTION HUB

A Fish Auction Hub (TPI) is an official facility that serves as a transaction and distribution center for fishermen's catches, typically located at ports or fish landing sites. According to the Directory of Fisheries Companies, Fishing Ports, and Fish Auction Places by the Ministry of Maritime Affairs and Fisheries, a TPI is a place where fish auctions or direct sales occur in buildings that have regulations and standardized auction facilities (KKP, 2016). TPI plays a strategic role as "an alternative marketing center that improves fishermen's bargaining position and income through a transparent auction system" (Faizi, 2022).

Furthermore, research on the Gaung TPI in Padang shows that its effectiveness is highly dependent on the quality of supporting facilities such as loading and unloading areas, sanitation, and the cold chain, as inadequate facilities hamper the efficiency of the fish distribution chain (Ismet et al., 2019). Thus, conceptually, a TPI is not simply a place for fish transactions, but a crucial node in the coastal economic system that connects fishermen, traders, and markets in a structured manner.



Figure 1.1 Ujung Batu Jepara
Source: Author, 2025

1.1 BACKGROUND

1.1.5 AUCTION HUBS IN JEPARA

1. TPI Ujung Batu Jepara (decided project)



Figure 1.4 TPI Ujung Batu
Source: Google maps perspective, 2025

Location: Ujungbatu, Jobokuto, Jepara

Activity: Active, center of Jepara auction activity.

Distribution scale: Regency, (Jepara, Kudus, Pati, Demak).

Existing condition: The buildings are aging, some areas are damp and muddy, drainage is poor, the building needs revitalization because it is not able to accommodate the current level of activity.

2. TPI Kedungmalang



Figure 1.6 TPI Kedung Malang
Source: Google maps perspective, 2025



Figure 1.7 TPI Kedung Malang
Source: Google maps, 2025



Figure 1.5 TPI Ujung Batu
Source: Google maps, 2025

Characteristic:

- Serves as a hub for large-scale fish auctions.
- Supports the economy of Jepara's fishermen.
- Frequently experiencing overcrowding, spatial conflicts, and declining infrastructure, it has become a government focus for revitalization.
- Strategically located near the center of Jepara.

Location: Kedungmalang, Kedung, Jepara

Activity: Active, regular auction activities.

Distribution scale: Inter-district (Kedung, Jepara City, North Demak).

Existing condition: Was reported that it had suffered quite severe damage due to wave abrasion, especially to the pier and its supporting facilities.

Characteristic:

- A fisheries center in the southern region of Jepara.
- Production is quite large, with small to medium sized fishing boat.
- It serves as a distribution center for fish to markets in Demak and southern Jepara.

1.1 BACKGROUND

3. TPI Mlonggo



Figure 1.8 TPI Mlonggo
Source: Author, 2025



Figure 1.9 TPI Mlonggo
Source: Google maps, 2025

Location: Jambu, Mlonggo, Jepara

Activity: Active, not in a big scale

Distribution scale: Inter-district (Mlonggo, Bangsri, Keling).

Existing condition: Buildings are often damaged, especially the docks and shelter areas, some even collapse.

4. TPI Demaan



Figure 1.10 TPI Demaan
Source: Author, 2025



Figure 1.11 TPI Demaan
Source: Google maps, 2025

Location: Demaan, Jepara

Activity: Not active, auction activities change into regular buying and selling activities

Distribution scale: No distribution

Existing condition: Old building, many facilities are not functioning.

Characteristic:

- Located near the coastal settlements of Jepara City.
- It is no longer active as an official auction site.
- The land is used primarily for fishing and small-scale trading.

1.1 BACKGROUND

5. TPI Bondo



Figure 1.12 TPI Bondo

Source: Google Maps Perspective, 2025



Figure 1.13 TPI Bondo

Source: Google maps, 2025

Location: Bondo, Bangsri, Jepara

Activity: Active, not in a big scale

Distribution scale: Local, between villages in Bangsri/Bondo.

Existing condition: Very simple, minimum facilities.

Characteristic:

- Located on the coast of Bondo, northern Jepara.
- There's a lot of traditional fishing activity, but no official auction activity.
- It's likely more active in the needs of the local community.

6. TPI Kedung Mutih



Figure 1.14 TPI Kedung Mutih

Source: Google Maps Perspective, 2025



Figure 1.15 TPI Kedung Mutih

Source: Google Maps, 2025

Location: Panggung, Kedung, Jepara

Activity: Not active

Distribution scale: No distribution activity

Existing condition: has been converted into a public parking area

Characteristics:

- Located near the coastal area of Jepara city.
- No production data is available.
- The TPI ceased operations due to the dominance of the TPI Ujung Batu in the central region.

1.1 BACKGROUND

7. TPI Bayuran



Figure 1.16 TPI Bayuran

Source: Author, 2025



Figure 1.17 TPI Bayuran

Source: Google Maps, 2025

Location: Tubanan, Kembang, Jepara

Activity: Not active

Distribution scale: No distribution

Existing condition: Damage, cannot be functioned

Characteristic:

- Located in the coastal area of Kembang near the Demak.
- It's in an area with many fish ponds and small-scale fishing.
- Auction activities have ceased.

8. TPI Bandungharjo



Figure 1.18 TPI Bandungharjo

Source: Google Maps Perspective, 2025



Figure 1.19 TPI Bandungharjo

Source: Google Maps, 2025

Location: Bandungharjo, Donorojo, Jepara

Activity: Very low, auctions are almost non-existent

Distribution scale: Local (village level)

Existing condition: Damage, cannot be functioned

Characteristic:

- Located in the westernmost region of Jepara.
- Fishing activity exists, but tends to be small.
- There are almost no records of formal auctions; sales are usually to collectors.

1.1 BACKGROUND

1.1.6 TPI UJUNG BATU

1.1.6.1 Site & Surrounding Existing

Ujung Batu Fish Auction (TPI) is one of Jepara's most important fisheries hubs, serving as the primary landing, auction, and distribution location. This area hosts economic transactions, the movement of ships and distribution activities. Its role is not only as a place for buying and selling fish, but also as a coastal economic hub that supports the livelihoods of fishermen and surrounding MSMEs.

It has strategic location, on the waterfront and proximity to the city center makes the TPI Ujung Batu easily accessible to both fishermen, traders, and visitors. The current Ujung Batu TPI building is an open-air structure primarily used as a fish auction space. However, its existing condition presents various problems. Cleanliness is limited to the interior of the building, while the exterior often appears shabby and untidy.

The available dock serves as a parking space for fishing boats. Furthermore, supporting facilities such as storage warehouses, cold storage, or fish containers are lacking, hampering the efficient distribution of marine products.

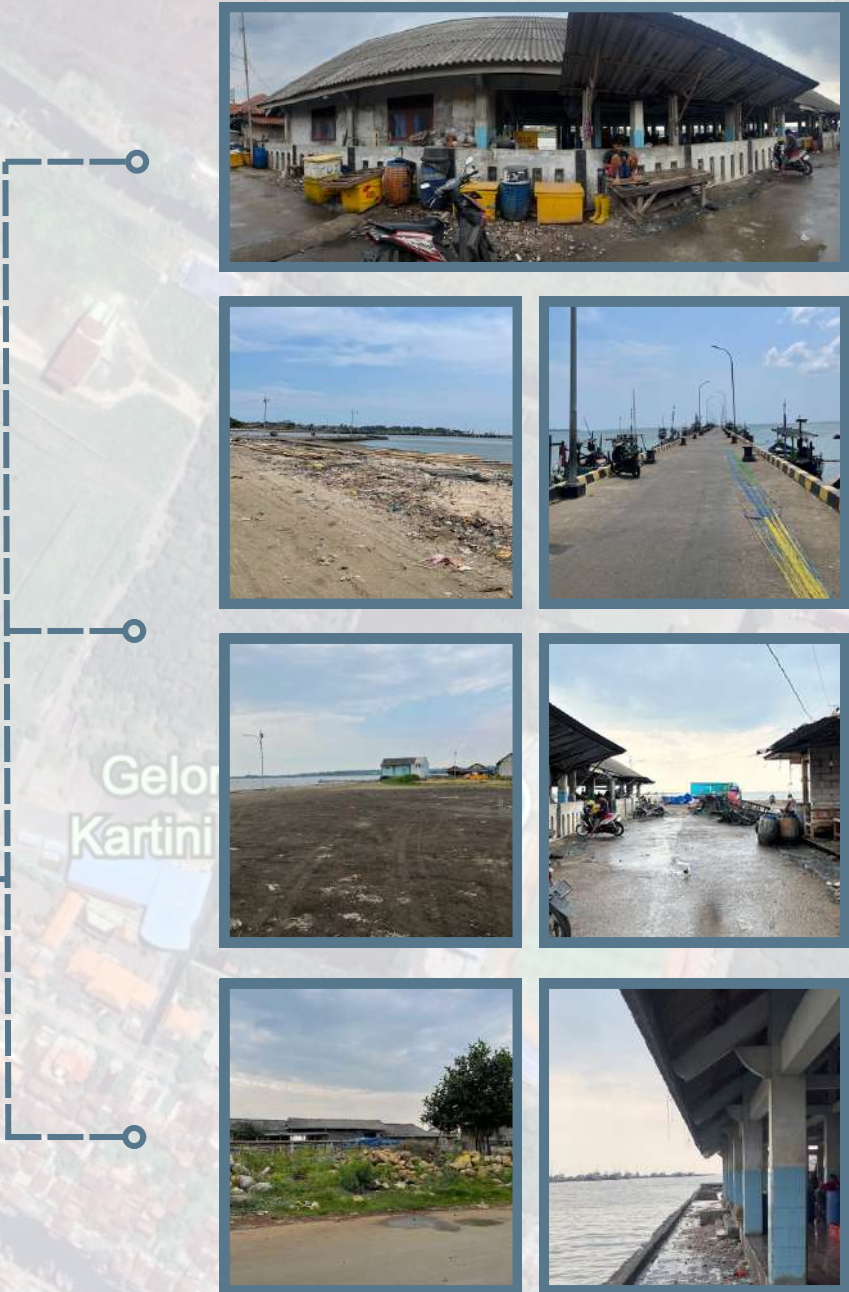


Figure 1.20 TPI Ujung Batu Overall Details
Source: Author, 2025

The activity, which continues from early morning until midday, demonstrates the crucial role of the TPI Ujung Batu in maintaining the economic sustainability of coastal communities. Besides serving as an auction venue, this area also serves as a social and economic hub for fishermen, traders, and MSMEs that depend on the TPI.

1.1 BACKGROUND

1.1.6.2 TPI Operating Hours

Fishermen's Work Patterns

- Fish fishermen: Focus on catching, loading, and unloading, and auctioning in the morning.
- Clamp fishermen: More flexible activities, some directly leading to processing or distribution.
- Seaweed fishermen: More focused on post-catch handling processes such as drying and packaging.

1. Fish Fisherman

00:00 PM - 06:00 PM

- Ship Departure: 00.00 PM – 05.00 AM
- Ship Arrival: 4:00 AM – 06:00 AM

2. Seaweed Fisherman

5:00 AM - 5:00 PM WIB

- Ship Departure: 05:00 AM – 06:00 AM
- Ship Arrival: 04:00 PM – 05:00 PM

3. Clamp Fisherman

5:00 AM - 6:00 AM WIB to

- Ship Departure: 05:00 AM – 06:00 AM
- Ship Arrival: 05:00 PM – 06:00 PM

Shifting System Conclusion

12:00 AM – 6:00 AM WIB → The pier is dominated by fish fishermen.

5:00 AM – 10:00 AM WIB → The pier begins to be used by shellfish and seaweed fishermen.

9:00 AM – 10:00 AM WIB → Shellfish and seaweed fishermen return to the TPI area in shifts.

MSMEs Activities

The UMKM process occurs from afternoon to evening, and applies to all products.



Figure 1.21 TPI Ujung Batu Details
(auction building)

Source: Author, 2025

1.1 BACKGROUND

1.1.6.3 Fisherman Operating Hours

Fish Fisherman

Activity Stage	Time	Type of Activity	Main Location
At Sea	00:00 PM – 04:00 / 05:00 AM	Fish catching	Sea
Ship Arrival	4:00 AM – 06:00 AM	Fish loading and unloading	Loading and unloading dock
Arranging the fish	04:00 AM – 06:00 AM	Sorting and weighing	Fish staging area
Aucton	06:00 AM – 01:00 PM	Auction transaction	Auction Hall
Distribution	08:00 AM – 04:00 PM	Fish distribution	Distribution area, distribution parking
MSME / UMKM Activities	09:00 AM – 10:00 PM	Product sale	UMKM Kiosks

Table 1.1 Fish Fisherman operational hour
Source: Author, 2025

1.1 BACKGROUND

Seaweed Fisherman

Activity Stage	Time	Type of Activity	Main Location
Ship Departure	05:00 AM – 06:00 AM	Heading to the seaweed cultivation site	Pier basin
Cultivation/Harvest	06:00 AM – 09:00 AM	Cultivation collection	Seaweed cultivation area
Washing and sorting	10:30 AM – 01:00 PM	Cleaning and sorting seaweed	Seaweed cultivation area
Drying	11:00 AM – 04:00 PM	Seaweed drying	Drying area
Distribution	03:00 PM – 06:00 PM	Seaweed distribution to market	Seaweed cultivation area
MSME / UMKM Activities	09:00 AM – 10:00 PM	Product sale	UMKM Kiosks

Table 1.2 Seaweed Fisherman operational hour
Source: Author, 2025

1.1 BACKGROUND

Clamp Fisherman

Activity Stage	Time	Type of Activity	Main Location
Ship Departure	05:00 AM – 06:00 AM	Heading to the Clamp cultivation site	Pier basin
Clamp harvest	06:00 AM – 09:00 AM	Clamp collection	Clamp cultivation area
Washing and sorting	09:00 AM – 12:00 PM	Separating clamp by size and quality	Clamp cultivation area
Distribution	12:00 PM – 05:00 PM	Clamp distribution to market	Market
Ship Arrival	05:00 PM – 06:00 PM	Heading to TPI Ujung Batu	Pier basin
MSME / UMKM Activities	09:00 AM – 10:00 PM	Product sale	UMKM Kiosks

Table 1.3 Clamp Fisherman operational hour
Source: Author, 2025

1.1 BACKGROUND

1.1.7 WHY TPI UJUNG BATU NEEDS TO BE REDESIGN

1.1.7.1 Proposal for the Ministry of Maritime Affairs and Fisheries

The Jepara Regency Fisheries Service (Dinas Perikanan Kabupaten Jepara) emphasized that the fisheries sector plays a crucial role in increasing production, improving public welfare, and providing employment. However, the capacity and quality of existing infrastructure are insufficient to optimally support fisheries activities. Facilities such as loading and unloading areas, storage, processing, and marketing are still underdeveloped and unable to meet the needs of the growing fisheries industry.

Much of Jepara's marine and fisheries potential remains underutilized due to limited infrastructure. The Jepara Regency Government, through its marine and fisheries development program, has identified the urgency of revitalization to increase competitiveness, increase production efficiency, and support the economy of coastal communities. Regional budget constraints also reinforce the need for a more effective and comprehensive restructuring design to sustainably renew, reorganize, and revitalize fisheries facilities.



Hal yang menjadi prioritas saat ini adalah tercukupinya kebutuhan sarana dan prasarana untuk kegiatan perikanan. Untuk itu perlu dilakukan peningkatan dan penataan sarana dan prasarana perikanan. Pemenuhan kebutuhan sarana dan prasarana untuk pengembangan sektor kelautan dan perikanan membutuhkan biaya yang besar, tetapi Anggaran yang dimiliki oleh Pemerintah Kabupaten Jepara sangat terbatas karena harus juga memenuhi kebutuhan pengembangan di sektor lain. Untuk itu diperlukan sinergi dari Pemerintah pusat dalam hal ini Kementerian Kelautan dan Perikanan terutama dalam pemenuhan anggaran pembiayaan.

2. Potensi Sektor Perikanan di Kabupaten Jepara

2.1. Perikanan Tangkap

1. Jumlah armada kapal/perahu 3.190

2. Jumlah Nelayan 8.542 orang

3. Produksi Ikan Laut 9.183.113 Kg dengan nilai produksi Rp 117.307.422.000

2.2. Perikanan Budidaya

1. Luas Budidaya Air Payau (Tambak) 1.265,41 Ha.

2. Produksi Tambak 14.829,14 ton

3. Jumlah Pembudidaya Air Tawar 1.473 orang

4. Luas lahan Budidaya air tawar 33.110 m2

5. Produksi budidaya air tawar 6.459,83 ton.

6. Produksi budidaya numpuk laut 19.599,24 ton.

2.3. Potensi Garam Rakyat

1. Luas lahan tambak garam 504,5 Ha.

2. Jumlah Petambak garam 496 orang

3. Produksi garam rakyat 22.789,04 ton

2.4. Pengolahan Hasil Perikanan

1. Jumlah Unit Pengolahan Ikan 1.312 unit

2. Jumlah Pemasar hasil perikanan 2.862 orang

3. Permasalahan Yang Dihadapi

3.1. Masih terdapat sarana prasarana kelautan dan perikanan yang belum sepenuhnya terpenuhi sehingga kegiatan usaha perikanan belum terlaksana secara optimal.

3.2. Belum tertatanya sarana prasarana kelautan dan perikanan.

4. Upaya Pemecahan Masalah

4.1. Peningkatan sarana prasarana perikanan.

4.2. Rehabilitasi sarana dan prasarana perikanan.

4.3. Penataan sarana dan prasarana perikanan.

4.4. Pelaksanaan kegiatan perikanan untuk memberdayakan masyarakat

I. PENDAHULUAN

1. Latar Belakang

Dalam rangka upaya peningkatan produksi perikanan dan kesejahteraan masyarakat, Pemerintah Kabupaten Jepara mempunyai program yang diarahkan untuk menangani permasalahan sarana dan prasarana perikanan. Salah satu program yang direncanakan adalah dengan kegiatan pembangunan sarana prasarana kelautan dan perikanan.

Program Pembangunan Kelautan dan Perikanan diarahkan dalam rangka memacu pembangunan dan pengembangan usaha perikanan yang maju, produktif dan berdaya saing tinggi sebagai bagian dari upaya untuk membangun perikanan yang berkelanjutan dan terarah.

Sumberdaya perikanan yang sangat besar dan belum sepenuhnya dimanfaatkan, merupakan modal dasar untuk membangun dan berkembang, utamanya untuk membangun daya saing dalam menghadapi era pasar global dan industrialisasi. Pembangunan perikanan diharapkan mampu mendayagunakan besarnya sumberdaya yang ada untuk mendorong dan menghidupkan kegiatan produksi yang berbasis ekonomi rakyat, mendorong dan meningkatkan perolehan devisa negara serta mempercepat pembangunan ekonomi masyarakat di pedesaan.

Kabupaten Jepara mempunyai sumberdaya perikanan yang cukup besar dan sangat berperan dalam kontribusi penyediaan lapangan kerja bagi masyarakat. Sumberdaya perikanan tersebut berkaitan dengan usaha perikanan tangkap, perikanan budidaya serta pengolahan dan pemasaran hasil perikanan.

II. PELAKSANAAN

1. Tujuan

Tujuan kegiatan adalah:

- Meningkatkan fungsi sarana prasarana kelautan dan perikanan
- Meningkatkan produksi perikanan

2. Sasaran

Sasaran kegiatan yaitu peningkatan peran pemerintah dalam pengembangan usaha di sektor perikanan melalui penyediaan sarana prasarana perikanan yang memadai.

3. Manfaat

Meningkatkan produksi perikanan dan produktifitas usaha sehingga masyarakat dapat meningkatkan pendapatan

4. Kebutuhan Alokasi Anggaran

Penyediaan sarana dan prasarana perikanan serta dukungan pengembangan usaha perikanan yang kami harapkan mendapatkan dukungan pembiayaan dari Kementerian Kelautan dan Perikanan terdiri dari :

1. Pengembangan usaha bidang perikanan tangkap

2. Pengembangan usaha bidang perikanan budidaya

3. Pengembangan usaha pengolahan dan pemasaran hasil perikanan

Rincian kebutuhan alokasi anggaran untuk pengembangan sektor perikanan di Kabupaten Jepara adalah sebagai berikut:

III. PENUTUP

Demikian proposal usulan Pengembangan Perikanan di Kabupaten Jepara dengan harapan dapat terealisasi sehingga masyarakat dapat meningkatkan produksi perikanan dan pada akhirnya dapat meningkatkan pertumbuhan ekonomi masyarakat.

Jepara, Maret 2025

Kepala Dinas Perikanan
Kabupaten Jepara

FARIKHAH ELIDA, S.T., M.T.
Pembina Utama Muda
NIP. 19671217 199503 2 001

Figure 1.22 TPI Ujung Batu Revitalization Proposal
Source: Head of the Fisheries Service of Jepara Regency, 2025

1.1 BACKGROUND

1.1.7.2 Site & Surrounding Existing

According to the Jepara Regency Fisheries Service, the Ujung Batu TPI area currently serves a mixed function, including fishing settlements, fishing activities, home industries, and market stalls without clear zoning boundaries. This mix of functions results in narrow circulation, unorganized loading and unloading activities, environmental degradation, and a lack of public space and adequate sanitation. These conditions make revitalizing the area crucial to reorganize zoning, increase the efficiency of fishing activities, and improve the quality of life for coastal communities.

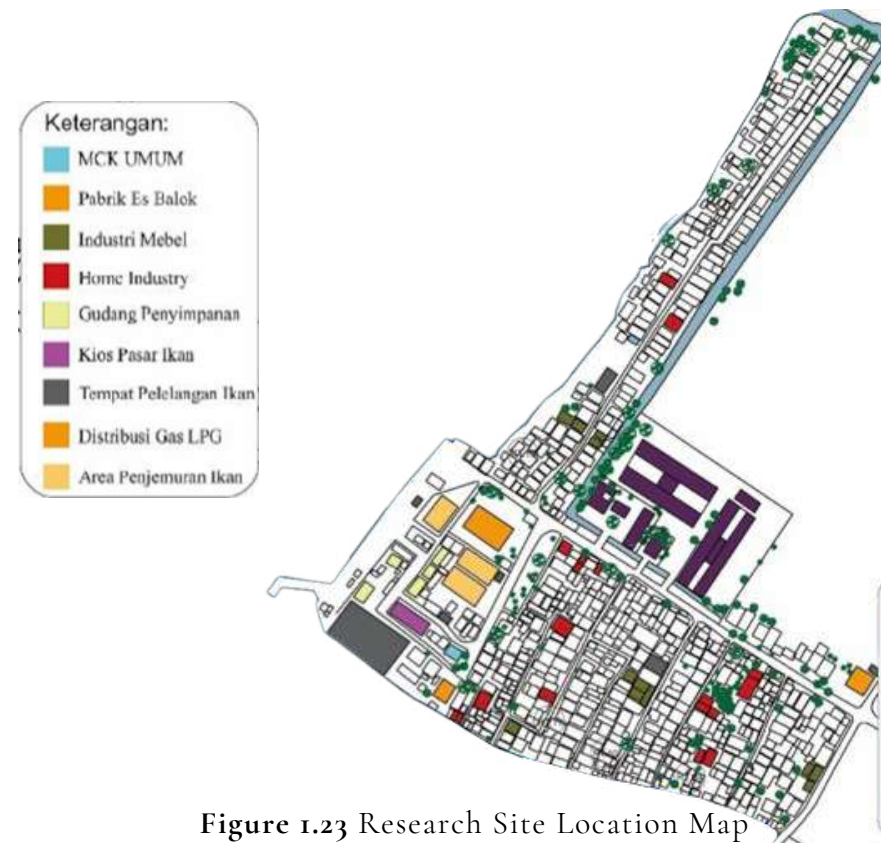


Figure 1.23 Research Site Location Map

Source: B.F. Chrisvananda, *Penataan Kawasan Permukiman Nelayan Ujung Batu Kota Jepara*, 2021

1.1.7.3 Site & Surrounding Zoning

Fish Auction Zone (TPI)

- Located on the western side of the area, right on the banks of the Wiso River.
- It serves as the center of fish loading and unloading, auctions, distribution, and access for fishing boats from the estuary.
- Formal zoning is in place, but it is still mixed with residential and home-based industrial activities.

Fishermen's Residential Zone:

- Located along the eastern side of the area (RT 04, RT 10, RT 11, and RT 15).
- Contains densely packed fishermen's houses, with direct access to the fish auction site and the waters.
- Daily activities are dominated by preparations for going to sea, net repairs, home-scale fish processing, and open-air fish drying.



Figure 1.24 Map of the Fisherman's Settlements at Ujung Batu

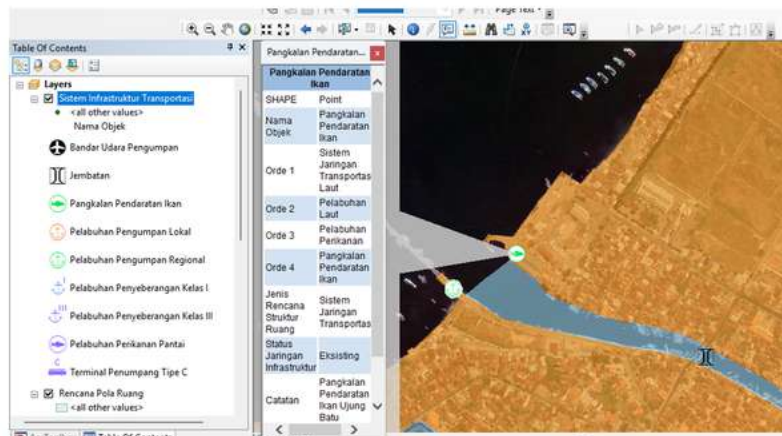
Source: B.F. Chrisvananda, *Penataan Kawasan Permukiman Nelayan Ujung Batu Kota Jepara*, 2021

1.1 BACKGROUND

1.1.8 COASTAL REGULATIONS

1.1.8.1 Regional Spatial Planning for TPI Jepara Regency

RTRW Kab. Jepara Terhadap TPI Ujungbatu



- Menurut Arahana Stuktur Ruang Sebagai Pangkalan Pendaratan Ikan berdasarkan Kepmen KKP Nomor 109 Tahun 2021. dengan KUPZ:
 - Kegiatan yang diperbolehkan:
 - kegiatan operasional, penunjang, dan pengembangan kawasan pangkalan pendaratan ikan; dan
 - pengembangan ruang terbuka hijau
 - Kegiatan yang diperbolehkan dengan syarat:
 - kegiatan yang memanfaatkan ruang di sekitar pangkalan pendaratan ikan dengan syarat memperhatikan rencana pengembangan kawasan perundangan-undangan; dan
 - pengembangan jaringan prasarana dengan syarat dilaksanakan sesuai dengan ketentuan peraturan perundang-undangan
 - Kegiatan yang tidak diperbolehkan berupa kegiatan dan pendirian bangunan di atas badan air yang dapat mengganggu operasional dan pengembangan pangkalan pendaratan ikan;
- Pada Rencana Pola Ruang Masuk pada kawasan permukiman Perkotaan.
- Terdapat Ketsus Sempadan Pantai

Figure 1.25 Regional Spatial Planning Regulation

Source: Head of the Fisheries Service of Jepara Regency, 2025

According to the Direction of Spatial Structure as a Fish Landing Base based on the Decree of the Minister of Marine Affairs and Fisheries Number 109 of 2021. with KUPZ (General Provisions of Zoning Regulations):

- Permitted activities:
 1. operational, supporting, and development activities of the fish landing base area; and
 2. development of green open spaces.
- Permitted activities are subject to the following conditions:
 1. activities utilizing the space around the fish landing base, provided they comply with the statutory area development plan; and
 2. development of infrastructure networks,

- provided. they are implemented in accordance with statutory regulations.
- Prohibited activities include activities and the construction of buildings on water bodies that could disrupt the operation and development of the fish landing base.
- In the Spatial Planning for Entry into Urban Residential Areas.
- There is a Special Decree on Coastal Boundaries

1.1 BACKGROUND

1.1.8.2 Coastal Area Regulations and Setbacks

Law Number 27 of 2007 concerning Management of Coastal Areas and Small Islands

KETENTUAN UMUM
Pasal 1
Dalam Undang-Undang ini yang dimaksud dengan:
1. Pengelolaan Wilayah Pesisir dan Pulau-Pulau Kecil adalah suatu proses perencanaan, pemanfaatan, pengawasan, dan pengendalian Sumber Daya Pesisir dan Pulau-Pulau Kecil antarsektor, antara Pemerintah dan Pemerintah Daerah, antara ekosistem darat dan laut, serta antara ilmu pengetahuan dan manajemen untuk meningkatkan kesejahteraan masyarakat.
8. Kawasan adalah bagian Wilayah Pesisir dan Pulau-Pulau Kecil yang memiliki fungsi tertentu yang ditetapkan berdasarkan kriteria karakteristik fisik, biologi, sosial, dan ekonomi untuk dipertahankan keberadaannya.
9. Kawasan Pemanfaatan Umum adalah bagian dari Wilayah Pesisir yang ditetapkan peruntukannya bagi berbagai sektor kegiatan.
21. Sempadan Pantai adalah daratan sepanjang tepian yang lebarnya proporsional dengan bentuk dan kondisi fisik pantai, minimal 100 (seratus) meter dari titik pasang tertinggi ke arah darat.

Figure 1.26 Coastal Area Management Based on Law
Source: Head of the Fisheries Service of Jepara Regency, 2025

1. Management of Coastal Areas and Small Islands is a process of planning, utilization, supervision and control of Coastal Resources and Small Islands between sectors, between the Government and Regional Governments, between land and sea ecosystems, and between science and management to improve the welfare of the community.
8. Areas are parts of Coastal Areas and Small Islands that have certain functions that are determined based on physical, biological, social and economic characteristics to maintain their existence.

9. Public Utilization Areas are parts of the Coastal Area that are designated for various activity sectors.
21. The coastal boundary is land along the edge whose width is proportional to the shape and physical condition of the beach, at least 100 (one hundred) meters from the highest tide point towards the land.

Jepara Regency Regional Regulation (Perda) Number 4 of 2023 concerning the Jepara Regency Regional Spatial Planning Plan for 2023-2043

45. Pelabuhan Perikanan Pantai adalah tempat yang terdiri atas daratan dan perairan di sekitarnya dengan batas-batas tertentu sebagai tempat kegiatan pemerintahan dan kegiatan sistem bisnis perikanan yang digunakan sebagai tempat kapal perikanan bersandar, berlabuh, dan/atau bongkar muat ikan yang dilengkapi dengan fasilitas keselamatan pelayaran dan kegiatan penunjang perikanan kelas C.
46. Pangkalan Pendaratan Ikan adalah tempat yang terdiri atas daratan dan perairan di sekitarnya dengan batas-batas tertentu sebagai tempat kegiatan pemerintahan dan kegiatan sistem bisnis perikanan yang digunakan sebagai tempat kapal perikanan bersandar, berlabuh, dan/atau bongkar muat ikan yang dilengkapi dengan fasilitas keselamatan pelayaran dan kegiatan penunjang perikanan

Figure 1.27 Regency Regional Regulation Based on Perda

Source: Head of the Fisheries Service of Jepara Regency, 2025

45. Coastal Fishing Port is a place consisting of land and surrounding waters with certain boundaries as a place for government activities and fisheries business system activities which are used as a place for fishing vessels to dock, anchor, and/or load and unload fish which are equipped with shipping safety facilities and class C fisheries support activities.
46. A fish landing base is a place consisting of land and surrounding waters with certain boundaries as a place for government activities and fisheries business system activities which are used as a place for fishing vessels to dock, anchor and/or load and unload fish which are equipped with shipping safety facilities and fisheries support activities.

1.1 BACKGROUND

1.1.8.3 General Provisions for Zoning Regulations

KUPZ Permukiman Perkotaandan KETSUS Sempadan Pantai

KUPZ Permukiman Perkotaan yang berhubungan dengan TPI Ujung Batu, Masuk pada Kegiatan yang diperbolehkan dengan syarat meliputi:

- kegiatan perdagangan dan jasa dengan syarat dilaksanakan sesuai dengan ketentuan peraturan perundang-undangan;
- kegiatan pertanian, perkebunan, perikanan, peternakan, dan pertahanan keamanan dengan syarat tidak mengganggu kenyamanan, kesehatan, keselamatan, kualitas hidup masyarakat, dan tidak mencemari lingkungan;
- kegiatan pertahanan dan keamanan, kepentingan umum, proyek strategis nasional, dan penanggulangan bencana dilaksanakan sesuai dengan ketentuan peraturan perundang-undangan;

KUPZ Kawasan Sempadan Pantai, Kegiatan yang diperbolehkan dengan syarat meliputi:

- kegiatan perikanan, dengan syarat tidak menurunkan kualitas pesisir pantai;
- pelabuhan, bandar udara dan pembangkitan tenaga listrik dan jaringan infrastruktur, dengan syarat tidak menurunkan kualitas lingkungan;

Figure 1.28 Coastal Border Area Regulation

Source: Head of the Fisheries Service of Jepara Regency, 2025

KUPZ Coastal Border Area, Activities permitted with conditions include:

- fishing activities, provided do not degrade the quality of the coastline;
- ports, airports, power generation, and infrastructure networks, provided do not degrade the quality of the environment

The Urban Residential KUPZ related to the Ujung Batu TPI is included in the permitted activities, subject to conditions, including:

- trade and service activities, provided they are carried out in accordance with statutory provisions;
- agriculture, plantations, fisheries, livestock, and defense and security activities, provided they do not disrupt the comfort, health, safety, or quality of life of the community, or pollute the environment;
- defense and security activities, public interests, national strategic projects, and disaster management are carried out in accordance with statutory provisions;

Conclusion

Based on the Jepara Regency Spatial Plan (RTRW), Jepara Regency Regional Regulation Number 4 of 2023, Law Number 27 of 2007, as well as the KUPZ (General Provisions for Zoning Regulations) for Urban Settlements and KETSUS (Special Provisions) for Coastal Boundaries, the Ujung Batu TPI area is functionally and designated as a fishery area and coastal fishing port which is included in the public use area. Therefore, development activities directly related to fishery operations such as fish landing bases, fishery product processing facilities, logistical support buildings, and supporting infrastructure are permitted in the coastal area.

The coastal boundary at the Ujung Batu Fish and Fish Farm does not follow the concept of a natural coastal boundary, but rather treats it as a developed port area. This aligns with the existing character of the area, which has developed as a center of fisheries activity, and with practices in similar areas such as the Muara Angke Fish and Fish Farm, where processing buildings, fish markets, and supporting facilities are located close to the shoreline to maintain operational efficiency. Therefore, the project's placement within the coastal boundary at the Ujung Batu Fish and Fish Farm has a clear legal basis and is functionally rational, as long as it adheres to environmental, safety, and coastal sustainability requirements.

1.1 BACKGROUND

1.1.9 TPI UJUNG BATU FACILITIES



As the center of fishing activity in Jepara, the Ujung Batu Fish Farm (TPI) has various facilities to support fishing activities and the distribution of seafood. These facilities can be divided into three categories: basic, functional, and support facilities:

Basic facilities:

Facilities required for the TPI to function as a fish auction center include:

- A fish auction venue (area for buying and selling fish).
- A landing area for fishing boats (a simple pier/sea access).
- Entrance road (although it is currently damaged and in need of repair).

Functional Facilities:

Facilities supporting core fishing activities at the TPI:

- Small docking/shipyard → for repairing fishing vessels.
- Fish Landing Port (PPI) Plan → as a fish processing and packing center.

Support Facilities

Additional facilities for optimal and comfortable operations:

- Temporary catch storage warehouse.
- Parking and loading and unloading areas.
- Good distribution channels and logistics access.

1.1 BACKGROUND

- Cleanliness and fish waste management facilities.
- Administration room/TPI management post.
- Mosque

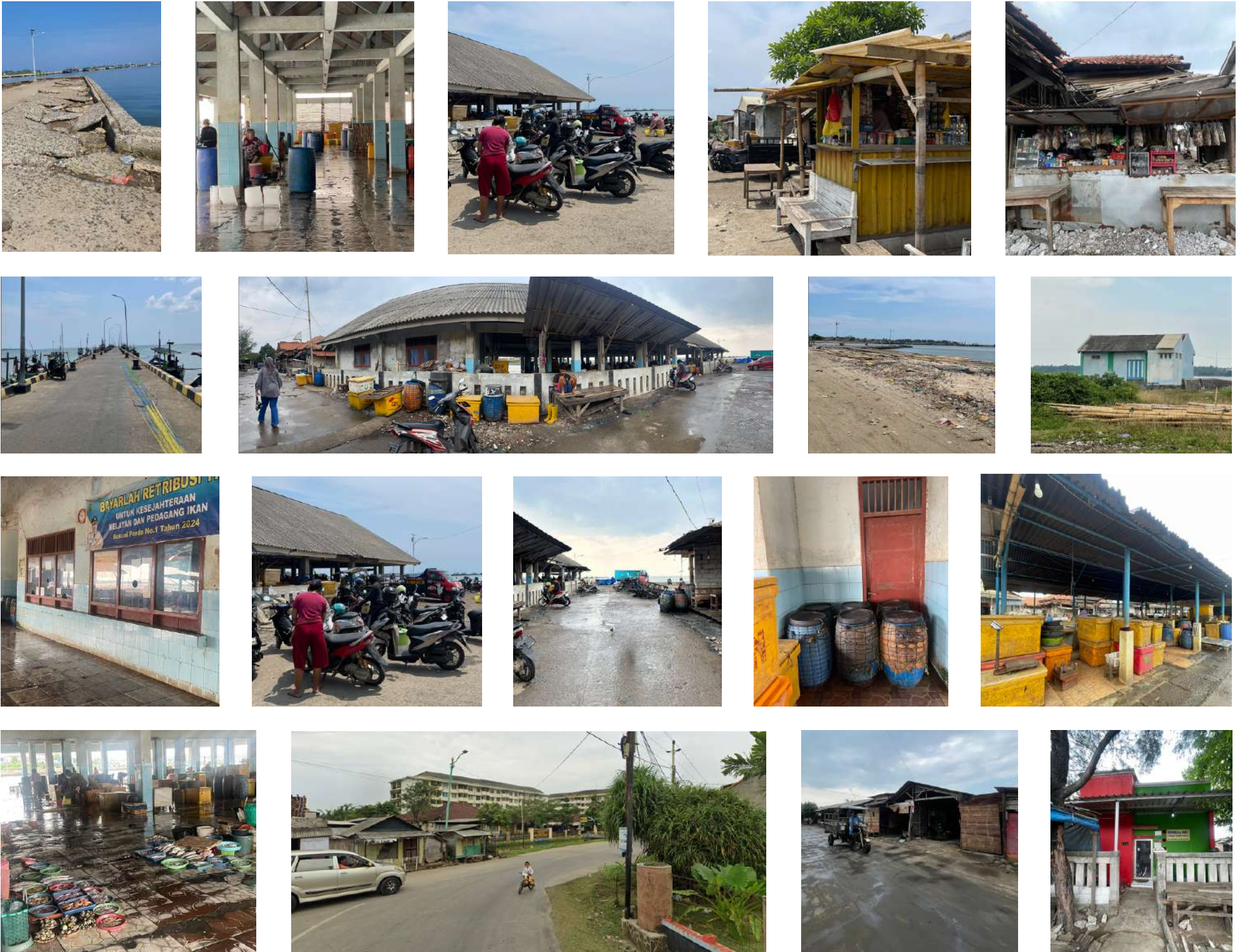


Figure 1.30 TPI Ujung Batu Facilities

Source: Author, 2025

1.1 BACKGROUND

1.1.10 PROBLEM ON SITE

1.1.10.1 Coastal Problem

Coastal areas face a variety of complex problems, both environmental and socio economic. One of these is coastal abrasion, the erosion of the shoreline due to ocean waves and human activity. Coastlines are vulnerable to tidal flooding, especially in areas with low elevations and flat contours, as seen at the TPI Ujung Batu Jepara site. Tidal flooding causes inundation that not only disrupts daily activities but also damages infrastructure and degrades environmental quality. Furthermore, marine pollution from coastal waste, plastic waste, and fishery residues further exacerbates the ecosystem's condition.

As a center of fishing activity, the TPI Ujung Batu is directly connected to the sea and river estuaries, resulting in tidal flooding and that cause muddy and slippery loading and unloading areas. Abrasion also has the potential to reduce the area available for fishing activities. Furthermore, coastal pollution from fish waste and waste from trading activities at the TPI worsens sanitation conditions and creates unpleasant odors.

Figure 1.31 TPI Ujung Batu Auction Building (West part)
Source: Author, 2025

1.1 BACKGROUND

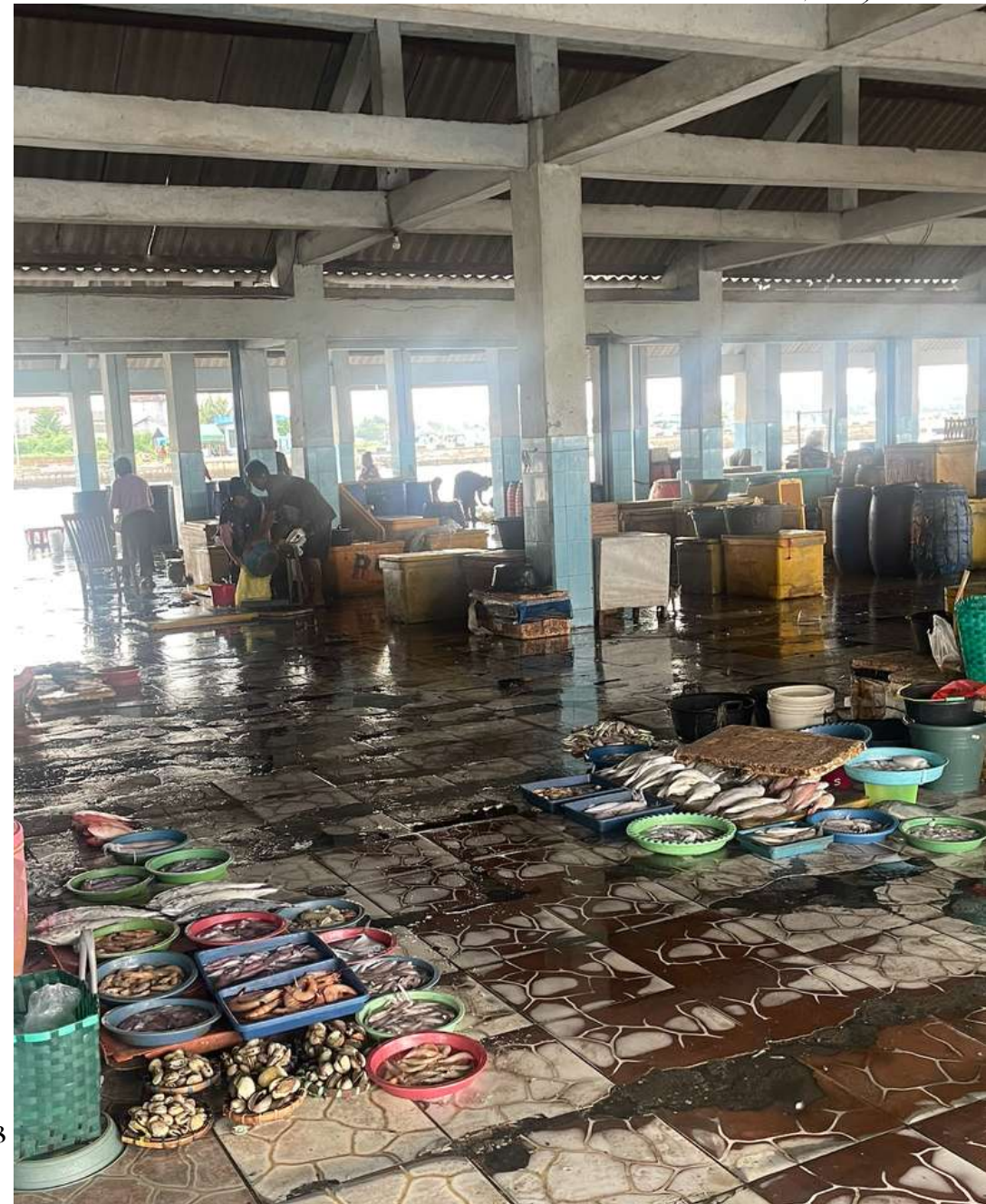
1.1.10.2 Auction and Handling Facilities

The primary function of the TPI is fish auctions, but the auction facilities in Ujung Batu are still inadequate. The auction building is limited in terms of capacity and comfort. Ventilation and sanitation systems are suboptimal, resulting in an unhygienic atmosphere. Furthermore, cold storage (refrigerated space to maintain fish freshness) is not yet available to meet the needs of fishermen's catch capacity.

As a result, fish that are not immediately sold at auction quickly lose quality, lowering their selling prices and harming fishermen. The lack of packaging and processing facilities also hinders the added value of Jepara's seafood, resulting in products often being sold raw without further processing.

Figure 1.32 TPI Ujung Batu Auction Building

Source: Author, 2025



1.1 BACKGROUND

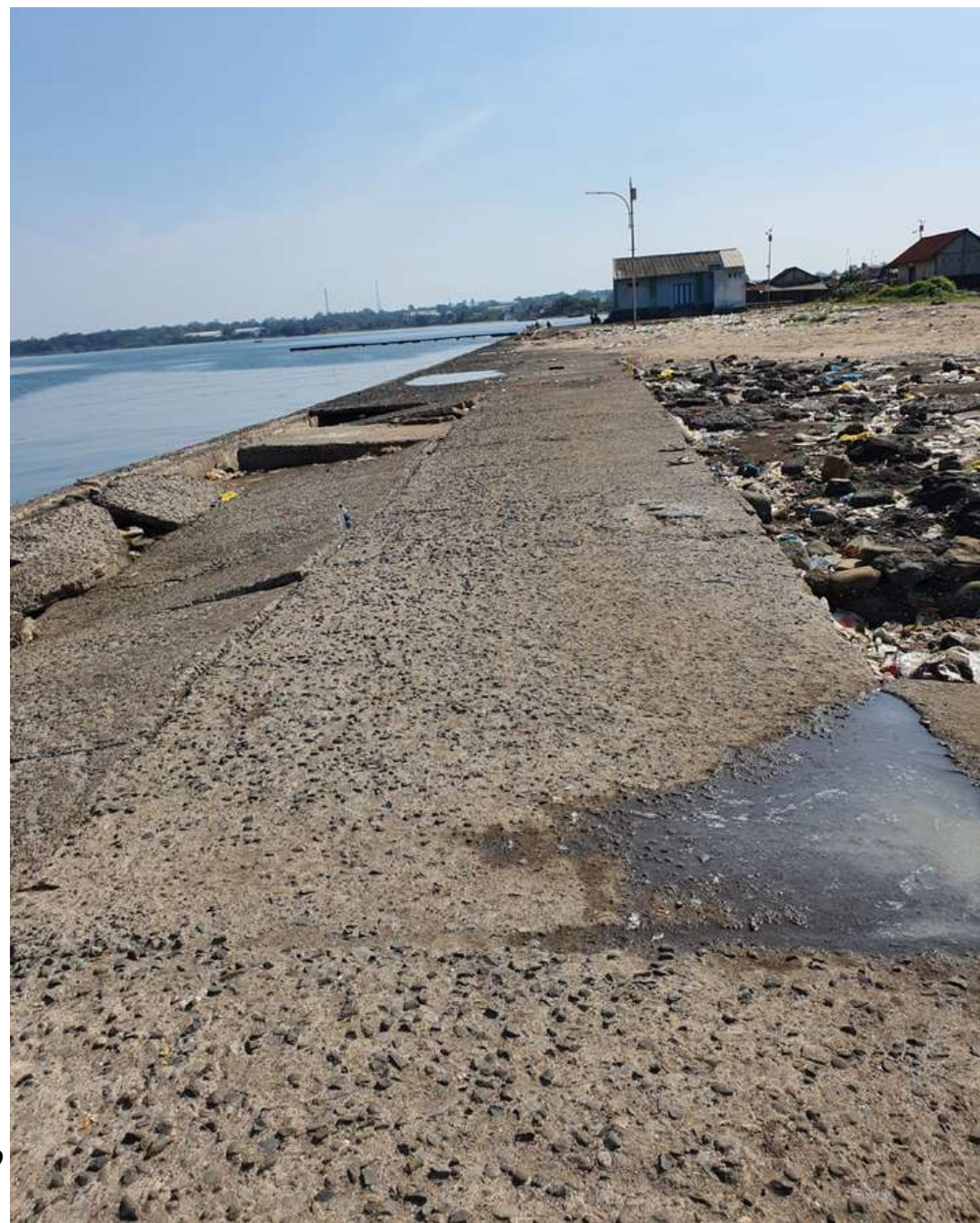
1.1.10.3 Port Area

The port at TPI Ujung Batu is a vital point where fishing boats port and unload their catch. However, this port lacks a breakwater to protect vessels and facilities from large waves. As a result, during the high-wave season, fishing boats struggle to anchor safely and are even at risk of being blown over or damaged.

Figure 1.33 TPI Ujung Batu (port area)

Source: Author, 2025

This situation not only disrupts loading and unloading activities but also endangers the safety of fishermen. Furthermore, without coastal protection, the coastal area is prone to abrasion, which in the long term can erode land around the TPI, damage building structures, and increase infrastructure maintenance costs.



1.1 BACKGROUND

1.1.10.4 Parking For Logistic and Distribution

Parking for transport vehicles is limited because the Ujung Batu Fish Market (TPI) area lacks parking for transport vehicles or private vehicles of fishermen and sellers. This often leads to congestion, especially during the peak fishing season when many boats dock at once because all vehicles are parked along the shoreline. Loading and unloading facilities are also rudimentary, with no clear distribution channels between fishermen, traders, and logistics vehicles.

This situation makes the workflow in the TPI area inefficient, creates complexity, and increases the risk of fish damage due to long waiting times. Poorly organized logistics infrastructure also limits the potential for rapid and timely delivery of seafood outside the region.

Figure 1.34 TPI Ujung Batu (empty space)

Source: Author, 2025



1.1 BACKGROUND

1.1.10.5 Distinctive Aroma From Auction Area

One of the main problems at the auction area of the TPI is a very strong and difficult-to-control fishy odor. This odor arises from a mixture of various sources, ranging from fish scraps scattered during loading and unloading, fish blood and mucus that are not immediately cleaned, and organic waste that is allowed to accumulate for too long. The lack of an adequate waste management system, such as a dedicated storage area or processing facility, exacerbates this situation.

Fish scraps are often carelessly dumped into waterways or the sea, causing rapid decomposition in open areas. Besides disturbing the comfort of fishermen, traders, and buyers, the excessive stench also damages the TPI's image as a center for fish trading, which should be clean and hygienic. This condition is further exacerbated by the arrival of visitors from outside the region or tourists, as negative perceptions of the environment are formed from their very first visit.

Figure 1.35 Dead fish at TPI Ujung Batu's auction building's floor

Source: Author, 2025



1.1 BACKGROUND

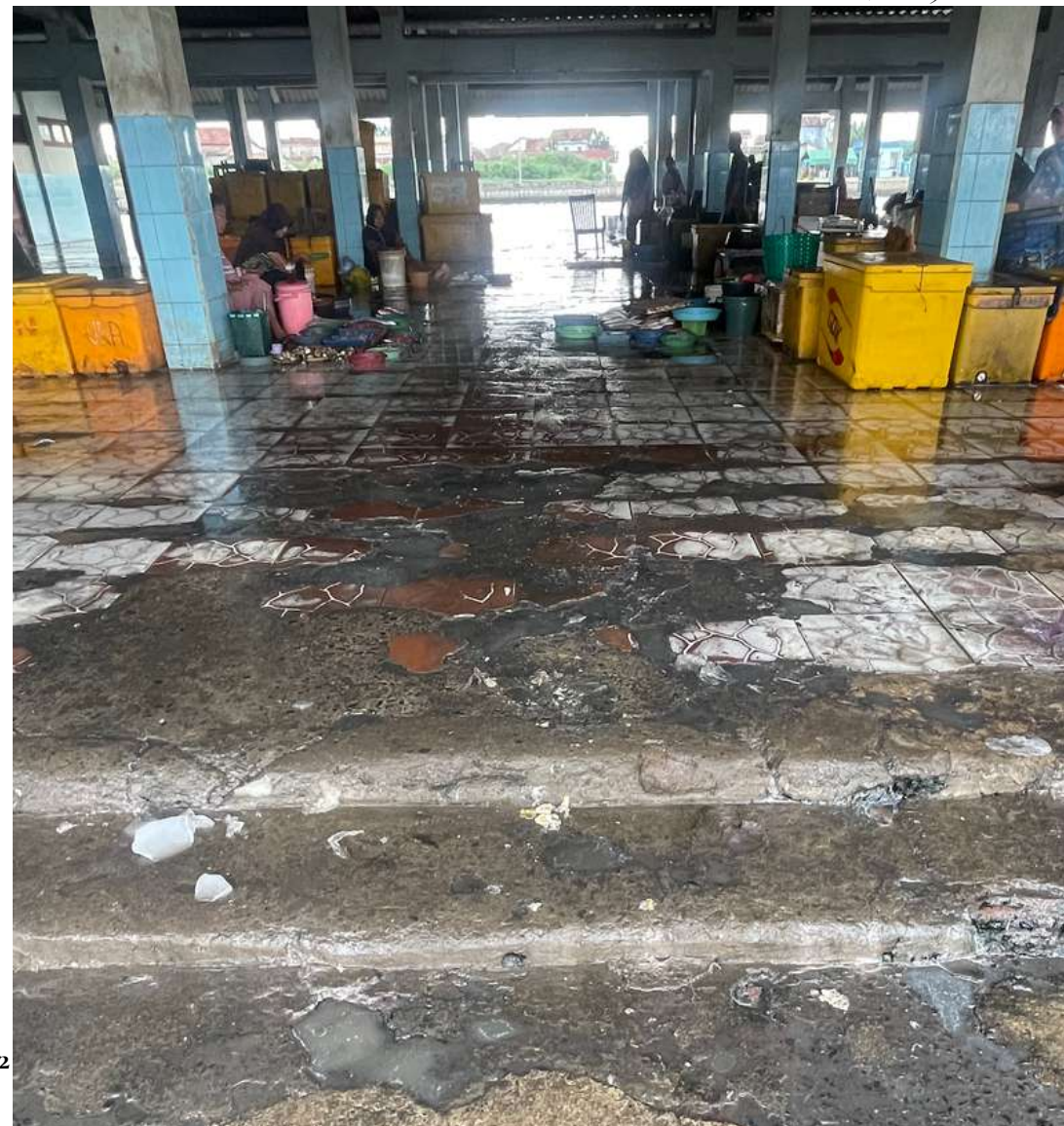
1.1.10.6 Stagnant Water on the Auction Area

Wet likely conditions are almost always found in fish auction areas, especially on the floor where loading, unloading, and sales activities take place. This occurs because there is no effective drainage system to drain seawater, melted ice water, and residual fish fluids. As a result, the floor becomes wet and stagnant, creating an environment that is not only dirty but also slippery and dangerous for human activity. Over the long term, the muddy conditions that never fully dry can damage floor materials, grow moss or mold, and increase the risk of environmental-based diseases.

From an economic perspective, these conditions also make the auction process uncomfortable, for both traders and buyers who must interact in a space with low hygiene standards. The floor of the fish auction site is almost always muddy due to seawater, melted ice water, and spilled fish fluids. This water does not drain properly because the drainage system is not functioning optimally, many channels are clogged with organic waste, and there are insufficient drains.

Figure 1.36 TPI Ujung Batu's auction's building flooring condition

Source: Author, 2025



1.1 BACKGROUND

1.1.10.7 Mud in TPI Area

Mud often arises from a combination of sandy and muddy coastal conditions and poorly organized infrastructure. Areas around docks and loading and unloading areas are often prone to mud sedimentation, especially during high tides. The main causes of this problem are the lack of coastal-resistant pavement infrastructure, the lack of a managed sedimentation system, and the proximity of the TPI to the muddy shoreline.

These conditions make the auction environment even dirtier, worsen hygiene, and create a squalid impression. Mud mixed with fish waste also increases the potential for pollution and slows down loading and unloading activities, making the movement of people and vehicles more difficult.

Figure 1.37 Muds inTPI Ujung Batu's auction's building
Source: Author, 2025



1.1 BACKGROUND

1.1.10.8 Coastal Weather Dynamics on TPI Activities

Activities at the Fish Auction Place (TPI) are significantly affected by coastal weather conditions. Heavy rainfall and strong winds can disrupt fishing activities, impacting the volume of fish brought to the TPI. Furthermore, heavy rain and high waves can restrict fishing boat access to ports and slow down the loading and unloading process. High air temperature and humidity also affect fish quality during temporary storage prior to auction. This weather dynamic can be demonstrated by the occurrence of a lean season. This condition aligns with the findings of Satria (2015) and Kusnadi (2018), who stated that the lean season is a critical phase in the lives of fishermen because the cessation of fishing activities directly impacts the income of coastal fishermen's households.

The lean season in the Ujung Batu Jepara TPI area generally lasts from November to January, characterized by high waves and extreme weather conditions that cause fishermen to stop fishing and lose income. Some fishermen attempt to survive by working as aquaculture fishermen, such as cultivating shellfish, shrimp, and seaweed, as explained in the research by Wahyono et al. (2019), which states that aquaculture is often an alternative livelihood during the off-season. However, based on interviews with fishermen at the Ujung Batu TPI, not all fishermen are able to switch to aquaculture because the aquaculture ponds in Jepara Regency are quite far from the Ujung Batu area, limiting access to alternative employment.

Figure 1.38 Fisherman's boat in TPI Ujung Batu

Source: Author, 2025



1.1 BACKGROUND

1.1.10.9 Coastal Shallowing in TPI Ujung Batu Area

The shallowing of the waters in the Ujung Batu Fishing Port area disrupts ship movement and docking. This shallowing is caused by dominant ocean waves heading inland from the fishing port, carrying sediment and depositing it in the shallow waters and the boat mooring zone. This sediment accumulation causes a gradual decrease in water depth, making it difficult for fishing boats to dock and load and unload. This situation is exacerbated by the lack of coastal protection structures capable of reducing wave energy, resulting in continuous sedimentation.

Figure 1.39 TPI Ujung Batu tide condition and sedimentation
Source: Author, 2025



Consequently, fishermen choose to moor their boats along the Wiso River to avoid the waves. However, this practice actually accelerates the river's shallowing due to boat activity and sediment movement, and creates additional problems for the surrounding fishing settlements. This shallowing of the waters demonstrates the need for an integrated approach involving coastal protection systems, and boat mooring arrangements

Figure 1.40 TPI Ujung Batu tide condition and sedimentation Mapping
Source: Author, 2025



1.1 BACKGROUND

1.1.11 INTEGRATION WITH TRADING

Around the Ujung Batu Fish Market (TPI) area, a row of shophouses and MSME kiosks have sprung up, operating alongside auction activities. Fishermen's catches are not only sold through auctions at the TPI but also distributed to these kiosks for processing and resale in various forms. Some kiosks function as food stalls, serving fresh seafood to traders, fishermen, and visitors, while others have developed into souvenir shops selling seafood-based products such as dried fish, crackers, and traditional Jepara coastal dishes.

Although these activities are already underway and mutually supportive, their potential has not yet been fully developed in a planned manner. The relationship between the auction area, MSME kiosks, and public space remains spontaneous and has not yet been integrated into a robust spatial system.

Figure 1.41 TPI Ujung Batu UMKM buildings

Source: Author, 2025



1.1 BACKGROUND

Fish auctions, which have long been the center of the fishing economy, can be further developed by offering a culinary tourism experience directly linked to the seafood distribution process. In other words, the catch from the auctions doesn't stop at buying and selling, but becomes part of a value chain that continues into the tourism sector. Visitors can directly witness the auction process, select fresh fish, and then enjoy the seafood at coastal culinary venues managed by local MSMEs.

This integration creates a mutually beneficial relationship: trade is boosted by the influx of tourists, while tourism gains authentic appeal from real local economic activity. Furthermore, the presence of a waterfront area of approximately 4,000 square meters provides an opportunity to organize interaction zones between traders, tourists, and the community, without disrupting the primary functions of the auction and distribution.



Figure 1.42 TPI Ujung Batu
Source: Author, 2025

1.1 BACKGROUND

1.1.12 SHIP DATA IN TPI UJUNG BATU AREA

DATA KAPAL
Jumlah Kapal di Kabupaten Jepara total : 3.788 buah
Kapal yang beroperasi/Lelang di masing masing TPI sbb :
1. TPI Ujungbatu
➢ Jumlah Kapal cantrang (± 7 Gross Ton) : 8 buah perahu
➢ Kapal Purse seine >30 Gross Ton (kapal Luar daerah) yang tambat labuh di UPP (Pelabuhan Kelas 2) Jepara : 60 kapal dalam satu tahun menyesuaikan tujuan pangkalan dalam dokumen surat persetujuan berlayar
➢ Kapal motor tempel (Arad) <5 Gross Ton di sekitaran TPI Ujungbatu meliputi Demaan, Jobokuto dan Ujungbatu berjumlah ± 300 buah perahu (Belum mengikuti lelang)

Figure 1.43 Number of Boats in TPI Ujung Batu

Source: Head of the Fisheries Service of Jepara Regency, 2025



Figure 1.45 Boat parking in Wiso Riverbank

Source: Google.com, 2025



Figure 1.44 Boat parking in Wiso Riverbank Mapping

Source: Google Earth rework by author, 2025



Figure 1.46 Boat parking in trestle bridge edge

Source: Google Maps, 2025

Jepara has a total of 3,788 fishing vessels, reflecting the high intensity of fishing activity in coastal areas. Within this system, the Ujung Batu Fishing Port serves a diverse fleet, ranging from 8 trawlers (± 7 GT), approximately 60 purse seine vessels measuring >30 GT that call annually, to approximately 300 outboard motor boats (<5 GT) owned by local fishermen in the Demaan, Jobokuto, and Ujung Batu areas. This large number and diversity of vessels is not matched by adequate mooring infrastructure and harbor basin capacity, resulting in many small vessels being moored along the Wiso River.

This mooring practice, carried out to avoid sea waves, also exacerbates the silting process due to the accumulation of sediment and sea sand, and reduces the operational function of the fishing port area. This condition indicates an imbalance between the burden of fishing activities and the carrying capacity of the area, making the restructuring and development of the Ujung Batu Fishing Port as an integrated fish landing base an urgent need.

1.1 BACKGROUND

1.1.13 FISHERMANS SETTLEMENTS

Spatial Condition



Figure 1.47 Map of fisherman's settlements in TPI Ujung Batu Area

Source: Google Earth rework by author, 2025

- Fisherman's Settlements
- TPI Ujung Batu

The fishermen's settlements in the Ujung Batu TPI area developed organically as both living and working spaces, where domestic, economic, and fishing activities take place in a single space. This pattern is common in coastal fishing villages in Indonesia, characterized by high building density, spatial orientation toward the sea and the TPI, and minimal separation of functions between housing and fisheries production activities.

According to research on the morphology of fishing villages, fishermen's residential spaces function not only as residences but also as part of the fisheries production system, such as storing fishing gear and post-catch activities (Putra & Wibowo, 2019). This spatial condition makes the need for supporting fisheries and public spaces crucial in the restructuring of the Ujung Batu TPI area.

1.1 BACKGROUND

Environment Condition

Environmentally, the Ujung Batu fishing settlement is located in a coastal area with a high level of vulnerability to tidal flooding, high tides, and environmental degradation. The direct proximity of the settlements, the fisheries fishery fishery wastewater treatment plant (TPI), and the sea makes this area vulnerable to waterlogging, organic fishery waste pollution, and declining sanitation. Research on the adaptation of coastal fishing communities shows that fishing communities live in dynamic and risky environments, necessitating a spatial planning approach that is adaptive to climate change and coastal threats (Rachman & Prasetyo, 2021). Therefore, the redesign of the Ujung Batu TPI needs to integrate environmental adaptation strategies, such as raising building elevations, improving drainage systems, and integrated waste management, which also have a direct impact on the environmental quality of the surrounding fishing settlement.

Social Condition

Socially, the Ujung Batu fishing settlement is strongly linked to the fishing auction place (TPI) as a center of economic activity and community interaction. The fishermen's social life is shaped by routines at sea, fish auctions, and the distribution of catches, creating intense patterns of interaction between fishermen, traders, and the surrounding community. A study of the perceptions of the fishing community in Ujung Batu Village shows that the socio-economic conditions of fishermen are highly dependent on the stability of the coastal environment and the sustainability of fishing activities. Therefore, physical changes to the TPI area will have a direct impact on the community's social life (Sari et al., 2022). This confirms that fishing settlements cannot be separated from the function of the TPI, and redesign of the area needs to consider social interaction spaces, public spaces, and a safe and clear connection between the settlement and the fishing area.

Figure 1.48 Fisherman's environment and activities

Source: Author, 2025



1.1.14 FISH PRODUCTION IN LAST 2 YEARS

[illegible]

Figure 1.49 Data of fish catch in 2023-2025

Source: Head of the Fisheries Service of Jepara Regency, 2025

Fish catch data at TPI Ujung Batu for the period July 2024-June 2025 shows production fluctuations significantly influenced by seasonal conditions and sea weather. No fish landings were recorded between November and January, as this period was considered the lean season, when local fishermen refrained from sailing due to high waves, strong winds, and unsafe sea conditions. Furthermore, the data also shows that the months before and after the lean season, namely around October and February, show relatively low catch volumes.

This is due to the fact that shipping quality has not yet fully recovered, as sea weather conditions are still affected by the remnants of the lean season. This seasonal pattern indicates that the Ujung Batu Fish Farming Center's activity is unstable throughout the year, requiring adaptive facility planning to adapt to seasonal cycles, such as providing space for processing, storage, and supporting non-fishing activities to maintain the sustainability of the area's function when fisheries production declines.

1.1 BACKGROUND

1.1.15 SHIP PARKING AREA

The use of the Kali Wiso (Wiso) River as a boat mooring area by fishermen around the Ujung Batu fishing settlement is one of the main problems in the area. Based on field interviews, fishermen park their boats right next to the settlement to avoid large waves and open sea conditions that risk damaging their boats, especially during bad weather. However, this condition significantly exacerbates the river's silting process. The movement of boats entering and leaving, natural coastal sedimentation, and the lack of planned mooring facilities have caused the Wiso River channel to become increasingly shallow and hamper the river's hydrological function.

This phenomenon aligns with coastal studies that indicate that the use of rivers as mooring areas without proper management contributes to accelerated sedimentation and a decline in the quality of the aquatic environment (Wahyudi & Nugroho, 2020). This condition indicates the need for a reorganization of the boat mooring system and water circulation in the redesign of the Ujung Batu TPI, so that the fishery function continues without worsening the environmental conditions and surrounding fishing settlements.



Figure 1.50 Wiso Riverbank as Boat Paking Area
Source: Google Earth rework by author, 2025

Ship Parking in Kali Wiso TPI Ujung Batu

1.1 BACKGROUND

1.1.16 FISH LANDING BASE PLANNING



Figure 1.51 Pier Basin Planning
Source: Google Earth rework by author, 2025



Figure 1.52 Break Water Visualization
Source: Google.com, 2025

- Planned Port Pool
- Planned Breakwater
- TPI Ujung Batu
- Planned Trestle Port
- Docking Pool

TPI Ujung Batu is planned to be developed as a Fish Landing Base (PPI) to improve the efficiency and safety of fish landing activities. This plan faces the major problem of shallowing of the waters due to ocean waves carrying sand sediment into the TPI area, disrupting ship mooring and loading and unloading activities.

In response, a breakwater is planned to be built approximately 350 meters from the shoreline with a width of 240 meters to reduce wave energy and create a protected harbor basin. This area will become the harbor basin within the PPI system. Furthermore, a trestle pier approximately 350 meters long is planned to connect the TPI mainland and the harbor basin, while also supporting fish landing activities and catch distribution.

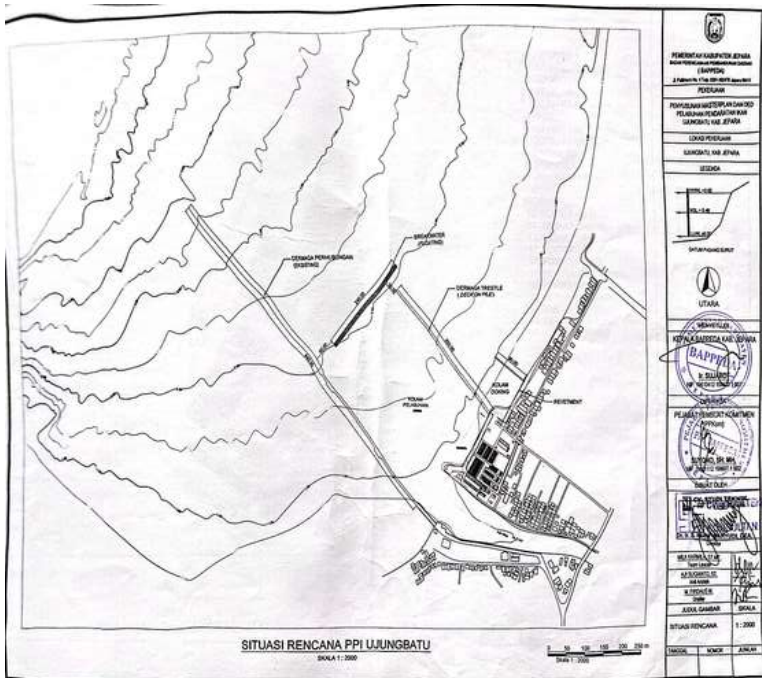


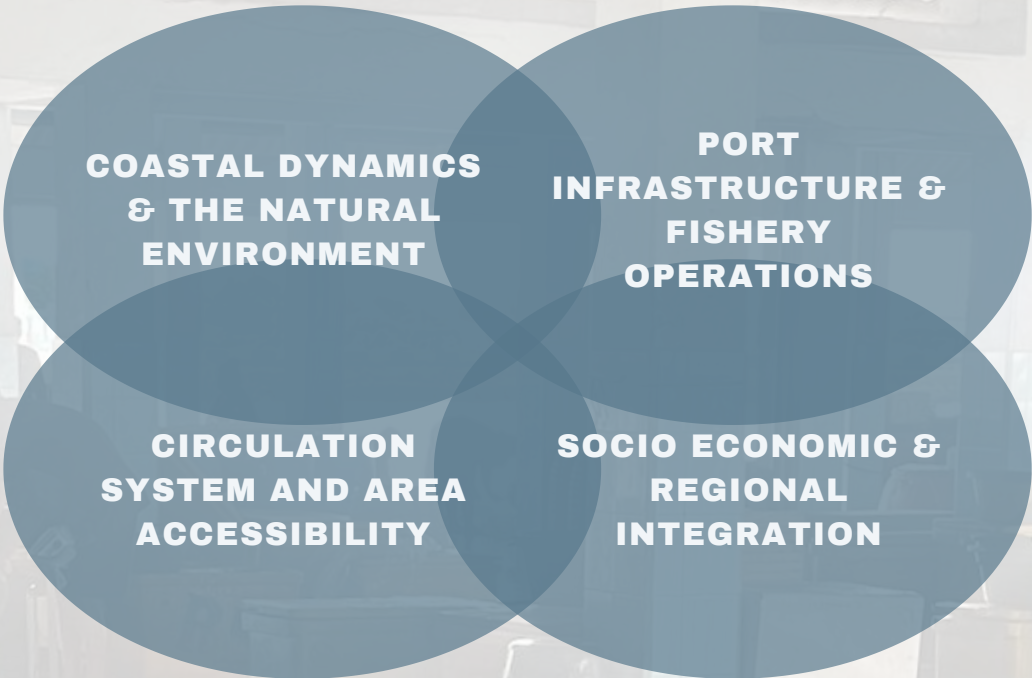
Figure 1.53 Pier Basin Planning Drawing
Source: Head of the Fisheries Service of Jepara Regency, 2025

The integration of the breakwater, harbor basin, and trestle pier is a key element in realizing a safe, efficient, and sustainable PPI and forms the basis for the redesign of the Ujung Batu TPI area.

The planned breakwater in the Ujung Batu TPI area uses a tetrapod system, similar to the one implemented at Kartini Beach in Jepara. The use of tetrapods was chosen because of their ability to effectively reduce wave energy through interlocking elements. Tetrapods are precast concrete breakwater elements with four intersecting arms, designed to absorb and disperse ocean wave energy. The tetrapod arrangement allows seawater to enter between them, so that wave energy is not fully reflected back, but is gradually reduced.

1.2 PROBLEM STUDY

1.2.1 PROBLEM MAPPING



Non Architectural Issues

Ocean waves, coastal weather, and sedimentation processes cause shallowing of the waters and disrupt fish landing activities. These natural conditions are major obstacles to TPI operations.

The high intensity of ship activity and fish distribution without a clear operational system reduces the efficiency and comfort of the area.

Fisherman, distribution vehicles, visitors, and general public activities still use the same routes. This creates overlapping activities that could potentially disrupt the smooth operation of the area.

MSME activities are still separate and not yet integrated into the TPI regional economic system.

Architectural Issues

The buildings and outdoor spaces have not been designed to adapt to the tides, coastal weather, and muddy ground conditions that affect the comfort and sustainability of TPI activities.

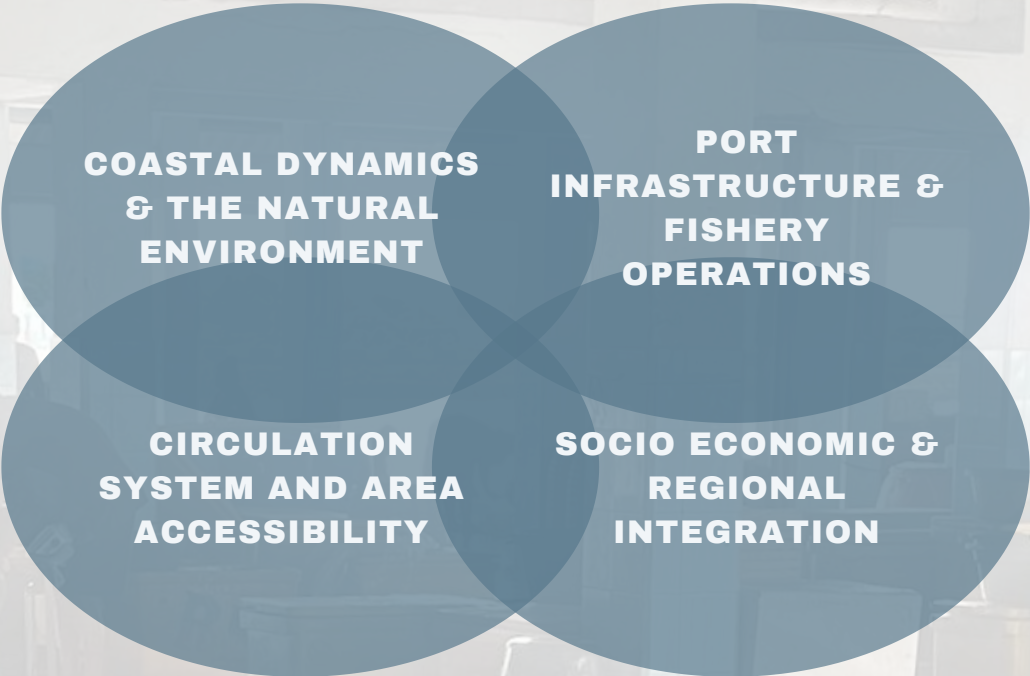
The layout of the building mass, dock, and auction area has not been integrated so that the circulation of loading and unloading, distribution, and user activities collide with each other.

The layout of buildings and outdoor spaces lacks a clear circulation system. The relationships between area functions still involve numerous intersections and waste spaces, making the area's orientation less effective.

The TPI area does not yet have public spaces and supporting zones that can connect auction activities with MSMEs and visitors in a proper and structured manner.

1.2 PROBLEM STUDY

1.2.2 PROBLEM RESPONS



Non Architectural Issues

Development of Water Zone Arrangement through breakwaters, pier basins, and shipyard basins to create safer waters and support fishing port operations.

Implementation of Fisheries Workflow (Sea-Land) which integrates ship mooring areas, auctions, processing, cold storage, ice factories, and distribution in one continuous flow of activities.

Reorganizing the circulation system by separating fishing, distribution, public transportation and pedestrian routes based on the activity characteristics of each user.

Development of the Integrated Trade and Tourism Waterfront concept through the integration of MSME buildings, markets, and waterfront public spaces with fishing activities.

Architectural Issues

The application of passive design strategies in the form of natural ventilation, semi-open spaces, building elevations, and roof shapes that are responsive to the coastal climate.

Reorganization of building mass based on the sequence of fishing activities to form more efficient and integrated spatial relationships.

The formation of a zoning-based area structure and access hierarchy that clarifies the relationship between buildings and facilitates user orientation.

Provision of public space as a transitional space between the fisheries operational area and the public area and MSME activities.

1.2 PROBLEM STUDY

1.2.3 BRIAN LAWSON MATRIX

DESIGN CONSTRAIN	SYMBOLIC PROBLEM	FORMAL PROBLEM	PRACTICAL PROBLEM	RADICAL PROBLEM
DESIGNER The Architect	Maritime Identity & Seasonal Landscape The Ujung Batu TPI area has lost its expression as a maritime space due to physical degradation, shallowing, and decreased seasonal activity.	Adaptive Fish Hub Typology Creating a spatial configuration that responds to tidal fluctuations, rotating fishing activities, and land-water connections.	TPI Operational Efficiency Creating an effective and sequential system for loading and unloading, customers, processing, and distribution.	Resilient Coastal Fish Hub Transforming the Fish and Fisheries Center (TPI) from a mere auction site into a center for fisheries activities that adapts to coastal dynamics.
CLIENT Jepara Regency Government (Fisheries Service)	Regional Fisheries Area Image Strengthening the role of the Fish Farm (TPI) as the main fisheries facility in Jepara Regency.	TPI Standardization Providing facilities that meet the needs of fishing vessels, auction areas, processing, markets, and distribution.	Integrated Area Planning Connecting the dock, auction building, processing facilities, MSMEs, markets, and public areas into one operational system.	Driving the Fisheries Economy Making the TPI an economic hub that supports the production, processing, and marketing of Jepara's seafood.
USER (Fishermen, Traders, TPI Workers, Visitors)	Coastal Space Experience Providing a comfortable and accessible space for all area users.	Circulation Quality and Accessibility Provide clear paths for fishermen, distribution, public transportation, and pedestrians.	Comfort and Safety of Activities Reduces movement conflicts and increases daily work efficiency.	Sustainable Coastal Living Creating a work and social environment that supports the long-term activities of coastal communities.

1.2 PROBLEM STUDY

DESIGN CONSTRAIN	SYMBOLIC PROBLEM	FORMAL PROBLEM	PRACTICAL PROBLEM	RADICAL PROBLEM
REGULATOR (RTRW, Ministerial Regulation of Maritime Affairs and Fisheries, Fisheries Port Standards),	Coastal Governance Spatial Ensuring integration between coastal areas, fishing settlements, and fishing activities.	Compliance with TPI and PPI Meet technical requirements for auction facilities, ship moorings, circulation, and processing.	Operational Compliance Supports the management of auctions, distribution, sales, and operational systems in accordance with regulations.	Integrated Coastal Area Development Creating a fisheries area that aligns with the coastal development goals of Jepara Regency.

Table 1.4 Brian Lawson Design Problem Matrix
Source: Author, 2025

Bryan Lawson's Matrix Description

Symbolic → identity, meaning, and image of the area.

Formal → form, layout, typology, and spatial quality.

Practical → function, operation, comfort, and efficiency.

Radical → long-term vision and impact of regional transformation.

1.2 PROBLEM STUDY

1.2.4 PROBLEM FORMULATION

1. How can the reorganization of the Ujung Batu Fish Farming Area improve the orderliness of fisheries activities without disrupting the Wiso River's function as a waterway?
2. How can zoning, circulation, and supporting facilities more effectively support loading and unloading, auctioning, processing, and distribution of catches, as well as ship mooring activities?

1.2.5 GOALS

1. Creating a TPI Ujung Batu design that is adaptive to the dynamics of the coastal environment and comfortable for coastal communities in the Ujung Batu area.
2. Carrying out spatial planning, circulation and TPI infrastructure in a structured and separated but integrated with each other

1.2.6 OBJECTIVES

1. Create a clear understanding of how improvements to the fish auction site can benefit future coastal development on an urban scale.
2. Integrate the function of the fish auction site with supporting facilities.
3. Restructure and separate the zoning and circulation of the area.

1.2 PROBLEM STUDY

1.2.7 DESIGN LIMITATIONS (REGULATORY CONSTRAINTS)

1. Area Function Limitations

The Ujung Batu Fish Landing Area (TPI) is designated as a Fish Landing Base (PPI) based on the Jepara Regency Spatial Plan (Regional Regulation No. 4 of 2023). Therefore, the function of the designed building must directly support fisheries activities, such as loading and unloading fish, auctions, processing, distribution, and supporting fisheries facilities.

2. Location Limits within the Coastal Boundary

Although the coastal boundary is generally set at a minimum of 100 meters from the high tide line (Law No. 27 of 2007), the Ujung Batu TPI area is categorized as a developed fishing port area. Therefore, development within the coastal boundary is functionally permitted, as long as the structure is directly related to port and fishing activities.

3. Limitations on Permitted Activity Types:

Referring to the Urban Settlement KUPZ and Coastal Border KETSU, permitted activities include:

- fishery operational facilities,
- marine product processing and distribution,
- fishery-related trade and services,
- port support facilities.
- Activities outside these functions are not prioritized in the design.

4. Environmental Constraints and Coastal Quality

All design interventions must not degrade the quality of the coastal environment, including seawater quality, shorelines, and surrounding ecosystems. Buildings must be designed with an adaptive approach to coastal climate and environmental risks.

5. Restrictions on Water Bodies

Based on Ministerial Decree No. 109 of 2021, buildings are not permitted on water bodies that could disrupt shipping lanes, ship mooring areas, or fish loading and unloading activities.

6. Building Scale and Intensity Limitations

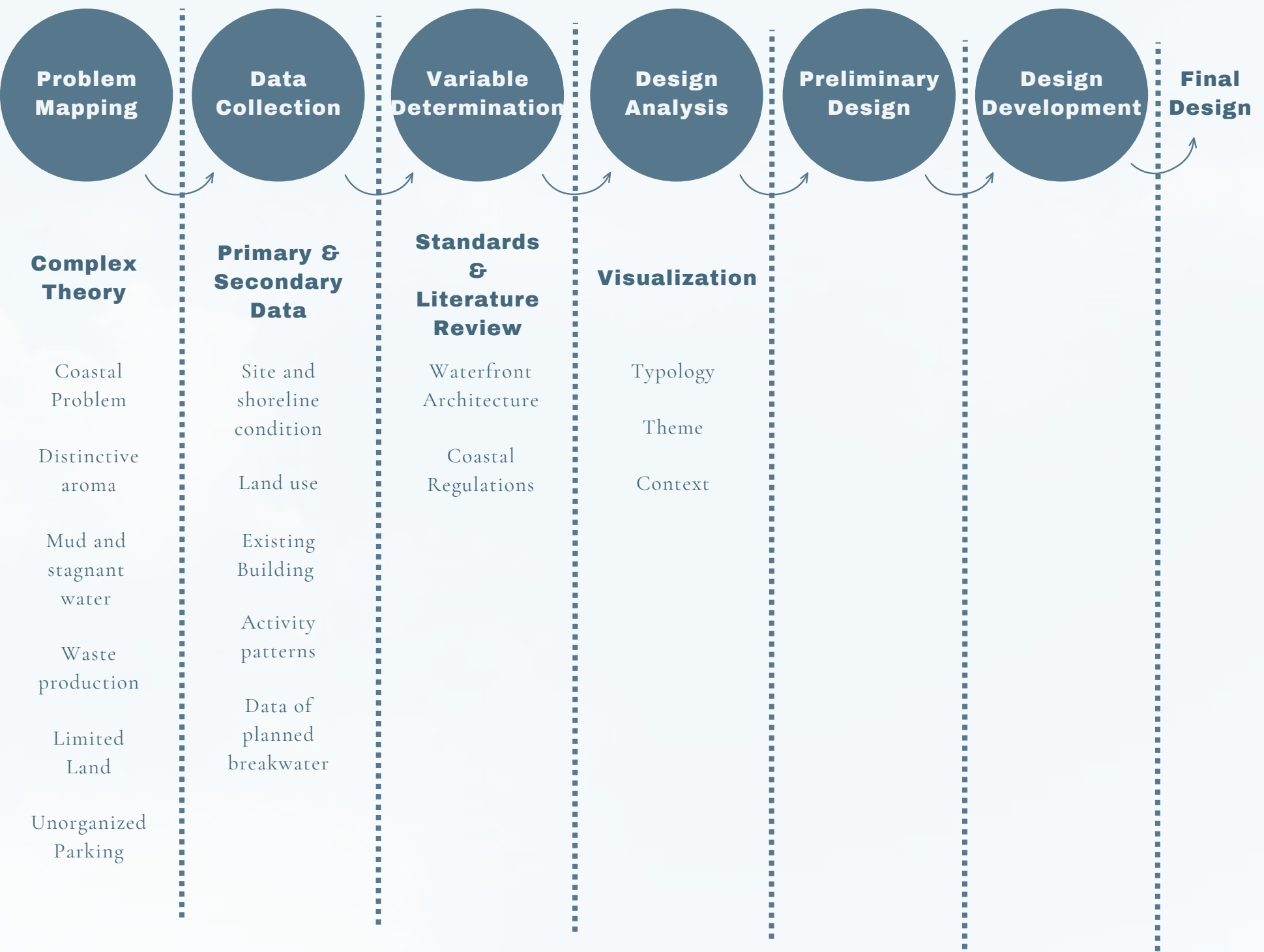
The scale, mass, and intensity of buildings must be adjusted to the capacity and character of the Ujung Batu TPI as a coastal fishing port, not as a general commercial area or waterfront tourism area.

7. Social Constraints and Activities of the Fishing Community

The design must consider the presence of fishing settlements and local socio-economic activities, so that architectural interventions do not eliminate access, livelihoods, and lifestyles of existing fishing communities.

1.3 DESIGN METHOD

In the Ujung Batu Fish Auction Redesign project, design methods were applied to address coastal environmental issues, functional needs, and the area's spatial conditions without eliminating the fish auction facility's primary function. The design process began with defining the design area's boundaries, followed by several stages as follows:



1.3 DESIGN METHOD

Design Problems:

The initial stage was carried out to identify the main problems occurring in the Ujung Batu TPI area. Analysis showed that the area faces various interrelated issues, ranging from coastal environmental dynamics, fisheries operational systems, regional circulation, and community economic integration. These problems were then mapped to identify the root causes, which formed the basis for the design process.

Output: Coastal dynamics and sedimentation, unorganized land and water circulation, conflicting activities between users, unintegrated fisheries facilities, lack of connectivity with MSME and community activities.

Data Collection:

Once the problems were identified, primary and secondary data were collected to gain a deeper understanding of the area's existing conditions. Data was obtained through field observations, documentation, interviews, literature studies, and technical data collection related to coastal areas and fishing activities. **Output:** Condition of the site and coastline, fishing activity patterns, boat mooring systems, condition of existing buildings, vehicle circulation, distribution and pedestrians, fish auction and processing activities, tidal and sedimentation data.

Determining Design Variables:

The collected data is then selected to determine the design variables that most influence the design. These variables become parameters for design decision-making. **Output:** Adaptive Architecture, coastal area regulations, fisheries operational activities, land and water circulation systems, tidal dynamics, the relationship between TPI areas and fishing settlements.

Design Analysis:

At this stage, all data and variables are analyzed to identify design potential and challenges. The analysis focuses on functional relationships, activity patterns, distribution flows, user circulation, and the relationship between land and water areas. **Output:** Land flow, water flow, zoning, building relationships, shoreline conditions, fishermen work patterns, adaptation to coastal dynamics.

Preliminary Design:

This stage produces a preliminary design concept based on the results of the previous analysis. The initial concept focuses on establishing a harbor basin as a center for water activities and separating the area's primary functions. **Output:** Forming a pier basin, separating the wet zone and dry zone, rearranging the auction building and supporting buildings, forming a more orderly circulation system.

Design Development:

The design development stage involves a process of evaluation and reflection on the initial design. The entire system is then refined based on the actual operational needs of fishermen and coastal environmental conditions.

Final Design:

The final stage resulted in the design of the Ujung Batu TPI as an Adaptive Coastal Fish Hub, namely a fisheries area that is able to adapt to coastal dynamics while increasing the efficiency of fisheries operations.

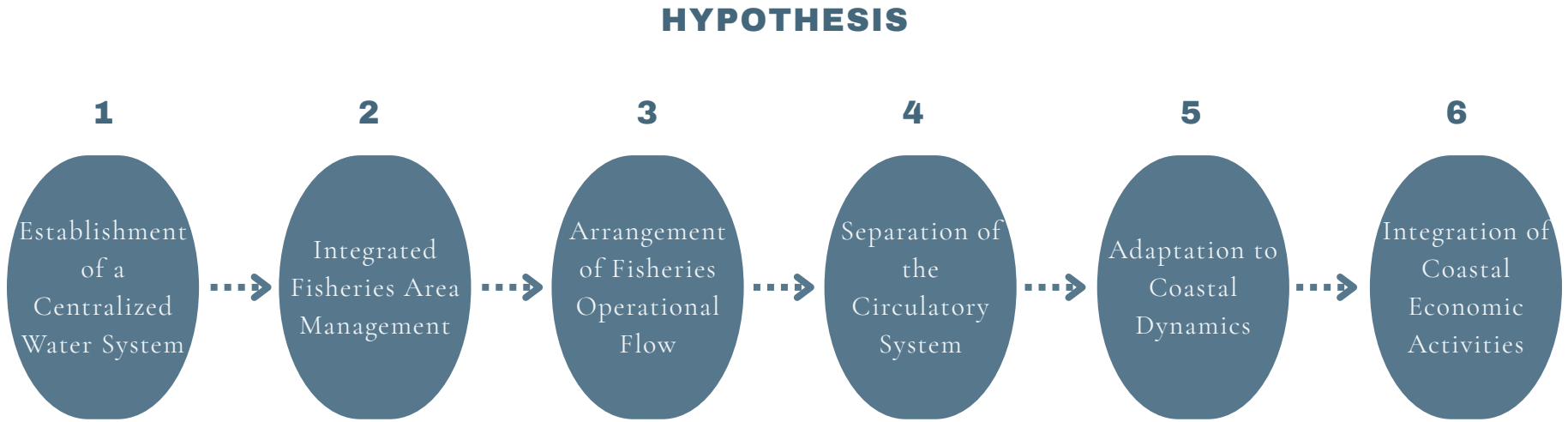
1.4 PRELIMINARY DESIGN HYPOTHESIS

Based on the analysis, design development, and design reflection processes, the proposed hypothesis was proven through the final design of the Ujung Batu Fish Farm (TPI Ujung Batu).

The area's layout, based on the relationship between the water system, fisheries operations, and community activities, successfully created a more structured area compared to the existing condition. The creation of a harbor basin reduced the use of the Wiso River as a mooring area, thereby opening up the river flow and reducing the risk of sedimentation. Furthermore, the spatial arrangement based on the flow of fisheries activities resulted in a more efficient connection between the dock, auction, processing, storage, and distribution.

The separation of fishing routes, distribution, public transportation, and pedestrians also improved the area's visibility and reduced previously existing circulation conflicts. Furthermore, the implementation of a mooring system based on the fishermen's shift work pattern demonstrated that the need for water space could be met without requiring excessive mooring capacity.

Through the integration of fisheries facilities, MSMEs, and public spaces, the area no longer functions solely as a fish auction site but instead develops into a center of coastal economic activity that supports the fishing community and broader regional activities.



1.5 CONCEPTUAL FRAMEWORK

Redesign of Ujung Batu Fish Auction Hub (TPI) in Jepara

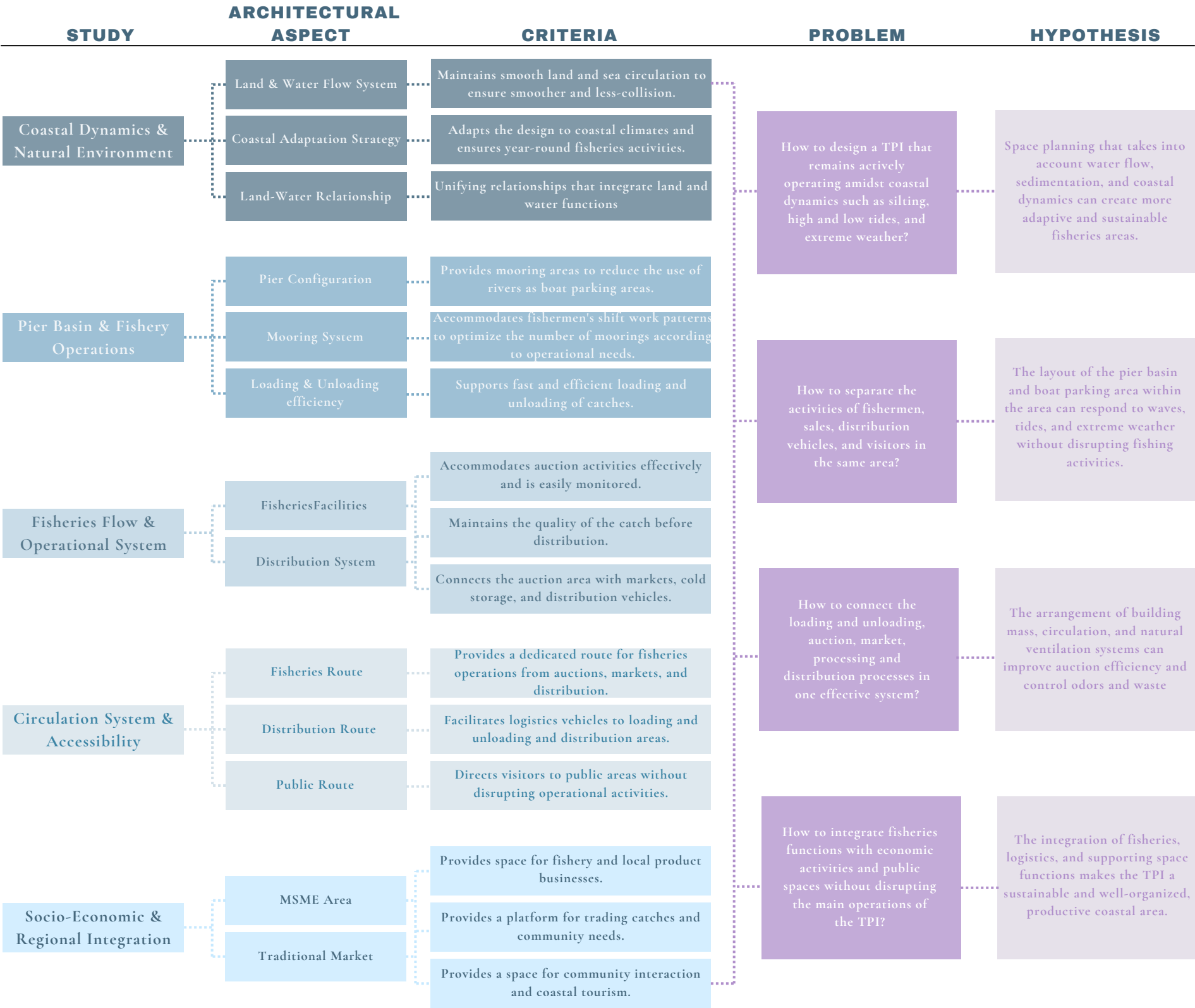


Figure 1.54 Conceptual Framework
Source: Author, 2025

1.6 ORIGINALITY & NOVELTY

The redesign of the Ujung Batu Jepara Fish Auction Hub (TPI) using a waterfront architecture approach has never been done before. This project presents novelty through the integration of auction, processing, sales, and distribution systems in a single area oriented to the port basin as the main element of the space,

1.Redesign of Fish Processing Center and Market in Kampung Manggar Balikpapan

Approach: Ecological Water Culture

Author: Umi Hanik Esaputri

Publication: 2022

Similarity: Coastal Design, Fisheries

Differential: Typology, Approach, Location

2.Perancangan Tempat Pelelangan Ikan (TPI) Berbasis Pariwisata Dengan Pendekatan Arsitektur Ekologi di Pantai Pasar Bawah Kota Manna

Approach: Ecological Architecture

Author: Dwi Fenty Fetria

Publication: 2024

Similarity: Typology

Differential: Approach, Location

3.Design of Hygienic Fish Auction By Open Building Approach in Sadeng, Gunungkidul

Approach: Open Building

Author: Febriansah Wijaya

Publication: 2020

Similarity: Typology

Differential: Approach, Location

while responding to coastal environmental dynamics such as silting, extreme weather, and tides without changing the TPI's primary function as an active fish auction facility. To avoid plagiarism, the report preparation process uses several references:

4.Tempat Pelelangan dan Pengolahan Ikan di Makassar Penataan Pola Ruang yang Kreatif dengan Konsep Transparan

Approach: Transparent

Author: Januar Perdana

Publication: 2005

Similarity: Typology, Integration of Auction Place with Processing

Differential: Approach, Location

5.Tempat Pelelangan dan Pengolahan Ikan di Makassar Penataan Pola Ruang yang Kreatif dengan Konsep Transparan

Approach: Transparent

Author: Januar Perdana

Publication: 2005

Similarity: Typology, Integration of Auction Place with Processing

Differential: Approach, Location



2 DESIGN STUDY



2.1 STUDY AND ANALYSIS OF DESIGN THEME

2.1.1 AREA REDESIGN

Area redesign aims to reorganize existing areas by rearranging physical elements, activity systems, and spatial relationships without eliminating the area's primary function. Unlike revitalization, which focuses on reviving areas that have experienced significant degradation, redesign emphasizes optimizing and integrating existing systems to respond to new needs more effectively and sustainably (Carmona et al., 2010).

Area redesign aims not solely to improve visual or aesthetic conditions, but also to enhance spatial performance, user comfort, and environmental sustainability. According to Carmona et al. (2010), the success of area redesign is largely determined by its ability to recognize local potential, address existing problems, and create long-term added value for the surrounding community. Therefore, redesign must be based on an analysis of the area's actual conditions and the needs of its users.

Area Redesign's Goals and Objectives

Area redesign aims to improve the quality of built-up areas through design interventions that support activity efficiency, local economic stability, and environmental sustainability. These goals are achieved through the following objectives:

- Improving the efficiency of area functions by rearranging spaces and circulation systems to support primary and supporting activities (Alexander et al., 1977).
- Improving area comfort by responding to specific environmental conditions, such as climate, water dynamics, and coastal characteristics.

- Supporting local economic growth by providing spaces and facilities that accommodate formal and informal activities in a structured manner (UN-Habitat et al., 2013).
- Reducing conflicts between activities by clearly separating and integrating work, distribution, and public zones.
- Creating areas that are adaptive to environmental and social changes, thus enabling them to function sustainably in the long term.

Redesign Aspects

Area redesign is an activity that, in its implementation, encompasses several key aspects, namely:

- Physical Intervention

Physical intervention in redesign is directly related to the visual, spatial, and functional conditions of the area. Good physical conditions play a crucial role in supporting activities, increasing work efficiency, and shaping the area's image. Therefore, physical redesign is carried out through improvements and restructuring of building quality, outdoor spaces, circulation systems, and the relationship between land and water elements. According to Shirvani et al. (1985), physical intervention in area redesign includes the arrangement of building mass, open spaces, movement paths, and supporting elements such as signage and utility systems.

- Economic Arrangement and Strengthening

Area redesign is expected to provide added economic value by supporting local economic activities in a structured manner. Physical improvements to an area

2.1 STUDY AND ANALYSIS OF DESIGN THEME

form the basis for accommodating formal and informal economic activities, thus creating a more efficient and sustainable economic system. According to Jacobs et al. (1961), areas designed with mixed functions have greater potential to generate economic and social vitality..

- Social Strengthening and Spatial Activity

The success of an area redesign can be measured by its ability to create an active and inclusive environment for its users. Redesign not only produces physically organized spaces but also spaces that support social interaction and build regional identity. According to Gehl et al. (2010), the quality of public spaces significantly influences social dynamics and user comfort. Therefore, area redesign needs to create spaces that support social activities, both for primary users and the surrounding community.

2.1.2 ADAPTIVE ARCHITECTURE

Adaptive architecture is a design approach that emphasizes the ability of buildings and areas to respond to changing environmental conditions, user activities, and operational needs that evolve over time. According to Kronenburg (2007), adaptive architecture is not only concerned with a building's ability to physically change, but also with the ability of a spatial system to continue functioning optimally when faced with changing environmental conditions and human activity. In other words, buildings are not viewed as static objects, but rather as part of a system that continuously interacts with its environment.

In the context of coastal areas, this approach is relevant because coastal environments are dynamic. Changes in tides, sedimentation, current movements, weather conditions, and the economic activities of coastal communities are constantly changing factors that influence the area's performance. Therefore, coastal areas require design strategies that can adapt to these changes without compromising their primary function.

Schneider and Till (2007) explain that adaptability in architecture also relates to the space's ability to accommodate changing user activities. Adaptive spaces are not designed for a single specific condition, but are able to adapt to a variety of possible future uses. This approach is especially important for public facilities and productive areas that have diverse activities and varying intensity of use.

In the TPI Ujung Batu Redesign project, the principle of adaptability is not realized through mechanical transformation of the building's form, but rather through the area's ability to respond to the dynamics of the coastal environment and changing patterns of fishing activity. This is based on the existing condition of the TPI Ujung Batu, located at the mouth of the Wiso River, where fisheries activities coexist with a water system that is vulnerable to sedimentation and changing hydrological conditions.

User activity was also a key consideration in the application of Adaptive Architecture to this project. Based on the analysis, fish fishermen, shellfish fishermen, and seaweed fishermen have different operational patterns. Therefore, the area was designed with the principle of operational flexibility through a shared berthing system.

2.1 STUDY AND ANALYSIS OF DESIGN THEME

Lawson (2001) states that the quality of a built environment is determined by its ability to support the activities occurring within it. Therefore, relationships between spaces must be formed based on user activity patterns, not solely on the need for space in isolation. This thinking underpins the development of a fisheries flow system in the Ujung Batu TPI area, where the relationship between the dock, loading and unloading area, auction, processing, and distribution are arranged according to the sequence of actual fishing activities. This approach allows the area to adapt to changes in catch volume and operational activity intensity without compromising work efficiency.

The application of Adaptive Architecture also relates to the building's response to coastal climate conditions. According to Olgyay (1963), climate-responsive buildings must utilize the potential of the natural environment to create comfortable spaces. In fish auction buildings, the need for natural ventilation is crucial given the high humidity, temperature, and odors generated by fishing activities. Therefore, the roof shape, ventilation system, and opening configuration are designed to maximize natural airflow so that the building can adapt to coastal climate conditions without over-reliance on mechanical systems.

Habraken (1998) explains that a good built environment must be able to adapt to the social and economic development of the community. In the context of the Ujung Batu Fish Auction (TPI), the area's function is no longer limited to a fish auction site but has also evolved as a center of economic activity for coastal communities. Therefore, the area is

designed to accommodate MSMEs, a seafood market, and a waterfront public space as part of an integrated regional system.

Based on these various studies, Adaptive Architecture in the Ujung Batu Fish Auction Redesign is understood as the area's ability to adapt to the dynamics of the coastal environment, changes in fishing activity patterns, fisheries operational needs, tropical coastal climate conditions, and community economic development. This approach is realized through the arrangement of water systems, the implementation of adaptive fish flow and land flow, the development of a mooring system based on fishermen's operational patterns, the use of natural ventilation, and the integration of economic functions within a single, interconnected waterfront area. This ensures that the area is not only able to function effectively under current conditions but also has the capacity to respond to changes that may occur in the future.

2.1 STUDY AND ANALYSIS OF DESIGN THEME

2.1.3 STUDY ISSUES

The Ujung Batu Fish Auction Place (TPI) is a coastal work area with high activity intensity and direct interaction with natural and aquatic systems. The issues arising in this area are multidimensional and interconnected, involving natural conditions, the fishing port system, environmental quality, and the region's social and economic aspects.

Based on an analysis of existing conditions and a literature review related to coastal areas and fishing ports, the issues facing this project are classified into four main categories.

1. Natural Environment & Coastal Dynamics

The TPI Ujung Batu area is located in a coastal area and river estuary, which is heavily influenced by natural dynamics such as ocean waves, currents, tides, and sedimentation processes. One major problem is water silting, which occurs due to the influx of sand sediment from the sea and sediment from river estuaries. According to Dean et al. (2002), estuary areas and open harbors are highly susceptible to sedimentation due to the interaction of ocean waves and river flow.

Direct exposure to waves and surf makes the waters in front of the TPI less calm for boat mooring. This situation encourages fishermen to use the river as a temporary shelter, which ultimately accelerates river silting and disrupts the region's hydrodynamic balance (White et al., 2010).

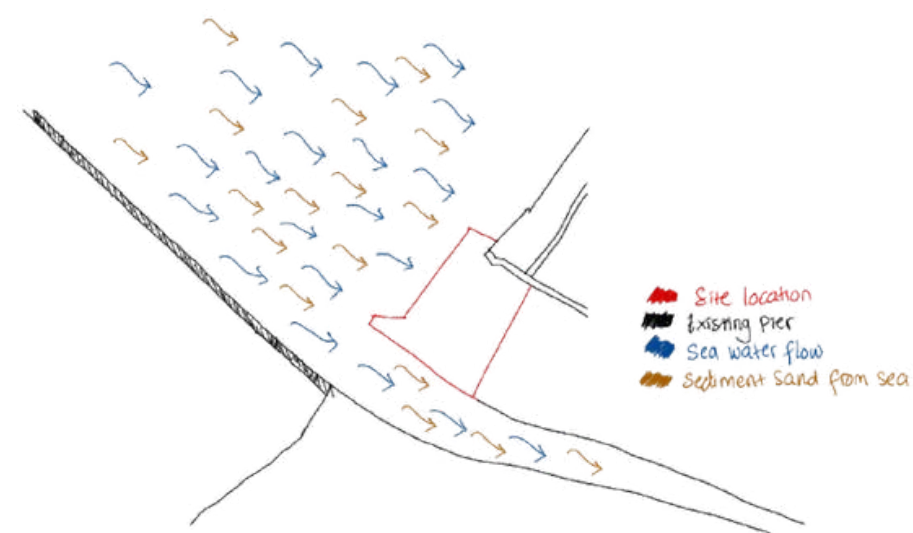


Figure 2.1 Flow of Water and Sand

Source: Author, 2025

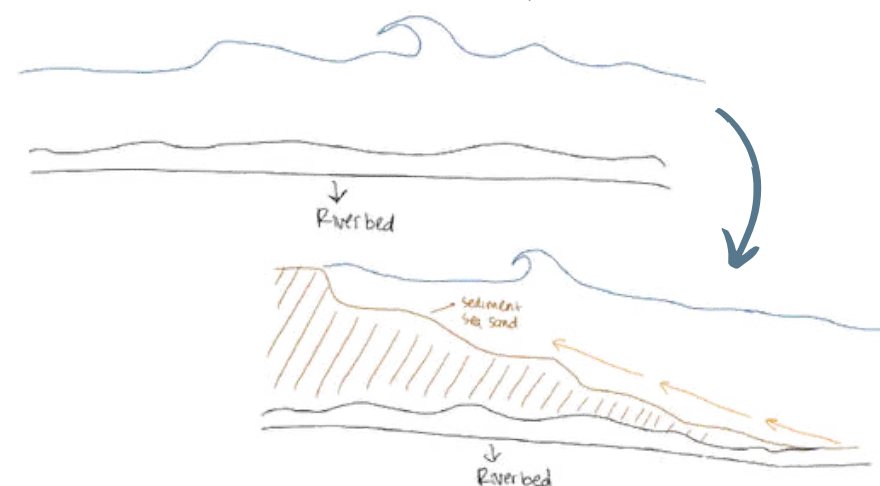


Figure 2.2 Sedimentation in the Wiso Riverbank

Source: Author, 2025

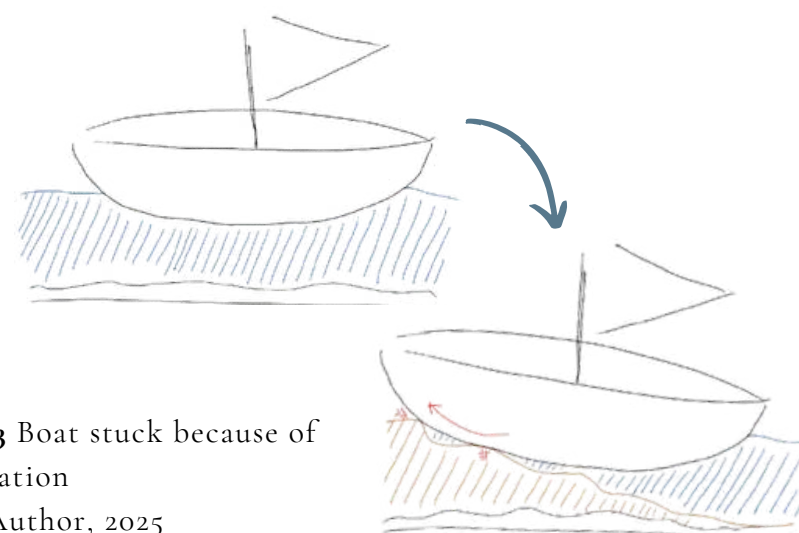


Figure 2.3 Boat stuck because of sedimentation

Source: Author, 2025

2.1 STUDY AND ANALYSIS OF DESIGN THEME

2. Port Infrastructure & Fishery Operation Issues

Under existing conditions, the TPI area lacks a structured and protected mooring system and harbor basin, resulting in inefficient fish landing and loading and unloading activities. According to FAO et al. (2014), fishing ports without protected harbor basins tend to experience operational disruptions, decreased productivity, and higher safety risks.

The circulation of vessels, logistics vehicles, fishermen, and visitors is not clearly organized. This situation creates conflicts between activities and prolongs the fisheries workflow. Hoyle et al. (2004) explain that the efficiency of a port area is largely determined by a clear circulation system and the integration of marine and land-based activities.

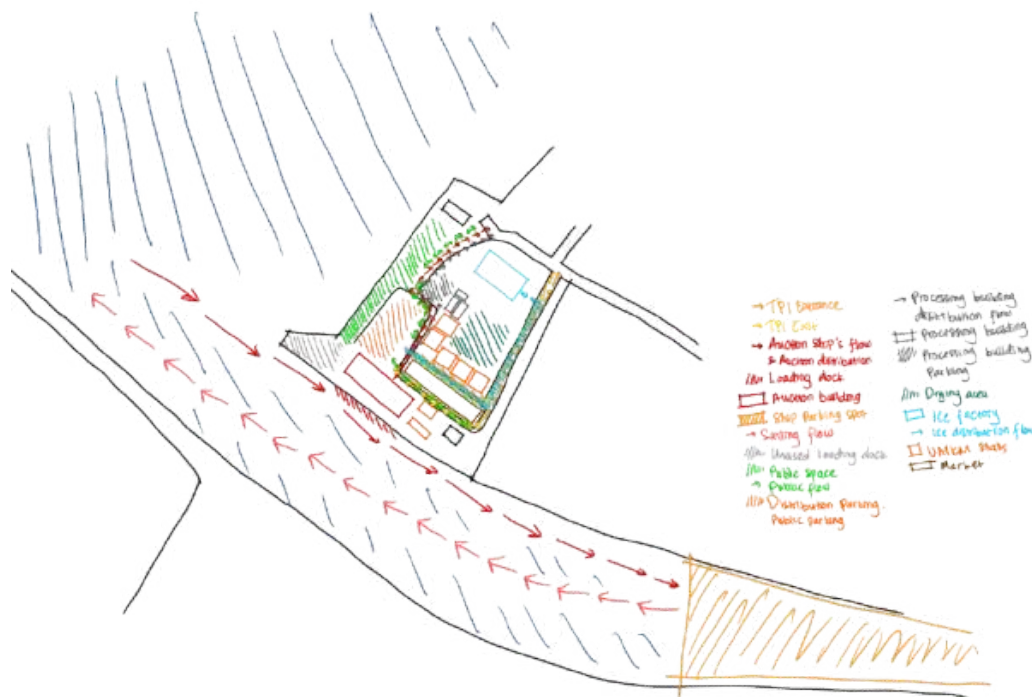


Figure 2.4 TPI Ujung Batu Operational and Infrastructure Issue

Source: Author, 2025

3. Environmental Quality Problem

Fishing activities generate large amounts of organic waste, including fish scraps, used washing water, and other solid and liquid waste. Under existing conditions, limited sanitation and waste management systems lead to the formation of stagnant water, mud, and the characteristic odor of fish auction areas. According to McGinley et al. (2000), poorly managed organic waste in humid environments can accelerate the decomposition process and significantly degrade environmental quality.

Decreased environmental quality not only impacts the work comfort of fishermen but also influences the perception of the area by the community and visitors. Schiffman et al. (2001) emphasized that sensory environmental quality, including odor and visual cleanliness, has a significant influence on the social acceptance of an area.

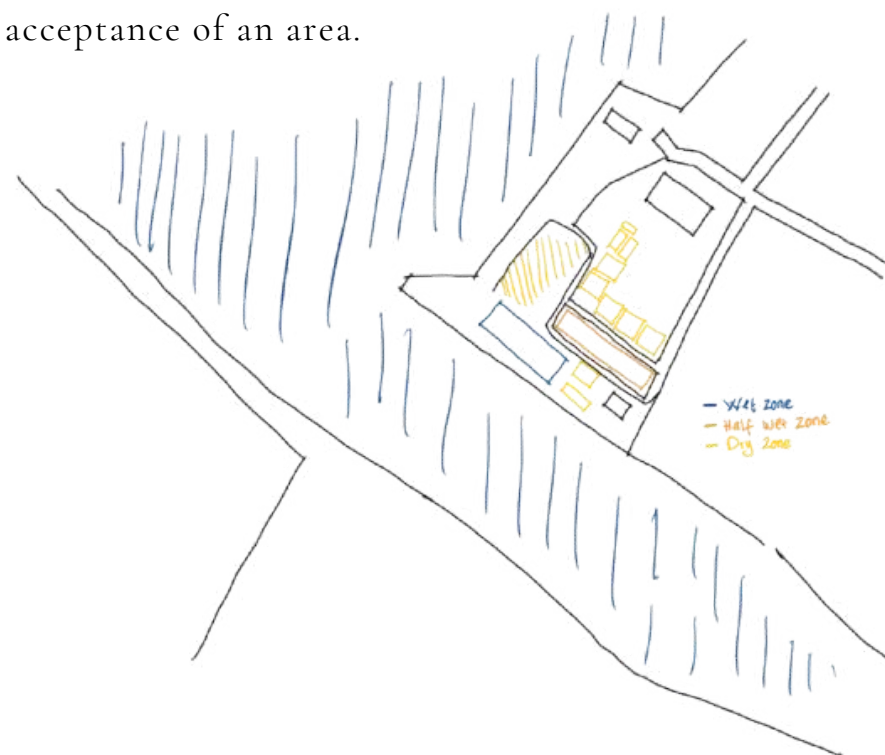


Figure 2.5 TPI Ujung Batu Environmental Quality Problem

Source: Author, 2025

2.1 STUDY AND ANALYSIS OF DESIGN THEME

2. Socio Economic & Regional Integration Problem

Social and economic problems in the Ujung Batu Fishing Port (TPI) area are closely related to the fishermen's dependence on the seasons. During lean periods, most fishermen stop fishing and lose their primary source of income. According to Allison et al. (2009), coastal communities dependent on capture fisheries are highly vulnerable to seasonal and climatic changes.

The Ujung Batu Fishing Port (TPI) is surrounded by fishing settlements, so activities within the TPI directly impact the economic sustainability of surrounding fishing families. The incomes of fishermen, fish workers, fish traders, and household businesses are highly dependent on the intensity of fish auctions and landings in the area. According to Allison et al. (2009), coastal communities living close to fishing facilities tend to have a high level of economic dependence on a single center of activity.

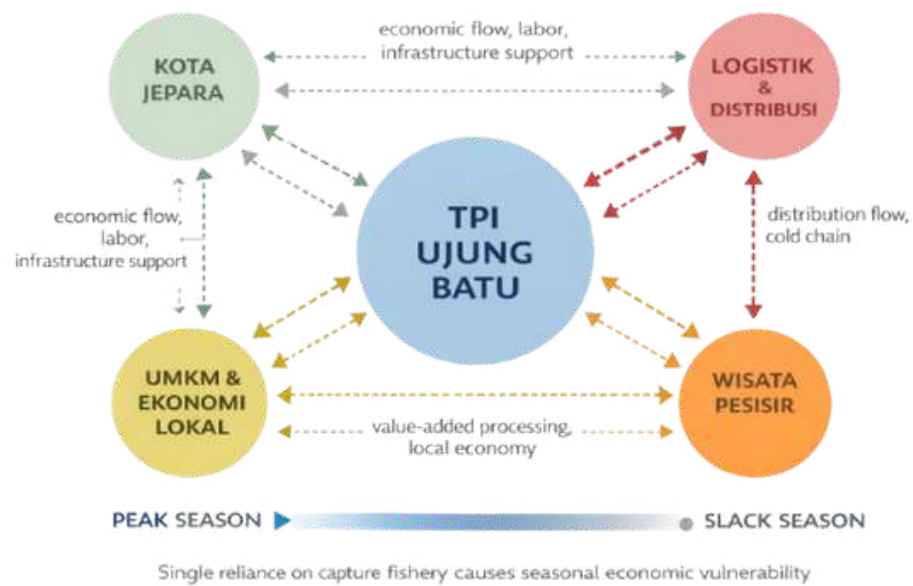


Figure 2.6 Socio Economic & Regional Integration Problem
Source: AI ChatGPT, 2025

Furthermore, the TPI area has not been optimally integrated with city systems and regional activities, resulting in underutilization of the region's economic potential. Roberts et al. (2016) state that integrating fishing port areas with regional economic systems can increase the economic resilience of coastal communities and expand the area's functions without diminishing its primary role.

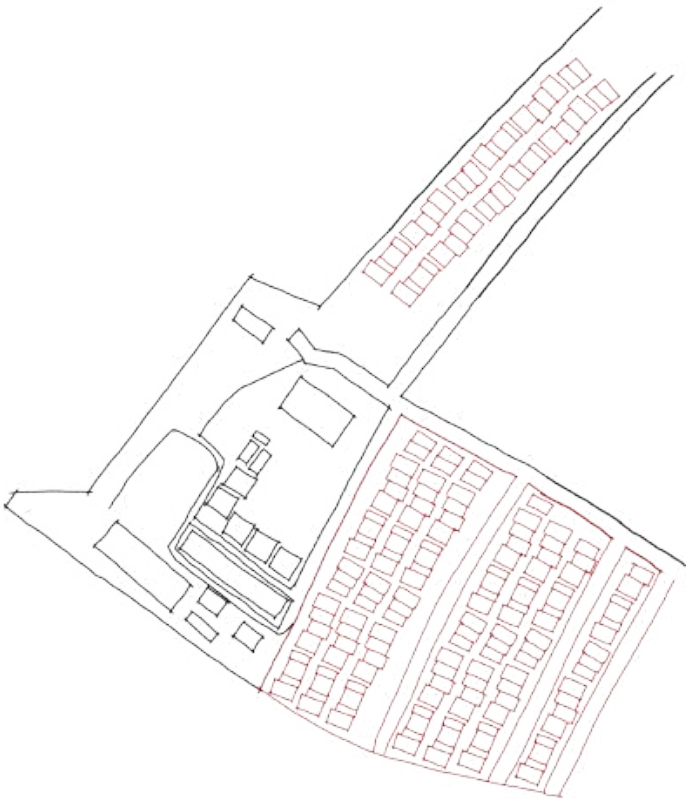


Figure 2.7 Fisherman's Settlements Mapping
Source: Author, 2025

2.2 FISHERY ACTIVITY STUDY

- **Fishing Boat Arrivals**

Fishing activities begin when fishing boats arrive at the TPI area after heading out to sea at dawn, around 4:00–5:00 a.m. The arrival of the boats triggers the start of all activities in the TPI area, as the catch is immediately brought ashore for further processing. This stage requires a safe and organized mooring area so that boats can dock without disrupting the activities of other vessels. The arrival of the boats marks the starting point for the entire chain of fishing activities.

- **Fish Loading & Unloading**

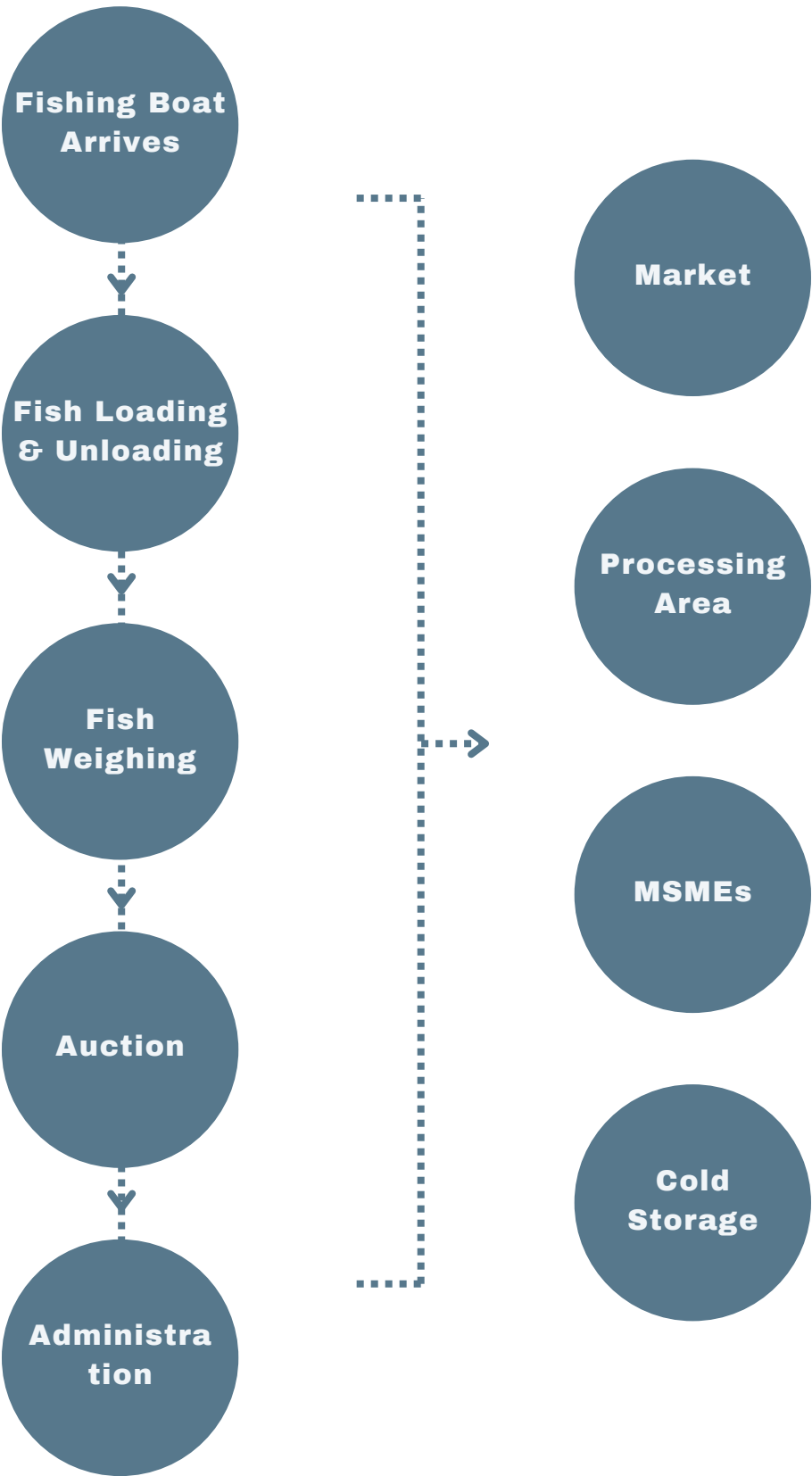
After the ship docks, the fish are loaded and unloaded onto land. This process is carried out quickly and continuously to maintain the freshness of the fish. The loading and unloading process is a high-intensity, wet process and is the initial stage of processing the catch.

- **Fish Weighing**

The unloaded fish are then weighed to determine the weight and quantity of the catch. This weighing serves as the basis for recording and determining prices during the auction process. This stage marks the transition from technical fishing activities to economic ones.

- **Open Outcry (Auction)**

After weighing, the fish are auctioned through an open auction system (open outcry). The auction typically takes place in the morning and reaches its peak once all the fish are ready to be auctioned (usually at 1:00 p.m.). This stage involves direct interaction between fishermen, traders, collectors, and the auctioneer, making the auction area a hub of social and economic activity at the TPI.



2.2 FISHERY ACTIVITY STUDY

- **Auction Administration**

As the auction progresses, a series of administrative activities are carried out to manage the auction proceeds. Administrative activities at the Ujung Batu TPI consist of several stages, namely:

1. Collecting auction tickets, as proof of transaction for buyers.
2. Totaling auction tickets, to summarize the number and value of transactions.
3. Depositing auction money, as the payment process for auction proceeds.
4. Cashier, as the final stage in recording and managing auction proceeds.

This administrative process ensures that the entire auction process is recorded in an orderly and accountable manner.

- **Distribution of Auction Proceeds**

After the administrative process is complete, the auctioned fish are distributed to several destinations:

2. Markets for direct sales,
3. Processing Areas for further processing,
4. MSMEs (Micro, Small, and Medium Enterprises) as raw materials, and
5. Cold Storage for temporary storage prior to further distribution.

Distribution continues throughout the day and evening, depending on market and processing needs.

2.3 AUCTION AREA STUDY

2.3.1 AUCTION AREA

According to FAO et al. (2014), fish auction areas are a key component of a fishing port system because they determine distribution efficiency, price transparency, and the economic sustainability of fishermen. Therefore, understanding the characteristics of auction areas and their supporting facilities is crucial in the study of TPI areas.

The auction area does not exist as a single space, but rather as an integrated spatial system consisting of auction buildings and supporting facilities. Hoyle et al. (2004) explain that effectively functioning fishing port areas generally have clear spatial relationships between transaction, administrative, and distribution areas to ensure a smooth flow of activities.

The main activity in the auction area takes place after the loading and unloading and weighing of the fish is complete. The weighed fish are placed in the auction area to be sold through an open auction system. This system is widely used in traditional fish auctions because it allows direct interaction between sellers and buyers and allows for rapid price formation (Béné et al., 2010).

The characteristics of auction activities are:

- Wet, because they involve fresh fish, water, and ice
- Intensive, with concentrated human movement over a short period of time
- Temporary, because the main activity occurs at specific times

According to McGinley et al. (2000), the wet and intensive nature of fish auction activities requires a spatial arrangement that simultaneously maintains cleanliness, comfort, and work efficiency.



Figure 2.8 Auction Situation Visualization

Source: Google.com, 2025

2.3 AUCTION AREA STUDY

2.3.2 AUCTION AREA ELEMENT

Given the nature of fish auction activities, which are wet, intensive, and take place over a specific duration, the design elements of the auction area need to be formulated comprehensively but not fragmented. According to FAO et al. (2014), the quality of an auction space is determined by its ability to simultaneously support workflow, sanitation, and comfort. Therefore, the design elements of the auction area at the Fish Auction Fish Farm (TPI) can be summarized into the following main elements.

- **Natural Ventilation**

Auction areas require open or semi-open spaces that allow for visual openness and natural air circulation. Open spaces play a role in reducing the accumulation of odors, heat, and humidity generated by fishing activities. Carmona et al. (2010) stated that high-intensity public workspaces will function more optimally if they have good natural ventilation and a direct connection to the outside.

- **Structured Circulation System**

Circulation is a crucial element in the auction area because it involves the simultaneous movement of fish, workers, buyers, and visitors. According to Hoyle et al. (2004), separating circulation based on function can reduce activity conflicts and improve operational efficiency in the port area. The movement of fish, people, and distribution channels should be clearly visible through spatial planning.

- **Sanitation & Drainage Systems**

Because auction activities are wet, the auction area requires a comprehensive sanitation system. This includes a waterproof and easy-to-clean floor surface, a drainage system that can quickly drain water and liquid waste, and easy access for cleaning the area after the activity is completed. McGinley et al. (2000) emphasize that poor sanitation management in fisheries areas can significantly reduce environmental quality and work comfort.

- **Supporting Facilities and Space Flexibility**

The auction area must be directly connected to supporting facilities such as administration, distribution, processing, MSMEs, and cold storage. This integration allows for efficient and controlled post-auction processes. Bromley et al. (2012) stated that the distance and relationship between functions in a fish auction significantly impact distribution speed and product quality. The auction space must be flexible to accommodate fluctuations in fish volume and the number of auction participants that vary daily and seasonally (FAO et al., 2014).

2.4 PRECEDENT STUDY

2.4.1 TPI MUARA ANGKE



Figure 2.9 TPI Muara Angke

Source: Google.com, 2025

Port (Port & Harbor)

- Functions as the main berthing point for fishing boats, fishing vessels, and distribution vessels.

Docking Area

- The docking area functions for boat repairs, fuel supplies, and preparation for going to sea.

Fish Market & Kiosks

- The old fish market and the modern fish market (Muara Baru) provide facilities for transactions, MSME kiosks, and cold storage.
- Small-scale traders sell directly from open stalls, while large traders use cold storage and warehouses.

Restaurants

- Around the market area, there are many seafood restaurants, especially those targeting tourists, who serve as an extension of the market's function: fresh fish from the auction can be directly processed and consumed on the spot.

The Muara Angke Fish Auction Center (TPI) in Jakarta is one of Indonesia's largest fisheries and fish auction centers. It serves not only as a point of sale for seafood but also as an integrated area for economic activities, storage, distribution, and processing. This area is crucial because it accommodates the activities of thousands of traditional fishermen, fish traders, and MSMEs operating in the culinary and service sectors. Revitalization of the Muara Angke area in recent years has provided modern facilities such as cold storage, a closed auction room, a fish processing area, a wastewater treatment plant (IPAL), and a modern fish market (Muara Baru), which is also aimed at attracting tourists.

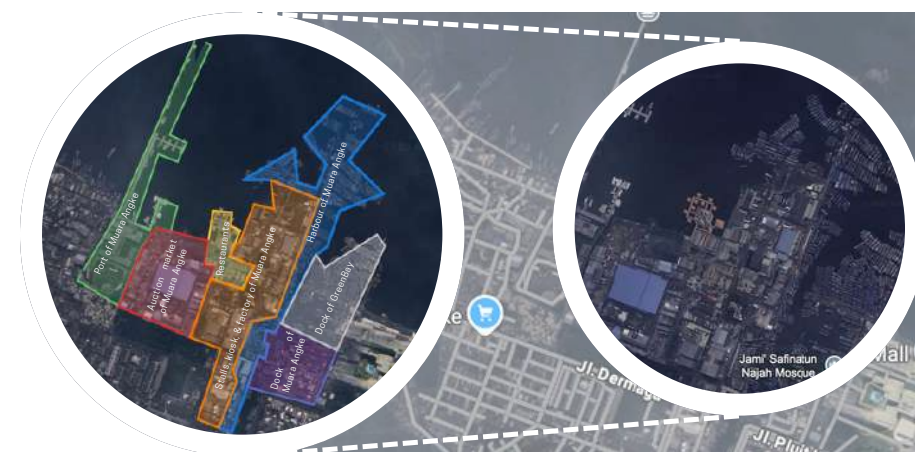


Figure 2.10 TPI Muara Angke Zone Mapping

Source: Google Earth rework by author, 2025

Processing Factories / Industries

- There are fish processing industries that add value to products and expand the market's function as a center for the fishing industry.

Supporting Facilities

- Large cold storage for storing unsold fish.
- Wastewater Treatment Plants (IPAL) to reduce marine pollution.

2.4 PRECEDENT STUDY

2.4.2 FISHING HUB "RENOVATING BRULLUS PORT", DENMARK



Figure 2.11 Fishing Hub "Renovating Brüllus Port"

Source: [https://www.behance.net/gallery/181824117/fishing-hub-\(graduation-project\)-RENOVATING-old-PORT](https://www.behance.net/gallery/181824117/fishing-hub-(graduation-project)-RENOVATING-old-PORT), 2025

The Brüllus Port Renovation Project was developed as an effort to revitalize a fishing port experiencing declining activity. The main challenge of the project was how to update the fisheries infrastructure without losing the port's functional character and still allowing for adaptation to new functions.

- **Mass and Infrastructure Approach**

The buildings and facilities were designed as separate yet interconnected systems, with an emphasis on spatial flexibility. The wharf, loading and unloading area, processing area, and supporting facilities were not integrated into one large building, but were arranged as a series of masses that follow the waterline.

- **Flexibility and Adaptability Strategy**

The structures and spaces were designed to adapt to changes in fishing activity volume and seasons. Workspaces were modular and easily accessible, allowing for reuse without major structural changes.



- **Architectural Expression**

The architecture displays a straightforward industrial character, with open structures, marine-resistant materials, and a strong visual connection between the buildings and the water.

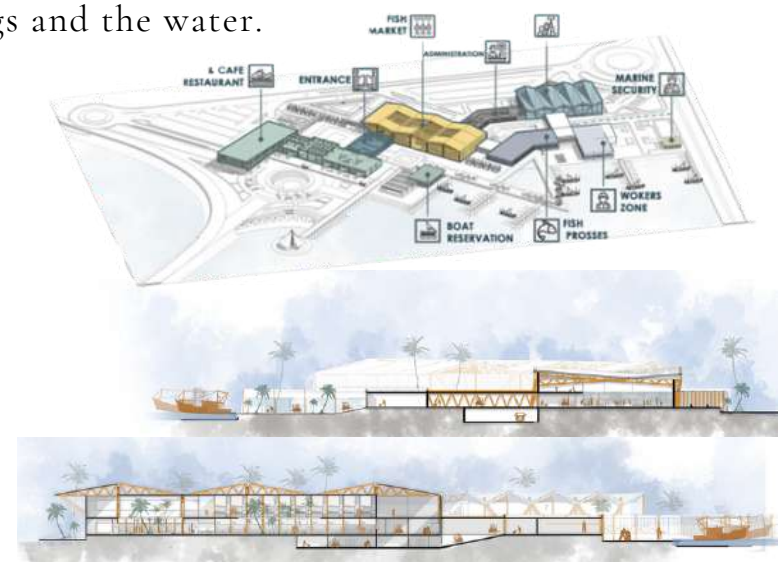


Figure 2.12 Technical drawing of Fishing Hub "Renovating Brüllus Port"

Source: [https://www.behance.net/gallery/181824117/fishing-hub-\(graduation-project\)-RENOVATING-old-PORT](https://www.behance.net/gallery/181824117/fishing-hub-(graduation-project)-RENOVATING-old-PORT), 2025



3 DESIGN CONTEXT



3.1 LOCATION, SITE, & CONTEXT ANALYSIS

3.1.1 LOCATION DESCRIPTION



Figure 3.1 Site location of the project

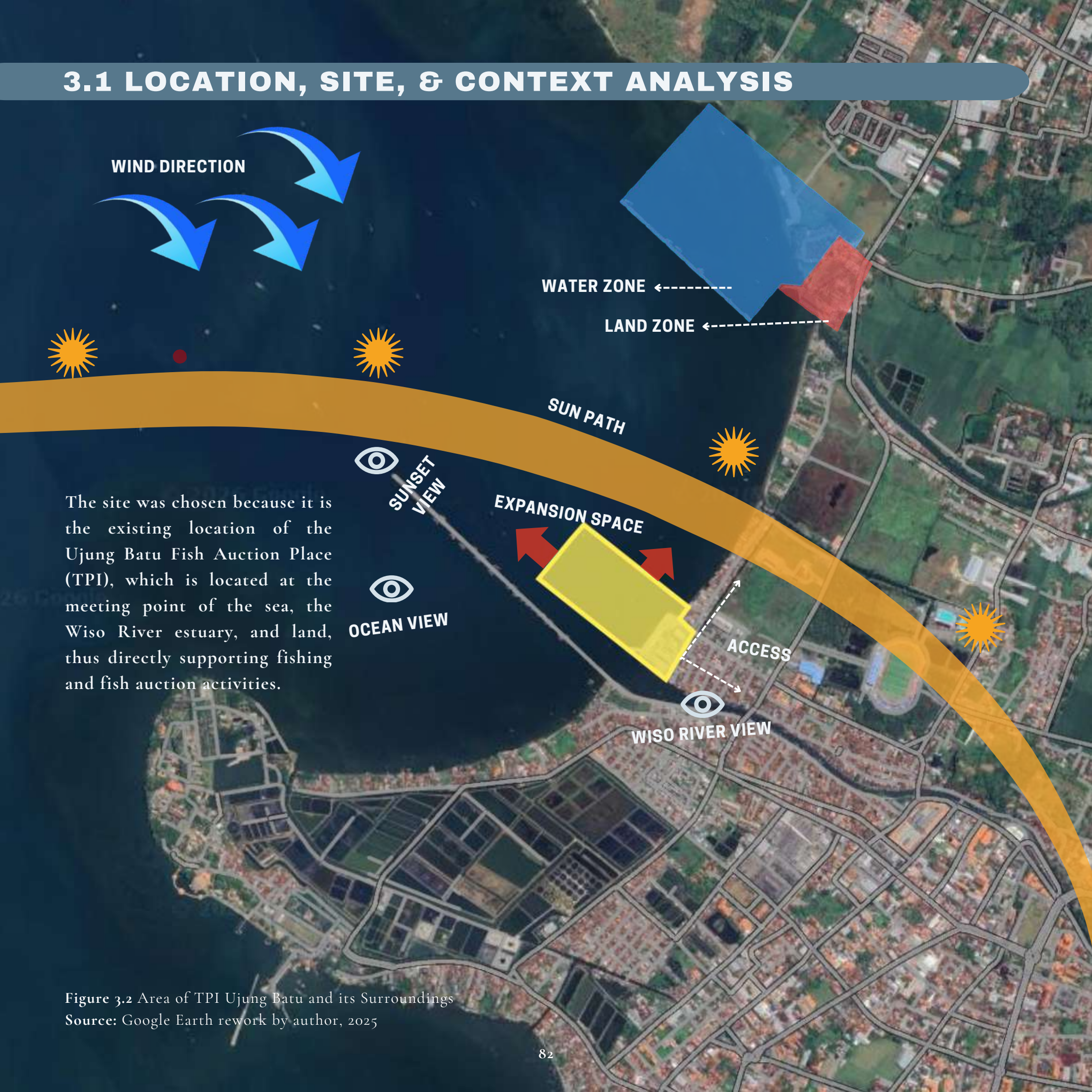
Source: Google Earth rework by author, 2025

The design area is located at the Ujung Batu Fish Auction Place (TPI), on the north coast of Jepara Regency, at the confluence of the Java Sea and the Wisio River estuary. This location serves as a center for capture fisheries activity, with relatively calm waters used for boat mooring and fish loading and unloading.

The TPI area directly borders a densely developed fishing settlement that follows the coastline and river channel, demonstrating the strong link between fishing activities and the socio-economic life of the surrounding community. On the landward side, the area is also adjacent to fishponds and wetlands, forming a coastal transition landscape.

Contextually, the Ujung Batu TPI is connected to Jepara's urban network and offers access to the city center and commercial areas. The dynamics of tides, ocean currents, and sedimentation from the river estuary contribute to shaping the area's physical character, making the Ujung Batu TPI an active coastal area with integrated fisheries, residential areas, and water resources.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

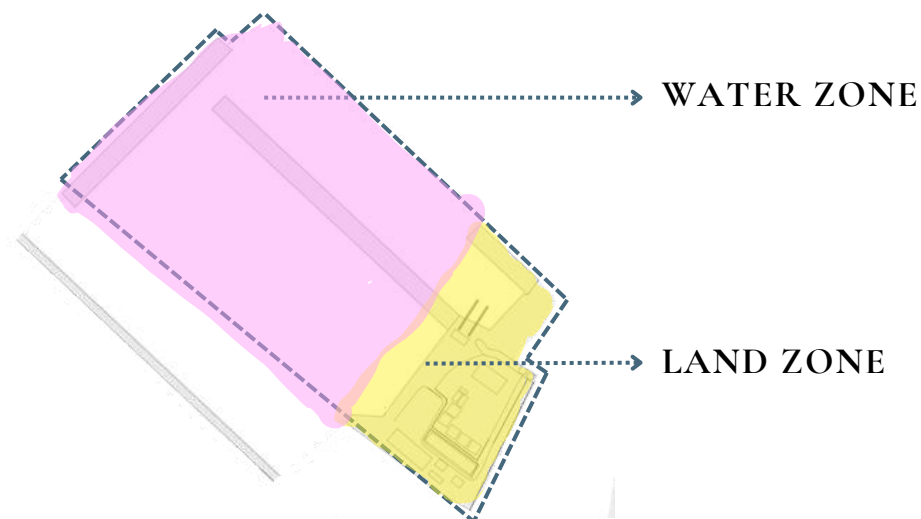
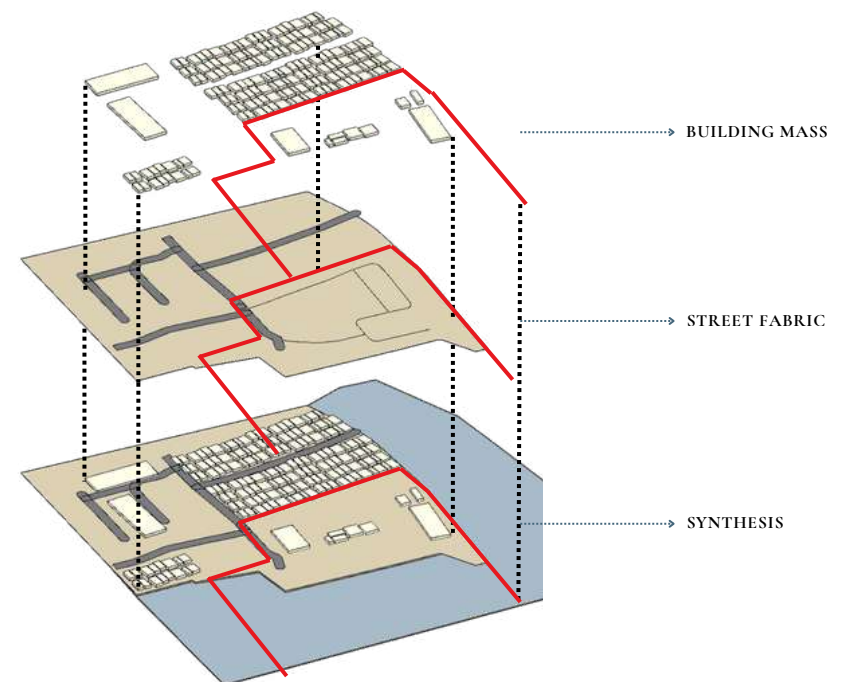


The site was chosen because it is the existing location of the Ujung Batu Fish Auction Place (TPI), which is located at the meeting point of the sea, the Wiso River estuary, and land, thus directly supporting fishing and fish auction activities.

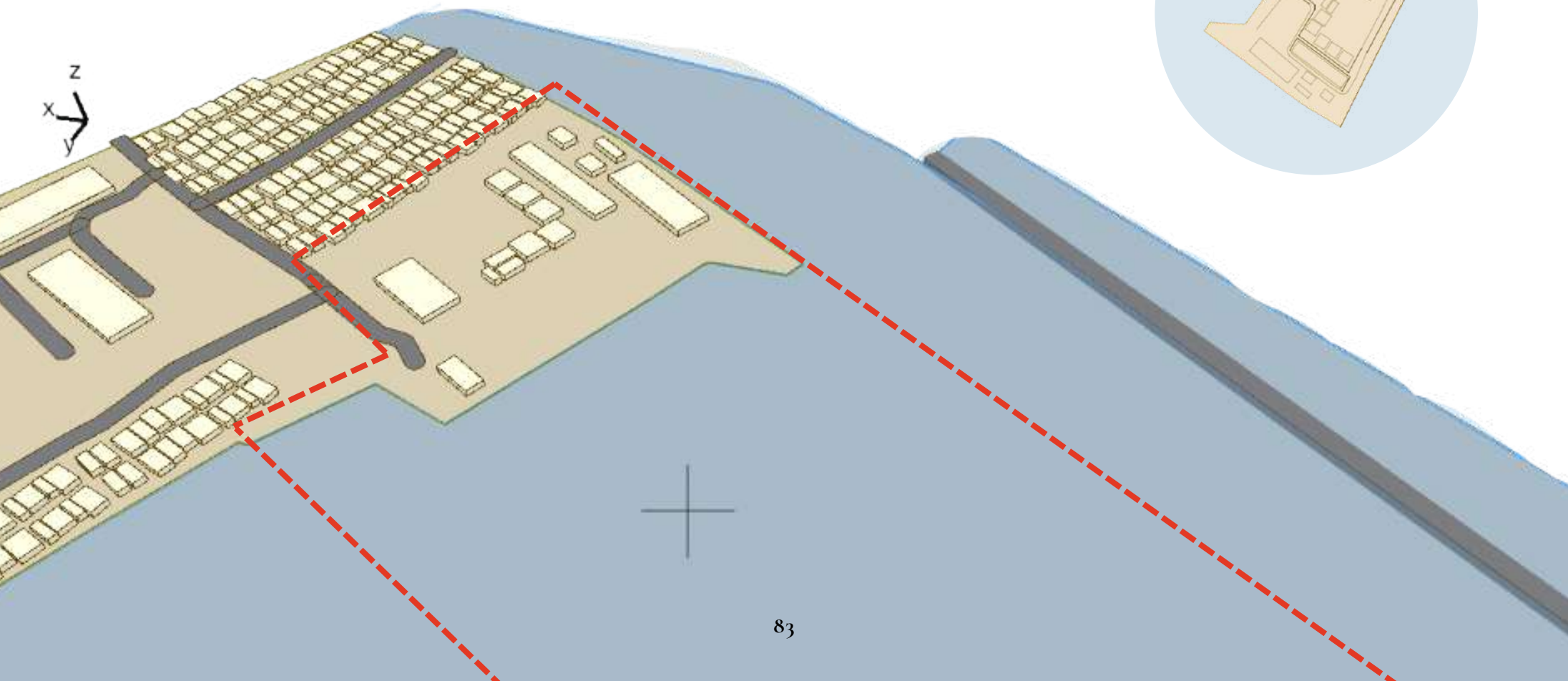
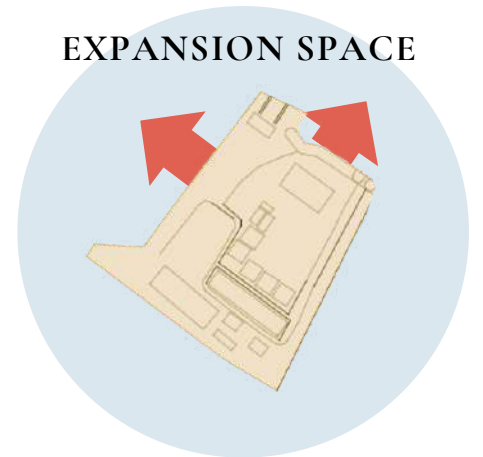
Figure 3.2 Area of TPI Ujung Batu and its Surroundings
Source: Google Earth rework by author, 2025

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

The site's layout is formed by separating the water and land zones in the Ujung Batu Fish Auction Place (TPI) area, which are connected as a single fisheries operation system. The water zone accommodates boat activity, while the land zone accommodates auctions and supporting facilities. The site's development is focused out to sea, following the coastline and the Wiso River estuary.



EXPANSION SPACE



3.1 LOCATION, SITE, & CONTEXT ANALYSIS

3.1.2 PHYSICAL DATA



Figure 3.3 Site Location of the Project

Source: Google Earth rework by author, 2025

Address: Jl. Sidik Harun No.10, Ujungbatu III, Ujungbatu, Kec. Jepara, Kabupaten Jepara, Jawa Tengah

Coordinate: -6.582784, 110.657464

Site Area: 13 ha (Land; 1 ha, Water: 12 ha)

Classification: Fishery & Residential

Existing Use: TPI and its supporting facilities (Fish Processing, UMKM, & Market)

BCR (Building Coverage Ratio): $60\% \times 10.000 = 6.000$ m²

Green Building Coefficient: $20\% \times 10.000 = 2.000$ m²

Green Open Space: $15\% \times 10.000 = 1.500$ m²

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Average Humidity



Figure 3.4 Humidity in Jepara Within a Year

Source: Author, 2025

From the graph, the average humidity in Jepara is divided into three phases.

- In January, the average humidity in Jepara is around 82%.
- In November, the average humidity is approximately 78%.
- In July, the average humidity in Jepara approaches 80%.

Average Rainfall



Figure 3.5 Average rainfall in Jepara Within a Year

Source: Author, 2025

This chart shows the average monthly rainfall in Jepara, showing that the peak rainfall occurs in December–January, while the dry months are in June–August.

Average Temperature



Figure 3.6 Average Temperature in Jepara Within a Year

Source: Author, 2025

Hottest Month: May, with an average daily high of 28°C.

Coldest Month: August, with an average daily low of around 22°C.

Average Daily Temperature: Throughout the year, average daily temperatures range from 30°C to 32°C during the day, and 24°C to 25°C at night.

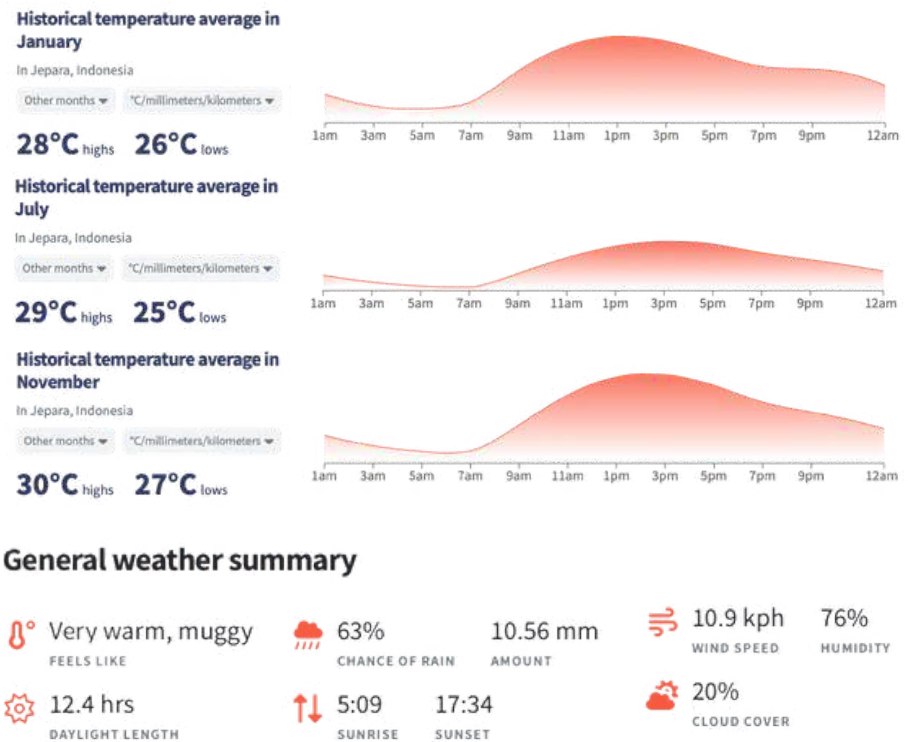


Figure 3.7 Average Temperature in Jepara Within a Year

Source: Google.com, 2025

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Wind Data

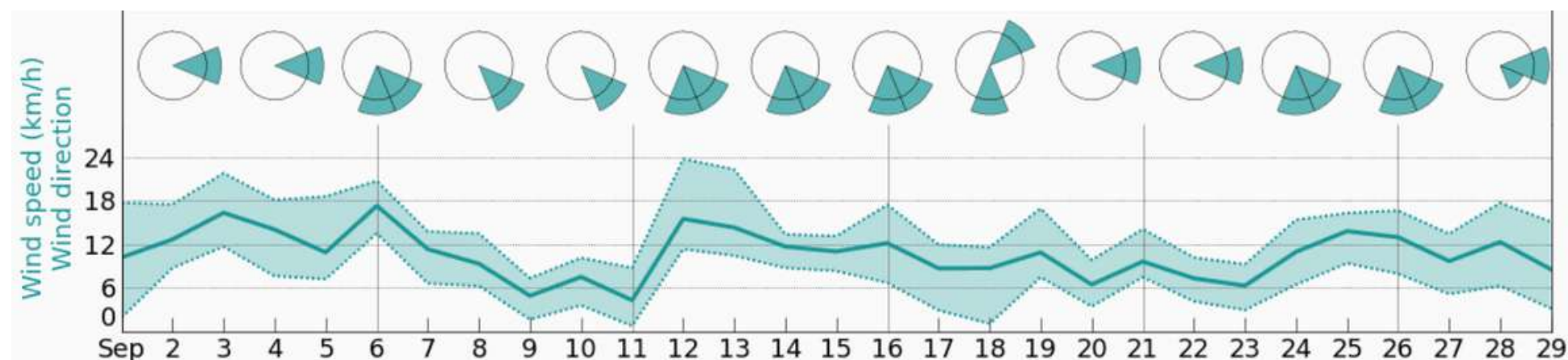


Figure 3.8 Wind Data in Jepara Within a Year

Source: Author, 2025

From the pie chart (mini wind rose) above the graph:

- At the beginning of the month (September 2–6): the dominant winds are from the northeast (NE).
- September 7–11: the winds blow from the east (E) to the southeast (SE).
- September 12–15: the dominant winds are from the east–southeast (ESE–SE).
- September 16–20: the winds tend to be from the south–southeast (SSE–SE).
- September 21–25: the winds return to the east–southeast (ESE–E).
- September 26–29: the dominant winds are from the northeast (ENE–NE) again.

Average Wind Speed

- Average speed: 8–14 km/h.
- Peak speed: around 18–22 km/h (5th and 12th).
- Lowest winds: around 2–4 km/h (9th and 17th)

So, the main conclusion: wind conditions at TPI Ujung Batu are relatively stable, predominantly from the east-southeast with an average speed of 11 km/hour.

Relationship Between Wind Direction and Tides

Increased Wave Height & Breaking

Winds blowing from the sea (east/southeast) toward the coast can push larger waves toward piers or coastal facilities. If high tides occur in conjunction with strong sea breezes, the waves can travel further, disrupting pier operations, damaging structures, or causing localized tidal flooding.

Surface Current Direction

Consistent winds from one direction can create surface currents in the same direction, which interact with the tides (tidal currents). The effects of tidal currents can be enhanced or diminished by wind, altering the level of inundation or water distribution.

Impact on Drainage & Flooding

When high tides and winds push water inland, low-lying coastal areas without protection can experience drainage difficulties and flooding. Drainage systems must be designed to accommodate the combination of high tides and sea breezes.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

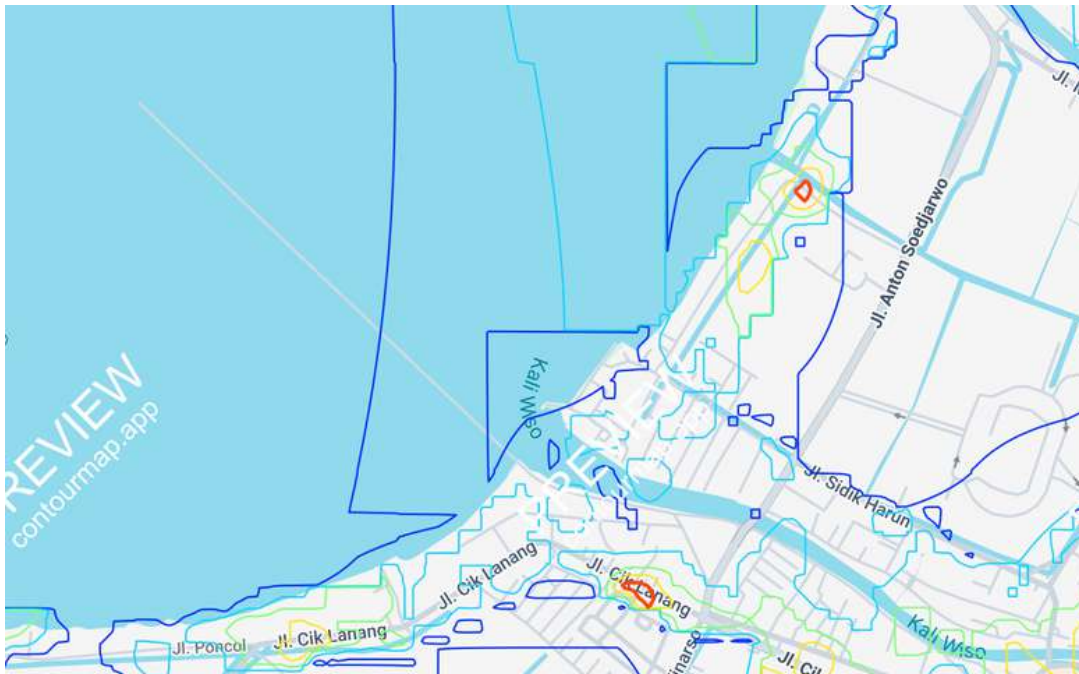


Figure 3.9 Ujung Batu Site Contour

Source: Cadmapper, 2025

Site Contour

The land contours in the Ujung Batu TPI area are relatively flat with small elevation differences, as is typical of coastal and estuary areas. This topography facilitates loading and unloading activities and logistics movements, but also increases vulnerability to flooding and tidal influences, especially during certain seasons. There is no significant natural elevation, making building elevation and drainage arrangements crucial in the area's design.

Bathymetry

In the waters around the Ujung Batu Fish Farm (TPI Ujung Batu), the water depth ranges from approximately 4 meters in the area closest to the shoreline to approximately 7 meters in the more distant waters. This depth change is gradual and gentle, particularly around the Wiso River estuary. This bathymetry directly impacts the maneuverability of fishing vessels, their parking capacity, and the safety of loading and unloading activities.

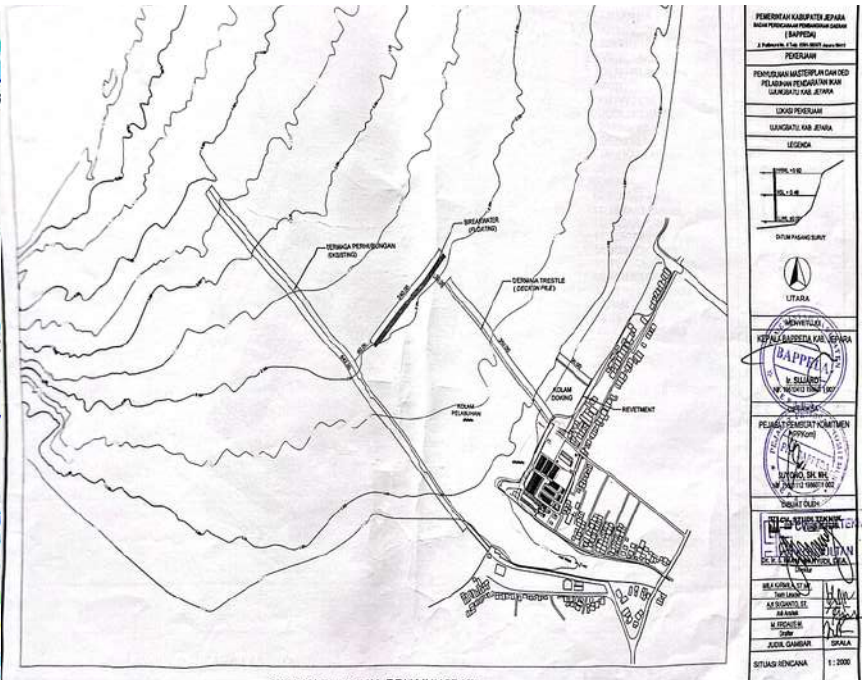


Figure 3.10 Ujung Batu Site Contour Plan Drawing

Source: d of the Fisheries Service of Jepara Regency, 2025

Estuary Characteristics

The Wiso River estuary creates a dynamic water contour pattern, with a tendency toward shallowing due to the accumulation of sediment carried by river currents and ocean waves. The estuary area is a critical point often used as an alternative mooring point by fishermen, but it also has the potential to disrupt the smooth flow of boats.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS



Figure 3.11 Ujung Batu Site Surroundings
Source: Google Earth rework by author, 2025

3.1.3 SITE CONNECTIVITY

The Ujung Batu Fish Farming Site (TPI) site's connectivity encompasses the sea, the Wiso River estuary, and the mainland, forming an integrated fisheries system. The site has direct access to the sea for boating, is connected to the river as an alternative route, and is connected to the road network and surrounding fishing settlements. This makes the TPI a hub for fisheries, distribution, and coastal economic activities, while also requiring clear circulation planning to avoid conflicts between these functions.

3.1.4 EXISTING LAND USE

Existing land use around the Ujung Batu Fish Farm is dominated by fisheries and fishing settlements that have developed along the coastline and the Wiso River estuary. Dense residential areas are located at the rear of the area, while the southern side is dominated by fish ponds and productive land.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

3.1.5 SITE EXISTING CONDITION

- Sea
- Shipyard
- Seashore
- Dock
- Auction Area
- Retails
- Unused Stalls
- SPBUN
- Fish Drying Area
- Ice Factory
- Fishermen's settlement

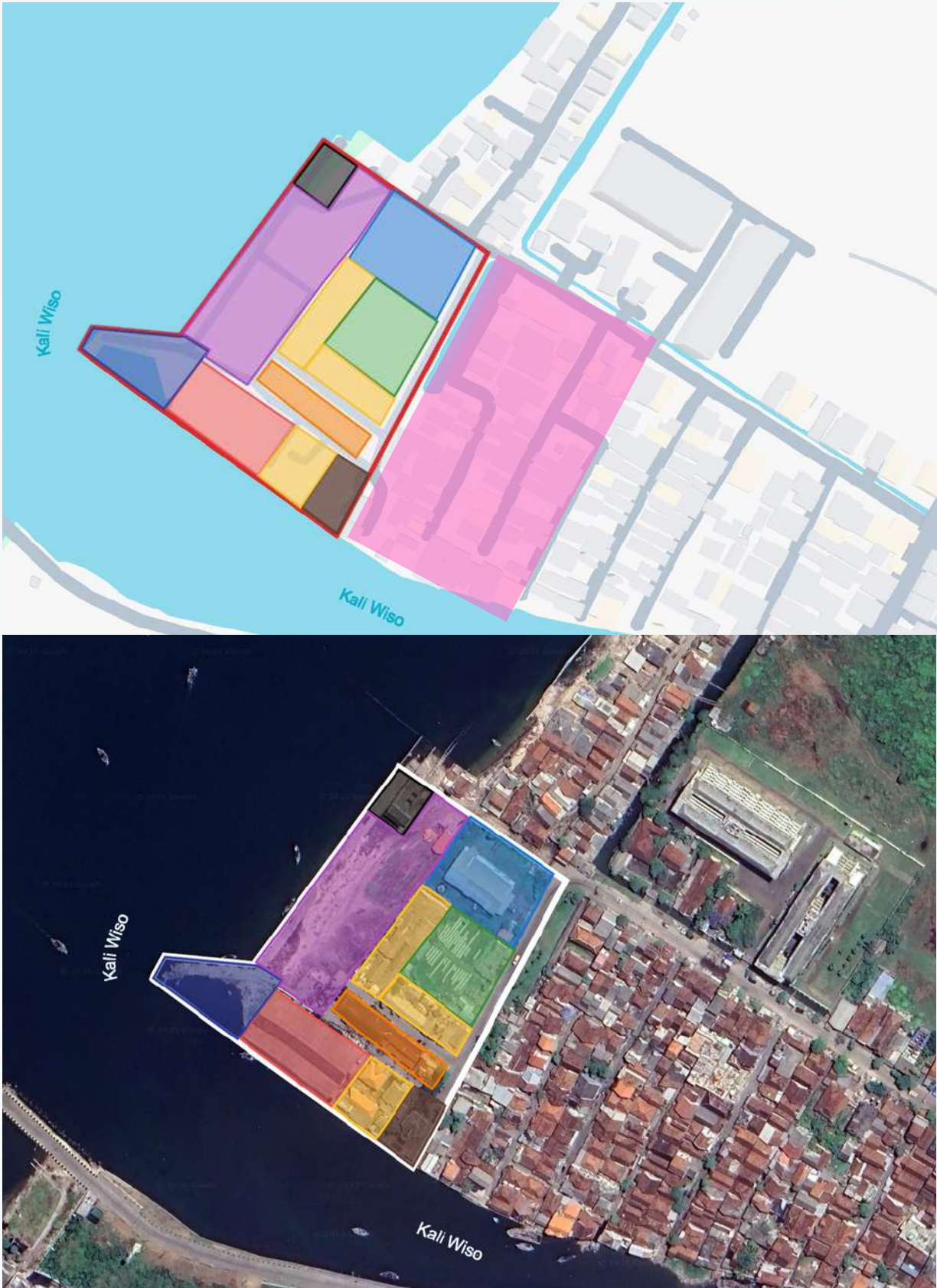


Figure 3.12 TPI Ujung Batu Site Zoning
Source: Google Earth rework by author, 2025

3.1 LOCATION, SITE, & CONTEXT ANALYSIS



3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Existing TPI Condition



The fish auction building at the TPI Ujung Batu is currently a one-story, open-plan structure, featuring exposed reinforced concrete columns and beams and a corrugated sheet roof. The interior of the building lacks permanent functional boundaries, allowing auction activities, fish handling, and user movement to occur within the same space. Openings on the sides of the building allow for natural air circulation, but without any clear control over wind direction and odor distribution.

The condition of the building's floor indicates a constantly wet surface due to fish, ice, and seawater washing activities. Some areas of the floor have suffered damage, material degradation, and puddles. The elevation difference between the floor and the exterior of the building appears minimal, allowing water to easily drain away, creating muddy conditions around the building. There is no visible, integrated floor drainage system to drain water from the auction activities.



Figure 3.13 Existing Auction Building Condition

Source: Author, 2025

Activities inside the building are dominated by traders, collectors, and auction workers who use buckets, plastic tubs, drums, and fish boxes as their primary means of handling their catch. These elements are placed directly on the floor without any designated zones.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Existing Market Condition



Figure 3.14 Existing Market Building Condition
Source: Author, 2025

The market area at the TPI Ujung Batu is housed in a semi-open building with a light steel column and frame structure supporting a corrugated iron roof. The market space is open-air without permanent walls, allowing buying and selling activities to directly face the surrounding environment. The spatial layout lacks clear zoning between the buying and selling, fish storage, and circulation areas, resulting in these functions being mixed within a single space.

Market activity is dominated by the use of large plastic fish boxes stacked directly on the floor or on simple tables. These boxes serve both as storage containers and as displays for fish, but their irregular placement creates visual congestion and constricts movement. Several weighing equipment and work tables are placed sporadically without a defined circulation pattern.

The market floor appears wet and dirty due to the handling of fish, ice, and seawater. The uneven floor surface and elevation differences between the inside and outside areas of the building create puddles and muddy conditions, especially along the main circulation routes. The drainage system does not appear well-integrated, allowing waste water from these activities to flow freely across the floor surface.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Existing Fish Processing Condition



The fish processing building at the TPI Ujung Batu is a semi-permanent structure separate from the auction and market areas. Physically, the structure and walls are predominantly made of wood and bamboo, with a corrugated iron roof. The exterior of the building exhibits a utilitarian and functional character, with a simple appearance and minimal protection from coastal weather, particularly rain and sea breezes.

Inside, the processing area is open and lacks clear spatial divisions between processing stages. Fish processing activities, such as boiling and handling seafood, are carried out manually using simple equipment. The boiling process appears to be carried out using a live fire stove, while the fish are placed on wooden racks and trays for further processing. The flooring consists of earth and rough concrete, with damp and wet conditions due to the constant water activity.

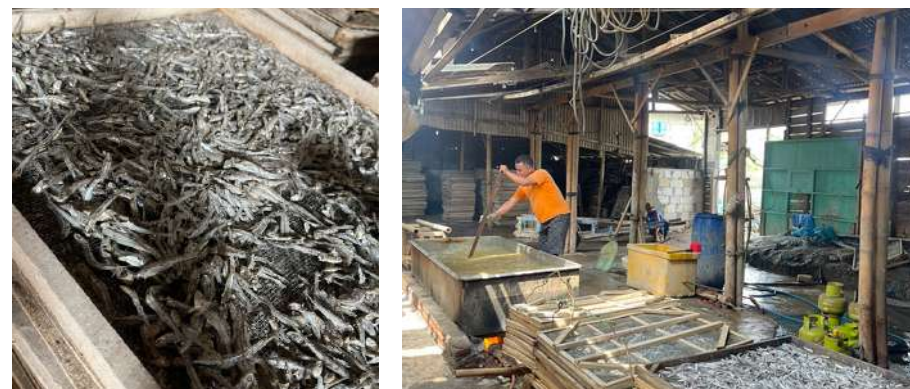


Figure 3.15 Existing Processing Building and Drying Area Condition

Source: Author, 2025

The processing building also lacks a planned sanitation, drainage, and ventilation system. Wastewater from the processing process flows directly into the surrounding area without any special treatment, while air circulation relies only on natural openings in the open sides of the building.

This situation reflects traditional manual labor-based processing practices, but also highlights the building's limitations in supporting standards of cleanliness, workplace comfort, and fish processing efficiency.

3.1 LOCATION, SITE, & CONTEXT ANALYSIS

Existing MSMEs (UMKM) Condition



Figure 3.16 Existing UMKM Building Condition

Source: Author, 2025

Currently, MSME buildings in the Ujung Batu Fish Market (TPI) area are semi-permanent, scattered along the area's circulation routes and directly adjacent to the fish auction and processing areas. These buildings generally consist of small, free-standing kiosks with simple structures made of wood, bamboo, and light iron frames, and roofs made of zinc or asbestos. The kiosk walls are mostly open or partially enclosed, allowing direct interaction between sellers and buyers, but providing minimal protection from heat, rain, and sea breezes.

The functions of existing MSMEs are quite diverse, ranging from selling food and beverages, daily necessities for fishermen, to processed seafood products such as salted fish and snacks. The activities of these MSMEs are highly dependent on the rhythm of the TPI (Fish Market), especially from morning to afternoon when the auction takes place.

Spatially, the kiosks are not arranged in a specific zone, resulting in a frequent mix of pedestrian, vehicle, and loading and unloading activities, which reduces the comfort and safety of the space. The physical condition of the building shows a high degree of wear and tear, with weathered materials, poor connections, and uneven dirt or concrete floors. Supporting facilities such as drainage, lighting, and seating are very limited, making the MSME area function more as an informal transactional space than a comfortable public space. Nevertheless, the presence of these MSMEs plays a crucial role in supporting the daily economic livelihoods of fishing families and organically shaping the social life of the TPI area.

3.2 DESIGN CONCEPT ANALYSIS

3.2.1 DESIGN GUIDELINES

Guideline	Principles
Fisheries Operational Efficiency	• Placing facilities based on the sequence of work processes. • Minimizing intersections between fishing routes, distribution vehicles, and visitors.
Separation of Wet Zone and Dry Zone	• Facilitates area management. • Reduces activity conflicts.
Based on Fishermen's Activity Patterns	• Consider alternating work systems between fish, clamp, and seaweed fishermen. • Optimize the shared use of moorings. • Avoid overdevelopment of facilities.
Strengthening Relationships with Fishing Settlements	• Provide direct access from settlements to the TPI. • Make the TPI a link between fishing communities and port activities. • Maintain social and economic linkages within coastal communities.
Clear Circulation Hierarchy	• Reduce movement conflicts. • Improve operational safety and efficiency.
Coastal Environmental Resilience	• Provide cross ventilation to let the air circulation. • Consider tidal and tidal inundation.
Flexibility of Space Use	• Open areas can be used for seasonal activities. • Facilities can be expanded gradually.

Table 3.1 Design guidelines
Source: Author, 2025

3.2 DESIGN CONCEPT ANALYSIS

3.2.2 SITE CONTEXT ZONING

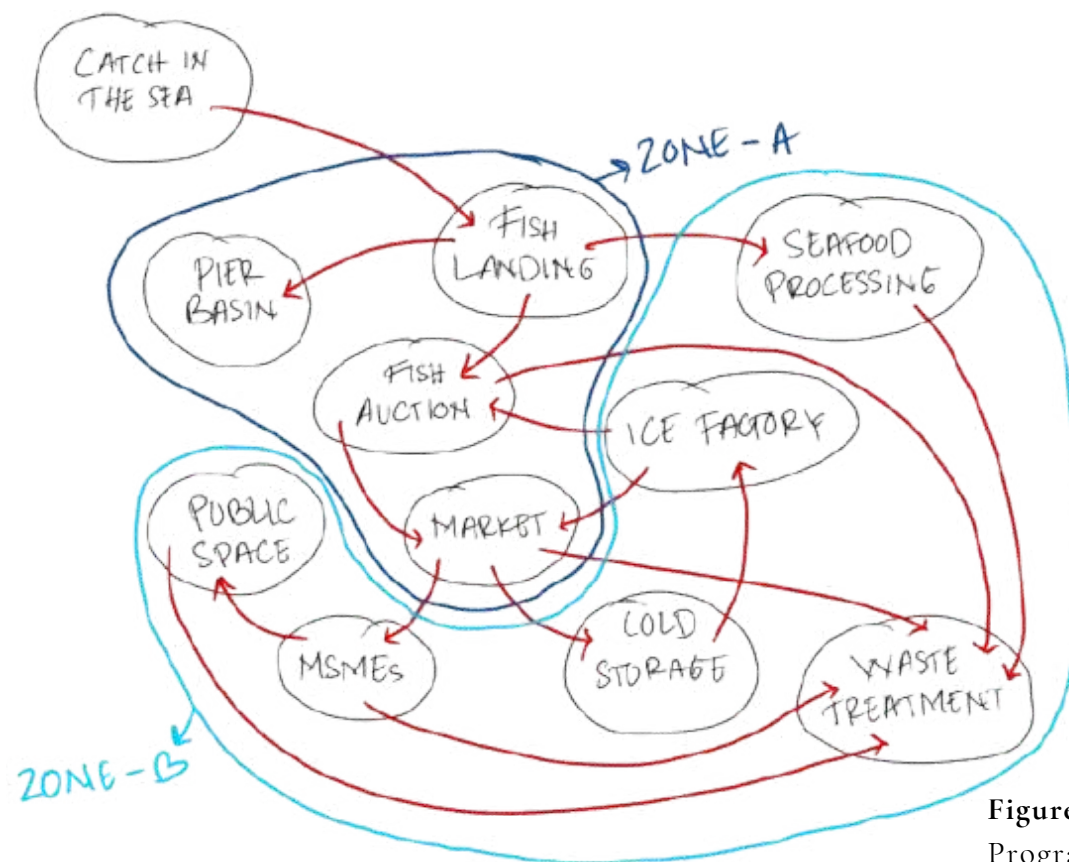


Figure 3.17 Zoning Concept Programming

Source: Author, 2025

Zone - A (Wet Zone)

- Pier Basin
- Fish Landing
- Fish Auction
- Market
- Seafood Processing
- Ice Factory

Zone Logic:

Zone A accommodates the entire chain of activities from sea to initial fish handling, characterized by:

- High water intensity
- Loading and unloading activities
- Strong odors
- High sanitation requirements
- Limited access (fishermen & workers)

Zone flow:

sea → landing → auction → Market → distribution

Zone - B (Dry Zone)

- Seafood Processing
- Cold Storage
- MSMEs (MSMEs)
- Public Space
- Waste Treatment

Zone Logic:

Zone B serves as a buffer between wet industrial areas and public activities, with the following characteristics:

- Dominantly dry floors
- Continued economic activities
- More comfortable and cleaner environment

3.2 DESIGN CONCEPT ANALYSIS

Alternative 1

Initially, the plan was to only focus on improving the existing TPI Ujung Batu by maintaining the existing zoning and not adding anything.

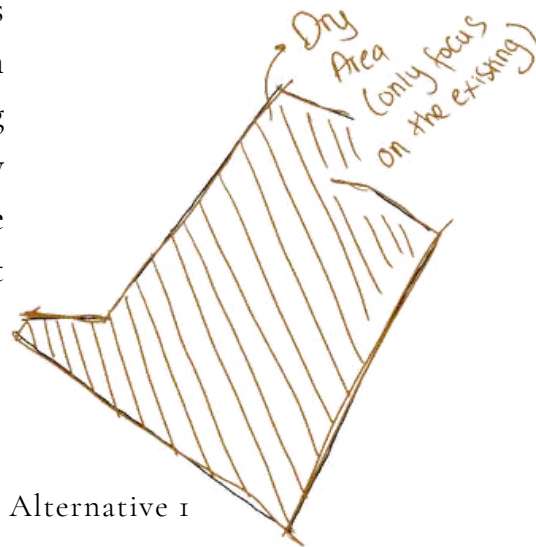


Figure 3.18 Zoning Concept Alternative 1

Source: Author, 2025

Alternative 2

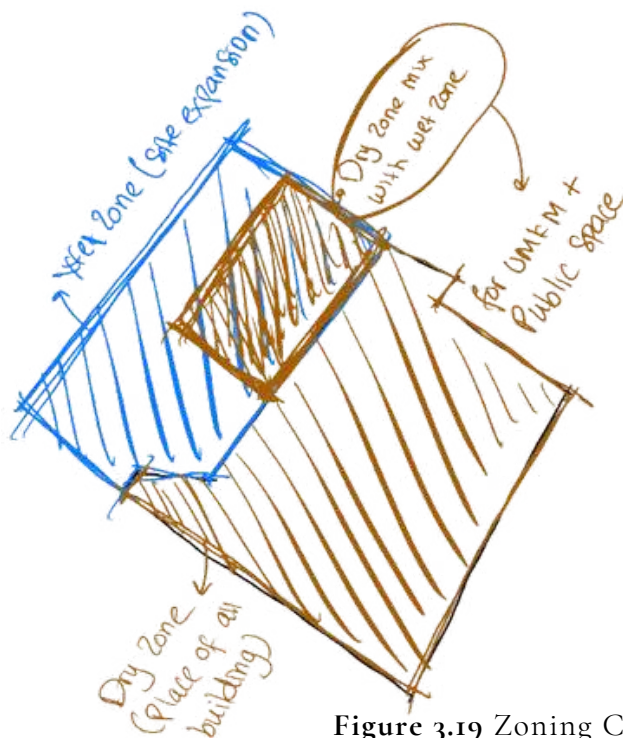


Figure 3.19 Zoning Concept Alternative 2

Source: Author, 2025

Starting to think about expanding the site in the water zone for MSMEs and public spaces to provide additional visuals and improve the arrangement of the zones.

Alternative 3

The site will be expanded further in the northwest water zone to become a pier basin, and the northeast water zone will be expanded to become a shipyard basin. The expansion.

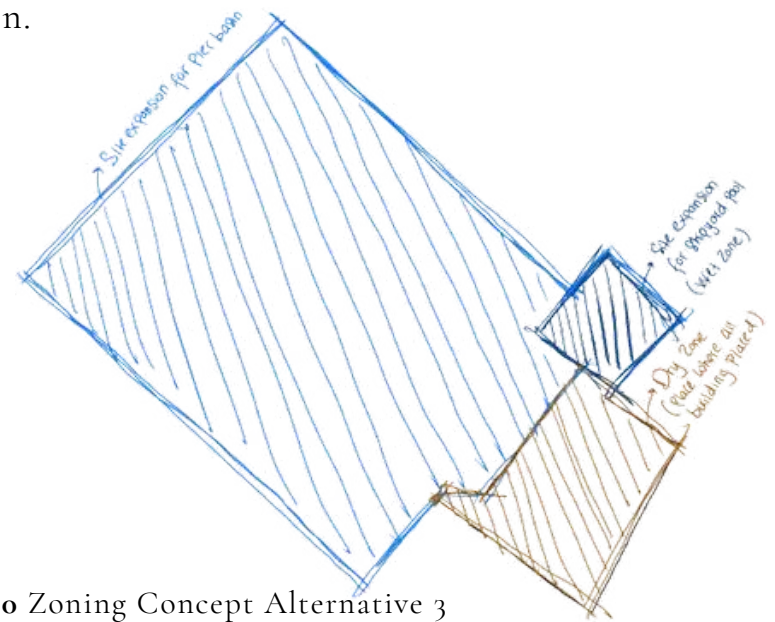


Figure 3.20 Zoning Concept Alternative 3

Source: Author, 2025

Alternative 4

Alternative 4 is a further development of Alternative 3 while still reducing the expansion of the water area on the northwest side as a port basin and the northeast side as a shipyard basin.

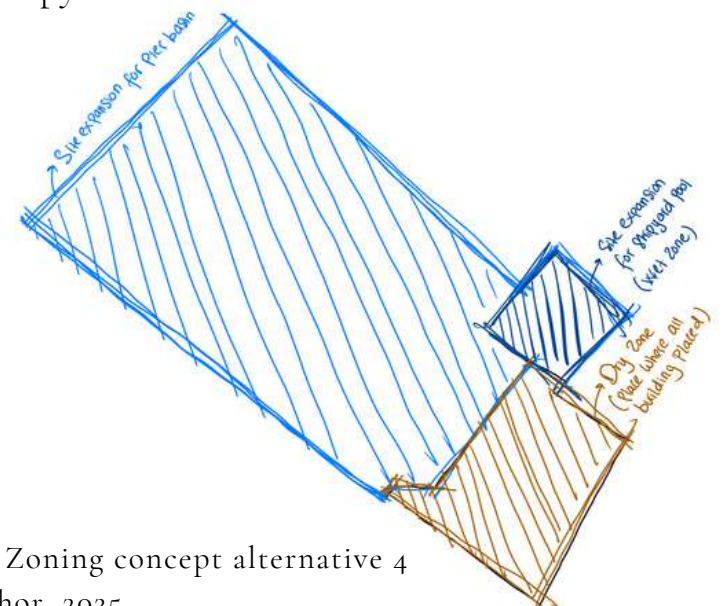


Figure 3.21 Zoning concept alternative 4

Source: Author, 2025

3.2 DESIGN CONCEPT ANALYSIS

Conclusion

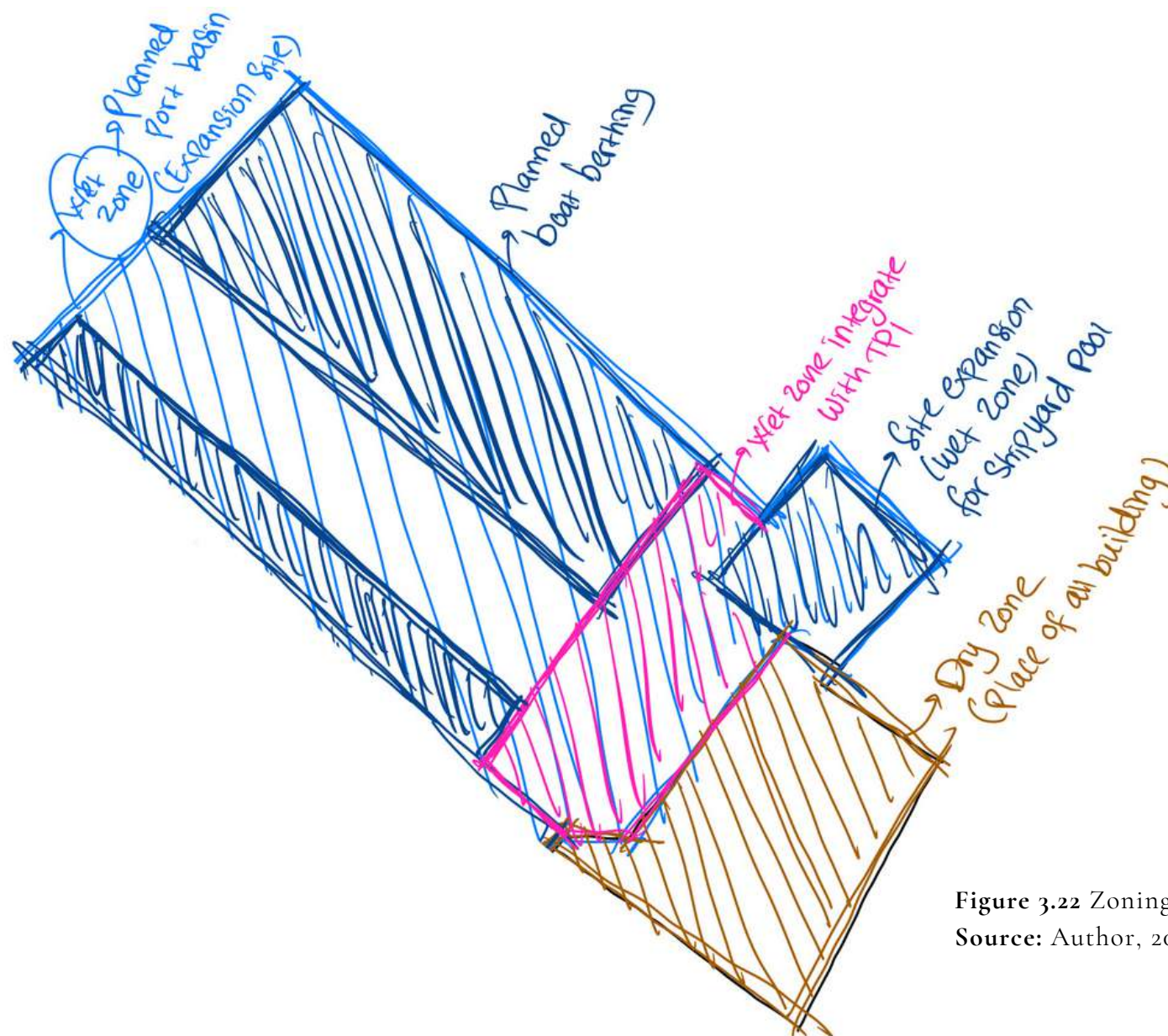


Figure 3.22 Zoning Concept Conclusion
Source: Author, 2025

- The division of the area into a dry zone and two integrated water zones (wet zones).
- The dry zone serves as the entire built-up area, encompassing auctions, processing, markets, MSMEs, supporting facilities, and area management.
- The first wet zone is directly integrated with the TPI Ujung Batu, supporting fish landing, loading and unloading, and the main fish distribution channel.
- The second wet zone is located in the planned port basin and serves as a mooring area, maneuvering, and providing operational support for fishermen.
- This zoning determination was based on interviews with the Jepara Regency Government and fishermen, as well as the technical needs of a sustainable fishing port.

3.2 DESIGN CONCEPT ANALYSIS

3.2.2 EXPLORATION OF THE CONCEPT OF ADAPTIVE DESIGN ON THE WATER ZONE

The Concept of Adaptive design as Water Zone Arrangement

The Adaptive Design as Water Zone Arrangement concept is a design approach for the Ujung Batu TPI area that adapts to the characteristics of the coastal environment and the operational needs of the Ujung Batu TPI. The arrangement of water zones is carried out by considering existing conditions, port development plans, ship movement patterns, and fishermen's needs.

A **breakwater** is a coastal protection structure built on the outer edge of a waterway to reduce the energy of ocean waves before they reach the port's operational area. The presence of a breakwater allows the port area to adapt to strong waves.

The **pier basin** was designed to adapt to the presence of fishing settlements around the Ujung Batu TPI area. This water area serves as a mooring or parking area for fishing boats, directly connected to the auction and distribution of catches.

Through a clear division of water functions, ship mooring, loading and unloading, catch distribution, and ship maintenance activities can take place more efficiently without interfering with each other. Furthermore, this concept also improves shipping safety, reduces conflicts in the dock area, and supports the development of the TPI as a sustainable coastal trade and tourism area.

The **shipyard basin** is an adaptation to the previously unspecified needs of ship maintenance in the area. This zone is designed to support docking and servicing of fishing vessels, allowing maintenance activities to be carried out without disrupting the port's core activities.

Ship mooring was designed as an adaptation to the need for mooring space for fishing boats, which were scattered and disorganized along riverbanks. Existing conditions caused fishing boats to disrupt water circulation. By providing ship mooring areas, fishing boats can be moored in more organized condition

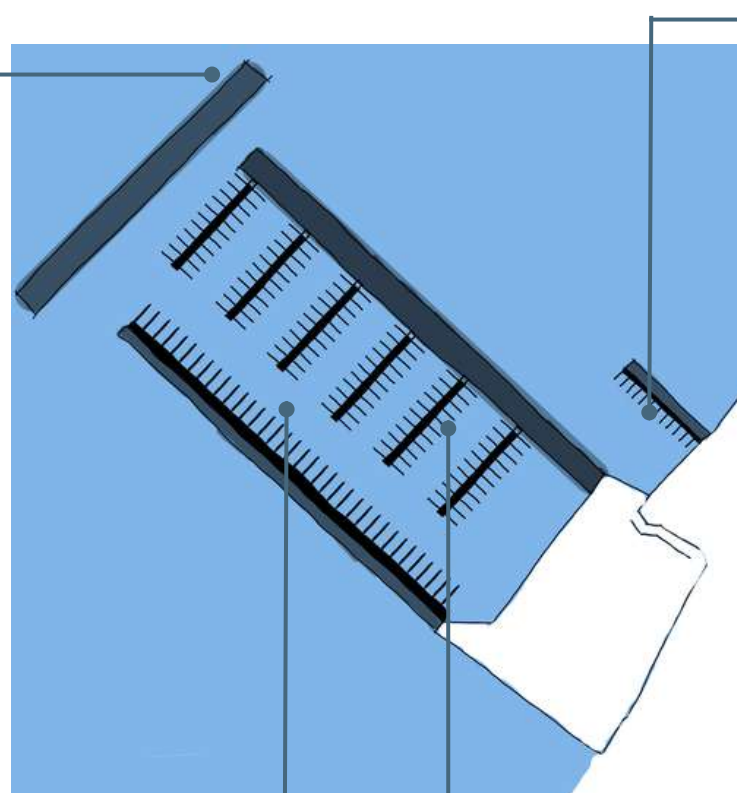


Figure 3.23 Pier Basin Scheme

Source: Author, 2025

3.2 DESIGN CONCEPT ANALYSIS

The Concept of adaptive design as Fisheries WorkFlow (Sea - Land)

The Adaptive Design as Fisheries Workflow (Sea-Land) concept is a design approach that adapts the entire regional layout based on the fisheries workflow, starting from activities at sea to the distribution process of catches on land. This concept aims to create an integrated relationship between the water and land zones so that each stage of fisheries activities can take place efficiently. Through this approach, regional development focuses not only on the provision of buildings and facilities, but also on how the space can respond to the operational needs of fishermen from the time the boat returns from sea until the catch is processed, marketed, and distributed.

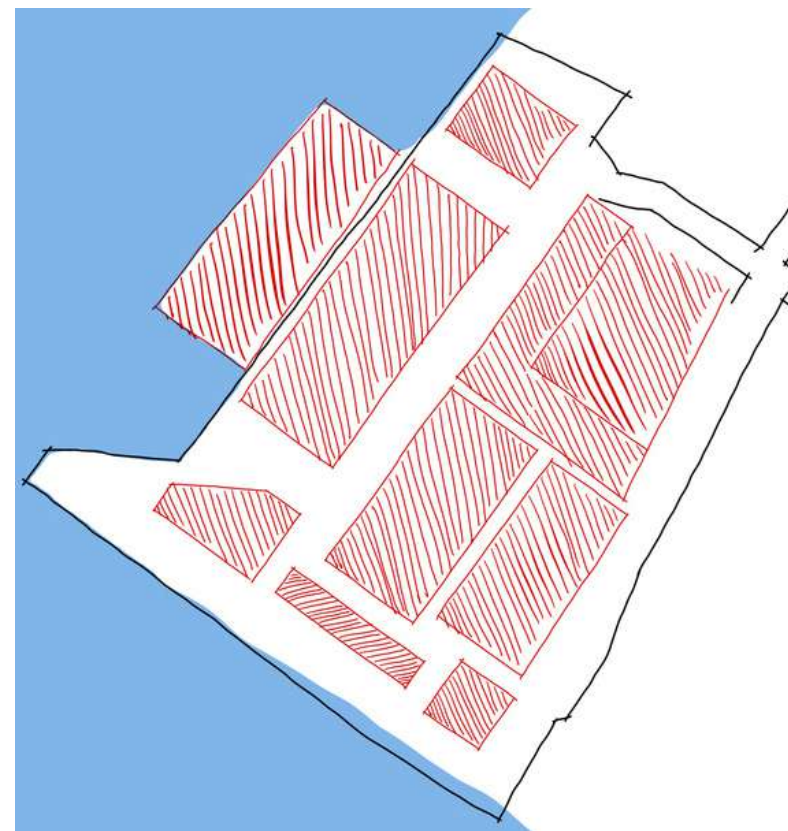


Figure 3.24 Land Zoning Scheme
Source: Author, 2025

In the redesign of the TPI Ujung Batu, the waterfront concept is interpreted as a continuous fisheries workflow from sea to land (sea → land). The waterfront serves as a functional transition zone where fisheries production processes begin, continue, and are distributed in a structured manner. This workflow forms the primary basis for the arrangement of the building mass and the area's circulation system.

Sea → Breakwater → Pier Basin → Ship Mooring → Fish Landing → Fish Auction Building → Fish Processing Building → Cold Storage & Ice Factory → Fish Market & MSME Area

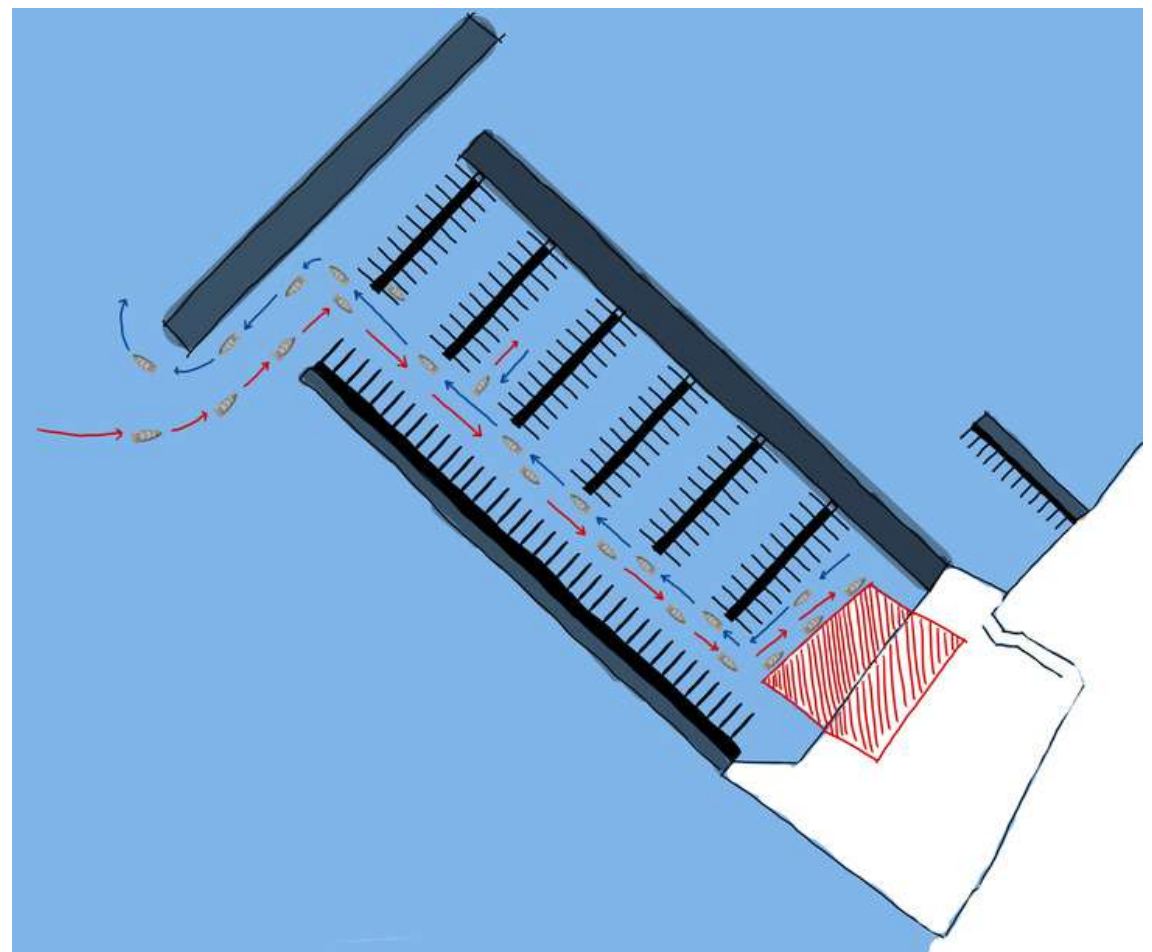


Figure 3.25 Fisheries Water Flow From Sea to Land Scheme
Source: Author, 2025



4

DESIGN OUTCOME



4.1 DESIGN RESULT

4.1.1 SITUATION

Current situation

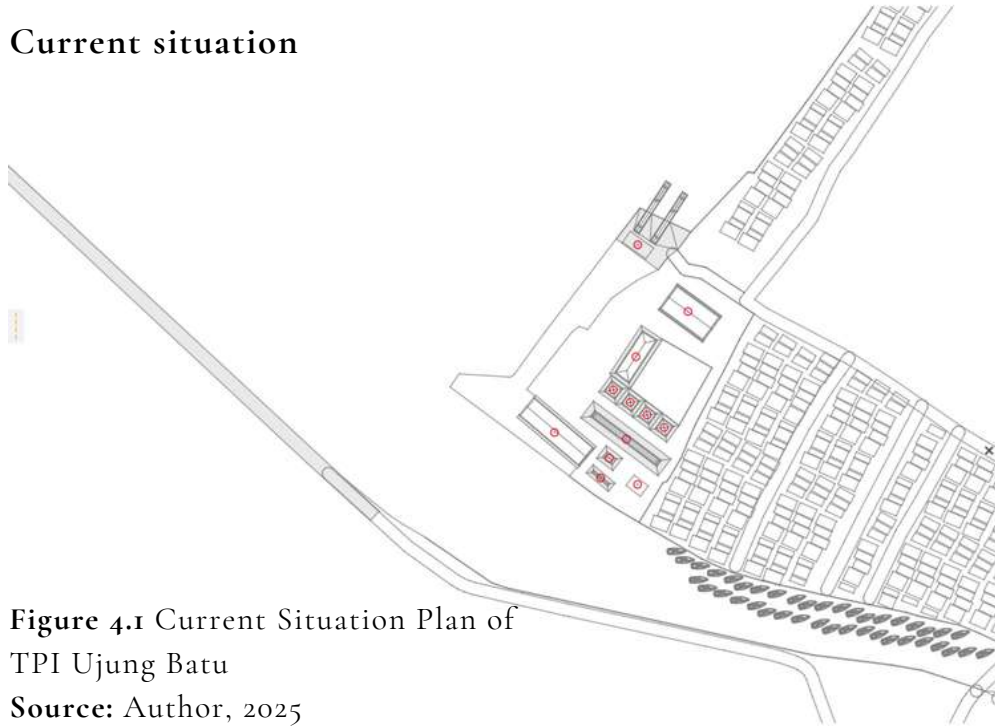


Figure 4.1 Current Situation Plan of TPI Ujung Batu

Source: Author, 2025

Design alternative

The redesign clarifies the separation of the land zone as the built-up area and the water zone as the fisheries operational area. Vessel parking is arranged within a structured harbor basin, ensuring a more orderly and efficient relationship between buildings, land circulation, and water.

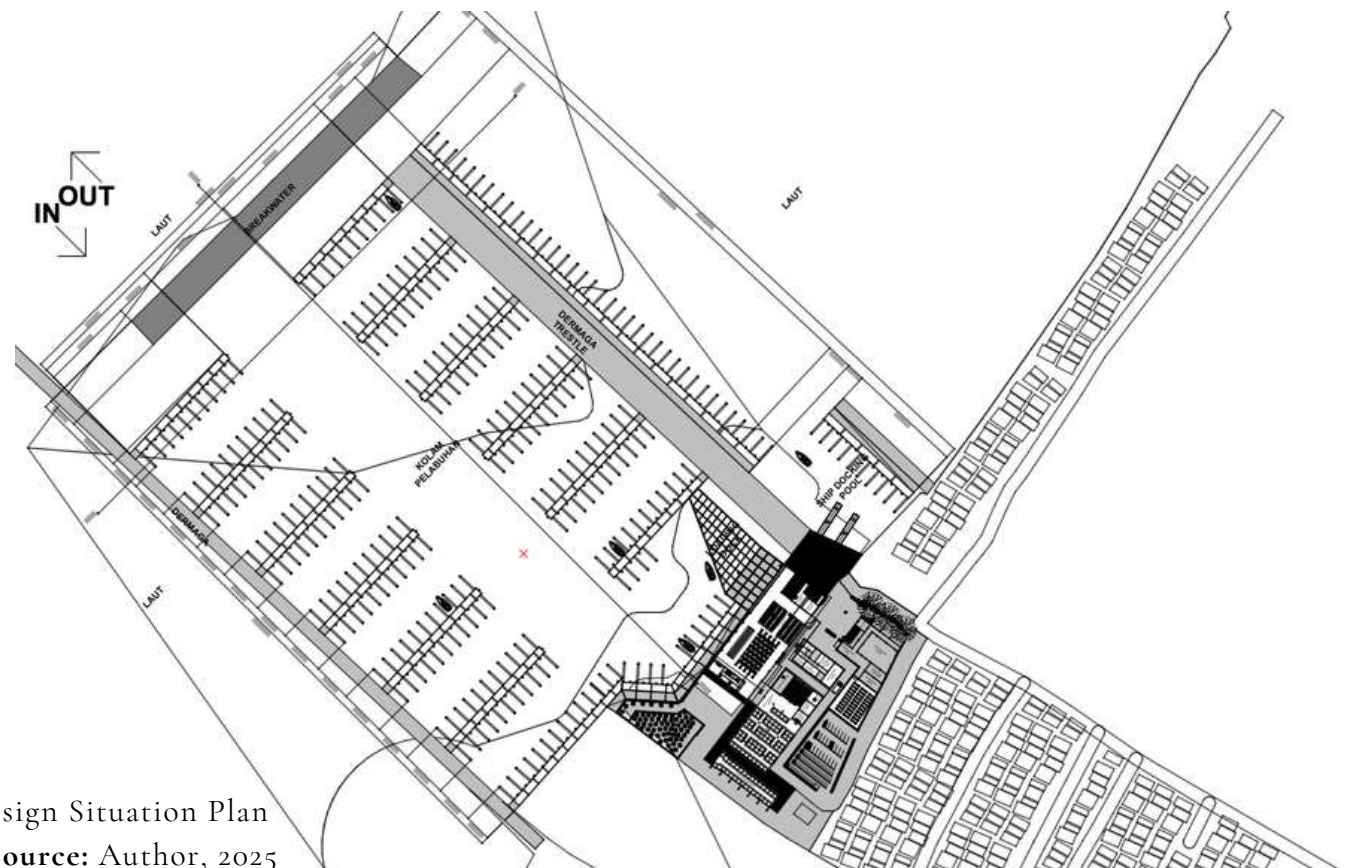


Figure 4.2 Alternative Design Situation Plan

Source: Author, 2025

The TPI Ujung Batu area is located on the water's edge and directly adjacent to a fishermen settlement. Fishing activities evolve according to the needs of the local community, resulting in a natural pattern of regional planning over time. Vessels are moored along the shoreline without a centralized mooring area causing shallowing, while fisheries support structures are scattered, reflecting existing conditions. As a result, the boundary between the operational waters and the built-up area remains unclear, and circulation in the area remains a mix of fisheries activities, vehicles, and catch distribution.

4.1 DESIGN RESULT

Final Design

After an evaluation, it was discovered that the planned mooring area capacity still exceeded actual operational needs. The initial design was based on the number of vessels in the area. The area's orientation still emphasizes the layout of the harbor basin rather than the TPI area. Therefore, the number of moorings needs to be adjusted, and the area's layout needs to emphasize the connectivity between residential areas, TPI facilities, loading and unloading areas, and the harbor basin to create a more efficient system and align with actual fishing activity patterns.

GSB: 100 meters from the highest tide point

Although Law Number 27 of 2007 stipulates a minimum coastal boundary of 100 meters from the highest tide point, in the Jepara Regency Spatial Plan (RTRW), fisheries activities such as the PPI (Inland Fisheries Fishing Port) and TPI (Fishing Terminal) are exempted because they constitute fisheries infrastructure that requires direct access to the water.

Therefore, only the auction building is located directly on the water's edge to support the loading dock and streamline loading and unloading processes. Other supporting buildings, such as markets, processing facilities, and MSMEs, are set back approximately 10 meters from the shoreline to comply with the principles of coastal boundaries and safety.

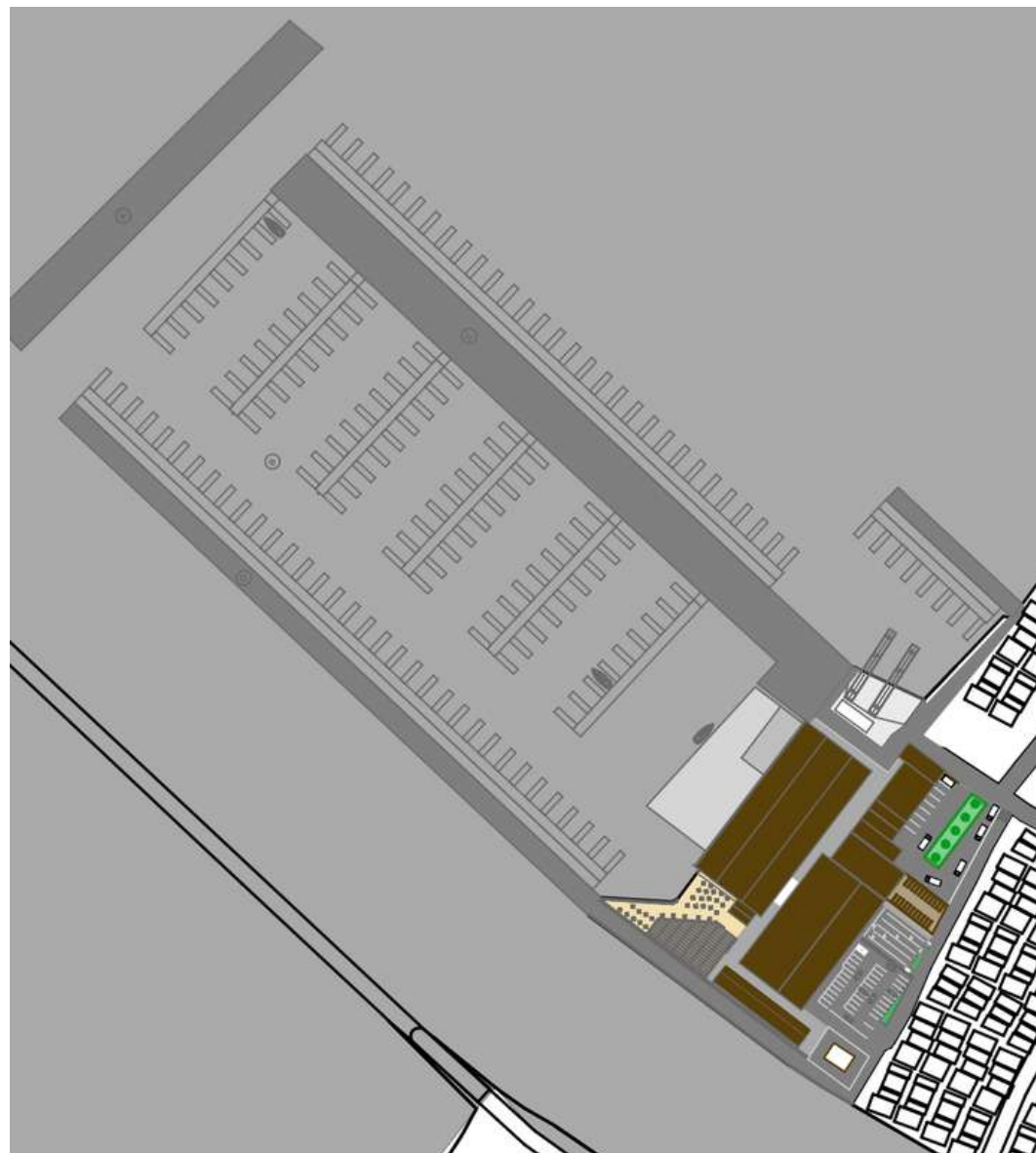


Figure 4.3 Final Design Situation Plan

Source: Author, 2025

4.1 DESIGN RESULT

4.1.2 SITE PLAN

Current Situation

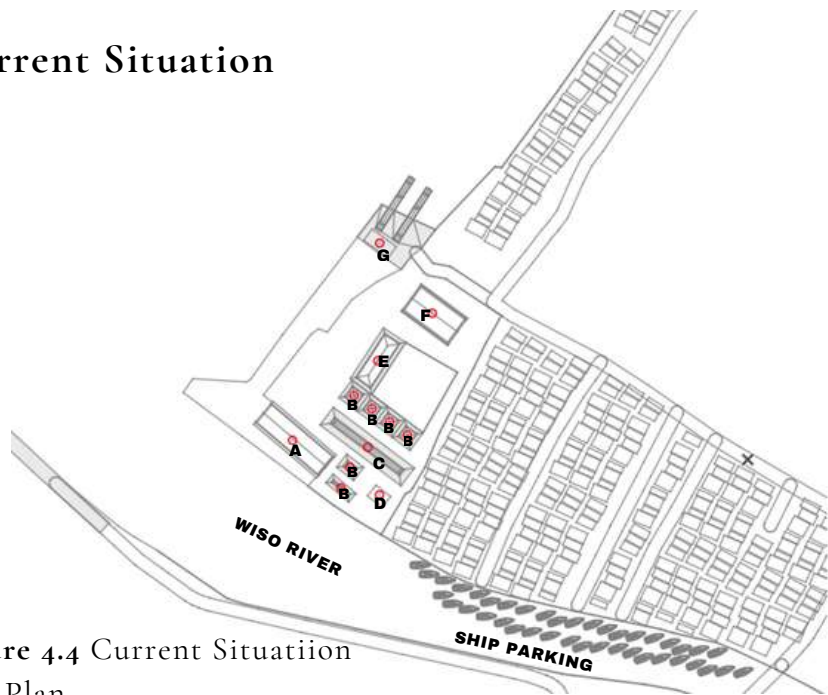


Figure 4.4 Current Situation Site Plan

Source: Author, 2025

Design alternative

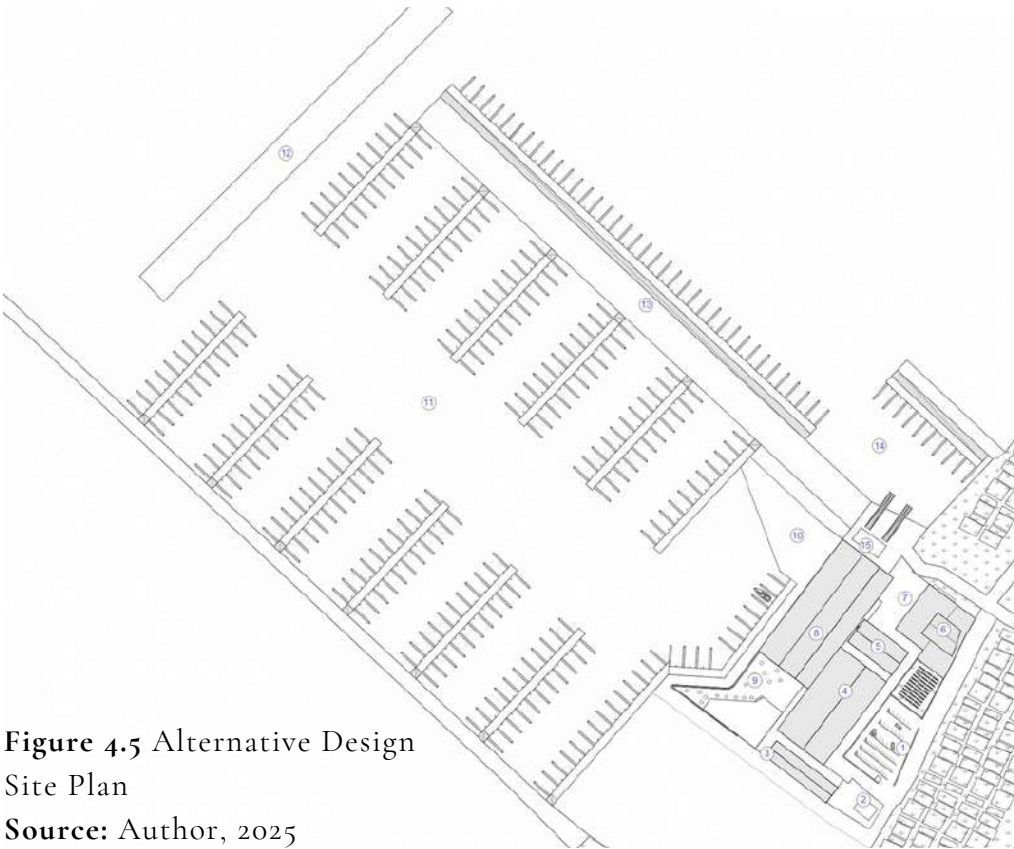


Figure 4.5 Alternative Design Site Plan

Source: Author, 2025

- | | |
|---------------------|-----------------------------|
| A. Auction Building | E. Fish Processing Building |
| B. UMKM Buildings | F. Ice Factory |
| C. Market | G. Shipyard |
| D. SPBN | |

The Ujung Batu TPI area has an irregular mass and circulation layout, with overlapping auction, market, processing and ship parking functions, thus reducing operational efficiency.

- | | |
|-------------------------------|-----------------------|
| 1. Public Parking | 8. Auction Building |
| 2. SPBN | 9. Public Space |
| 3. UMKM Building | 10. Loading Dock |
| 4. Market | 11. Port Basin |
| 5. Ice Factory & Cold Storage | 12. Breakwater |
| 6. Fish Processing Building | 13. Trestle Bridge |
| 7. Distribution Parking | 14. Shipyard Pool |
| | 15. Shipyard Building |

Redesigning the area into dry zones and wet zones, separating building and water functions, arranging boat mooring pools, and clarifying logistics and public circulation so that fishing activities run more efficiently and orderly.

4.1 DESIGN RESULT

Final Design

Based on the evaluation and refinement process carried out, the final design of the Ujung Batu TPI successfully addressed the main problems in the area, namely irregular water activities, circulation conflicts, and the less than optimal relationship between land and water functions. By adjusting the mooring capacity based on fishermen's work patterns, optimizing the harbor basin, strengthening the fish flow and land flow systems, and clearly separating the wet zone and dry

zone, the area is able to operate more efficiently, organized, and adaptively to the dynamics of the coastal environment. The final design not only maintains the TPI's primary function as a fish auction center, but also strengthens its role as a center for fisheries, processing, distribution, and coastal economic activities integrated into a sustainable waterfront system.

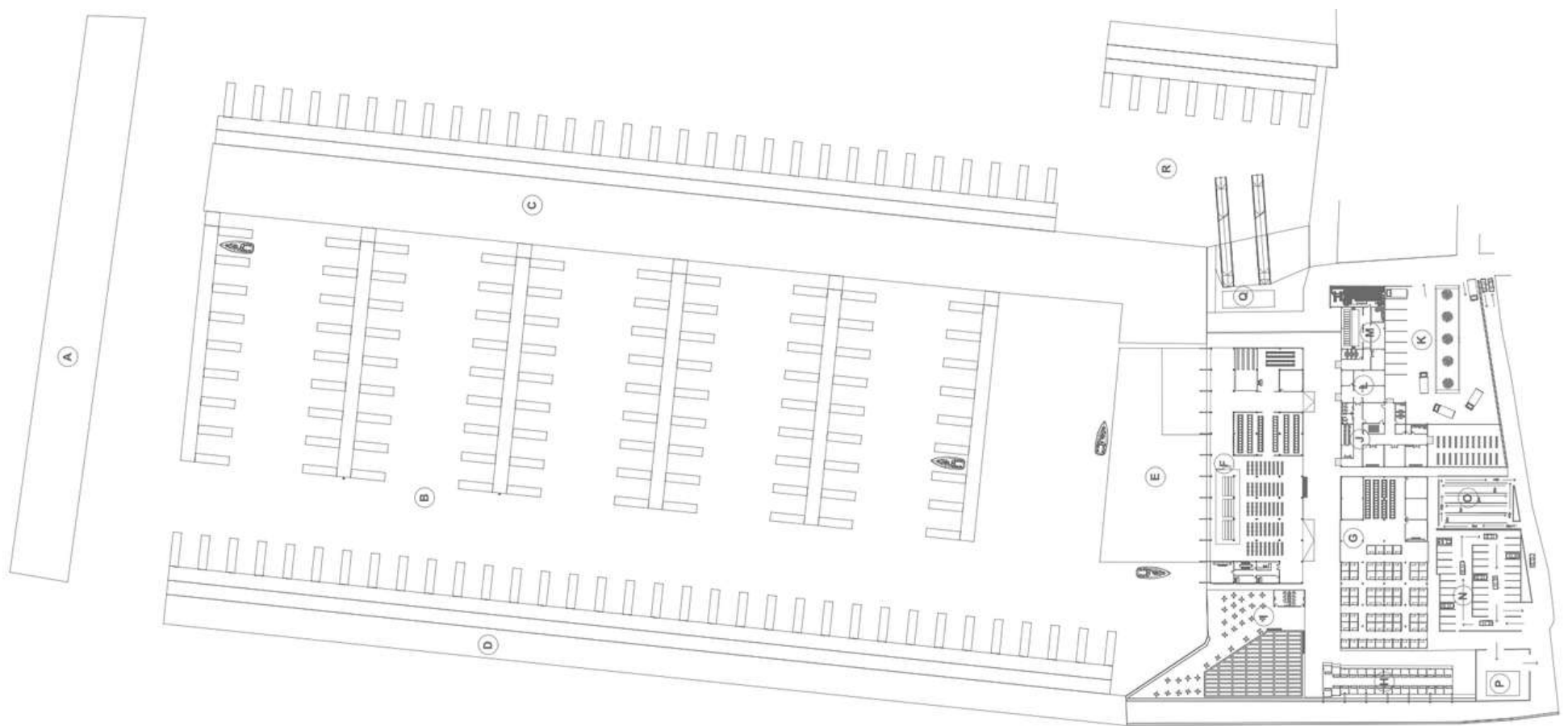


Figure 4.6 Final Design Site Plan

Source: Author, 2025

4.1.3 LAND CIRCULATION

Current Situation

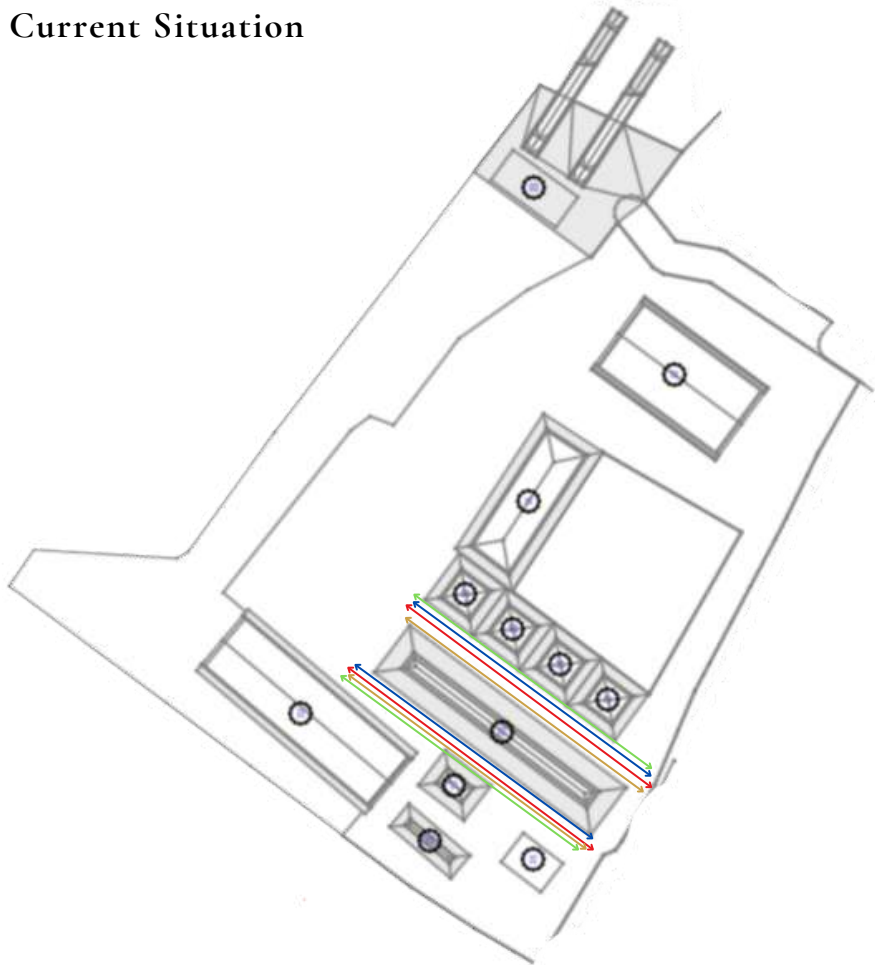


Figure 4.7 Current Situation Land Circulation Plan
Source: Author, 2025

The design proposes separating routes based on user types and area activities. Distribution, public transportation, pedestrian, and fishing routes are arranged separately to reduce circulation conflicts and improve operational efficiency. The placement of key functions also follows the flow of fisheries activities, from the catch landing area, auction, processing, and distribution. This arrangement creates a more structured circulation system than the existing one and clarifies the relationship between public areas and port operational areas.

- ↔ Distribution route
- ↔ Public vehicle route
- ↔ Pedestrian route
- ↔ Fisherman route

Under existing conditions, distribution routes, public transportation, pedestrians, and fishermen still use the same corridor, resulting in overlapping activities in several areas. Relationships between buildings are formed following the gradual development of functions without integrated circulation planning. This condition results in unclear area orientation, potential conflicts over movement between users, and reduced efficiency of port and fish auction activities.

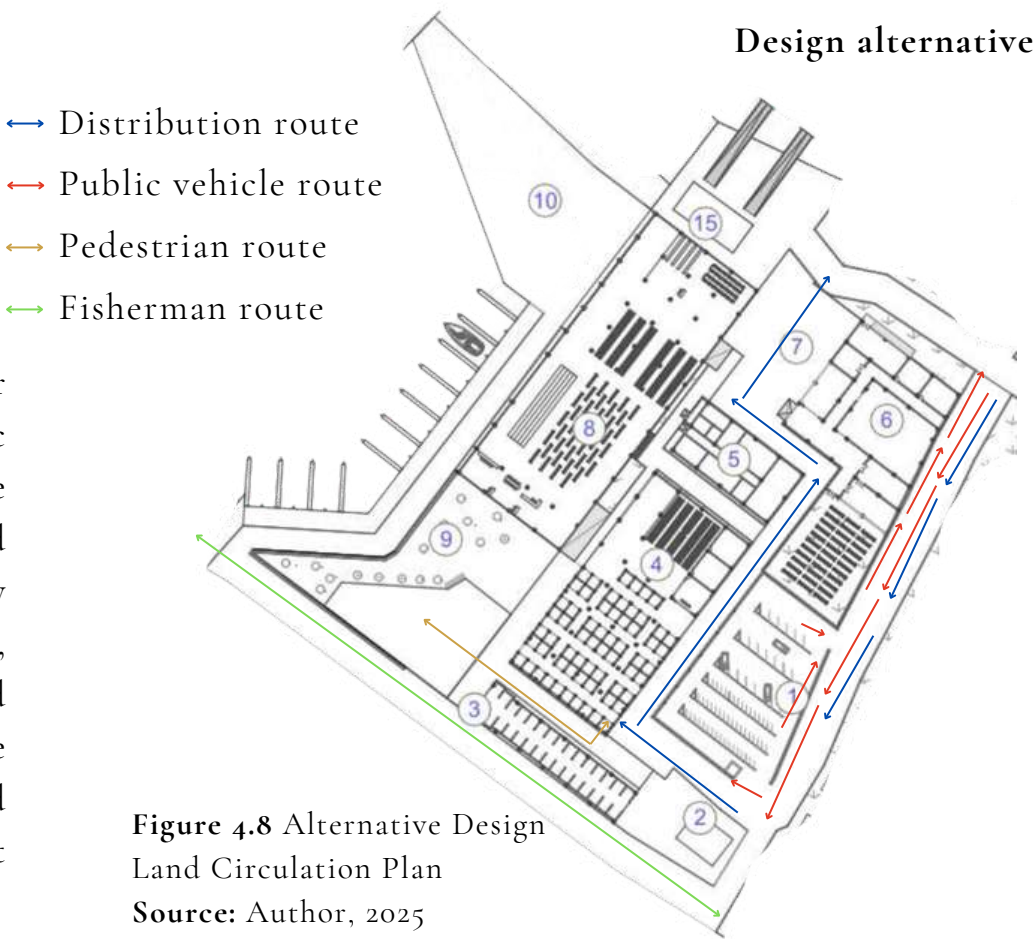


Figure 4.8 Alternative Design Land Circulation Plan
Source: Author, 2025

4.1 DESIGN RESULT

Final Design

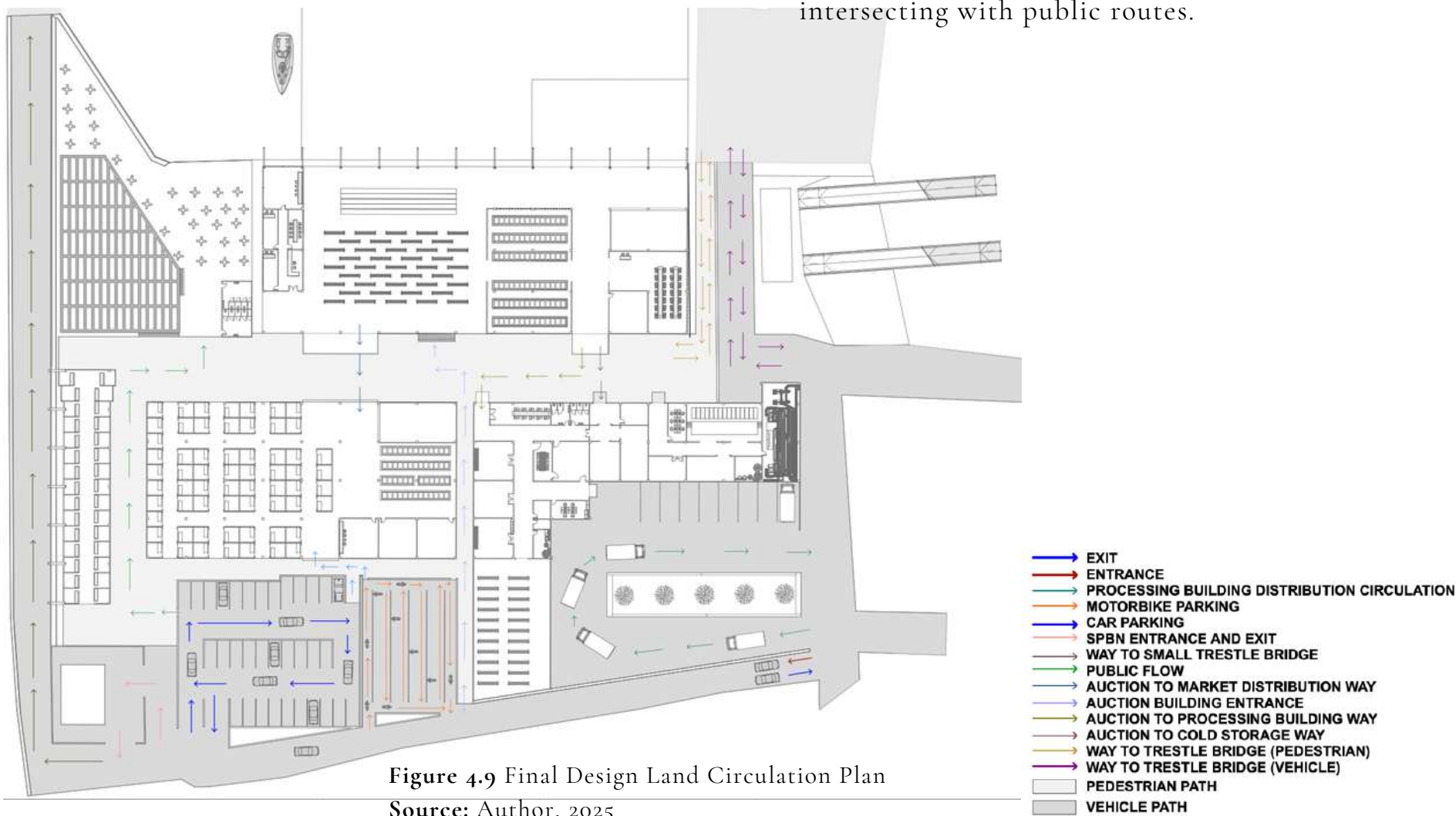
The final design is the result of refining alternative designs through an evaluation of user activity patterns, relationships between building functions, and movement efficiency within the area. At this stage, the circulation system is not only separated by user type but also structured to follow the fishery's operational flow from start to finish.

The fishery product distribution line is directly connected between the auction area, processing building, cold storage, and distribution area.

Distribution vehicle parking areas are located adjacent to operational facilities to reduce the distance traveled by logistics vehicles. Meanwhile, public transportation and motorcycle parking are separated from the operational area so that visitor activity does not disrupt the distribution process.

Pedestrian circulation is also specially arranged by providing paths connecting parking areas, markets, MSMEs, public spaces, and trestle bridges.

In addition, access to the SPBN, shipyard, and ship mooring area has been made more focused so that fishing activities can take place without directly intersecting with public routes.



4.1 DESIGN RESULT

4.1.4 WATER CIRCULATION

Current Situation

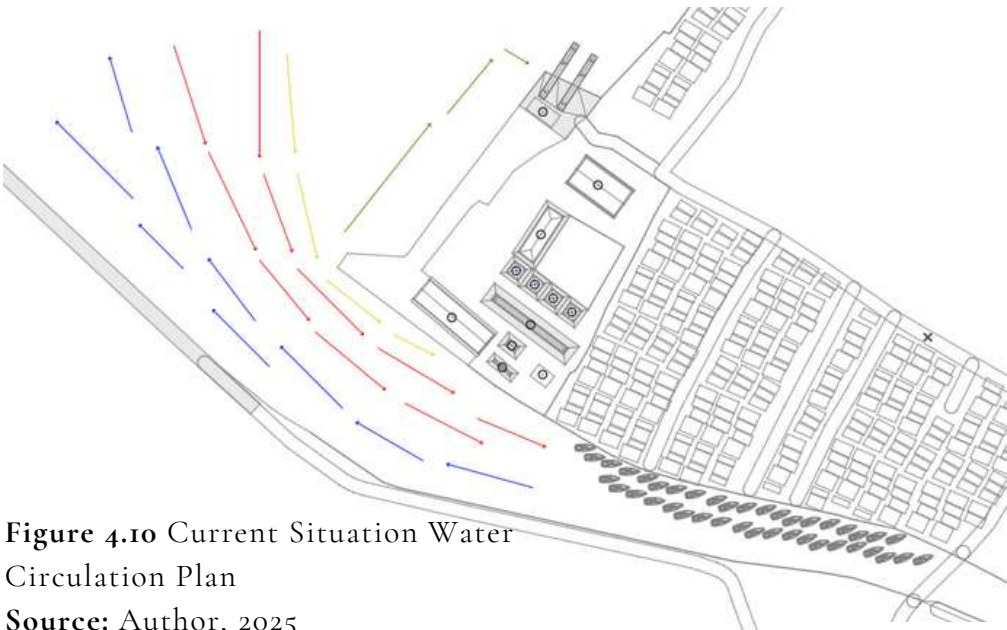


Figure 4.10 Current Situation Water Circulation Plan

Source: Author, 2025

- Entrance route
- Exit route
- Docking route
- Shipyard route

Design alternative

To reduce the use of the river as a mooring area, previous designs proposed the creation of a harbor basin to centralize vessel activity. This system successfully separated the river's function as a waterway from the harbor's function as a mooring area. However, an evaluation revealed that the size of the harbor basin and the number of planned moorings were still too large. Several parts of the design also created obstructions in the Wiso River flow corridor, potentially reducing the smooth flow of water from the river to the sea.

Under existing conditions, fishing vessels are moored directly along the banks of the Wiso River. Dispersed mooring activities cause portions of the river to serve as boat parking areas, reducing water flow. This situation has the potential to slow current speed, increase sediment accumulation, and accelerate river silting. Furthermore, entry, exit, and mooring routes are still interconnected within a single waterway, resulting in poorly organized vessel movement.

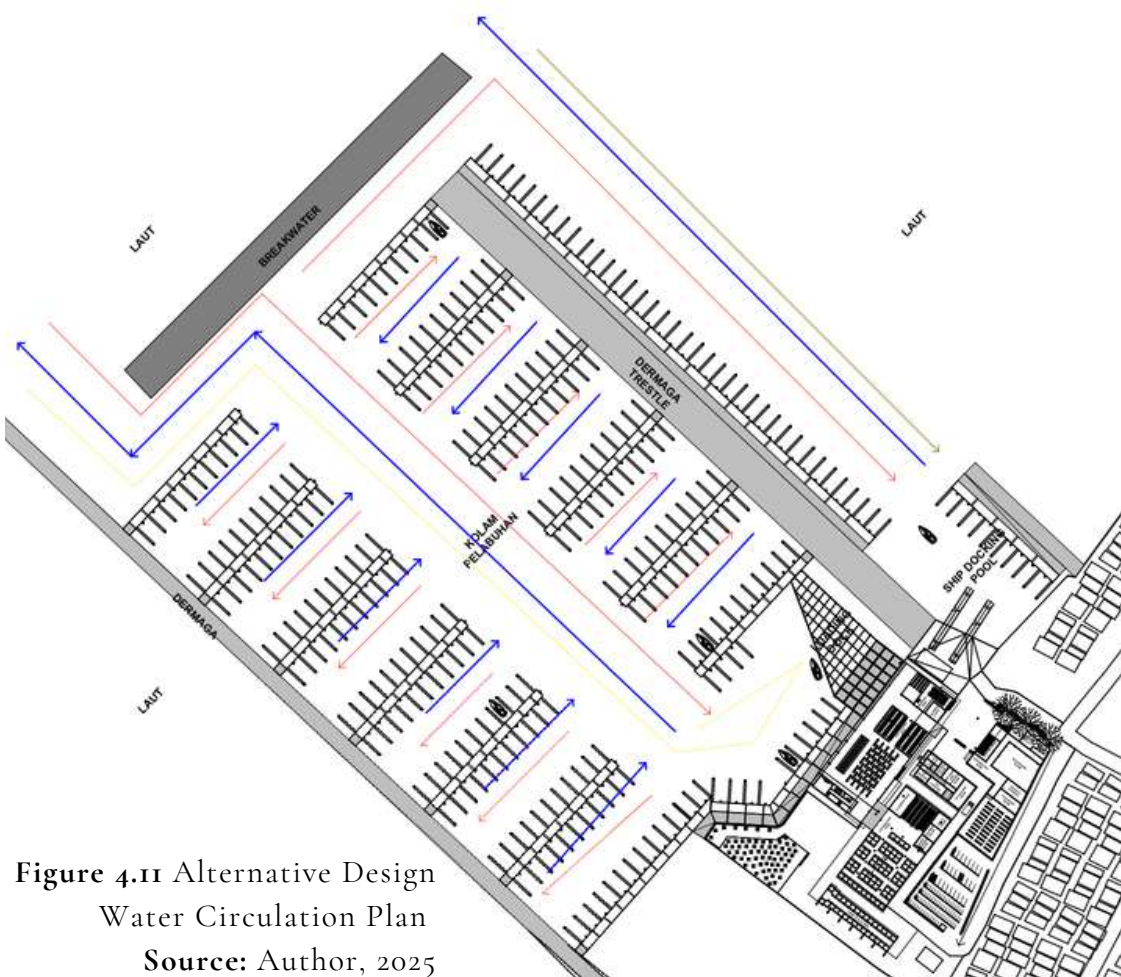


Figure 4.11 Alternative Design Water Circulation Plan

Source: Author, 2025

4.1 DESIGN RESULT

Final design

The final design is a refinement of the alternative design by adjusting the mooring capacity to the operational patterns of fishermen at the Ujung Batu TPI. Based on the analysis, the activities of fish, shellfish, and seaweed fishermen occur at different times, so the mooring capacity does not have to accommodate all vessels simultaneously. The number of berths was then reduced and their layout simplified to create a more efficient harbor basin.

The reduction in mooring elements created a more open water space, allowing for smoother water flow from the river to the sea. The ship movement system was also more clearly organized by separating ship entry and exit routes, routes to the loading dock, and routes to the shipyard. This arrangement reduced conflicts between ship movements and increased ease of maneuvering within the harbor basin.

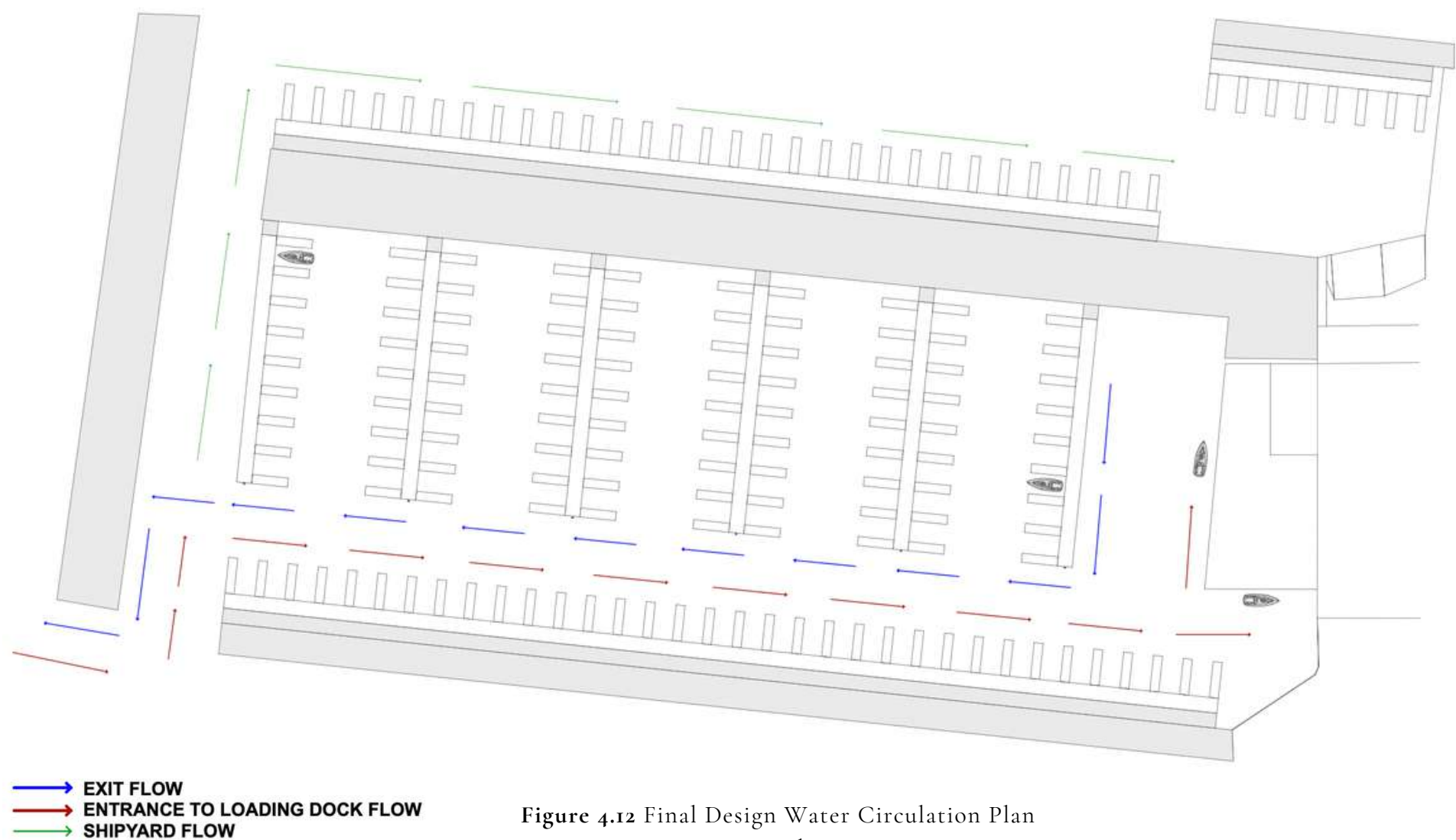


Figure 4.12 Final Design Water Circulation Plan
Source: Author, 2025

4.1 DESIGN RESULT

4.1.5 AUCTION BUILDING

Plan Layout

Current Situation

The auction building is a single, multi-function hall with administrative functions located on one side. All auction activities, loading and unloading, and human movement occur in one large space without clear work zones, resulting in overlapping workflows and reduced efficiency.

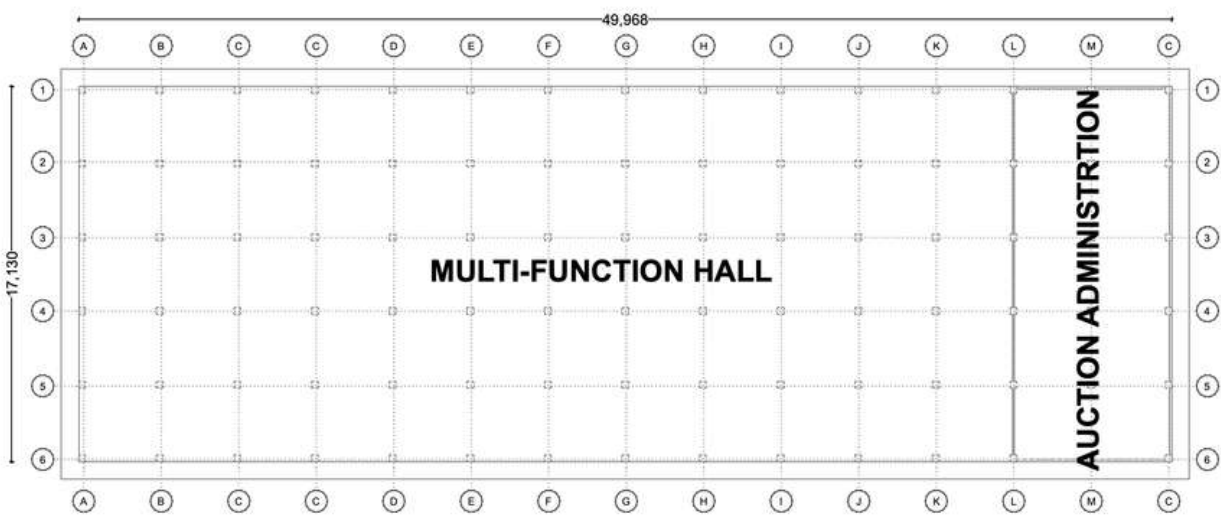


Figure 4.13 Current Situation Auction Building Plan
Source: Author, 2025

Design alternative

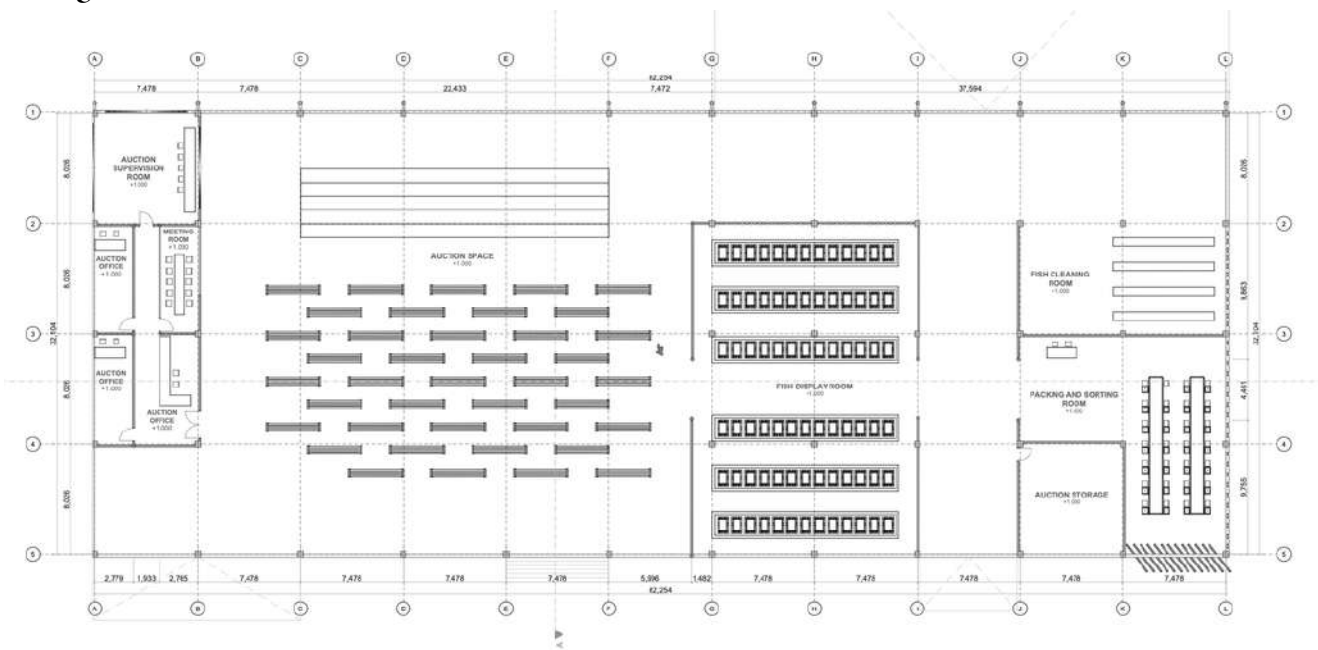


Figure 4.14 Alternative Design for Auction Building Plan
Source: Author, 2025

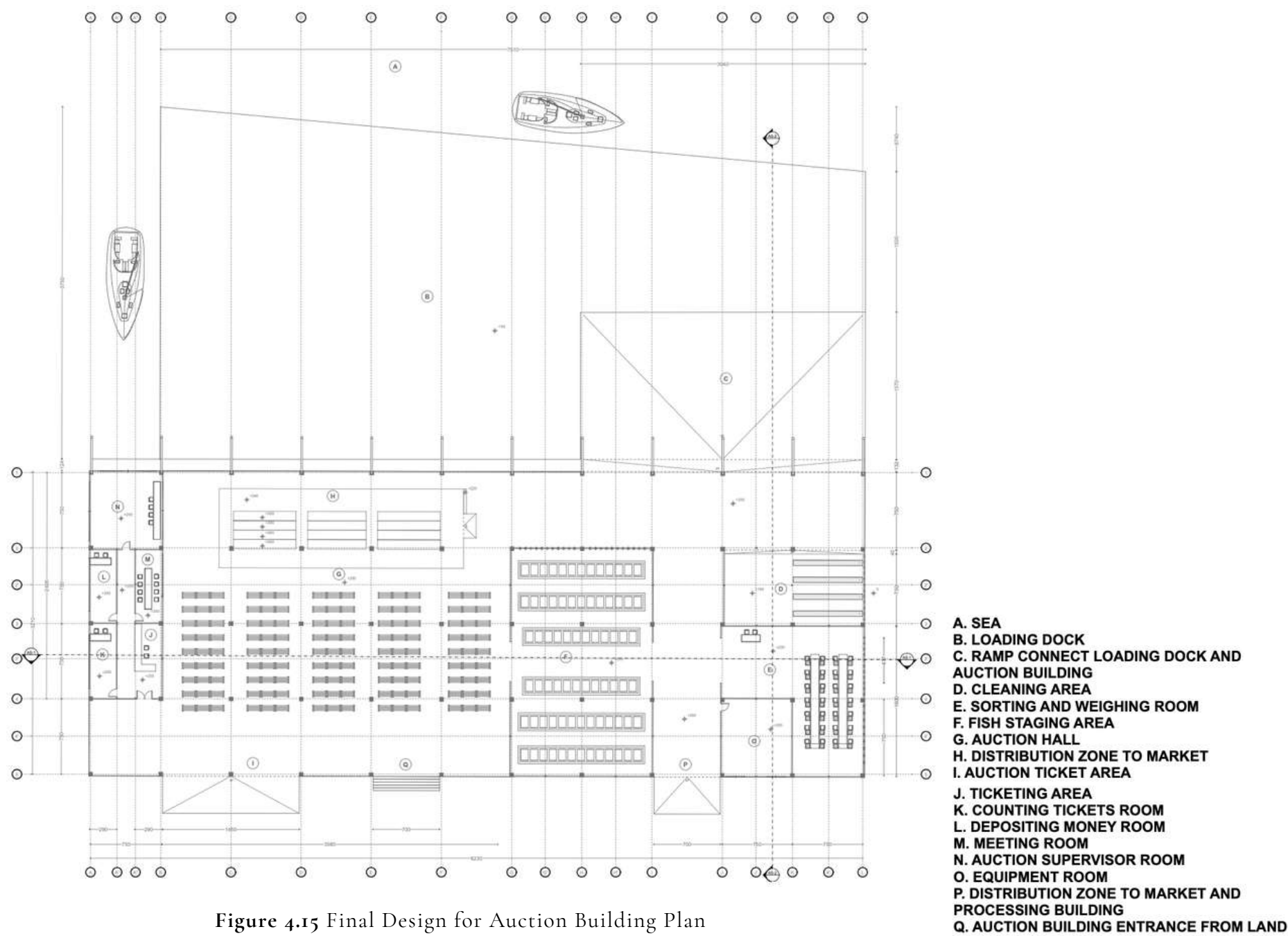
The auction building was reorganized into separate but interconnected functional spaces, including the main auction area, fish display area, sorting and packing area, cleaning area, storage area, and administration area. This arrangement creates a clearer, more hygienic, and controlled workflow, supporting a more efficient auction and distribution process.

4.1 DESIGN RESULT

Final design

In the final design, the structural system was refined by adding columns to the auction hall area through a more regular structural grid arrangement. Columns were added at strategic points to shorten the structure's span and more evenly distribute the building's loads.

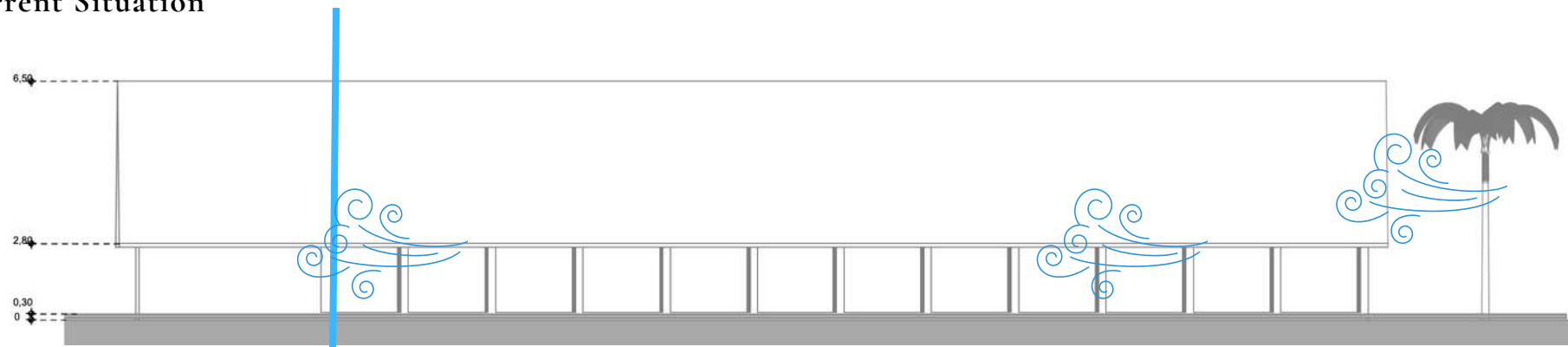
In addition to improving structural performance, the column arrangement also helps create a clearer spatial organization in the auction area. The main space remains read as a single unit, but with more controlled divisions for auction activities, fish displays, and worker movement.



4.1.6 AUCTION BUILDING

Section

Current Situation



Air circulation in the auction building is congested and uneven due to the low-slung structure with openings on all sides. Air flow is impeded by the building's mass, resulting in suboptimal natural ventilation and potential heat and odors in the auction hall.

Figure 4.16 Current Situation Auction Building Section
Source: Author, 2025

Design alternative

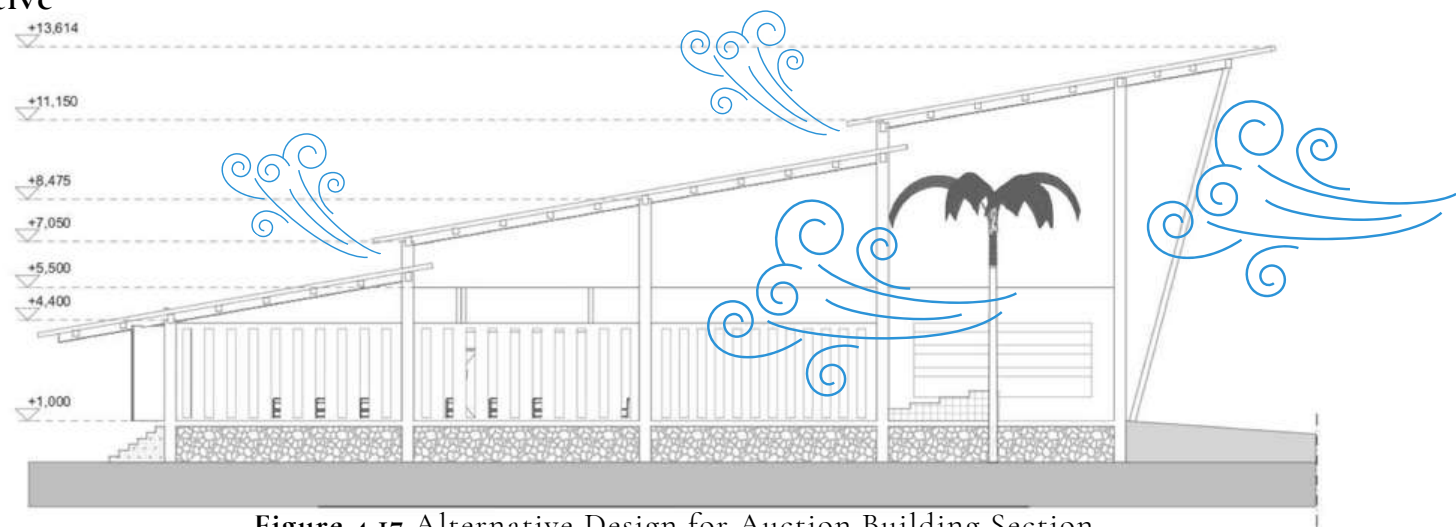


Figure 4.17 Alternative Design for Auction Building Section
Source: Author, 2025

The redesign features a multi-level, sloping roof, cross-shaped openings, and semi-open spaces that allow wind to flow in, out, and out continuously. The building's massing and elevation help capture sea breezes and

distribute them throughout the building's living space, improving thermal comfort and the building's environmental quality.

4.1 DESIGN RESULT

Final Design

The final design refined the structural system by implementing a roof truss as the primary roof support. The use of a roof truss allows for longer spans with greater stability and reduces the need for excessive structural elements in the auction space. The roof structure is then supported by a beam system that distributes the load from the roof to the columns more evenly. The presence of beams makes the structural system more rational and increases the building's rigidity against the high wind loads found in coastal areas.

Furthermore, the connections between the columns and the roof structure utilize steel connectors, making the connections between structural elements stronger, more precise, and easier to construct. This connection system also improves the structure's ability to withstand lateral forces from sea winds and coastal conditions.

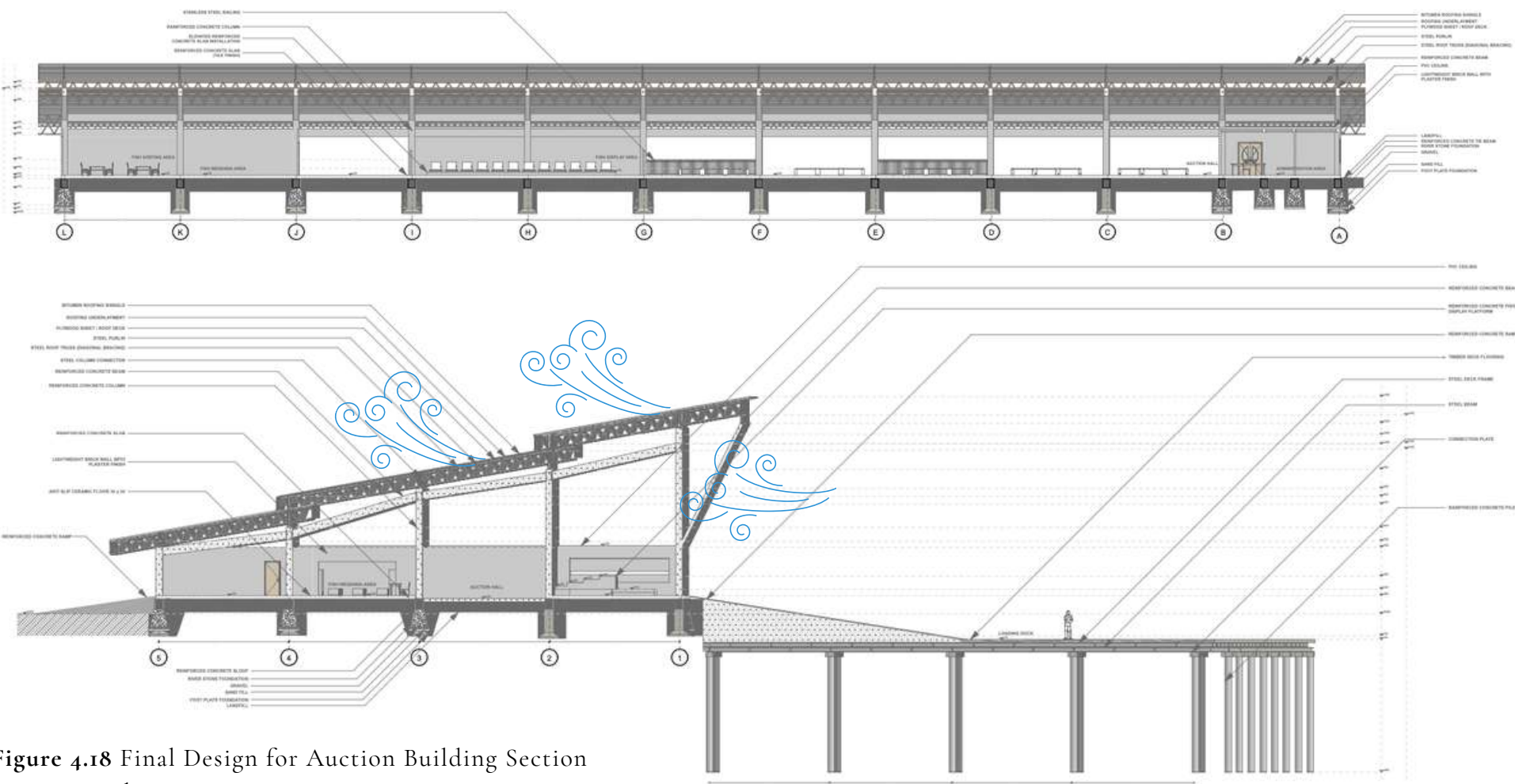


Figure 4.18 Final Design for Auction Building Section
Source: Author, 2025

4.1 DESIGN RESULT

4.1.7 MARKET BUILDING

Plan Layout

Current Situation

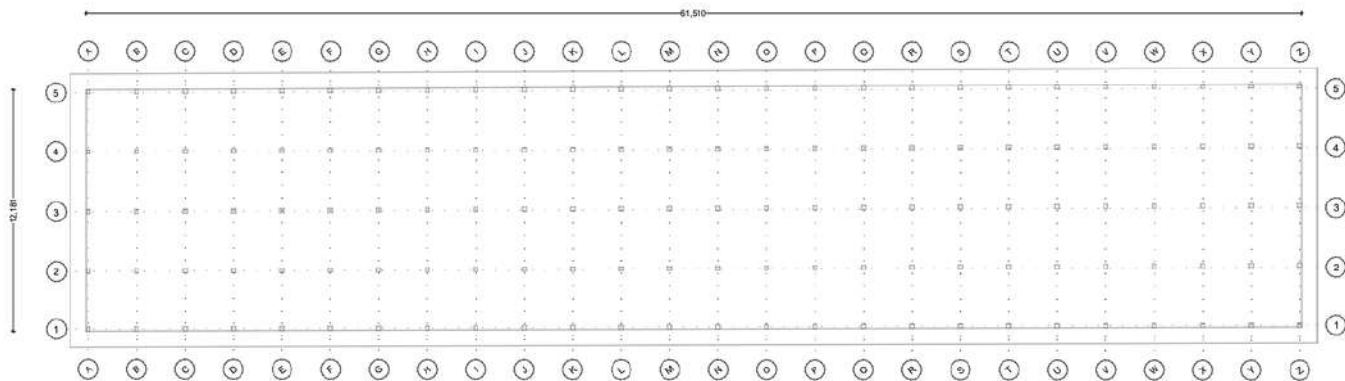


Figure 4.19 Current Situation Market Building Plan
Source: Author, 2025

Air circulation in the auction building is congested and uneven due to the low-slung structure with openings on all sides.

Air flow is impeded by the building's mass, resulting in suboptimal natural ventilation and potential heat and odors in the auction hall.

Design alternative

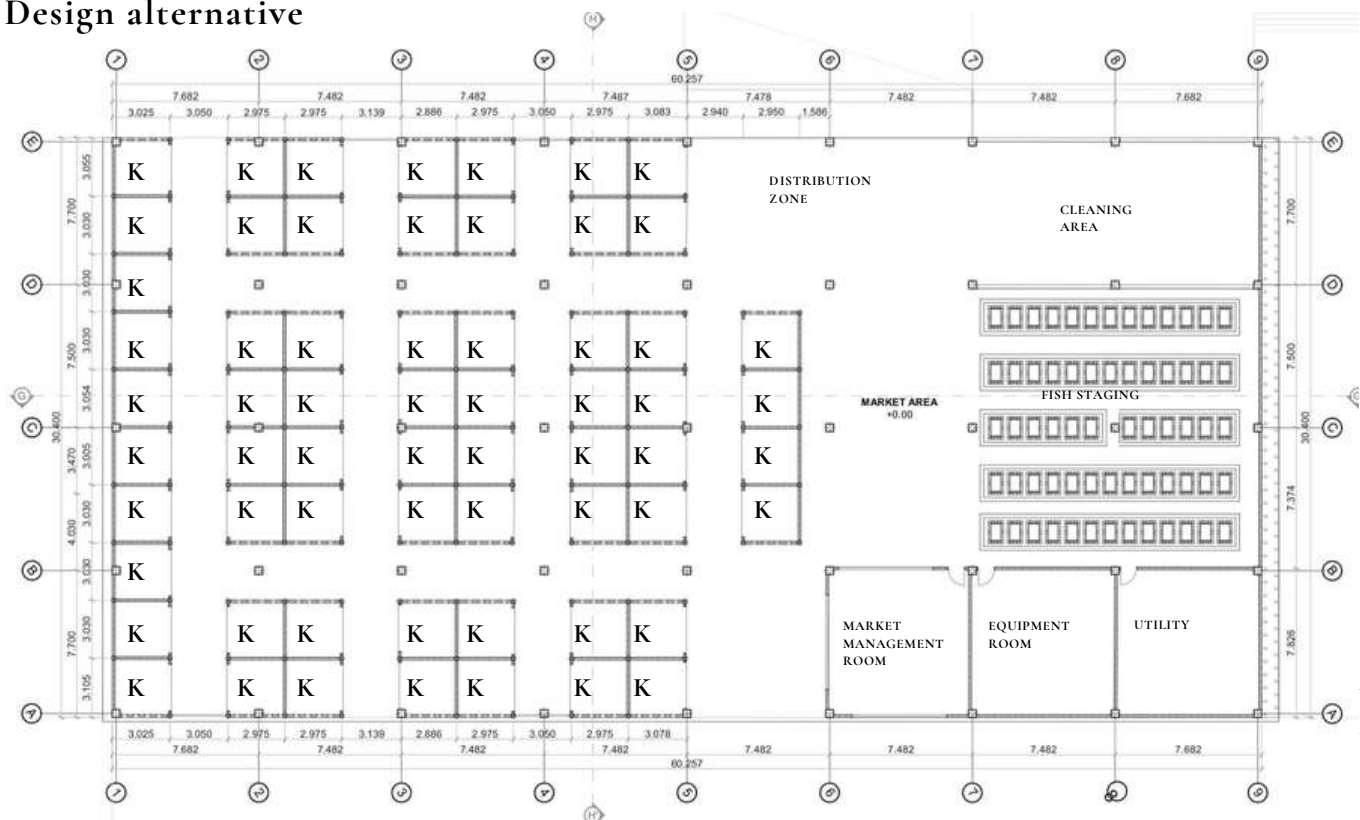


Figure 4.20 Alternative Design for Market Building Plan
Source: Author, 2025

The market layout was reorganized with orderly groupings of stalls (K), clear functional zones (market, distribution, cleaning, and utility areas), and more

focused circulation. The spatial boundaries improved order, increased efficiency of buying and selling activities, and increased user comfort.

4.1 DESIGN RESULT

Final Design

In the final design, the spatial configuration and functional zoning of the market building were retained, as they met the market's operational needs and effectively supported the flow of user activities. The main changes were made to the structural system, including the addition of practical columns to several parts of the building.

With these improvements, the market building maintains the spatial quality achieved in the alternative design, but with a stronger, safer structural system that aligns with the coastal environment of the Ujung Batu TPI.

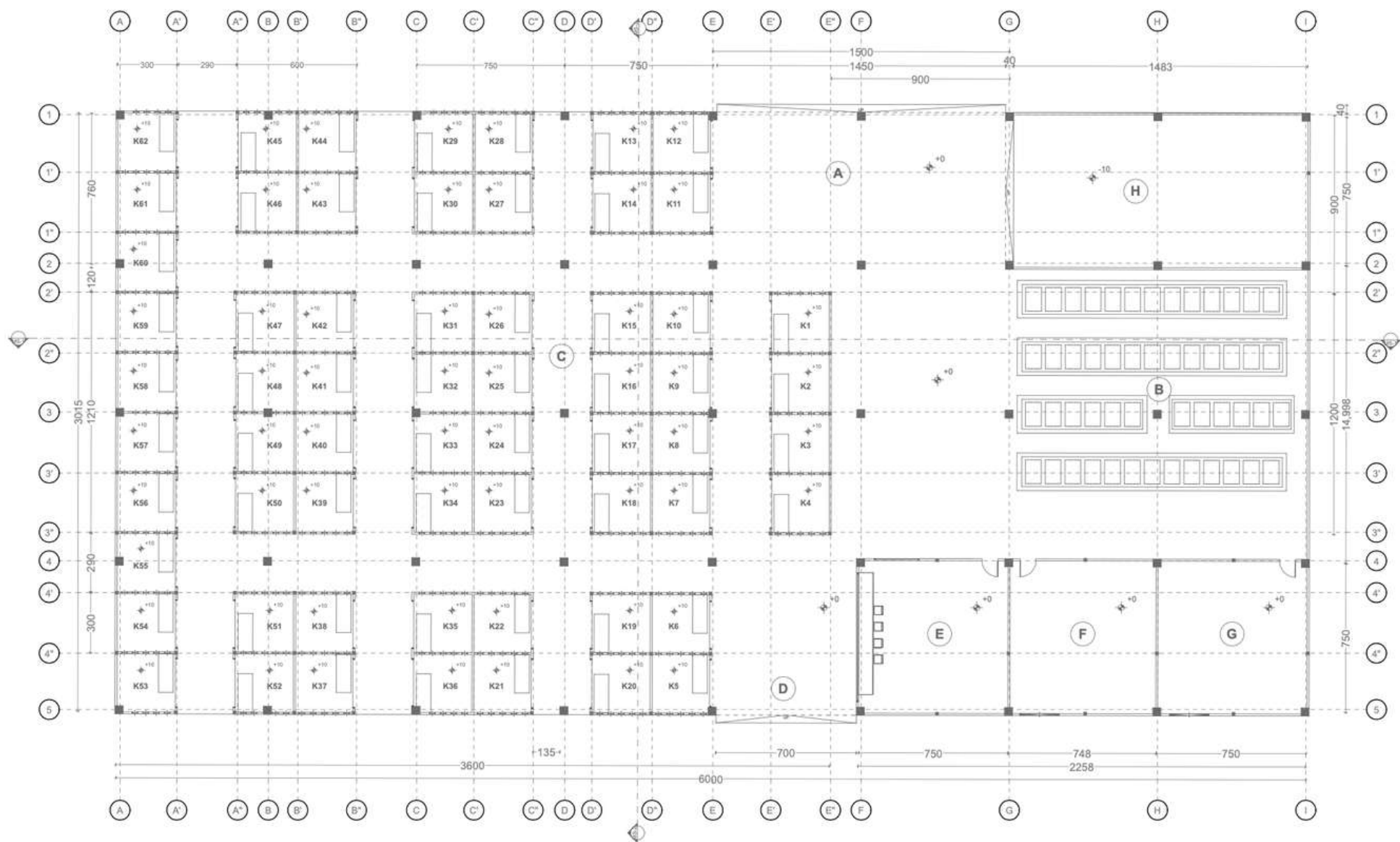


Figure 4.21 Final Design for Market Building Plan
Source: Author, 2025

4.1 DESIGN RESULT

4.1.8 MARKET BUILDING

Section

Current Situation

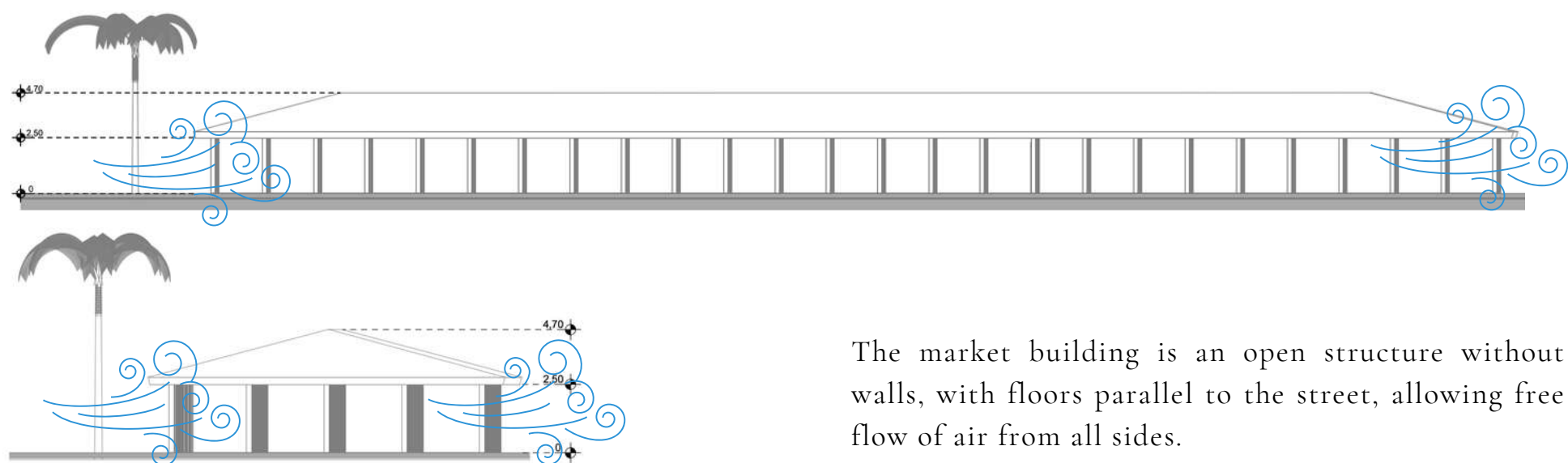


Figure 4.22 Current Situation for Market Building Section
Source: Author, 2025

The market building is an open structure without walls, with floors parallel to the street, allowing free flow of air from all sides.

Design alternative

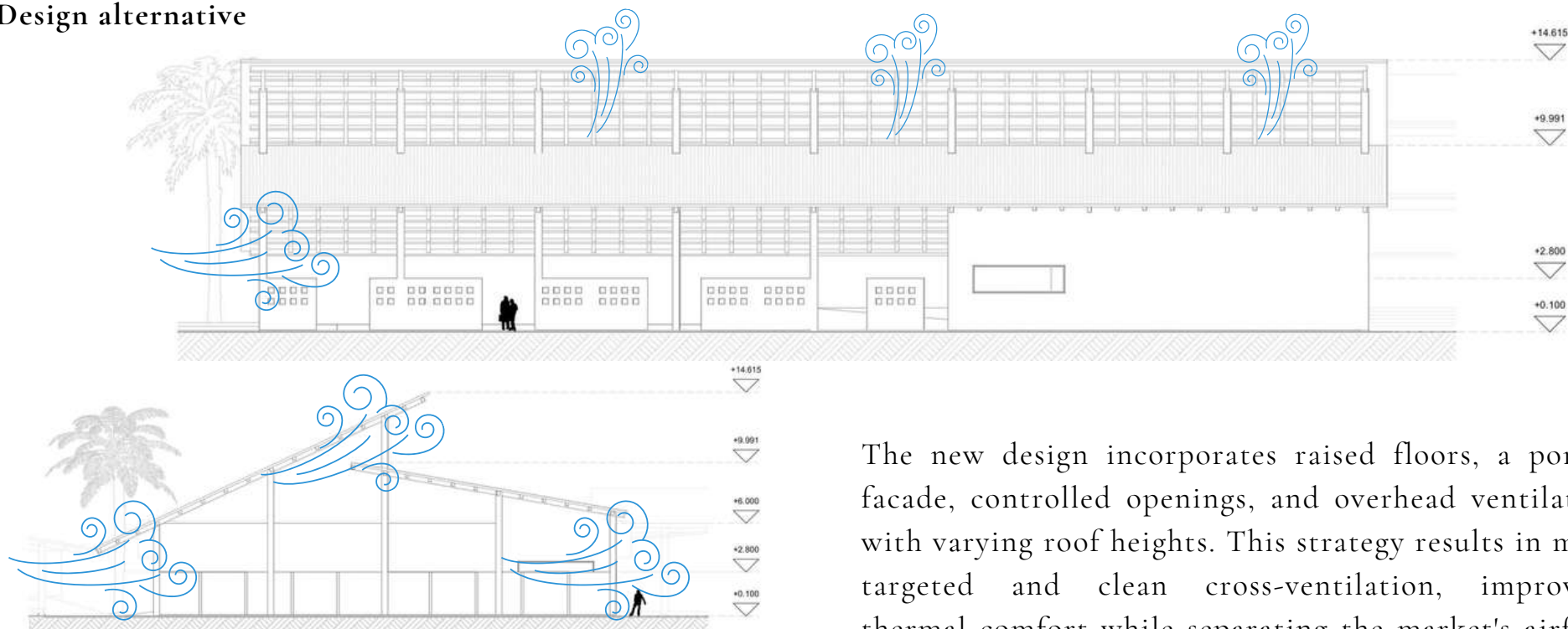


Figure 4.23 Alternative Design for Market Building Section
Source: Author, 2025

The new design incorporates raised floors, a porous facade, controlled openings, and overhead ventilation with varying roof heights. This strategy results in more targeted and clean cross-ventilation, improving thermal comfort while separating the market's airflow from the surrounding street circulation.

4.1 DESIGN RESULT

Final Design

In the final design, the spatial character, building form, and natural ventilation strategies developed in the alternative design were retained, as they effectively supported thermal comfort and trading activity within the market. Improvements were made primarily to the building's structural aspects.

The first change was the addition of practical columns in the kiosk area to reinforce the wall elements and increase the building's rigidity. This addition helped distribute the load more evenly and increased the structure's stability in coastal environments with high humidity and exposure to strong winds.

The second change was the addition of beams to connect the columns, creating a more integrated structural system. Furthermore, the roof system was refined through the use of a more defined and structured steel roof truss.

To more effectively connect the vertical and horizontal elements, steel column connectors were added between the columns and roof trusses. For additional purposes, the ceiling was replaced with a wooden pergola. Elements above the kiosk were also added for security purposes.

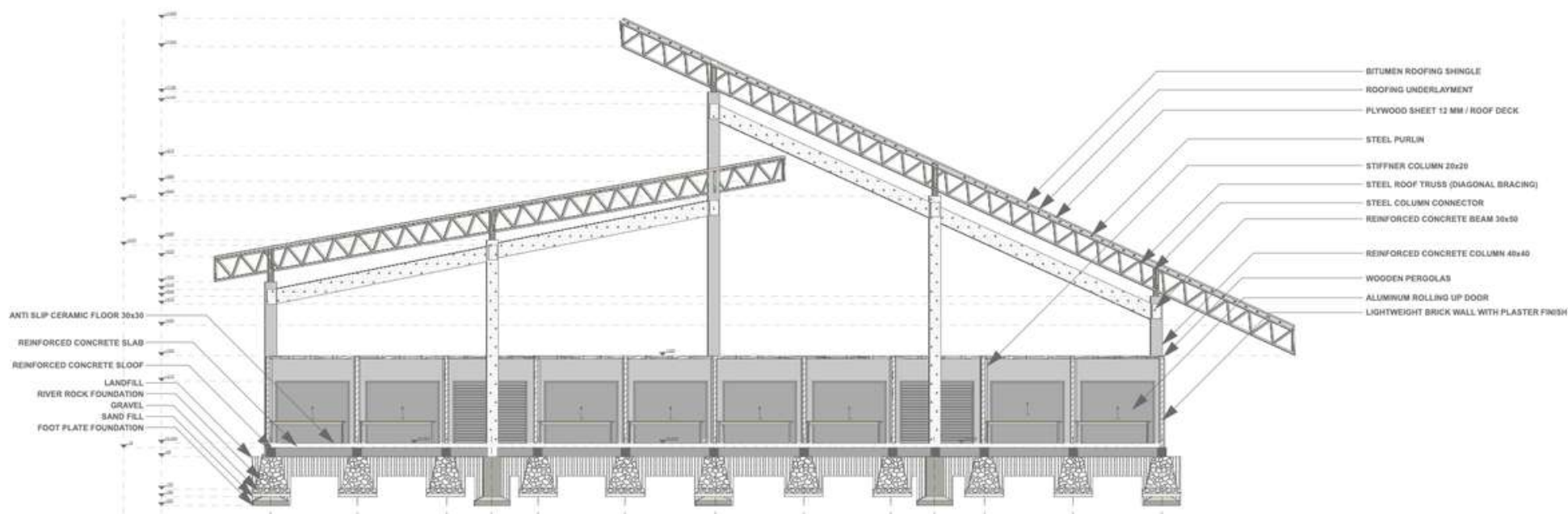


Figure 4.24 Final Design for Market Building Section
Source: Author, 2025

4.1.9 UMKM BUILDING

Plan Layout

Current Situation

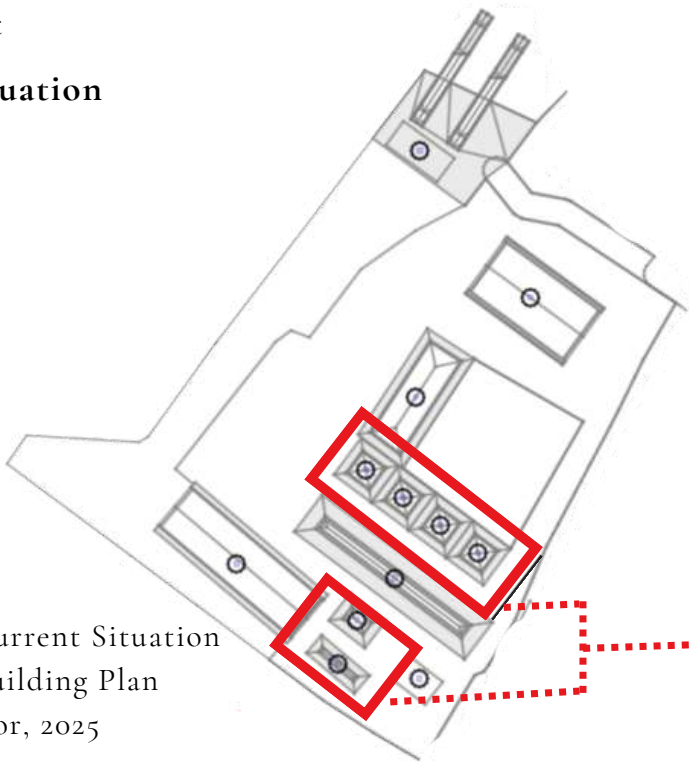


Figure 4.25 Current Situation for UMKM Building Plan
Source: Author, 2025

Design alternative

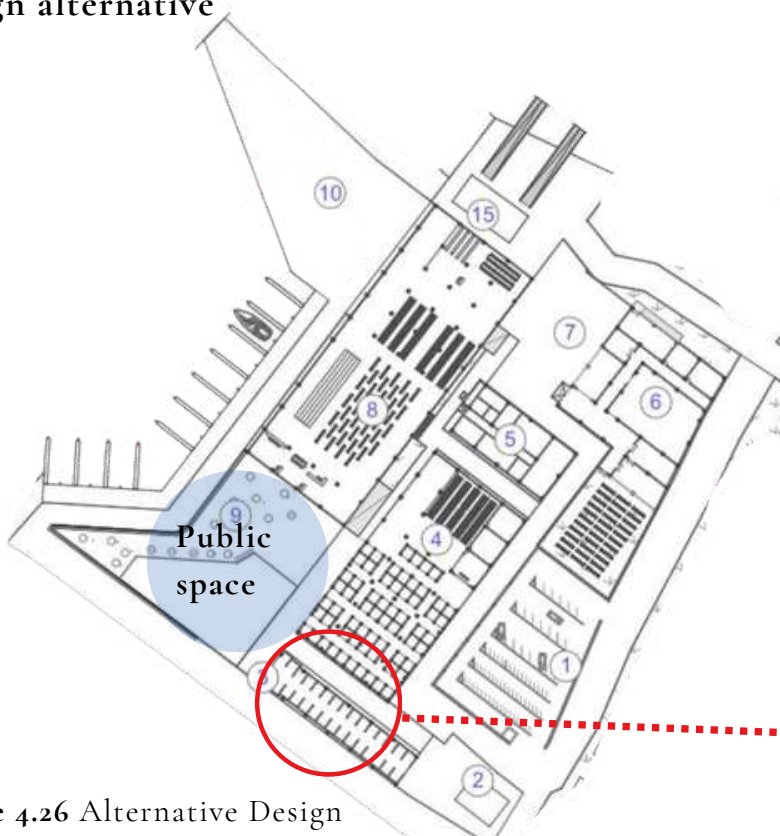
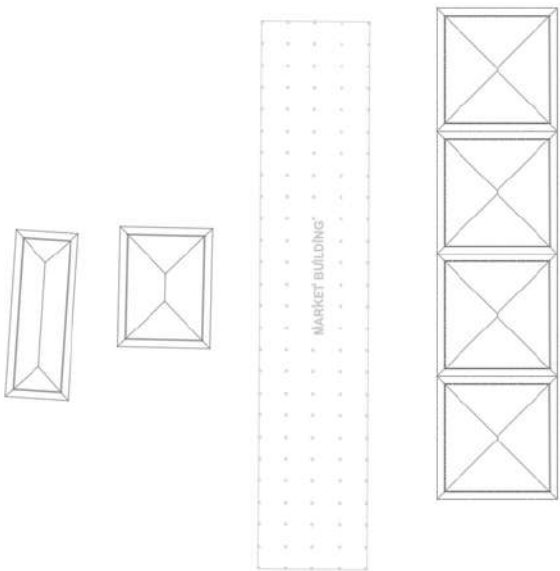
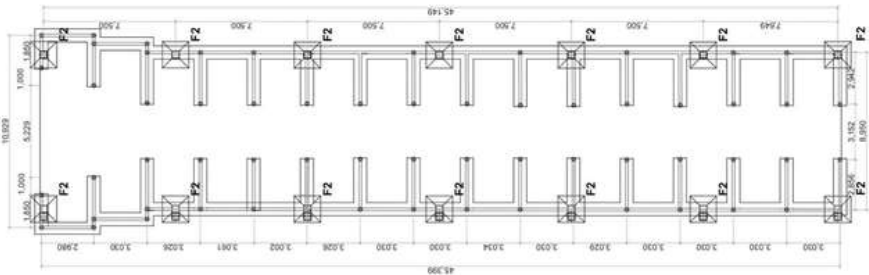


Figure 4.26 Alternative Design for UMKM Building Plan
Source: Author, 2025

The MSME buildings consist of small kiosks scattered throughout the TPI area without any clear functional classification. This distribution pattern creates irregular circulation, a mix of MSME traffic with auction and logistics activities, and limited public space and supporting service areas.



MSMEs are consolidated in a centralized building with organized kiosk modules. This arrangement creates clearer circulation, separates public and operational areas of the TPI, and integrates directly with public spaces, ensuring MSME activities are more organized, easily accessible, and do not disrupt the main workflow of the fishing port.



4.1 DESIGN RESULT

Final Design

In the final design, the basic concept of the MSME building developed in the alternative design was retained, as it was able to accommodate the needs of commercial activities and support integration with public spaces. There were no significant changes to the building layout, number of kiosks, or visitor circulation patterns.

Improvements were made to the building's structure through adjustments to the column system and structural grid. Column placement was made more orderly and consistent, following the kiosk module, resulting in a more rational and easier-to-construct structural system.

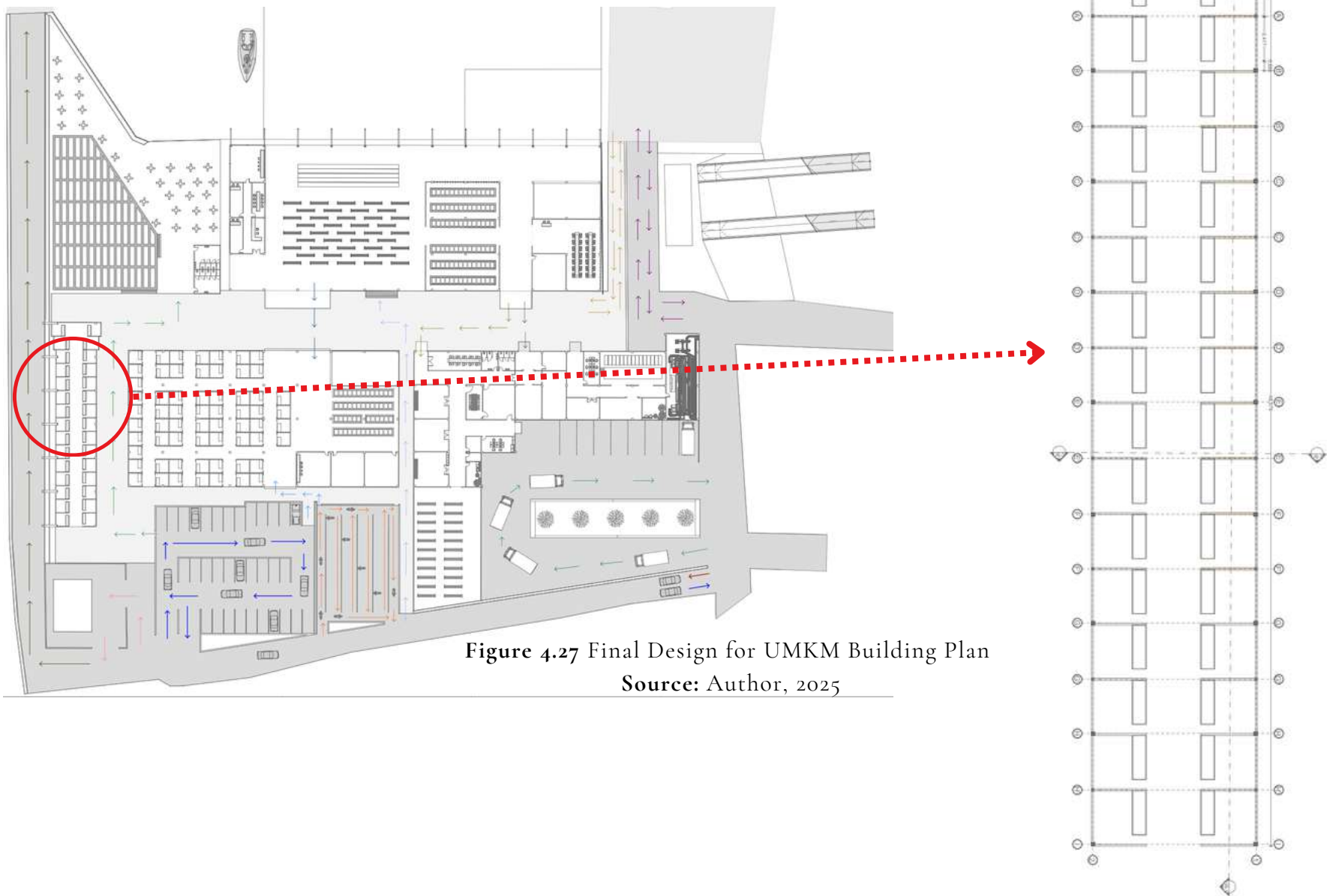


Figure 4.27 Final Design for UMKM Building Plan
Source: Author, 2025

4.1 DESIGN RESULT

4.1.10 MSMES BUILDING

Section

Design Alternative

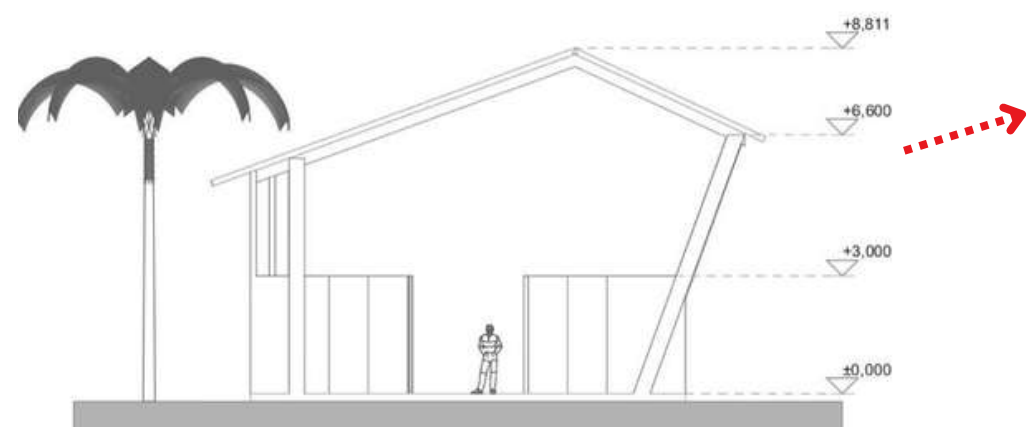


Figure 4.28 Alternative Design for UMKM Building Section

Source: Author, 2025

The initial function of MSMEs was as small kiosks selling snacks and processed fish products such as crackers and other dried products.

The high number of visitors to the Ujung Batu Fish Market (TPI) demonstrated the need for a more representative and organized public space.

Final Design

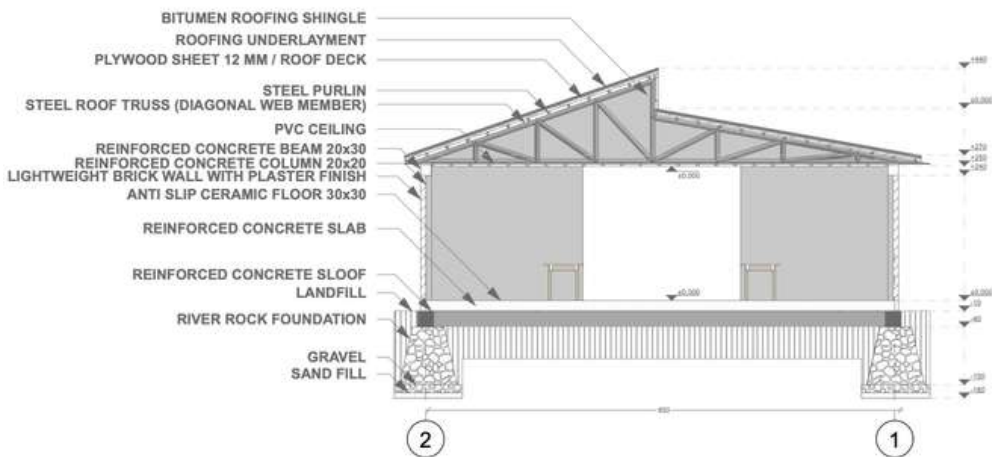


Figure 4.29 Final Design for UMKM Building Section

Source: Author, 2025

- This functional change is addressed through a higher, sloped roof design to promote natural ventilation.
- The different roof slopes, particularly on the sloping columns, are designed to allow cooking fumes to escape optimally, maintaining the comfort of public areas without mechanical systems.

The function of MSMEs has been expanded, not only as a sales location, but also as an area for processing and serving seafood directly.

Based on the results of interviews with the Jepara Regency Government, the MSME building was converted into part of a public space with a food court concept.

In the final design, the food court concept and natural ventilation system were retained, but the structural system was refined by replacing inclined columns with vertical ones. The use of vertical columns provides greater stability, simplifies construction, and increases the efficiency of structural materials. The tiered roof shape was retained to ensure optimal natural ventilation and heat dissipation from cooking activities.

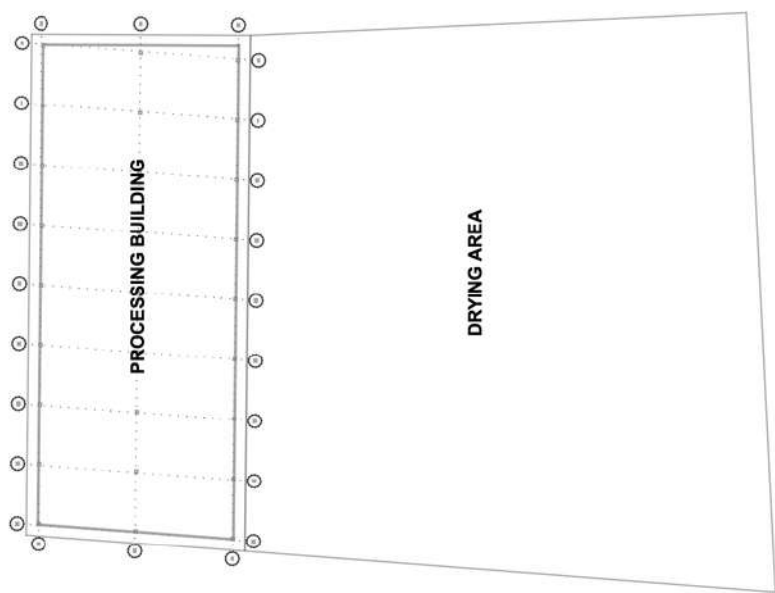
Furthermore, the roof structure was reinforced with steel roof trusses, enhancing the stability of the vertical and horizontal elements.

4.1 DESIGN RESULT

4.1.11 FISH PROCESSING BUILDING

Plan Layout

Current Situation



The existing processing building is relatively small and only accommodates basic processing activities. There is no dedicated parking area, so logistics vehicles mix with the general circulation of the TPI area. The drying area is located in an open space separate from the main building and not integrated into the processing workflow.

Figure 4.30 Current Situation for Fish Processing Building Plan
Source: Author, 2025

Design alternative

In the proposed design, the processing building is expanded and reorganized into an organized spatial system with clear zoning, encompassing processing, cleaning, packaging, storage, utilities, and waste management areas.

The drying area is designed as an integrated part of the building to streamline workflows. A dedicated parking area and loading dock are also provided to separate logistics circulation from public activities. This arrangement aims to improve processing efficiency, cleanliness, and occupational safety in the Ujung Batu TPI area.

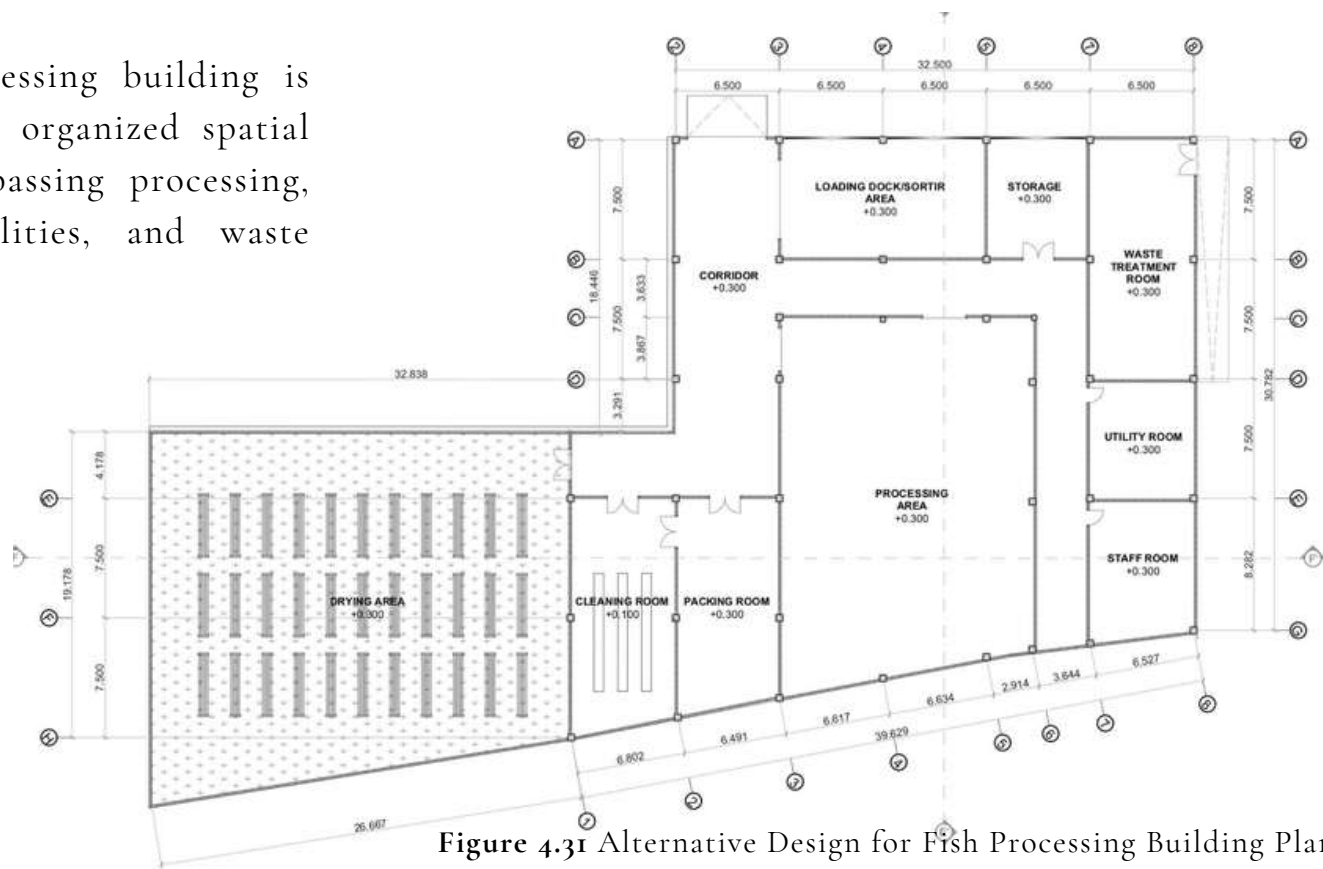


Figure 4.31 Alternative Design for Fish Processing Building Plan
Source: Author, 2025

4.1 DESIGN RESULT

Final Design

In the final design, the fish processing building was developed into a more integrated facility by combining the functions of the fish processing building, cold storage, and ice factory into a single building system. This functional integration was implemented to create a more efficient production flow.

the service and logistics areas were designed to be more organized by providing vehicle maneuvering space, loading and unloading areas, and direct access to storage and distribution facilities. This arrangement results in a more effective work system and supports hygiene standards in the fishery product processing process.

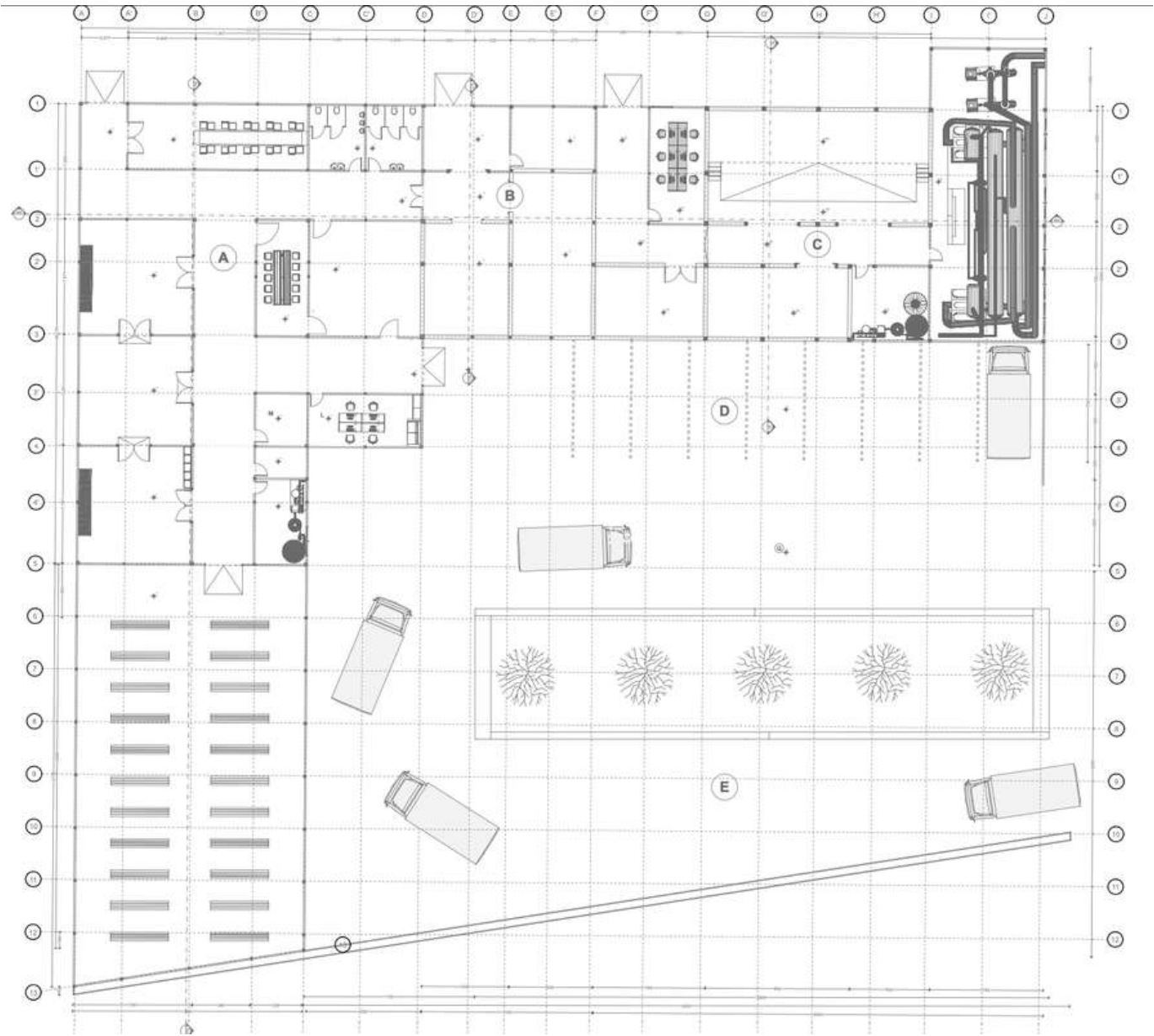


Figure 4.32 Final Design for Fish Processing Building Plan
Source: Author, 2025

4.1 DESIGN RESULT

4.1.12 PARKING AREA

Plan Layout

Current Situation



Figure 4.33 Current Situation for Parking Area

Source: Author, 2025

Under existing conditions, the TPI area lacks designated parking areas based on user type. Distribution vehicles, visitors, fishermen, and operational vehicles share the same area, resulting in intersecting traffic. This creates traffic conflicts, reduces activity efficiency, and disrupts the fish auction and distribution process.

Design alternative

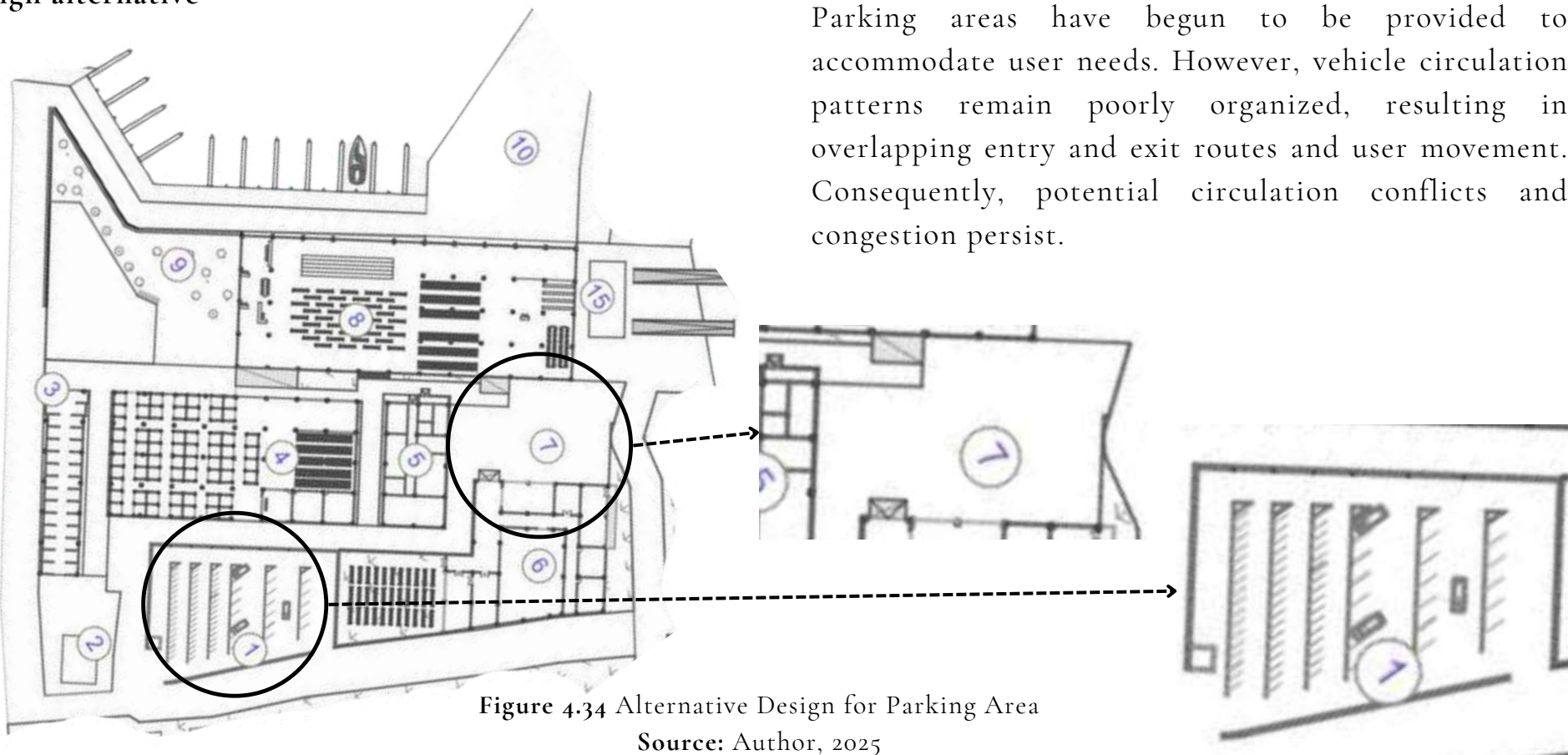


Figure 4.34 Alternative Design for Parking Area

Source: Author, 2025

Parking areas have begun to be provided to accommodate user needs. However, vehicle circulation patterns remain poorly organized, resulting in overlapping entry and exit routes and user movement. Consequently, potential circulation conflicts and congestion persist.

4.1 DESIGN RESULT

Final Design

In the final design, the parking and circulation system was thoroughly revised, separating public parking and distribution parking areas based on their respective activities. In addition to separating parking areas, vehicle movement routes were also organized based on function, ensuring distribution vehicles do not intersect with other vehicles or visitors. This arrangement creates a clearer, safer circulation system, and supports the smooth operation of the TPI.

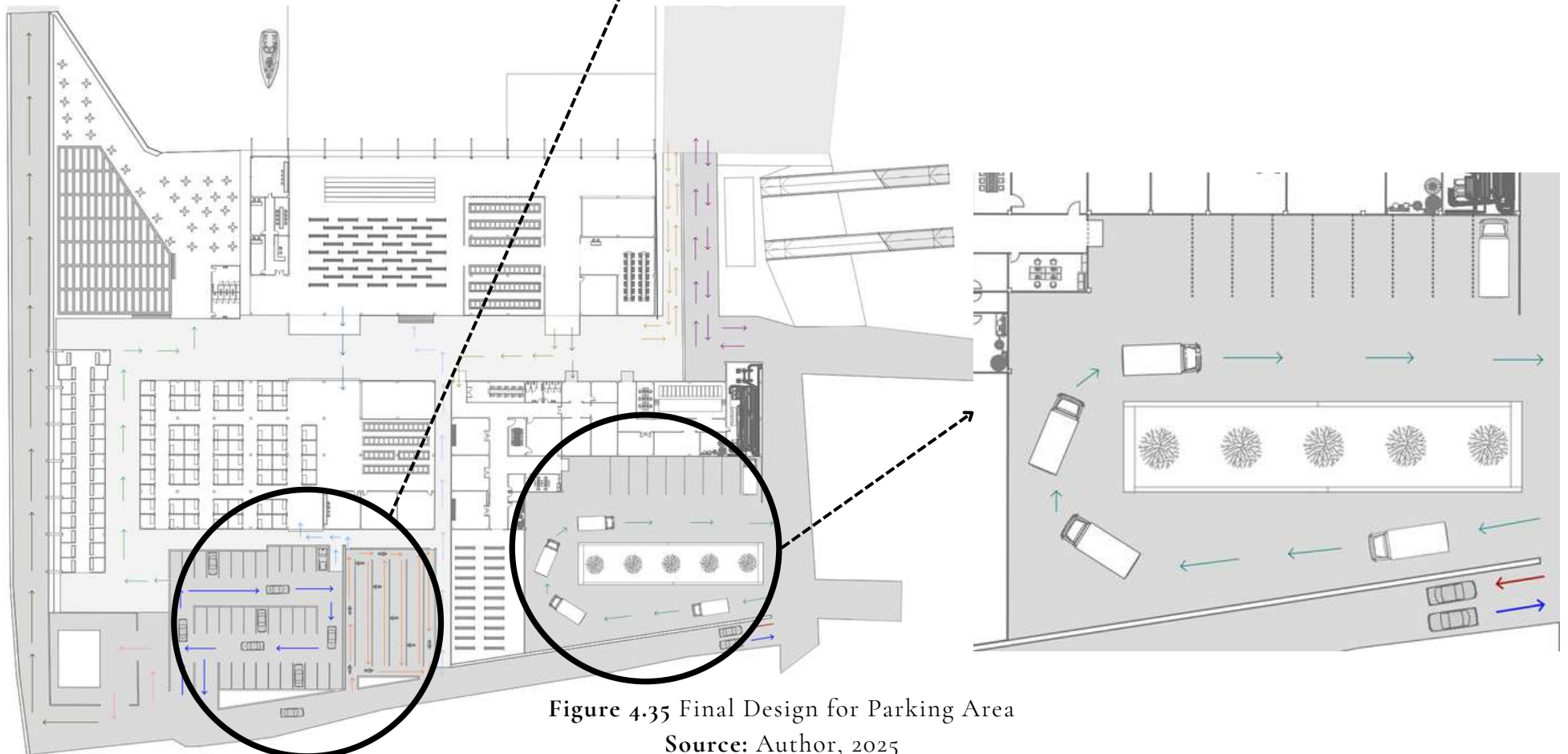
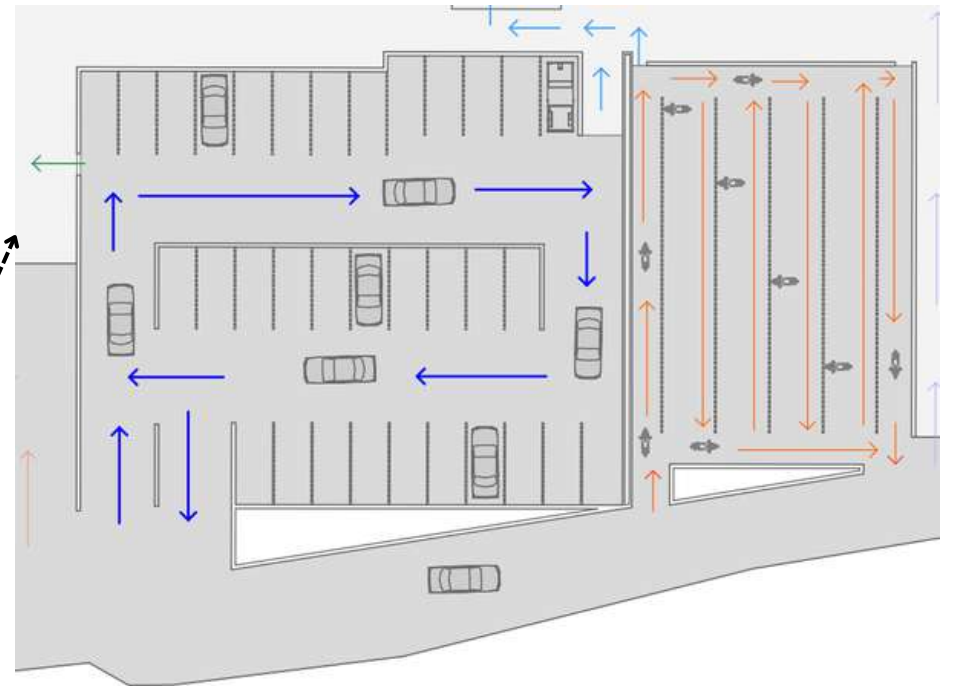


Figure 4.35 Final Design for Parking Area
Source: Author, 2025

4.1 DESIGN RESULT

4.1.13 DESIGN EXTERIOR & INTERIOR



Figure 4.36 TPI Ujung Batu Perspective

Source: Author, 2025



Figure 4.37 TPI Ujung Batu Perspective from North View

Source: Author, 2025

The design showcases the integration of water and land zones through a harbor basin with a finger pier system for mooring vessels, directly connected to public buildings at the water's edge. The waterfront design emphasizes the flow of fishing activities while providing an open, active public space that blends seamlessly with the surrounding residential landscape.

4.1 DESIGN RESULT



Figure 4.38 TPI Ujung Batu Perspective with Fisherman's Activities

Source: Author, 2025

This perspective depicts the market building as a hub for fishery trade, along with a public parking area designed to facilitate visitor accessibility. Parking at the front of the area facilitates easy access to the market, MSMEs, and public spaces without disrupting fisheries operations.



Figure 4.39 TPI Ujung Batu Parking Area Perspective

Source: Author, 2025

4.1 DESIGN RESULT



Figure 4.40 UMKM Building Perspective
Source: Author, 2025

The MSME area serves as an active public space with a food court concept, where seafood is prepared and served on-site. The open layout, high, sloping roof, and side openings promote natural air circulation and smoke exhaust, while creating a comfortable and interactive dining atmosphere.

The market area is designed semi-open with rows of neatly arranged stalls, allowing natural air circulation, efficient buying and selling activities, and direct interaction between traders and visitors in a clean and organized environment.



Figure 4.41 Market Building Interior
Source: Author, 2025

4.1 DESIGN RESULT



Figure 4.42 Pier Basin Perspective
Source: Author, 2026

The mooring area was designed to adapt to fishermen's needs by providing organized boat parking. This arrangement replaces the previously scattered moorings along the riverbank, making activities safer and more efficient.

Drying operations are carried out in an open area with neatly arranged tables, utilizing natural air circulation and sunlight. This arrangement ensures the quality of the processed product, ensures process efficiency, and ensures a clean work area.



Figure 4.43 Drying Area Perspective
Source: Author, 2026

4.1 DESIGN RESULT



Figure 4.44 TPI Ujung Batu Perspective from West View

Source: Author, 2026



Figure 4.45 TPI Ujung Batu Perspective from West View

Source: Author, 2026

This perspective shows a fishery product distribution system designed with dedicated logistics routes and a centralized distribution parking area. This arrangement facilitates the smooth loading and unloading of products and increases the operational efficiency of the area.

4.1 DESIGN RESULT



Figure 4.46 Auction Activity in TPI Ujung Batu

Source: Author, 2026

The fish auction takes place in a semi-open space, with fish displayed in the auction area and spectators in the stands. The layout encourages interaction between fishermen, auctioneers, and buyers, while also utilizing natural air circulation from the sea.

The waterfront public space serves as a recreation and gathering area, directly overlooking the harbor basin. Open seating, landscaping elements, and a canopy create a comfortable atmosphere for visitors, while strengthening the visual connection between the land and water activities at the TPI.



Figure 4.47 Public Space for Culinary in TPI Ujung Batu

Source: Author, 2026

4.2 DESIGN CRITERIA

Based on fishery activity flow

Criteria	Evidence in the project
The connection between water and land areas	The layout of the area follows the sequence of fishing activities starting from ship mooring, auction, processing, market, distribution, to public areas.
Support for distribution activities	Provision of a loading dock and distribution area directly connected to the auction and processing buildings.
Separation of primary and supporting activities	Distribution routes, logistics vehicles, visitors, and fishermen are arranged in separate zones to reduce circulation conflicts.

Table 4.1 Design criteria based on fishery activity flow
Source: Author, 2026

Economic and Tourism Integration

Criteria	Evidence in the project
Local economic development	Provision of market buildings and MSMEs as a platform for trading fishery products and local products.
Improving the quality of visitor experience	Arrangement of pedestrian paths that are not integrated with fisheries and distribution routes
Support for community social activities	Provision of public open spaces as interaction areas between the community, tourists and fisheries actors.

Table 4.2 Design criteria based on economic integration
Source: Author, 2026

4.2 DESIGN CRITERIA

Based on Water Zone Adaptation

Criteria	Evidence in the project
Provision of organized boat mooring areas	Design of ship mooring as a parking area for fishing boats which were previously scattered along the riverbank.
Support for the needs of fishing communities	Provision of pier basins and trestle bridges that are easily accessible from fishing settlement areas to increase the efficiency of ship mooring activities.
Support for ship maintenance activities	Provision of a shipyard basin as a docking and maintenance facility for fishing boats.

Table 4.3 Design criteria based on water zone adaptation
Source: Author, 2026

Based on climate adaptation

Criteria	Evidence in the project
Optimizing natural ventilation	Using cross-openings, varying roof heights, and semi-open spaces to enhance natural airflow.
Responding to the coastal climate	Using overhangs and roof shapes to protect the building from solar heat and heavy rainfall.
Structural system efficiency	Using steel roof trusses and column systems tailored to the building's span.

Table 4.4 Design criteria based on climate adaptation
Source: Author, 2026



5 DESIGN EVALUATION



The Design Evaluation chapter contains a series of evaluations of the design results based on input provided by the jury during the hearing process. Each jury comment is analyzed to identify design aspects that still require improvement, including conceptual, functional, technical, and implementation aspects.

As a follow-up, each input is accompanied by an adequate response explaining the rationale, revision process, and design decisions made by the author. Furthermore, each revision is accompanied by a page reference in this book as evidence of the changes made, allowing for systematic tracing of the design development process and demonstrating that each design decision has undergone a process of evaluation and refinement based on the criticism provided.

5.1 DESIGN RESPONSE

5.1.1 DESIGN BRIEF

1st Jury
Prof. Dr. Ing. Ir. Ar. Ilya Fadjar Maharika, MA., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	What is actually your idea of the redesign, why it's not revitalization?	This project is called a redesign because the main function of the TPI is maintained, while what is changed is the arrangement of the area, facilities, and operational systems to improve performance and environmental quality.	67
2	what are the concepts and approaches?	The concept used is Adaptive Design, which adapts the area to coastal conditions and fishing activities. The approach used is Waterfront Architecture through the Water Zone Arrangement and Fisheries Workflow (Sea–Land) strategies.	68

Table 5.1 Design response to design brief by the 1st jury
Source: Author, 2026

5.1 DESIGN RESPONSE

2nd Jury

Dr. Ar. Yulianto Purwono Prihatmaji, ST., M.T., IPM., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	What is the design challenge of the TPI?	The main challenge of this project is to reorganize the TPI area so that fishing activities, coastal conditions, regional circulation, and community economic activities can run in an integrated and more effective manner.	54
2	What time is the operational hour of the TPI?	TPI activities take place almost all day long following the fishermen's work patterns, with the most active period occurring in the early morning until morning when the boats return and the auction process takes place.	26
3	What is the design guidelines of this design?	The design is based on the efficiency of fishing activities, separation of wet and dry zones, clarity of circulation, connection with fishing settlements, and response to coastal conditions.	95
4	What is the design criteria of this design?	The design criteria include the arrangement of water zones, strengthening the flow of fishing activities from sea to land, adaptation to the coastal environment, and integration of economic and tourism functions within the area.	132

Table 5.2 Design response to design brief by the 2nd jury
Source: Author, 2026

5.1 DESIGN RESPONSE

5.1.2 COMPREHENSIVE

1st Jury
Prof. Dr. Ing. Ir. Ar. Ilya Fadjar Maharika, MA., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	The existing buildings do not really comply with the regulation, but somehow create space for the sempadan (setback). But, your design doesn't consider that.	The design maintains water areas and open spaces as transition zones between land and sea. In fishing port areas, the waterfront serves not only as a boundary but also as an operational area supporting vessel mooring, maneuvering, and fishing activities.	32
2	How can tourists enter without disrupting fish auction and distribution activities?	Tourist activities are separated from operational routes through a separate zoning and circulation system. Visitors are directed to public areas, markets, and MSMEs without passing through fish distribution channels or loading and unloading areas.	108
3	Why are auctions here, processing here, and MSMEs here?	The placement of functions follows the sequence of fisheries activities. The auction area is located near the ship moorings to expedite loading and unloading, the processing building is located after the auction to support post-harvest processing, and the MSMEs are located in the public zone as a link between fisheries activities and community economic activities.	106

Table 5.3 Design response to design comprehensive by the 1st jury
Source: Author, 2026

5.1 DESIGN RESPONSE

2nd Jury

Dr. Ar. Yulianto Purwono Prihatmaji, ST., M.T., IPM., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	You need to rethink your architectural issues and problems.	Architectural problems have focused on aspects that can be resolved through design, namely the connectivity of regional functions, clarity of circulation systems, adaptation to the coastal environment, and integration between fishing activities, distribution, and public spaces.	54
2	Can you explain more about the flow of the traders, fishermen, and visitors in the existing condition?	In the proposed design, the flow of fishermen, distribution, and visitors is separated based on their function and purpose. Fishermen move from the boat mooring area to the auction and processing area via operational routes, distribution vehicles have direct access to the loading and distribution areas, while visitors are directed to the market, MSMEs, public spaces, and the waterfront via separate pedestrian paths. This system reduces circulation conflicts and supports the smooth flow of fishing activities.	108

Table 5.4 Design response to design comprehensive by the 2nd jury
Source: Author, 2026

5.1 DESIGN RESPONSE

5.1.3 DESIGN DEVELOPMENT

1st Jury
Prof. Dr. Ing. Ir. Ar. Ilya Fadjar Maharika, MA., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	Parking arrangement is still very ineffective, circulation is too difficult to pass	I've changed the parking area by separating distribution parking from general parking. General parking is also separated between motorcycles and cars. The number of parking spaces is adjusted to the average number of visitors to TPI Ujung Batu each day, which is 25-30 cars per day. Therefore, the number of parking spaces chosen is 30 parking spaces.	125
2	How do fishing boats unload their catch, when the ship's parking bulkhead is very small, where do the boats unload their cargo from?	I have considered and changed the boat parking area where each boat parking area has a radius of 3 meters because the type of boat used at TPI Ujung Batu has a way of lowering the catch from the side.	110
3	Circulation for distribution is very ineffective	I have changed the distribution circulation to only 1 round to facilitate the distribution flow, and the flow for distribution itself has been separated from other movement circulations such as non-distribution vehicle circulation and pedestrians.	125

Table 5.5 Design response to design development by the 1st jury
Source: Author, 2026

5.1 DESIGN RESPONSE

2nd Jury

Dr. Ar. Yulianto Purwono Prihatmaji, ST., M.T., IPM., IAI.

	Notes From Jury	Adequate Response	Revised Part (Page)
1	Were all those ships really in port at the same time?	No, the ship parking system is divided into 3 shifts, namely fish fishing boats, clamp fishing boats and seaweed fishing boats, each of these shifts has a different schedule.	26
2	Are you sure about using a pile cap foundation? Isn't it too expensive?	The foundation system has been revised from pile caps to river stone foundations for low-rise buildings. This change was made to make the structural system more economical, easier to construct, and more suited to the building's character and the functional needs of the TPI area.	114 & 118
3	Kiosks in the market do not need a ceiling because you already have a roof	The design was revised by removing the conventional ceiling and replacing it with a wooden pergola. This element serves as a protective barrier for utility installations beneath the roof structure, improving user safety without impeding the natural ventilation that is the market's primary concept.	118

Table 5.6 Design response to design development by the 2nd jury
Source: Author, 2026



APPENDICES



PLAGIARISM REPORT



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Assalamualaikum Wr. Wb.

Dengan ini, menerangkan bahwa:

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Judul Karya Ilmiah : Tumata Kalinyamat: Redesign of the Ujung Batu Fish Auction Hub (TPI)
in Jepara

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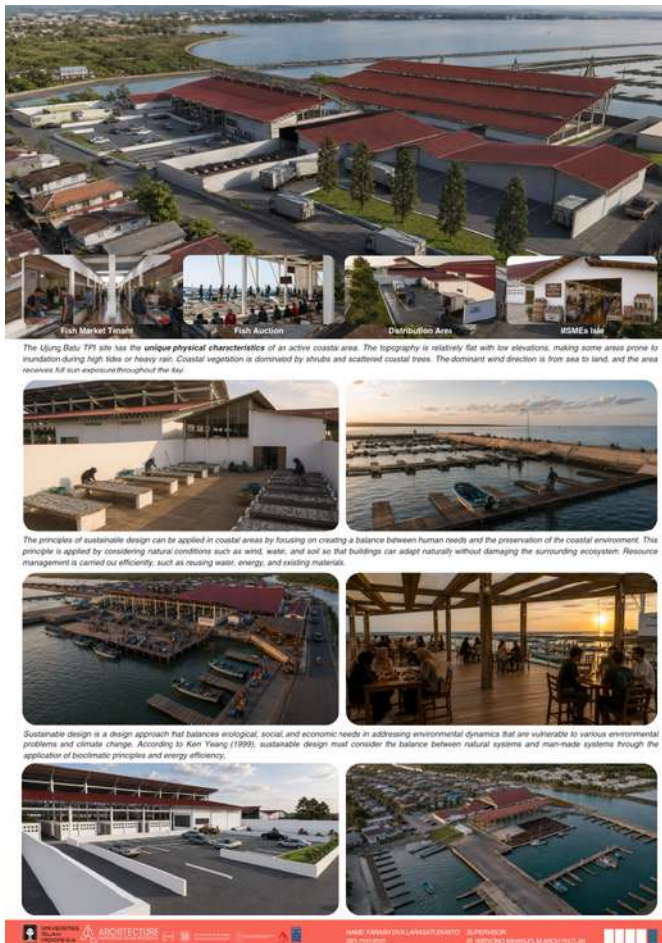
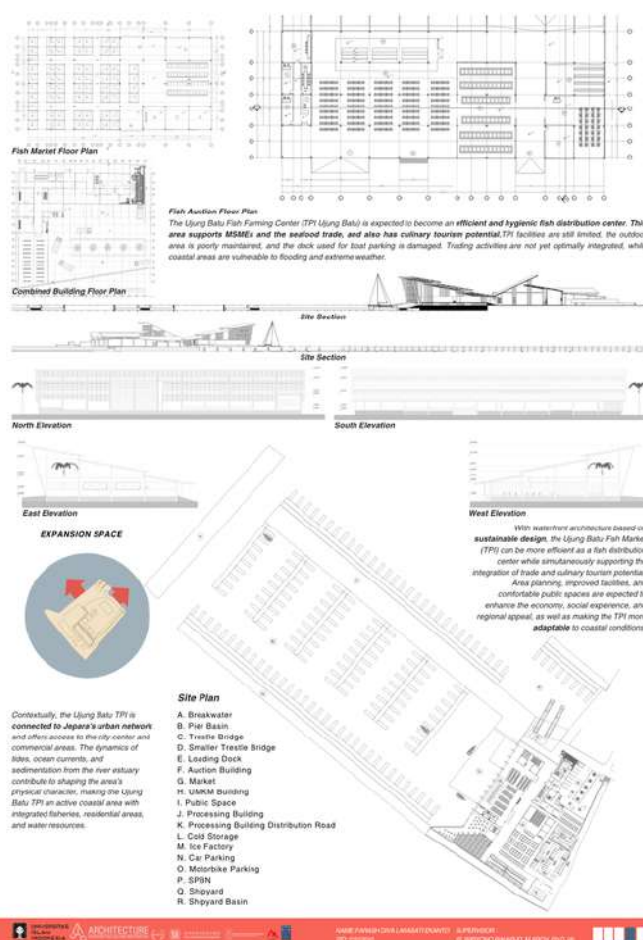
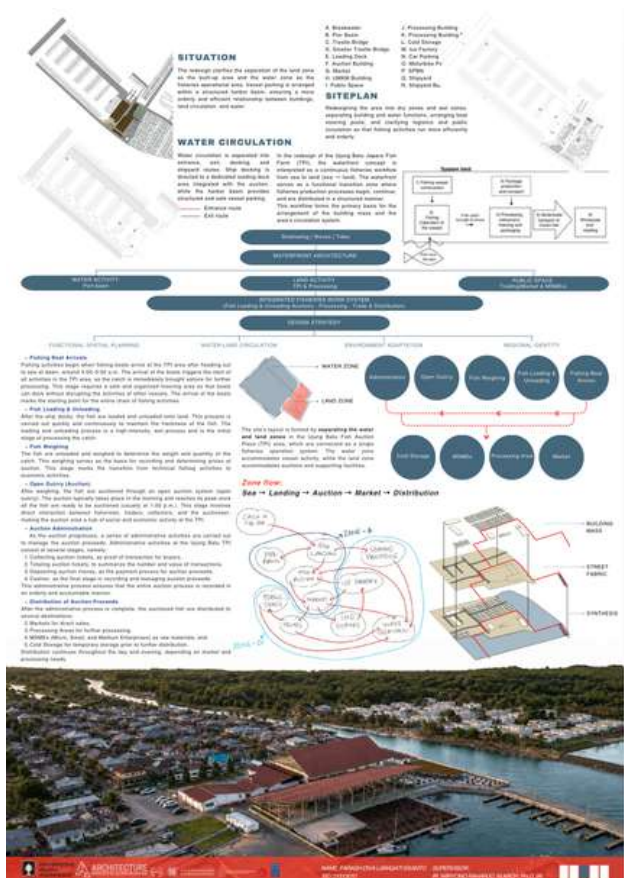
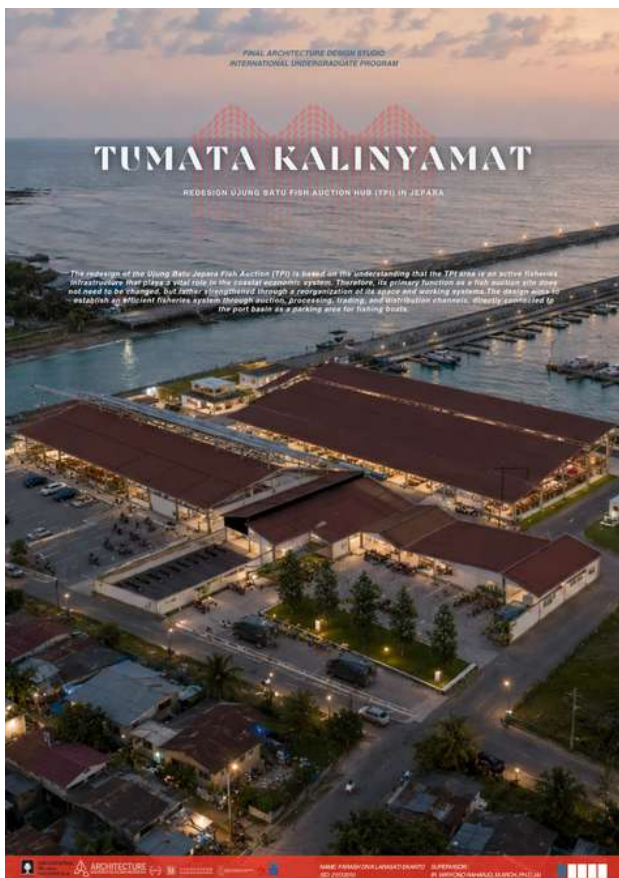
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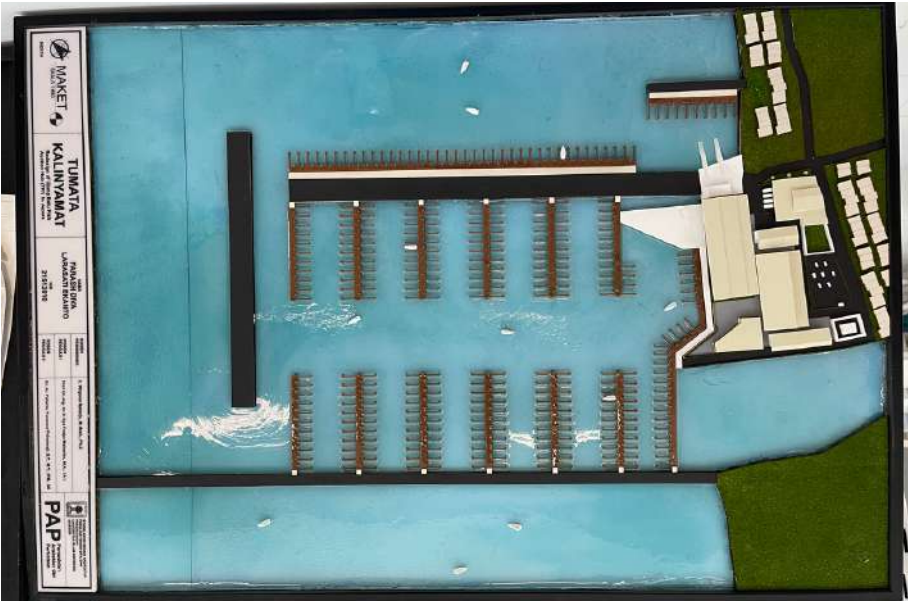


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