

DRAF RANCANGAN TEMPATAN DAERAH KUALA MUDA, KEDAH 2035 (PENGgantian)

EXECUTIVE SUMMARY





Foreword

KUALA MUDA DISTRICT KEDAH

20
35

LOCAL PLAN

Executive Summary of Kuala Muda District, Kedah Local Plan contains citations from the Kuala Muda District Local Plan Draft Report 2035. All further clarifications and details should be referred to the Kuala Muda District Local Plan Draft Report 2035.

The Kuala Muda District Local Plan contains:

- **Written Statement** that defines the general policy and proposals of the Kedah State Structure Plan and translates all development proposals for physical land use in writing form to clarify the proposals contained in the Proposed Land Use Plan.
- **The Subject Plan** describes the development plans in detail according to certain development sectors.
- **Insertion Plan** shows the various development proposals contained in the subject plan in more detail through perspective view, illustration, area, location and etc.
- **Proposed Land Use Plan** which contains detailed land use and physical development proposals according to lot.
- **Land Use Class Table** describes the types and activities of main land use and permitted buildings, as well as other permissible land use in each land use zone shown on the Proposed Land Use Plan. The table is prepared according to Map Index Sheet of Survey Department.

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INTRODUCTION

Kuala Muda District Local Plan 2035 (Replacement) is prepared in accordance with the provisions of Section 16 of the Town and Country Planning Act 1976 (Act 172). It will replace the Kuala Muda 2020 Local Plan. Local Plan (LP) is an official document that translates the general policies and proposals contained in the State Structure Plan to a more detailed physical form.



PREPARATION REQUIREMENTS KUALA MUDA LOCAL PLAN 2035

1

Replacing the existing Kuala Muda 2020 District Local Plan that is soon end its planning period.

2

There has been a significant change in current patterns and demands in terms of market and local economy as well as country level.

3

There has been a change of justification, legend and projection information of previous development.

4

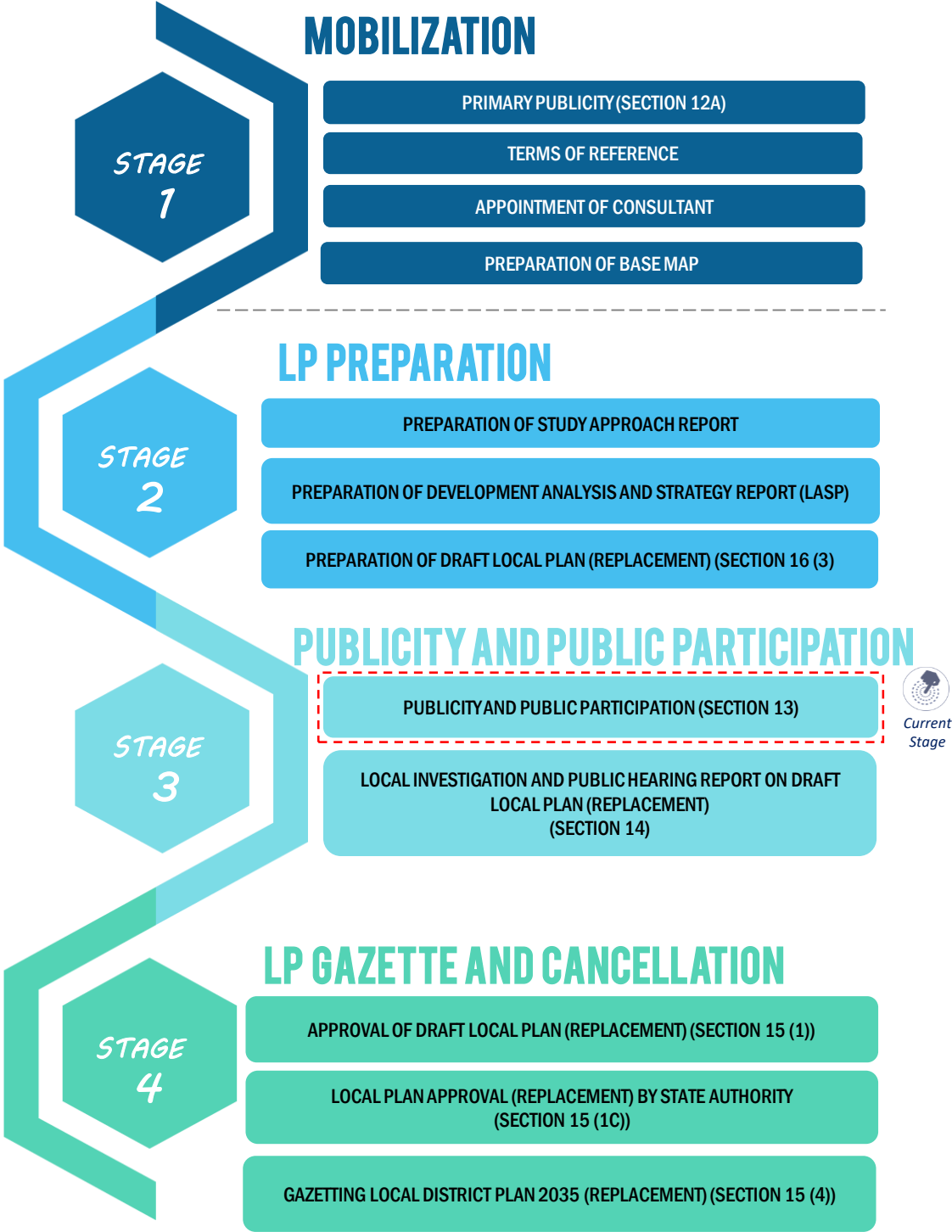
Previous Local Plan has been changed as much twice in 2016 and 2017.

5

Identify the future development needs in terms of the provision of facilities, utilities, transportation systems and the direction of physical and economic development by 2035.



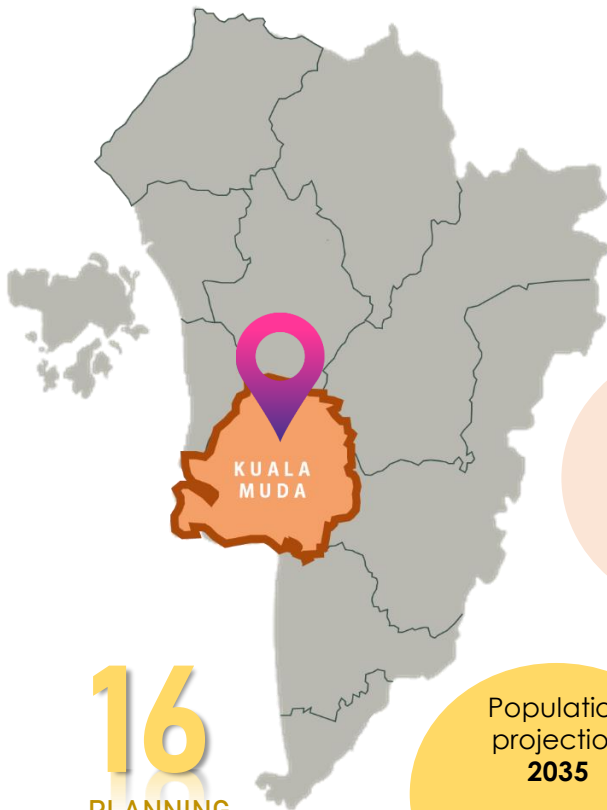
PROCESS OF LP PREPARATION



SITE PROFILE



KUALA MUDA 2035



District Area

92,835.39
Hectares

9.81% of Kedah State total
area

Total population
2017

507,700
people

23.33% of Kedah's
total population

16
PLANNING
BLOCKS

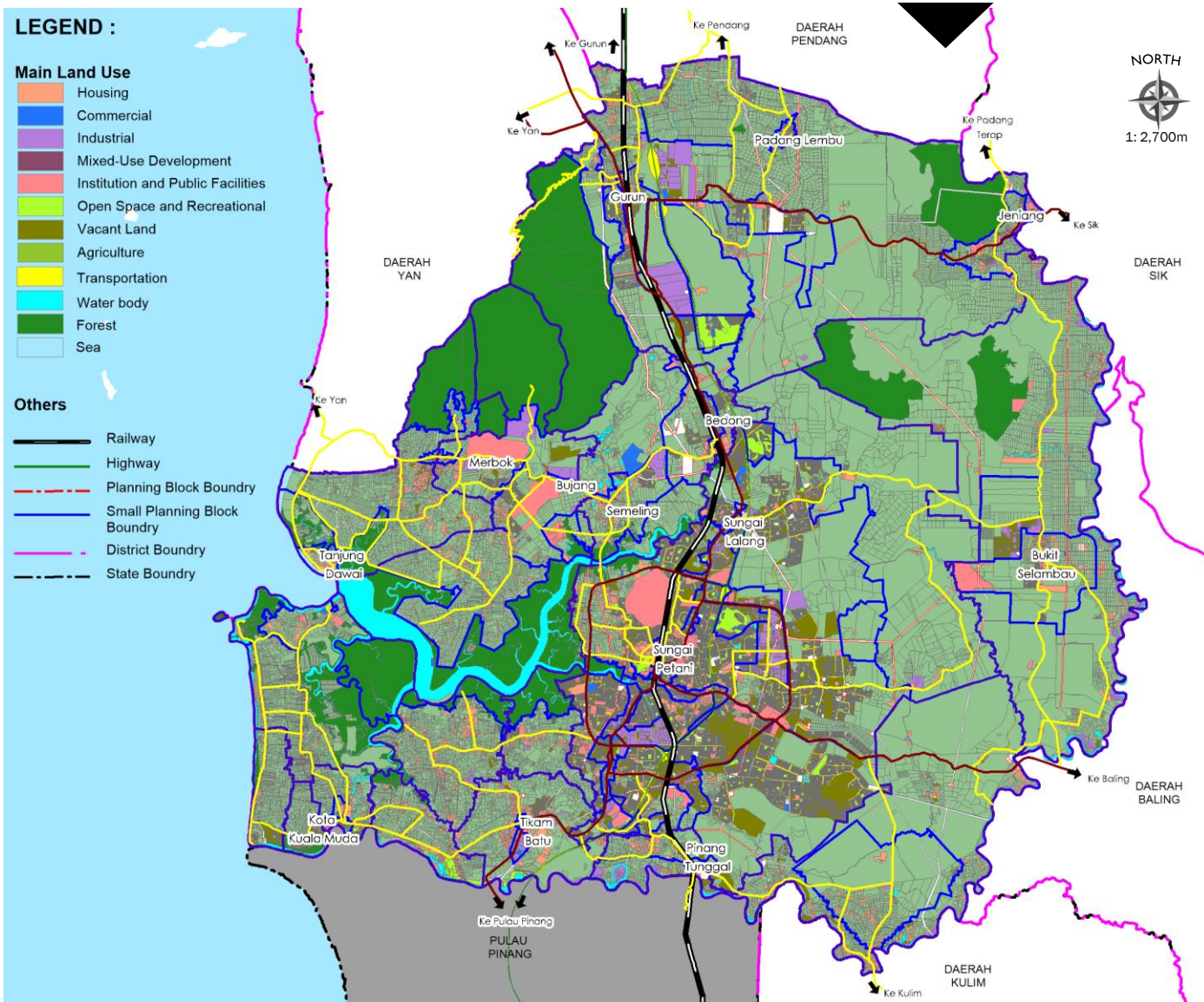
Population
projection
2035

857,730
people

26.4% of Kedah's total population
projection in 2035 (3.163 million
population)



CURRENT LAND USE 2017



Land Use	Area (Hectars)	
	Current 2017	%
Housing	6,226.08	6.71
Commercial	531.33	0.57
Industry	1,857.16	2.00
Institution and Public	2,014.54	2.17
Open Space and Amenities/Facilities	1,353.61	1.46
Transportation	4,873.58	5.25
Infrastructure and Utility	2,011.10	2.17
Agriculture	53,981.17	58.15
Vacant Land	3,800.29	4.09
Water Body	3,181.38	3.43
Forest	12,921.79	13.92
Sea	83.35	0.09
TOTAL	92835.39	100.00

Significance

of Kuala Muda in Kedah



STRATEGIC PLAN NPP-3

1 Bandar Sungai Petani is included in the **Sungai Petani Development Promotion Zone (DPZ)**, since it has the characteristics of potential area of economic growth, development booster and rapid population growth.

2 Kuala Muda district has **two ETS stations**, which are **Sungai Petani** and **Gurun**.

3 Kuala Muda coastline is a **bird sanctuary area** and haven for thousands of birds each season as their stopover site.

Source: 3rd National Physical Plan (NPP)

LEGEND:

Growing Area

- Urbanization Zone
- Secunder Urbanization Zone
- Coastal Zone Development
- Existing Built up Areas

Biodiversiti Development Area

- Permanent Forest Reserved
- Forest

Heritage Management Zone

- Geopark Mt Jerai
- Water Body
- Coastal Zone Conservation

Proposed Transportation

- Proposed Highway
- Proposed New Road
- Proposed Upgrade Road
- Hub Industrial
- Airport

Proposed Infrastructure

- Upgrade of Water Treatment Plant

Agriculture Area

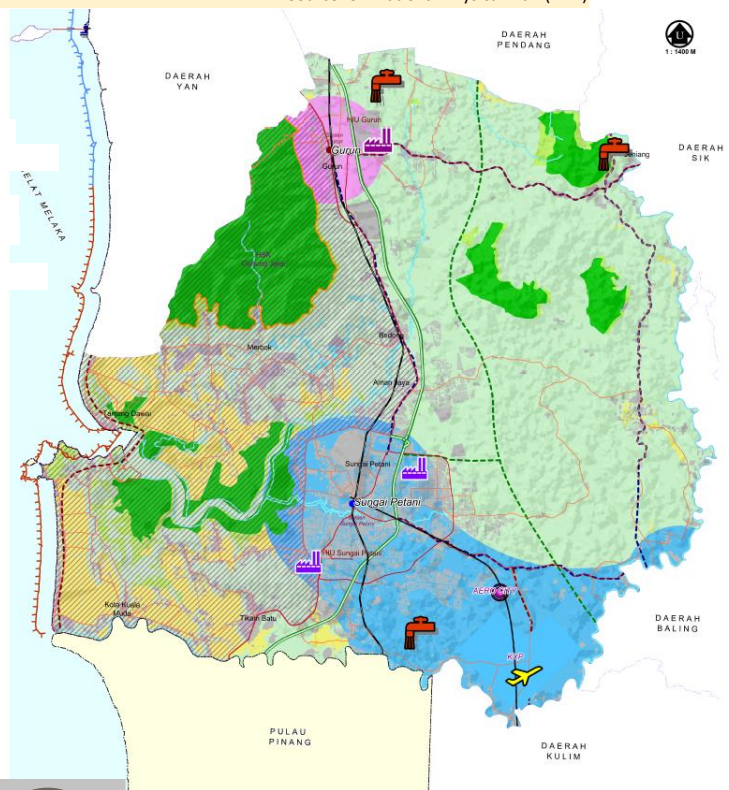
- Food Production Zone
- Agriculture Production Zone

Residential Hierarchy

- Main Town
- Local Town

Tourism Zone

- International Tourism Zone



SSP - LAND USE STRATEGIC PLAN FOR KUALA MUDA DISTRICT

Source: Draft of Kedah Structure Plan, 2035

Growth Area

- Main Municipal Zone
- Secondary Municipal Zone

Biodiversity Development Area

- Permanent Forest Reserve
- Forest

Khazanah Management Zone

- Jerai Geopark
- Water Body
- Coastal Protection Zone

Agricultural Zone

- Food Product Production Zone
- Agricultural Production Zone

Proposed Transportation

- Proposed Highway
- Proposed Airport



DEVELOPMENT ASSET



- 1 Industrial hub** in Kuala Muda will be a catalyst for economic competitiveness and investment with the use of smart technology and ICT.
- 2** Lembah Bujang Archaeological Complex and Sungai Batu archaeological site is the **source of archaeological heritage** and an asset to the Kuala Muda District.
- 3 International tourism icons** such as Gunung Jerai, Sungai Merbok, Lembah Bujang Archeology, Batu Sungai Archeology, Kota Kuala Muda, Sayak Island, Tanjung Dawai and Pantai Merdeka.
- 4** Gain benefit from an extensive greenery areas where indirectly acts as a **natural buffer zone** that provides ecosystem services to the surrounding environment.
- 5** There is **54%** out of total district area that is fully ready for future development.
- 6** Has a **comprehensive and accessible network** with other bordering areas.



DEVELOPMENT CHALLENGES

ECONOMY



Industrial competitiveness in the Kuala Muda is threatened with the **rapid industrial development in adjacent areas** such as Kulim Hi-Tech and industrial areas in Butterworth and Pulau Pinang.



The use of ICT is still not optimal.

This has to be taken into consideration seriously as to align with the challenges and urbanization happened in Kuala Muda District.



Not-so competitive tourism sector. The **quality of tourism products is still localized** with limited destination offers, products and travel programs.



There are obsolete and abandoned area in Bandar Sungai Petani.



Vast requirements on skilled and talented manpower in the process of transition to an upgraded economy and knowledge.
(Manpower resources with digital and high-tech skills).

QUALITY OF LIFE



High number of students and there are settlements located **beyond the level of accessibility between housing and schools** such as in Bandar Puteri Jaya and Ambangan Height.



Feeder Bus service is not comprehensive throughout the Kuala Muda District area

especially in the village area as the bus service is only passes the main roads.



Development in **river reserved area are not given attention** to serve as landscape and recreation area.



Impact of citizen conflict – living in a residential area that is close to the industrial area.



Unavailable of sport facilities such as sports complex / synthetic track / extreme park as a recreation spot of youth.



Lack of placemaking area in Bandar Sungai Petani.

ENVIRONMENT



River quality in Sungai Petani and **marine water quality** in Pantai Merdeka is **polluted**.



Local drainage system on development focus areas are **inefficient, not integrated and have low capacity flow** causes most of the municipal area is exposed to the phenomenon of flooding.



Coastal erosion in various coastlines such as Tanjung Dawai and Pantai Merdeka affects the quality of the environment, ie recreational areas for locals.



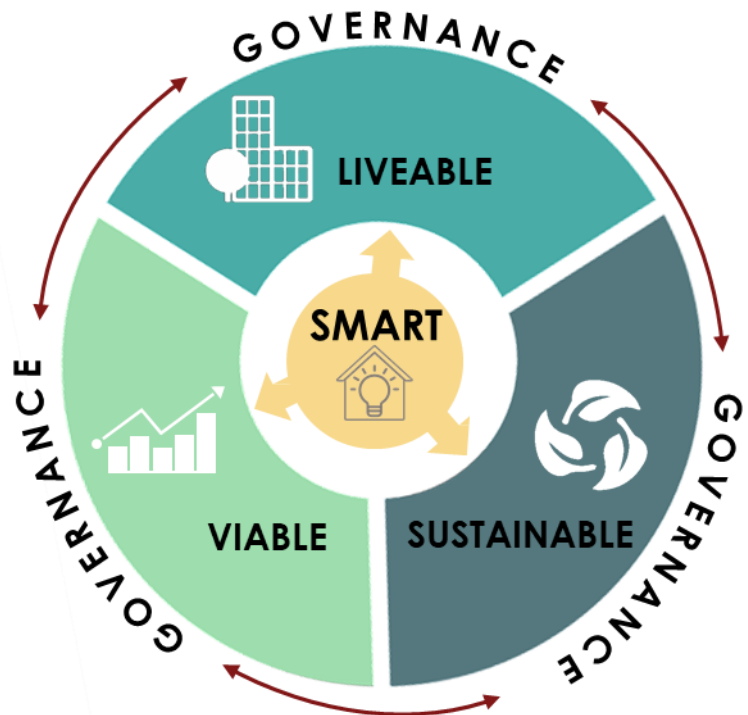
Minimum implementation of green technology in waste management as there is still **lack of connected services for sewerage systems and lack of 3R applications** in solid waste management.



There is a tsunami risk zone that needs to be addressed as it will affect the community.

DEVELOPMENT GOAL

KUALA MUDA AS
A DISTRICT OF
LIVEABLE,
VIALE,
SUSTAINABLE
and **SMART**



Districts with an active population and various activities, prosperous community as well as a safe environment.



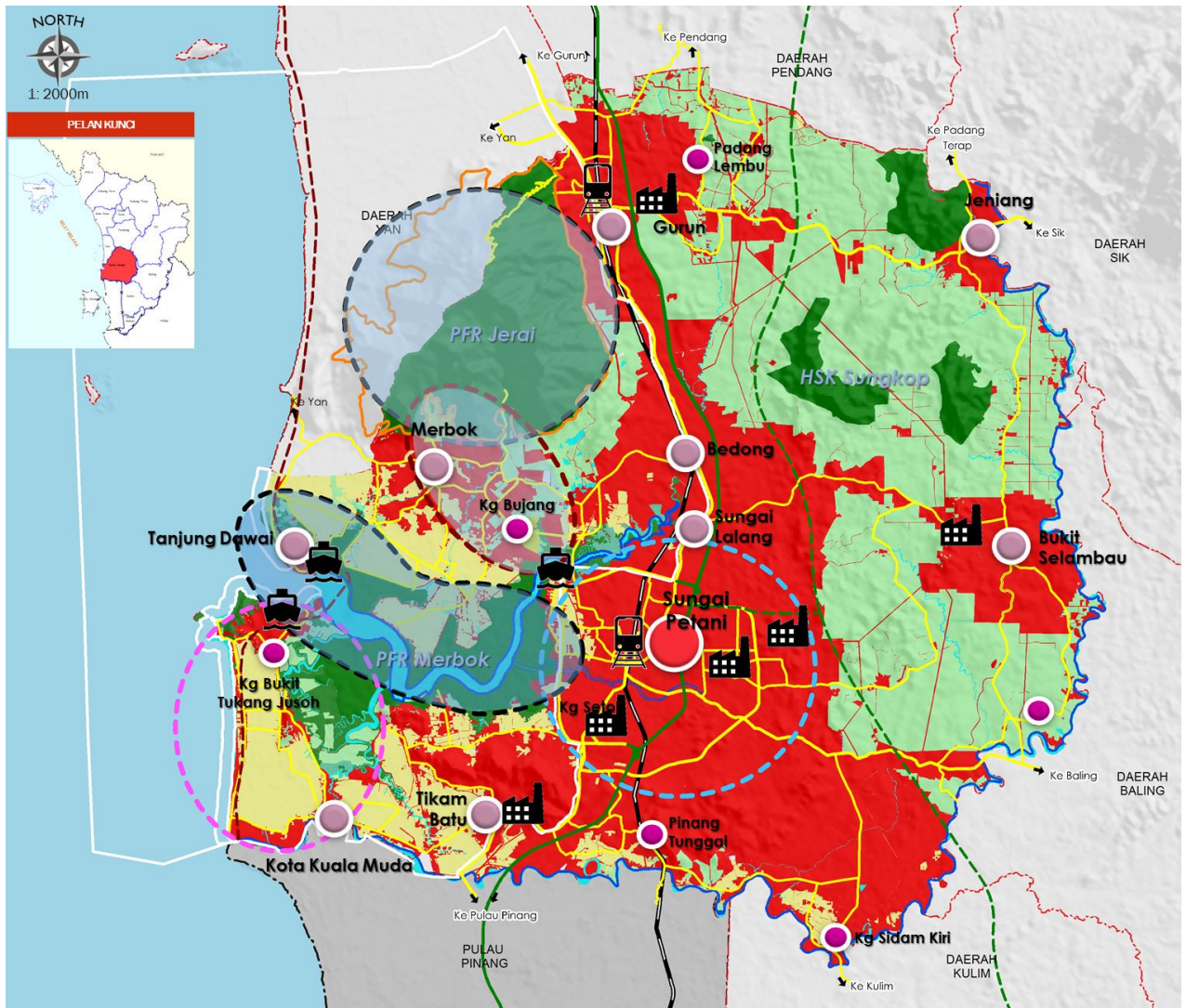
Districts that are capable to be developed and grow especially in economic sector.



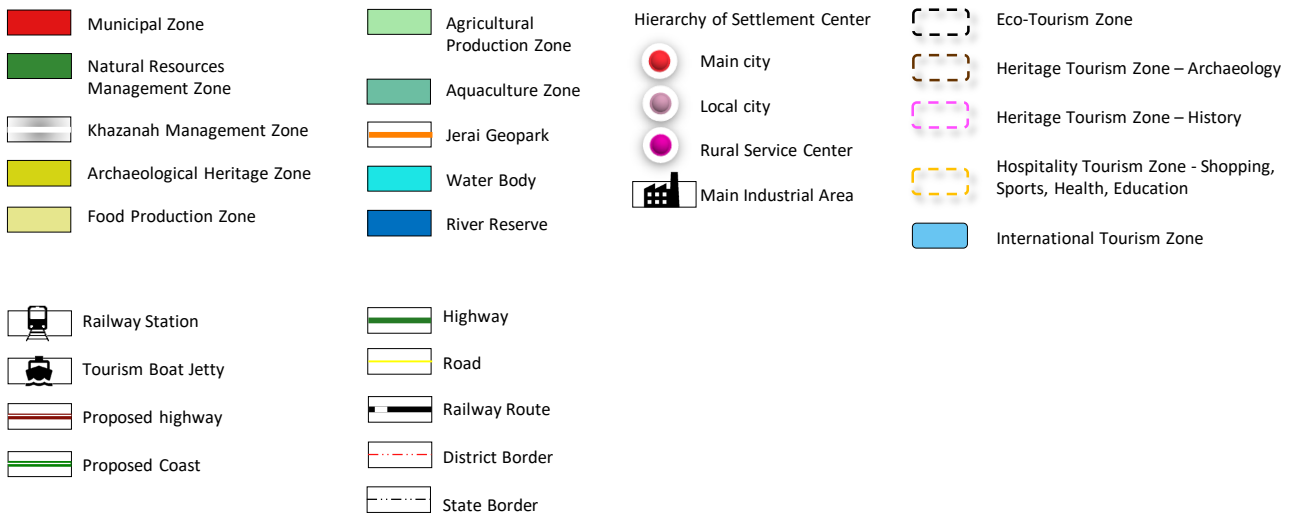
Ensure district development is managed wisely by taking into account the need to offset the urbanization while preserving the environment and natural resources.



DEVELOPMENT CONCEPT



Petunjuk



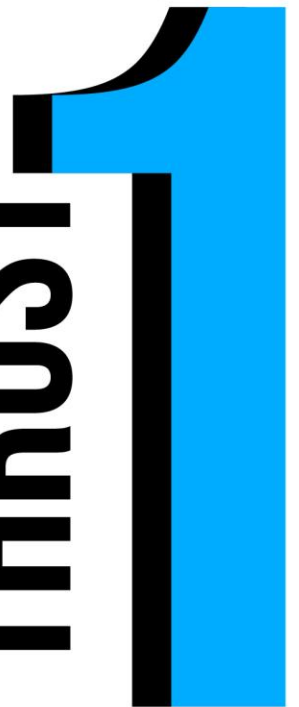
DEVELOPMENT PROPOSAL





PROSPEROUS COMMUNITY DEVELOPMENT

THRUST



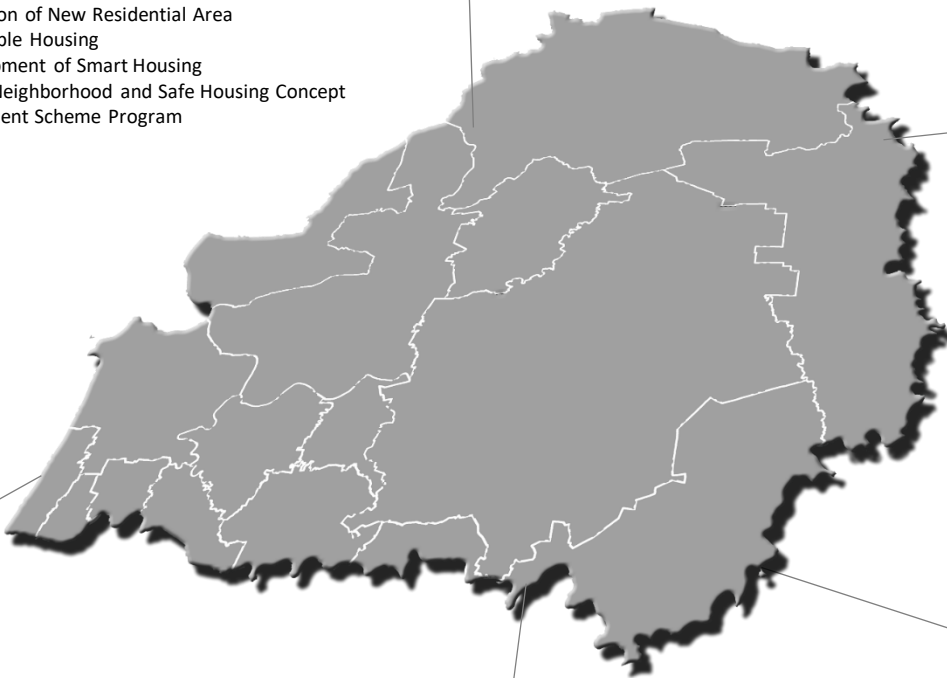


1 Providing Adequate, Organized, Quality and Affordable Housing Needs

- 1) Expansion of New Residential Area
- 2) Affordable Housing
- 3) Development of Smart Housing
- 4) Green Neighborhood and Safe Housing Concept
- 5) Smart-Rent Scheme Program

2 Developing and Strengthening the function of Rural Service Center (RSC)

- 1) Develop Selected Rural Service Center (RSC)
- 2) Economic Development Program of Rural Entrepreneurs



3 Improving Quality of Life by Developing an Inclusive Social Facilities

- 1) Proposed New Primary and Secondary School
- 2) Upgrade and Build New Health Facility
- 3) Proposed New Police Station and Fire Station
- 4) Extension of Muslim Cemetery Facilities
- 5) Proposed New Community Facilities

4 Improving the Accessibility of Inter and Intra District and Mobility in Urban Areas

- 1) Road Upgrading and New Road Development
- 2) Junction Upgrading
- 3) Proposed International Airport (KXP)


5 Developing Seamless and Efficient Public Transportation


- 1) Proposed Sungai Petani Integrated Public Transport Terminal
- 2) Enhance Accessibility of Public Transportation to Railway Station (First and Last Mile)
- 3) Provide Feeder Bus Services

ACTION 1

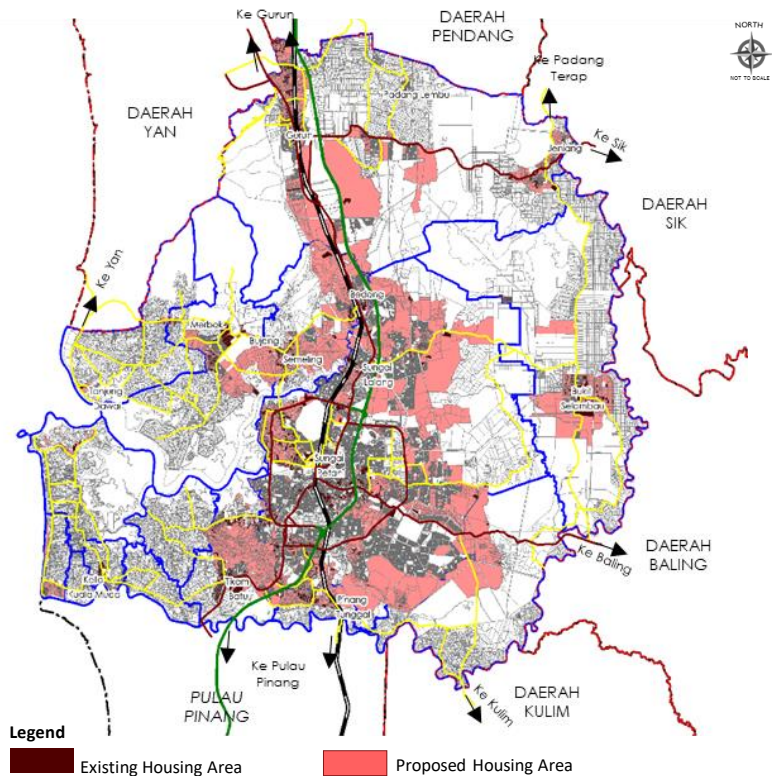
Proposing new housing area for all groups of community in order to meet the housing needs by the year of 2035. This housing plan also takes into account the spillover development from the adjacent state of Pulau Pinang that possibly makes Kuala Muda more thriving and liveable.

 Existing Area
6,226.08 Hectares

 Proposed Additional Area
14,639.67 Hectares

 Total Area
20,865.75 Hectares

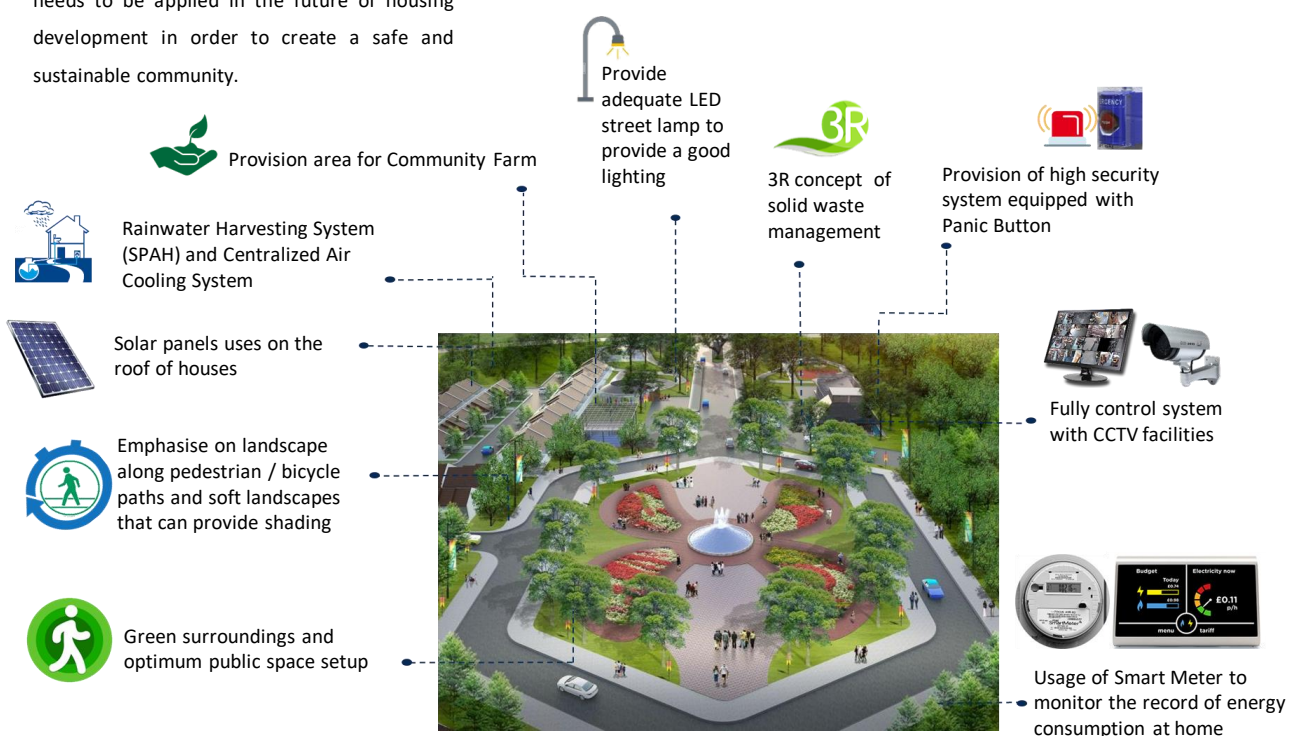
EXPANSION OF NEW HOUSING AREA



ACTION 2

Green Neighborhood and Safe Housing concept needs to be applied in the future of housing development in order to create a safe and sustainable community.

APPLICATION OF GREEN NEIGHBORHOOD, SAFE AND SMART HOUSING CONCEPT



ACTION 3



Primary School

Location required:

- I. Batu Empat Gurun
- II. Bedong
- III. Amanjaya
- IV. Bandar Puteri Jaya 1
- V. Bandar Puteri Jaya 2

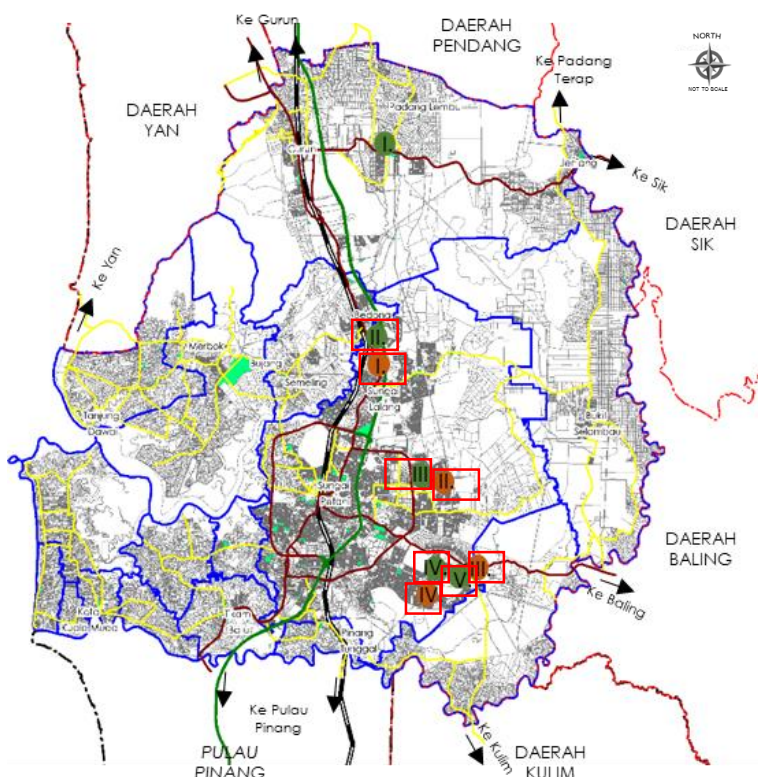


Secondary School

Location required :

- I. Bedong
- II. Ambangan Height
- III. Bandar Puteri Jaya
- IV. Bukit Banyan

PROPOSED NEW PRIMARY AND SECONDARY SCHOOL



ACTION 4

PROPOSED NEW HEALTH FACILITIES AND UPGRADING THE EXISTING FACILITIES



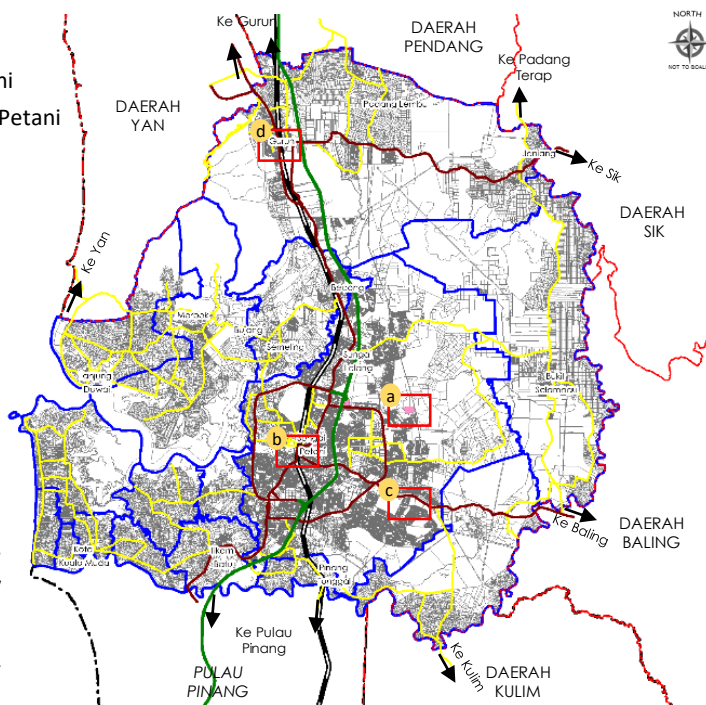
New Development:

- a) Northern Regional Cancer Center, Sungai Petani
- b) ACC and Haemodialysis Building at Old Sungai Petani Hospital (Demolish and build a new one)
- c) Bandar Puteri Jaya Health Clinic
- d) Gurun Health Clinic
- e) Mobile Dental Clinic Kuala Muda District



Upgrading :

- a) Upgrade existing Wad 4 to NICU and SCN, also existing Surgery Hall to the Maternity Hall
- b) Bandar Sungai Petani Health Clinic Type 2 (Full Replacement) Kuala Muda District

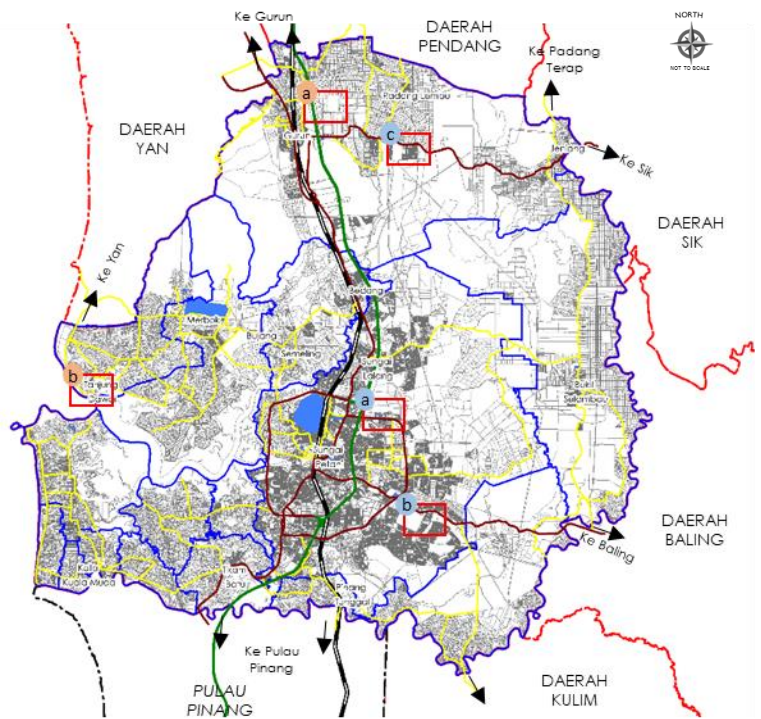




- Sungai Petani Police Station
- Bandar Puteri Jaya Police Station
- Batu Lima Police Station
- Padang Lumbu Police Station



- Gurun Fire Station
- Tanjung Dawai Fire Station
- Bandar Puteri Jaya Fire Station



I. Proposed New Road

- Highway = 29.26km
- Reserve 40m = 63.20km
- Reserve 30m = 73.97km
- Reserve 20m = 9.90km

Total = 176.33 km

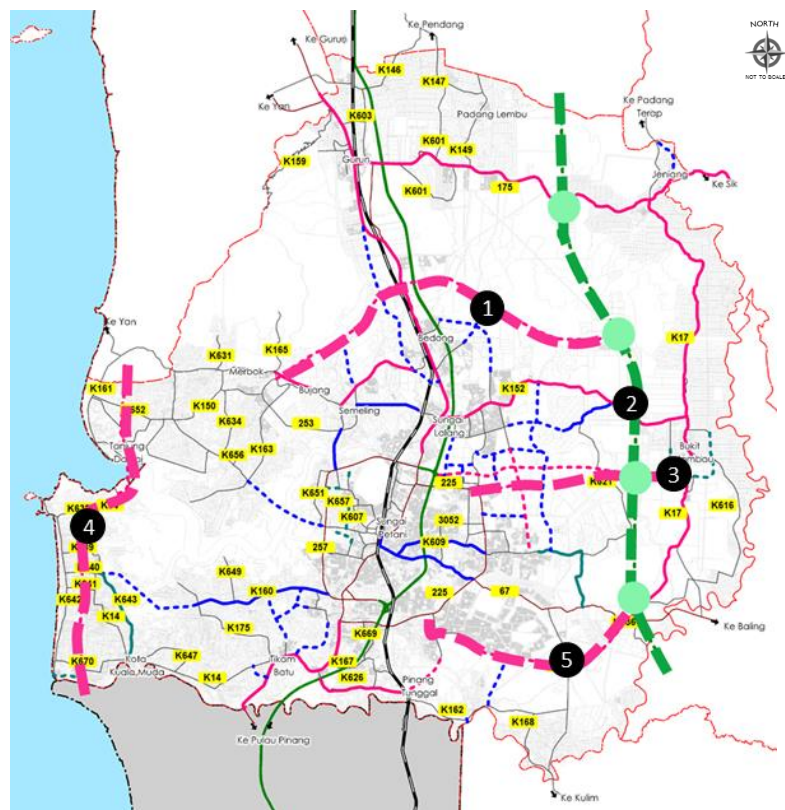
II. Proposed Road Upgrading

- Reserve 40m = 106.44km
- Reserve 30m = 23.16km
- Reserve 20m = 10.68km

Total = 93.96 km



- 1 North SP Link
- 2 NKE Highway
- 3 Central SP Link
- 4 Jalan Persisiran Pantai
- 5 South SP Link



ACTION 7

The proposed of international airport with a comprehensive cargo facilities includes:

Airside

- Airport apron area
- Satellite building
- Cargo complexes
- Aircraft maintenance area
- Storage area
- Transit area for cargoes
- Area for supporting facilities that related to airport activities (non-public facilities) such as Navigation Tools and Airport Fire and Rescue Services

Landside

- Logistics center and supporting facilities



PROPOSED INTERNATIONAL AIRPORT (KXP)



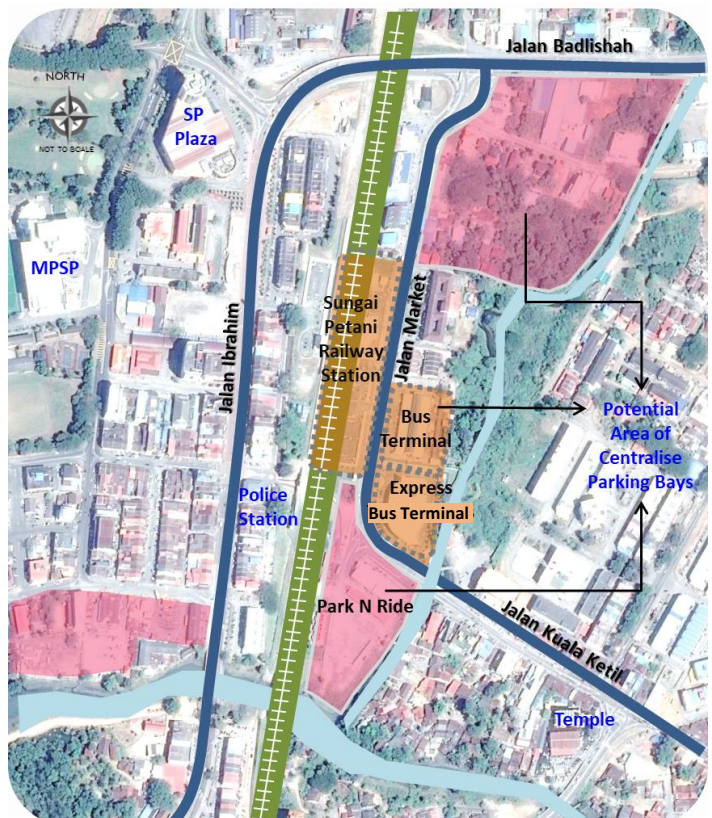
ACTION 8

The proposed of Sungai Petani Integrated Public Transport includes:

- Sungai Petani Railway Station
- Sungai Petani Bus Terminal
- Sungai Petani Express Bus Terminal
- Taxi services
- Park N Ride

Existing Sungai Petani Bus Terminal will be moved to Jalan Market, next to Sungai Petani Express Terminal Bus.

PROPOSED SUNGAI PETANI INTEGRATED PUBLIC TRANSPORT TERMINAL



A blue-toned photograph of a person climbing a steep, rocky mountain face. The climber is positioned in the upper center, silhouetted against the lighter blue sky. The rock face is textured and craggy, with some snow or light-colored rock visible. The overall mood is one of challenge and achievement.

COMPETITIVE ECONOMY DEVELOPMENT

THRUST 2



1 Developing Competitive City with A Clear Hierarchy and Function

- 1) Develop a Competitive City

2 Encouraging Integration of Land Use and Transit Center

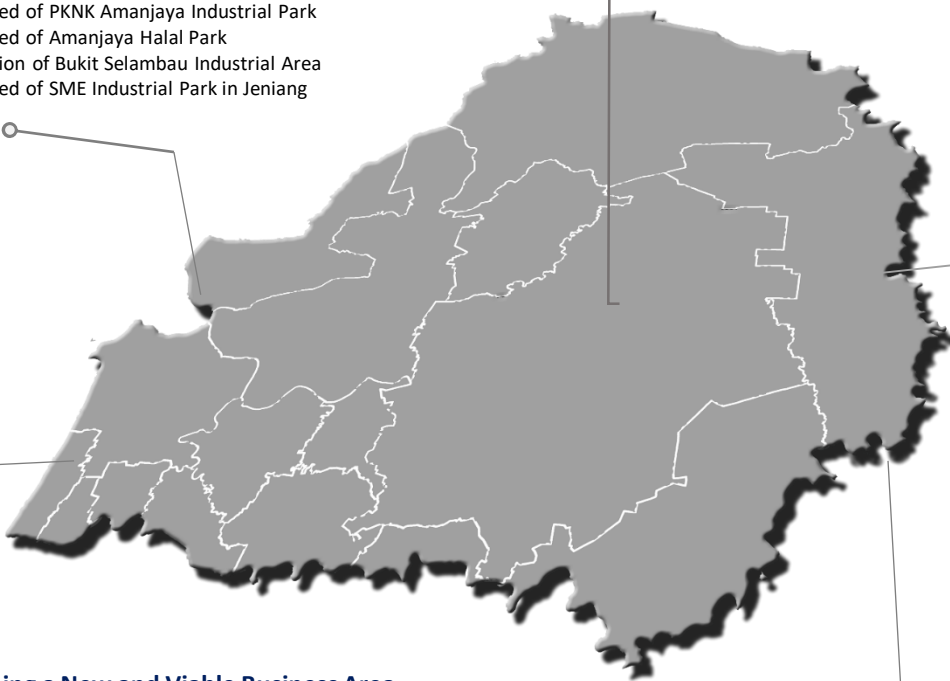
- 1) Transit Oriented Development (TOD) in Sungai Petani and Gurun

3 Developing a New Green and High Tech Industrial Park Concept

- 1) Proposed of PKNK Amanjaya Industrial Park
- 2) Proposed of Amanjaya Halal Park
- 3) Expansion of Bukit Selambau Industrial Area
- 4) Proposed of SME Industrial Park in Jeniang

4 Scaling of Existing Industrial Area

- 1) Reactivate the Automotive Industry in Gurun
- 2) Beautification of Industrial Area and Reparation of Infrastructure Facilities



5 Developing a New and Viable Business Area

- 1) Strengthen the Hierarchy of Business Area
- 2) Expansion of Existing Business Areas
- 3) Proposed of New Business Area
- 4) Proposed of New Market Complex
- 5) Relocation of Street Stalls to a Suitable Location

6 Enhancing the Productivity and Innovation of Agriculture, Farming and Fisheries Sector

- 1) Management of Paddy Areas in Kuala Muda District –By Estate
- 2) Proposed of Permanent Food Production Park (TKPM) in Padang Lembu, Gurun
- 3) Proposed of Integrated Livestock for Cow and Goat
- 4) Proposed Aquaculture Industrial Zone (ZIA) of Sungai Merbok

7 Strengthening and Diversify the Production of Agro-based Industries Products and Marine Products

- 1) Strengthening and Improving Agricultural Industries Productivity
- 2) Proposed Marine Product Marketing Center in Tanjung Dawai

8 Internationalisation of Natural Tourism and Archaeological Heritage (Jerai Geopark)

- 1) Proposed Jerai Geopark as A National Heritage Site
- 2) Promoting International Tourism Product

9 Enhance the Local Tourism Product

- 1) Heritage Trail Program in Bandar Sungai Petani
- 2) Improvise Tourism Management

ACTION 1

DEVELOP A NEW GREEN AND HIGH TECH INDUSTRIAL PARK CONCEPT



1 PKS Industrial Park in Jeniang

- **Location :** Jeniang
- **Area:** 6.18 Hectares
- **Type of Industry:** Resource-based industries and agricultural and food products industries



2 Expansion of Bukit Selambau Industrial Area

- **Location :** Bukit Selambau
- **Area:** 43.02 Hectares
- **Type of Industry:** Source-based and timber-based industries



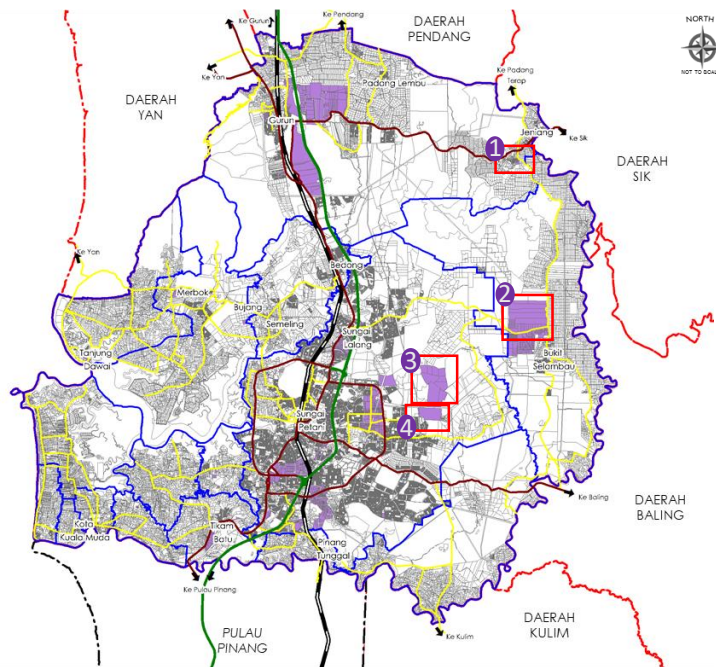
3 PKNK Amanjaya Industrial Park

- **Location :** Amanjaya
- **Area:** 317.77 Hectares
- **Type of Industry:** Production, manufacturing, electrical and electronic (E & E) industries



4 Amanjaya Halal Park

- **Location:** Amanjaya
- **Area:** 108.93 Hectares
- **Type of Industry:** Food and agriculture products processing industry, pharmaceutical industry



Legend
Industrial Area

ACTION 2

SCALING OF EXISTING INDUSTRIAL AREA



1 Reactivate the Automotive Industry in Gurun

The scaling proposal is to revitalize the automobile cluster activity in line with the Fourth Industrial Revolution (IR 4.0).

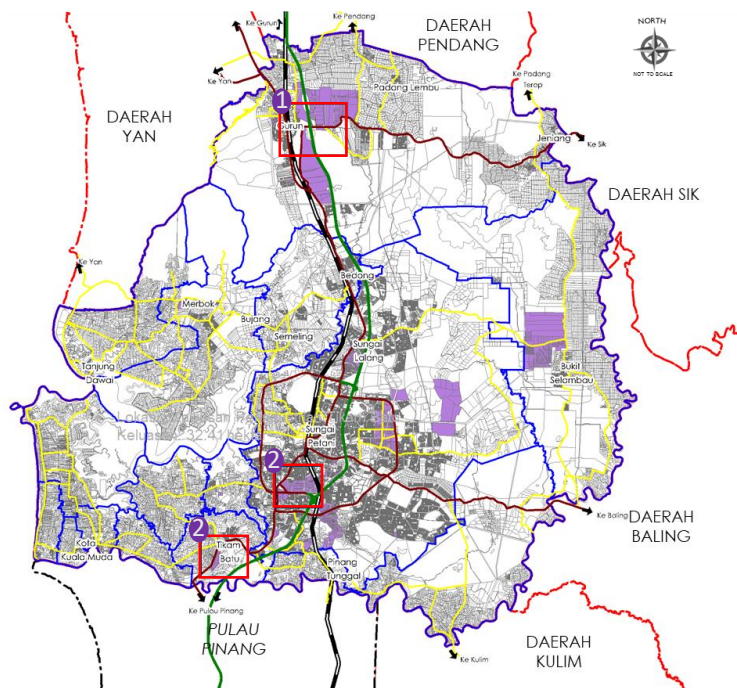
- **Location :** Gurun
- **Industrial Cluster:** Cluster of heavy industry, engineering and automotive
- **Type of Industry:** Automotive and transport-based industries



2 Beautification of Industrial Area and Reparation of Infrastructure Facilities

Proposals include the provision of attractive landscapes, infrastructure and information technology improvements and etc.

- **Location :** Bakar Arang Industrial Area
- **Area:** 204.05 hectares
- **Location :** Tikam Batu Industrial Area
- **Area:** 32.41 hectares



ACTION 3

New Business Area Development Proposal conceptualizes business incubator to increase the success and growth in business.

New businesses will be equipped with facilities, resources, infrastructure, funds and service assistance to help them position themselves in the development of the first phase.

This program also provides business assistance channels and office facilities for new businesses.

Location : Taman Kelisa Ria, Sungai Petani
Area: 24.75 Hectares

PROPOSED OF NEW BUSINESS AREA



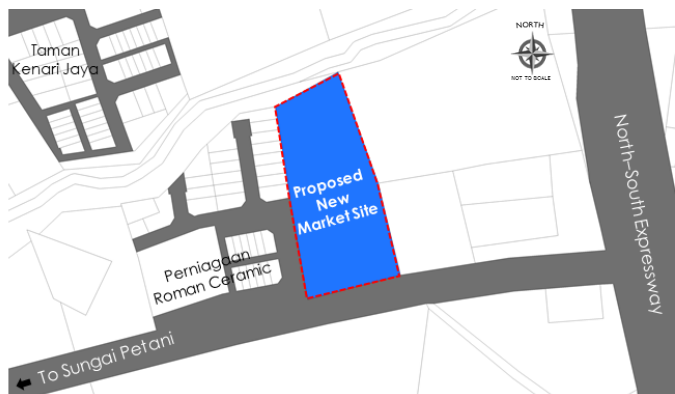
ACTION 4

Existing market sites will be proposed for new bus station to improve public transport services in Sungai Petani by 2035.

New Market Complex will be equipped with various facilities and new features in order to serve the visitors and entrepreneurs a convenience space.

Location : Sungai Petani (Lot 529)
Area: 1.3 Hectares

PROPOSED OF NEW MARKET COMPLEX



ACTION 5

Jerai Geopark as a national heritage to be promoted as an international tourism destination.

1. Mount Jerai
2. Museum and Archaeological Site Bujang Valley
3. Sungai Batu Archeology Site
4. Sungai Merbok
5. Tanjung Dawai
6. Kota Kuala Muda



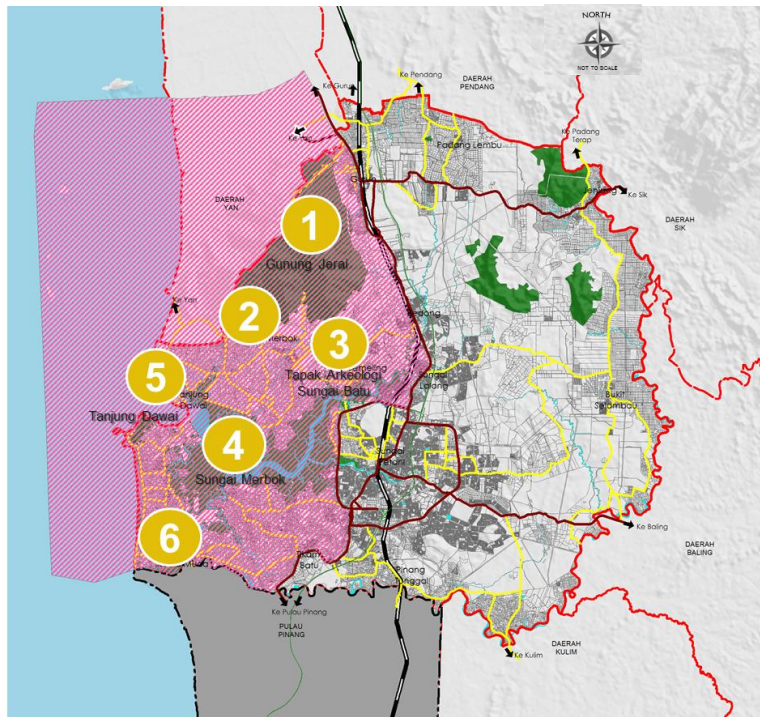
Specialty:

- Geological Evolution of Gunung Jerai
- Civilization Kedah Tua
- The diversity of mountains and mangrove habitats
- 24 state-level and national geosites
- 3 geo-archaeological complexes
- 9 historical and cultural sites



Location: 816 km² (land 501 km²)

PROPOSED JERAI GEOPARK AS A NATIONAL HERITAGE SITE



ACTION 6

PROMOTING INTERNATIONAL TOURISM PRODUCTS



Promoting Eco-Historical Trail Tour Packages

- Promoting of Eco-History Trail Tours with Kedah Tua stories like Hikayat Mahawangsa and Raja Bersiong.
- Providing tour packages and trained tour guides
- Upgrading facilities at Sungai Batu Archaeological Site
- Providing public transport from Sungai Petani
- Providing program and tourism activity calendar regularly (monthly)
- Promoting the usage of QR code method on information signage of tourism product



ACTION 7

ENHANCING THE PRODUCTIVITY AND INNOVATION OF AGRICULTURE, LIVESTOCK AND FISHERIES SECTOR



Permanent Food Production Park (TKPM)

1

- Location :** Pekan Padang Lembu, Gurun
- Area:** 16.16 Hectares
- Description:** Initiatives to promote the implementation of large scale and commercially high-tech fruit plantation by entrepreneurs (private sector)



Management of Paddy Areas in Kuala Muda District –By Estate

2

- Location :** Paddy Areas in Kuala Muda District
- Area:** 8,865.97 Hectares
- Description:** Development of tertiary irrigation systems in all paddy irrigation blocks in Kuala Muda District to increase productivity of rice



Sungai Merbok Aquaculture Industrial Zone (ZIA)

3

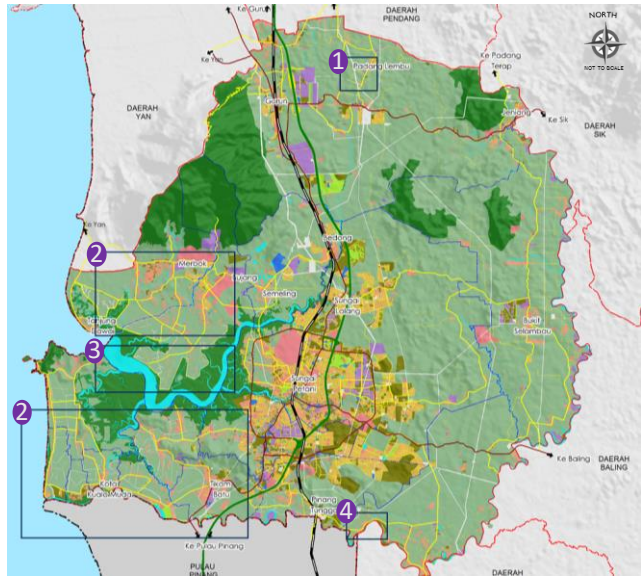
- Location :** Sungai Merbok
- Description:** Zoning programs of land area and water are for the development of commercial scale aquaculture projects such as marine fish breeding in ponds/tank and shrimps sanctuary



Integrated Livestock Farm for Cow and Goat

4

- Location :** Sidam Kiri
- Description:** Integrated and commercialized livestock entrepreneurship through smart farming programs



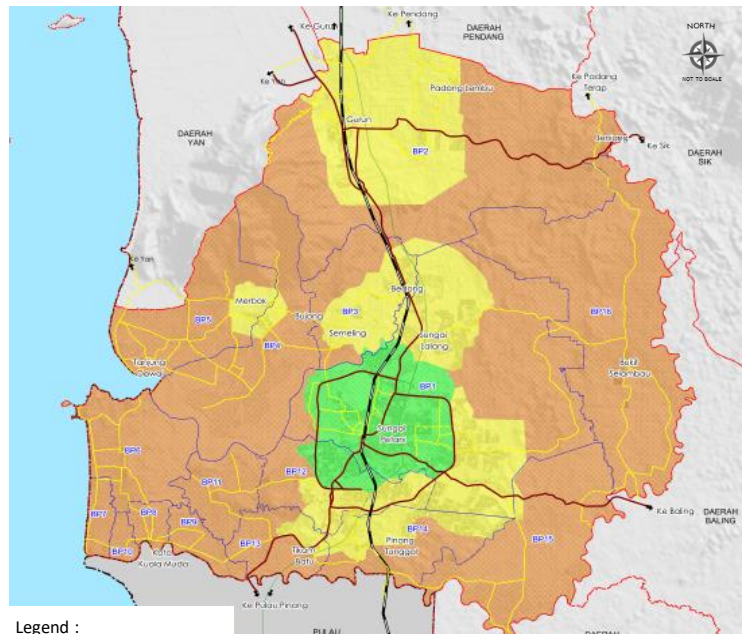
ACTION 8

EXPANSION OF INTERNET COVERAGE AND CAPACITY ENHANCEMENT BY DISTRICT-INTEREST ZONE

By 2035, the target area of internet coverage for Kuala Muda District is 100% (entire area). However, the region/zone hierarchy according to internet capacity is as below:



- District-interest zone such as administrative center, main municipal and commercial/industrial main center: 100 mbps/4G/LTE
- Medium-scale development area: 50-100 mbps/4G/LTE
- Other Areas: 8 mbps/3G



Legend :

- District-Interest Zone: Internet Capacity: 100 mbps
- District Development Area: Internet Capacity: 50 - 100 mbps
- Other Areas: Internet Capacity: 8- 50 mbps



**HEALTHY AND SAFE
ENVIRONMENT**

**THRUST
3**



1 Ensure Preservation and Quality Management of the Environment

- 1) Sungai Petani and Sungai Muda Water Quality Control Program
- 2) Pollution Control Programs in Housing, Business and Industrial Areas

2 Adapt the 'Smart Environment' Concept

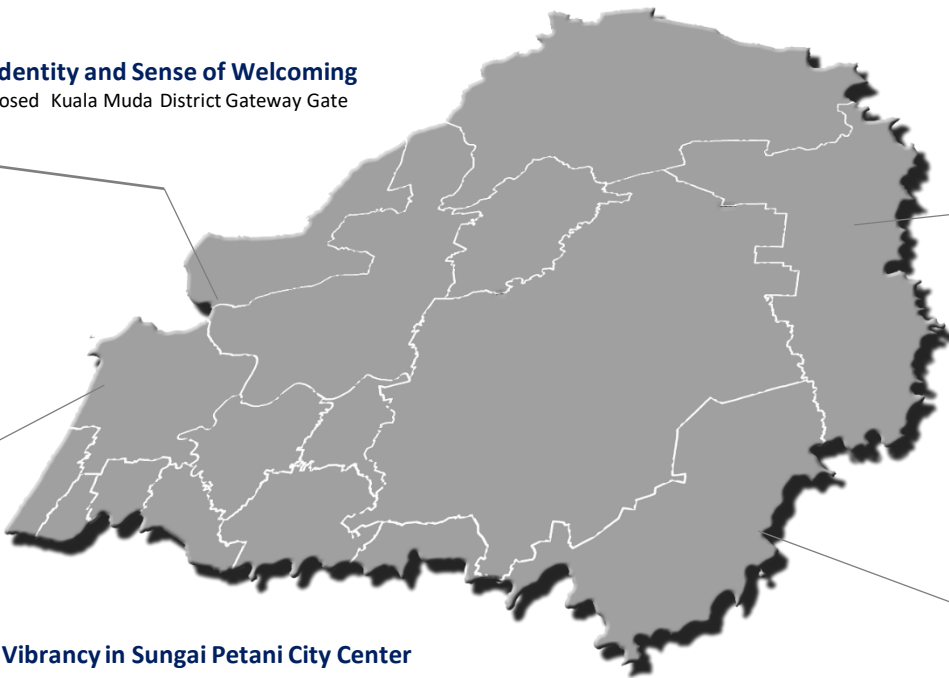
- 1) Carbon Low and Eco-green Community Program

3 Strengthen the Management of Disaster Risk Area

- 1) Program for Preparedness, Recovery and Management of Disaster Risk Plan

4 Create Identity and Sense of Welcoming

- 1) Proposed Kuala Muda District Gateway Gate



5 Increase Vibrancy in Sungai Petani City Center

- 1) Abandoned Commercial Building Restoration
- 2) Proposed of Sungai Petani River Of Life
- 3) Proposed of Sungai Petani City Park (SP Green Lung)
- 4) Proposed of SP Walk
- 5) Management of Traffic Circulation and City Center Parking, Proposal of Pedestrian and Bicycle Walks in Sungai Petani City Center
- 6) Heritage Building Conservation and Activities in Bandar Sungai Petani
- 7) Design Conservation Of Old Shop Building in Bandar Sungai Petani
- 8) Standardisation of Urban Furniture Design
- 9) Improvement Proposal of Urban Identity and Landscape Image

6 Implement CPTED Program in Accordance with Guidelines of Crime Prevention Through Environmental Design

- 1) Adapting CPTED Element in the Public Spaces Area

7 Encourage Greening, Beautification and Cleanliness of City

- 1) Taman Eko-Rimba Gurun (Taman Wilayah)
- 2) Pocket Park in each local city

8 Develop Facilities of Sports and Recreation to Promote Healthy Lifestyle

- 1) Proposed Kuala Muda District Sports Complex and Recreational Park
- 2) Proposed Motorised Sports Circuit Complex

9 Develop Integrated Sewerage Systems

- 1) Centralized Regional Sewerage System
- 2) Program of Bulk Toilet Replacement To Individual Septic Tank (IST)
- 3) Application of Specific Guidelines for Sewerage Systems in Urban Development Area in Sungai Petani

10 Manage Solid Waste Sustainably with 3R and Green Technology

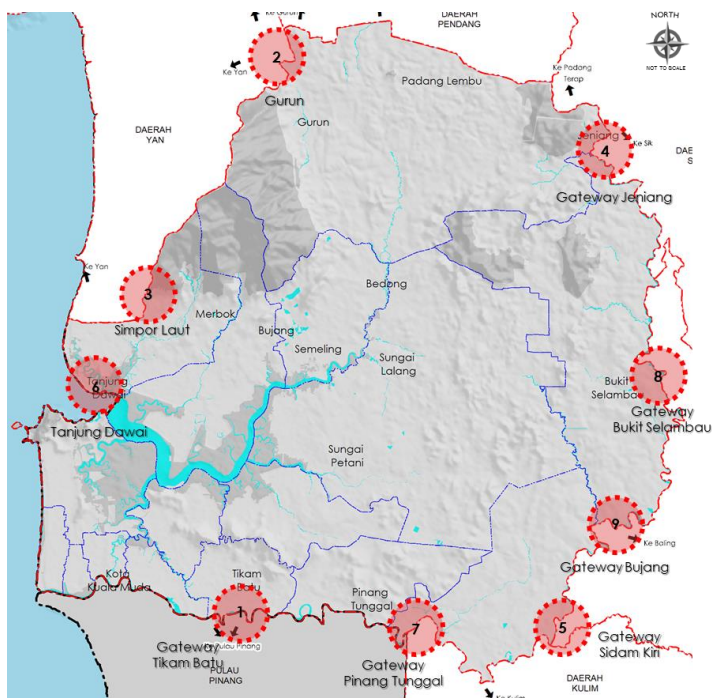
- 1) Improvement of Solid Waste Disposal Facility
- 2) Improve 3R Practices

ACTION 1

PROPOSED KUALA MUDA DISTRICT GATEWAY GATE

The district gateway gate involves :

- 1) Tikam Batu Gateway (from Seberang Perai Utara)
- 2) Gurun Gateway (from Yan)
- 3) Simpoh Laut Gateway (from Yan)
- 4) Jeniang Gateway (from Sik)
- 5) Sidam Kiri Gateway (from Kulim)
- 6) Tg. Dawai Gateway (from Langkawi-Kuala Muda)
- 7) Pinang Tunggal Gateway (from Kulim)
- 8) Bukit Selambau Gateway
- 9) Bujang Gateway



ACTION 2

PROPOSED OF SUNGAI PETANI CITY PARK (SP GREEN LUNG)

Taman Jubli Perak and Sungai Petani Golf Club will be integrated to serve as City Park

- Providing a line of Jacaranda Mimosifolia and Tabebuia Rosea trees as Tree of Avenue
- Providing of jogging and biking tracks
- Providing of Gazebo, seating area, playground, maze planting and tree house

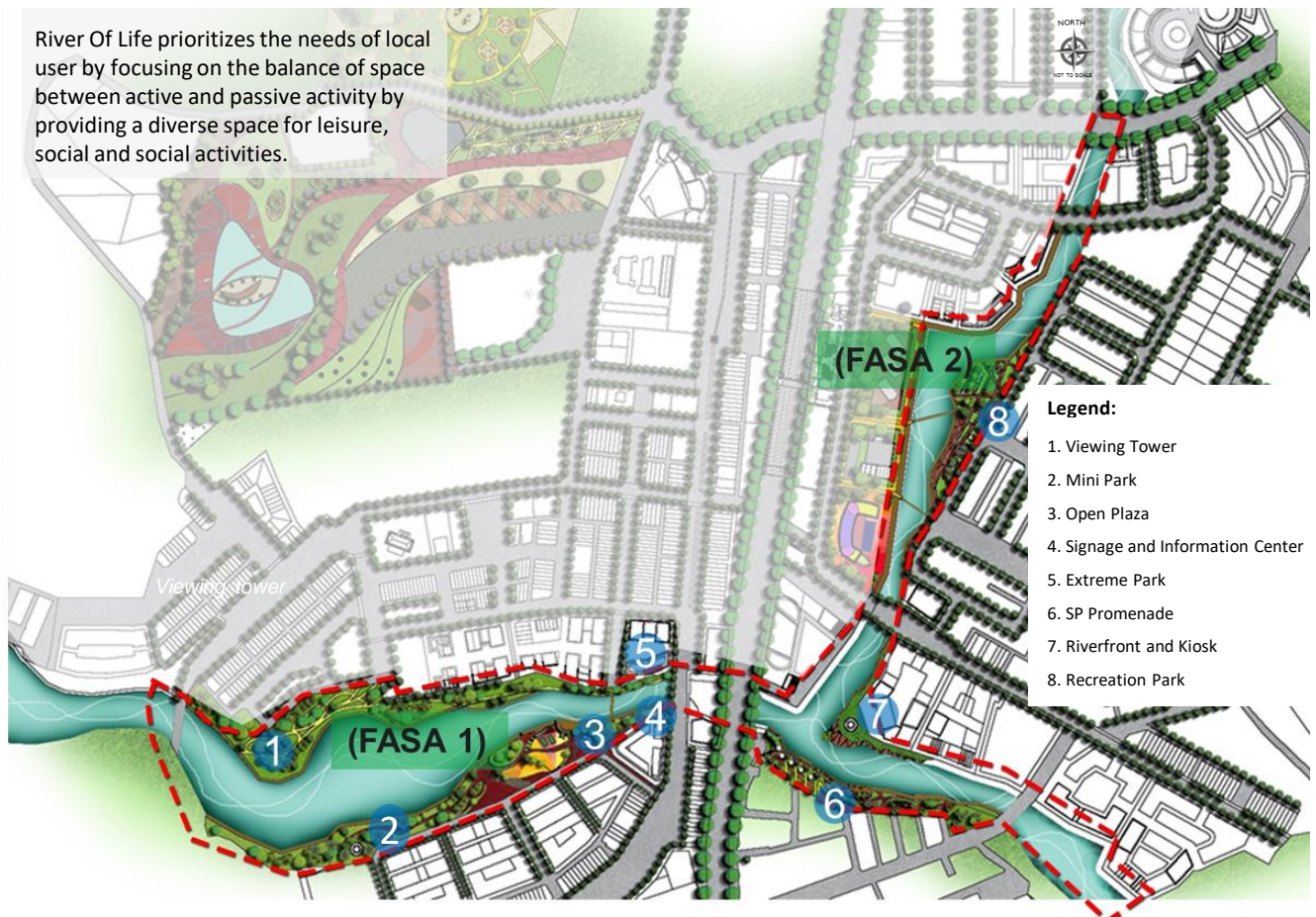




ACTION 3

PROPOSED OF SUNGAI PETANI RIVER OF LIFE

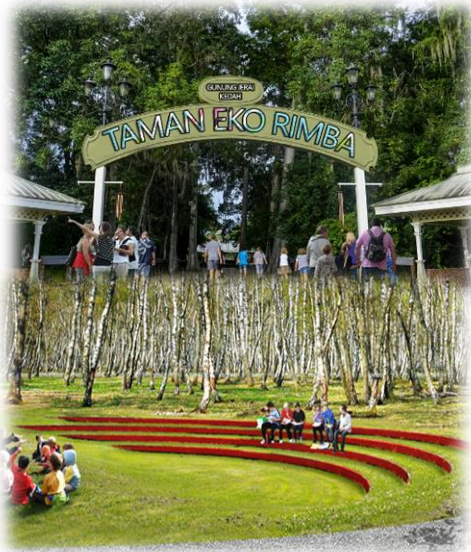
River Of Life prioritizes the needs of local user by focusing on the balance of space between active and passive activity by providing a diverse space for leisure, social and social activities.



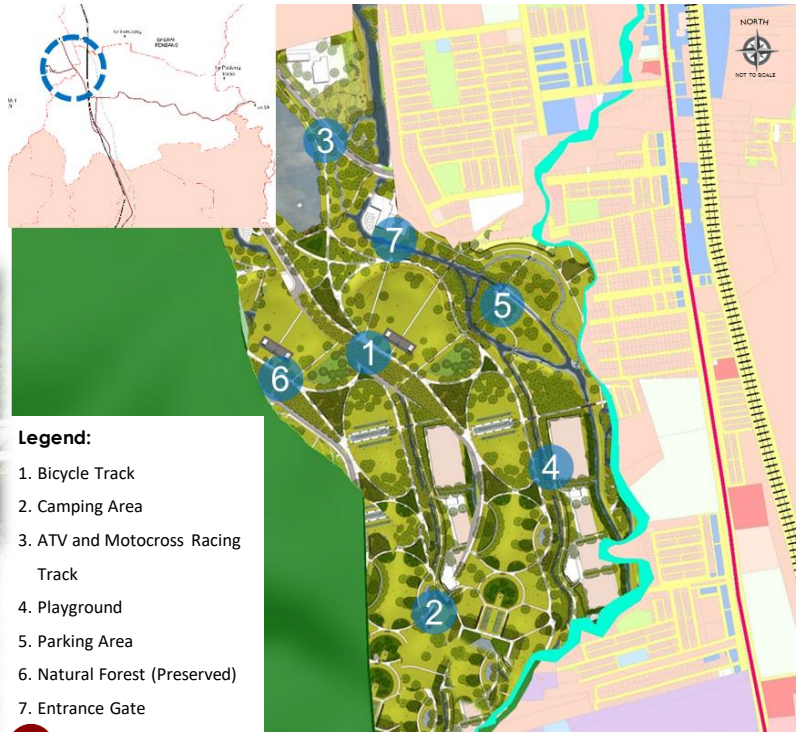


ACTION 4

Development with a concept of nature (Green Corridor) as the Green Heart for urban quality of life. Located at the bottom area of Gunung Jerai which already has natural forests as a recreational area and provides recreation elements which suitable for extreme sports.



PROPOSED OF GURUN ECO FOREST PARK (REGIONAL PARK)



Location : Gurun
Area: 90 Hectares



ACTION 5

Pocket Park are proposed in the following locations:

- 1) Gurun
- 2) Bedong
- 3) Merbok
- 4) Jeniang
- 5) Sungai Lalang
- 6) Tikam Batu
- 7) Kota Kuala Muda
- 8) Bukit Selambau



PROPOSED DEVELOPMENT AND SCALING OF POCKET PARK





ACTION 6

PROPOSED KUALA MUDA DISTRICT SPORTS COMPLEX AND RECREATIONAL PARK

Kuala Muda Sports and Recreational Complex will be the new landmark in Kuala Muda City Center with various facilities for recreational community.



Legend:

- | | | |
|-----------------|------------------|----------------|
| 1. Stadium | 3. Outdoor Court | 5. Outdoor Gym |
| 2. Indoor Court | 4. Sport Complex | |



Location : Sungai Lalang
Area: 290 Hektar



ACTION 7

PROPOSED MOTORISED SPORTS CIRCUIT COMPLEX

Sungai Petani Motorised Sports Circuit Complex will be proposed in Amanjaya which provides an international level of 1.8km track.



Legend:

- | |
|--|
| 1. Grand Stand |
| 2. Race Circuit |
| 3. Management Office |
| 4. Facilities |
| 5. Landscape of Sports Circuit Complex |



Location : Amanjaya
Lot No: 7604/7605
Area: 9295 Hectares

A blue-toned photograph of a person climbing a steep, rocky mountain face. The climber is positioned in the upper left, silhouetted against the lighter blue sky. The mountain's surface is rugged with various rock formations and patches of snow or light-colored rock. The overall mood is adventurous and focused on nature and physical challenge.

GREEN AND SUSTAINABLE RESOURCE MANAGEMENT

THRUST

4

1 Optimize and Improve the Uses of Land Efficiently

- 1) Development of Municipal Zone by Sequential Approach
- 2) Proposed Infill Development in Bandar Sungai Petani

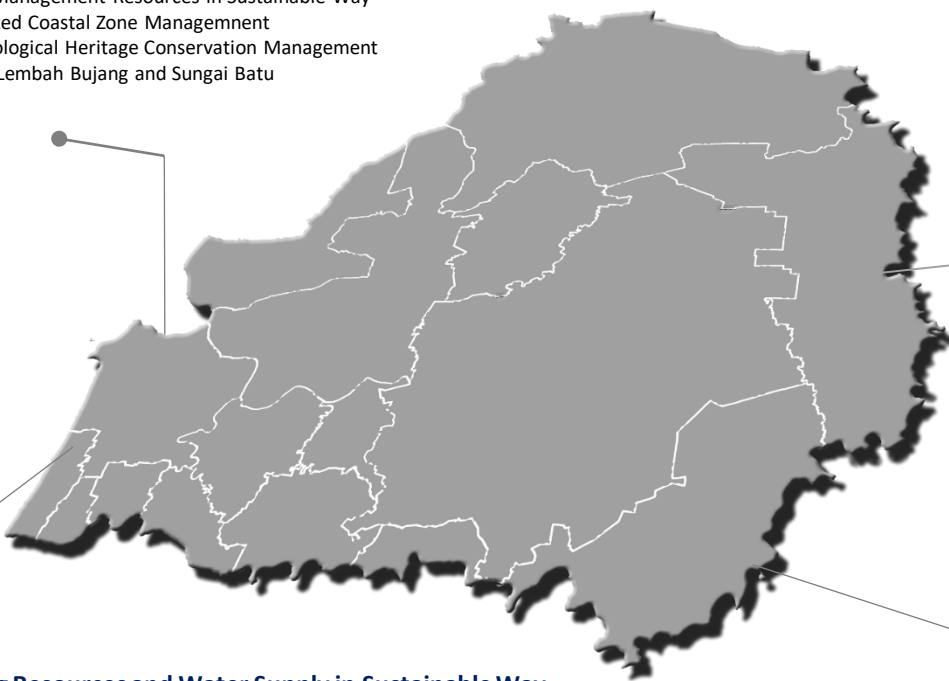


3 Managing Archaeological Heritage Resources Productively and Efficiently

- 1) Forest Management Resources in Sustainable Way
- 2) Integrated Coastal Zone Management
- 3) Archaeological Heritage Conservation Management Plan in Lembah Bujang and Sungai Batu

2 Promote Natural Resources Management to Improve Biological Diversity Care

- 1) Zoning of Sectoral and Integrated ESA Management
- 2) Environmentally Sensitive Area in Kuala Muda



4 Managing Resources and Water Supply in Sustainable Way

- 1) Upgrading of Existing Water Treatment Plant (WTP)
- 2) Increase the Capacity of Clean Water Storage
- 3) Proposed of a New Pipeline for Clean Water Distribution, Kuala Muda 2035
- 4) Proposed Sungai Merbok Off River Storage
- 5) Initiatives and Measures Towards a Declination of Water Consumption Daily Per Capita

5 Improving the Efficiency of Energy Consumption

- 1) Additional Supply of 11KV to Higher Electricity Demand Areas

7 Enhancing Digital Infrastructure

- 1) Expansion of Internet Coverage and Increases Capacity by Interest of District

6 Improving the Capability and Efficiency of Irrigation and Drainage Systems

- 1) Physical Upgrades and Improvements as well as Intensive/Integrated Maintenance Programs on Some Critical Rivers Drainage
- 2) Proposed of Sungai Petani Tidal River Control Door
- 3) Enforcement on Trap Installation of Food Waste, Oil and Grease and Trash Screen at all Outlet Entering Sungai Petani
- 4) Proposed of Wastewater Treatment Plant
- 5) Expansion and Compliance of MSMA-Based Drainage Design Concepts, Controls at Resources, On Site Detention (OSD) and Rainwater Harvesting Systems (RHS)
- 6) Application of Bio-ecological Drainage System (BIOECODS) Design
- 7) Proposed of Community Flood Retention Pond Bandar Sungai Petani
- 8) Proposed of River Mouth at Estuary of Sungai Merbok
- 9) Develop an Integrated Floods Forecasting and Warning System (E-Flood) for Sungai Merbok Basin

ACTION 1

ESA sectoral should be recognized by the relevant agencies to be referred as an indicator for sustainable development.

Legend

Heritage Value

- Permanent Forest Reserved(PFR)
- Historic sites and archaeological sites

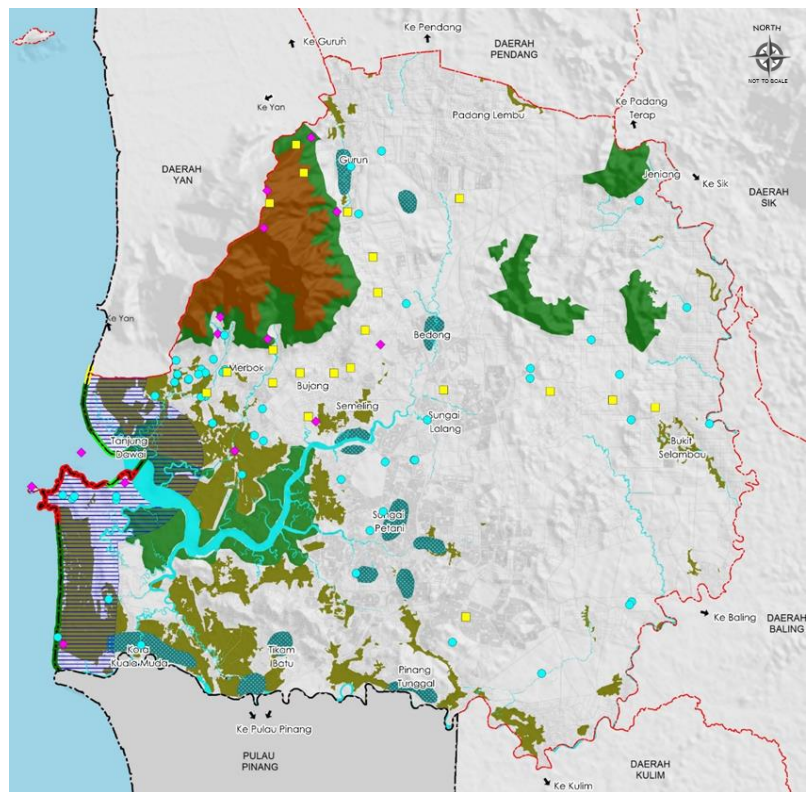
Disaster Risk

- River
- Highlands and Mountains
- Flood Plain Area
- Coastal Area
- Tsunami Risk Area

Life Support Value

- Well Tube
- Energy and Building Materials
- Paddy Field (Basic Food)

ZONING OF SECTORAL AND INTEGRATED ESA MANAGEMENT



Integrated and Sectoral ESA in Kuala Muda District

Integrated ESA	Sectoral ESA	Resources Input
Heritage Value	Forestry Area	4 PFR (11,051 ha)
	Historic Sites and Archaeological Sites	Archeological site at Jerai Geopark (total area of 816 square kilometers with land area of 501 square kilometers.)
Disaster Risk	Water Body (River)	Sungai Merbok & Sungai Muda
	Highlands and Mountains	Jerai mountainous area
	Flood Plain Area	Areas near the Sungai Merbok line & lowlands
	Coastal Area	Coastline. (27 km) that have different erosion levels
	Tsunami Risk Area	Coastal area at Kuala Muda (300 meters from the highest level of high tide)
	Muddy Land	Coastal areas, paddy fields and rivers
Life Support Value	Clean Water	Upstream of Sungai Merbok & Sungai Muda and underground well
	Energy and Building Materials	Distribution of several locations that store iron ore, manganese and niobium-tantalum.
	Basic Food	Paddy field area

ACTION 2

ESA management is to plan the land use according to a different level of ESA and integration with the overall planning of land use.



Level
1

Full Protected Area

Level
2

Limited Development Area

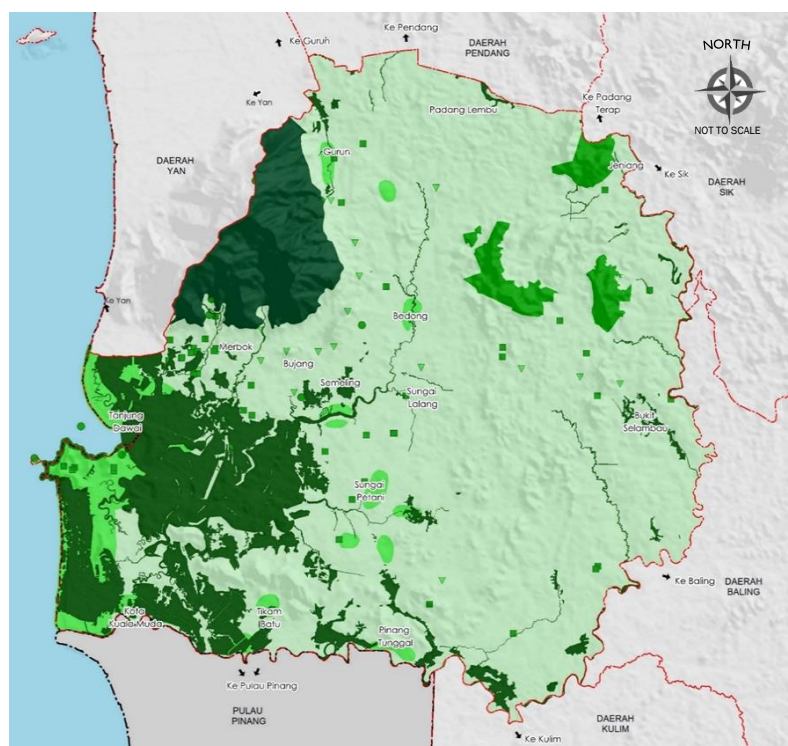
Level
3

Controlled Development Area

Legend

- ESA Level 1
- ESA Level 2
- ESA Level 3
- Outside of ESA

ENVIRONMENTALLY SENSITIVE AREA (ESA) IN KUALA MUDA



Sectoral ESA	Level 1	Level 2	Level 3
Forestry Area	ESA Gunung Jerai & PFR Merbok	ESA Sungkop & PFR Bukit Perak	-
Historical and Archaeological Sites	-	Jerai Geopark	-
Water Body (river)	Upstream of Sungai Merbok & Sungai Muda	-	Upstream of Sungai Merbok & Sungai Muda
Highlands and Mountains	Mountainous area (exceed 1,000 meter)	Jerai mountainous area (300-1,000 meter)	Mountainous area (150-300 meter)
Flood Plain Area	-	-	Areas near the Sungai Merbok line & lowlands
Coastal Erosion	Erosion Level 5	Erosion Level 3	Erosion Level 1 & 2
Tsunami Risk Area	-	-	Coastal area at Kuala Muda (100-300 meters from the highest level of high tide)
Muddy Land	-	-	Coastal areas, paddy fields and rivers
Clean Water	-	Upstream of Sungai Merbok, Sungai Muda & underground well	-
Energy and Building Materials	-	-	Distribution at several locations that store iron ore, manganese and niobium-tantalum.
Basic Food	Paddy Field Area	-	-

ACTION 3

MANAGING FOREST RESOURCES IN SUSTAINABLE WAY

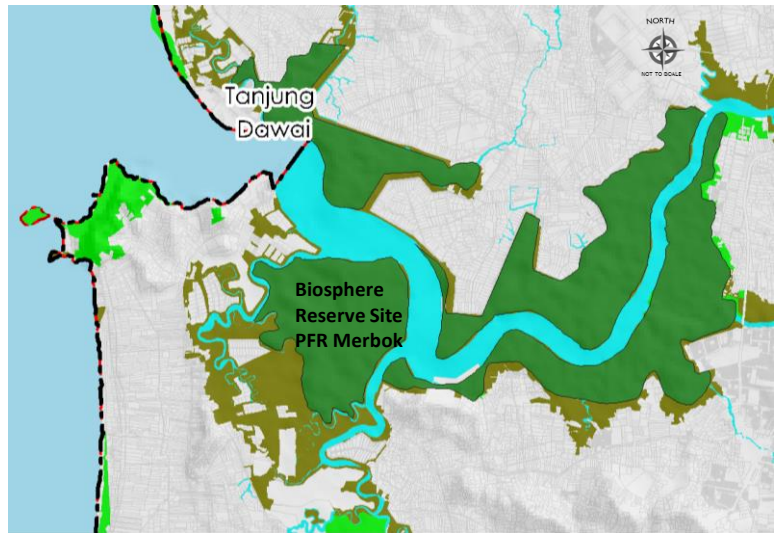
Permanent Forest Reserved (PFR) has been zoned as level 1 of ESA (Fully protected area) which is highly sensitive to the impact of development. This proposal is in line with NPP3-PA 1.1A (Protected Area) and PA1.2A (ESA as the Development Control Basic).

Action

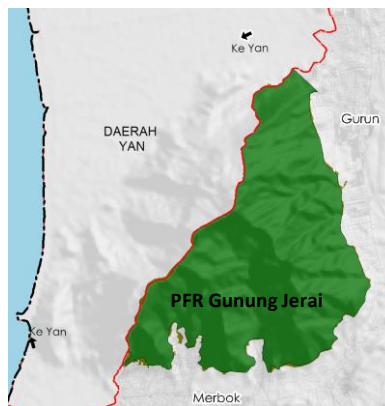


PFR Merbok

- ✓ Upgrading PFR Merbok as the nation's third biosphere site - rich in biological diversity and serve as a mangrove laboratory for research and education purposes
- ✓ Mangroves are important as tsunami waves insulation, erosion resistant, the fisheries site, carbon sinks and etc.
- ✓ 42 out of 60 mangrove species around the world, can be found in this 3,000 hectares area
- ✓ In support of eco-tourism, local people and fishermen around the area and encourage them to get engage in eco-tourism programs

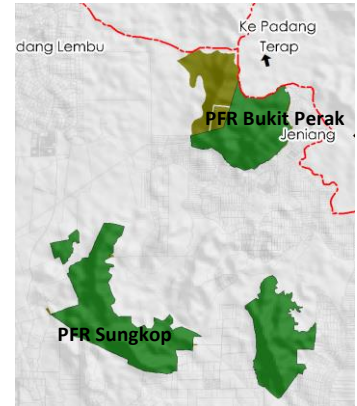


PFR Merbok Management Plan as Mangrove Forest Biosphere Reserve



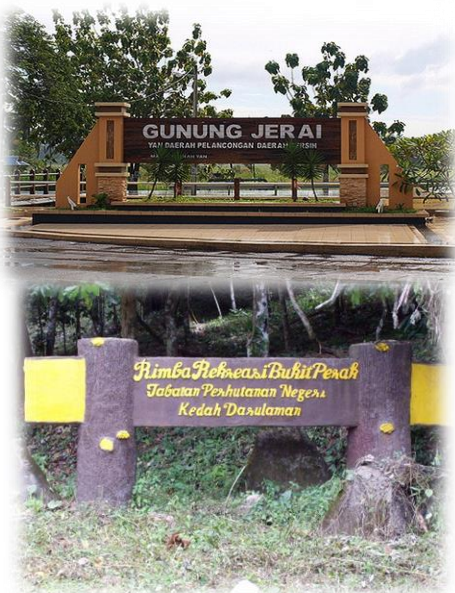
PFR Gunung Jerai

- ✓ Managing this area as a water catchment area and protected land (high altitude and steep gradients)
- ✓ Water source of Sungai Tupah and Tupah Water Treatment Plant are located at the riparian of PFR Gunung Jerai



PFR Sungkop and Bukit Perak

- ✓ Managing this area as a production forest and practicing appropriate methods such as adopting the Selective Management System (SMS)
- ✓ Logging activities need to change into a flexible system that can meet the environmental preservation objectives as well as to get benefit from the logging activities.



ACTION 4

Management measures of integrated coastal zone are as follows:

- Implementing the planning and control measures within the National Coastline Zone Physical Plan
- Promoting replanting of mangrove trees on eroded coastal levels 4 and 5
- Maintaining mangrove forest areas and controlling land reclamation in swamp forest areas
- Engineering works of beach defenses such as retaining walls and wave breakers
- This proposal is in line with NPP3-KD 2.2B (Coastal Area) and National Coastline Zone Physical Plan



INTEGRATED COASTAL ZONE MANAGEMENT



Action for Erosion Level 5:

- ✓ Maintaining mangrove forest area
- ✓ Planting mangrove trees in muddy areas
- ✓ Providing retaining cliffs as a coastal engineering defense fort
- ✓ Limiting the opening of land for aquaculture

Legend

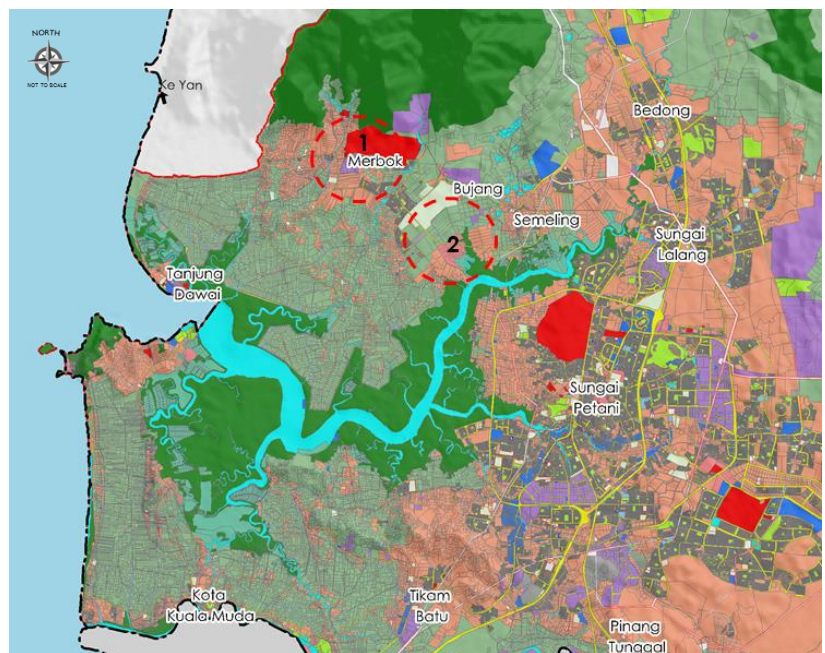
- Kedah Planning Unit 1
- Tsunami Risk Area
- Coast Erosion Level 5 (critical)
- Coast Erosion Level 3 (medium)
- Coast Erosion Level 2 (protected area)
- Coast Erosion Level 1 (stable)

ACTION 5

Procedure of conservation management of archaeological heritage:

- Managing Jerai Geopark as heritage tourism products at level 2 of ESA (limited development area)
- Proposed Sungai Batu and Lembah Bujang as a Core Zone of heritage area
- Providing heritage management plan in Jerai Geopark area
- Conducting a study of action plans on the mobility of tourists in the geopark area
- Carry out a site inventory as a historical record for archival purposes
- Controlling surrounding development to coherent with geopark conditions. Allowed development such as low-density housing and recreation/tourism sites
- Investigate and conduct excavation work to complete the record of Sungai Batu civilization

ARCHAEOLOGICAL HERITAGE CONSERVATION MANAGEMENT PLAN IN LEMBAH BUJANG AND SUNGAI BATU



Location

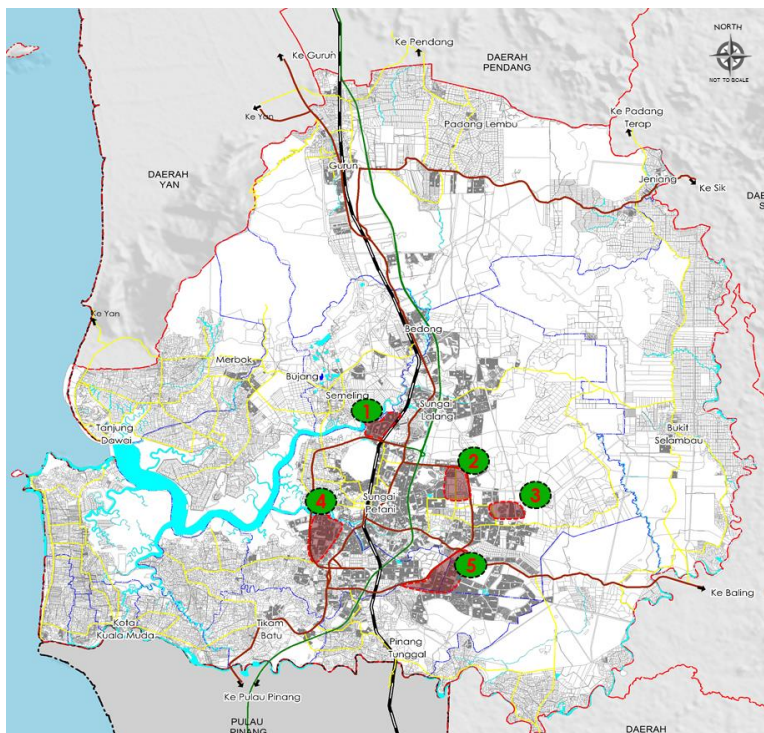
1. Lembah Bujang site in Bukit Batu Pahat, Merbok
2. Sungai Batu archaeological site in Kampung Permatang Samak, Jalan Pintasan Semeling

ACTION 6

ADDITIONAL SUPPLY OF 11KV TO HIGHER ELECTRICITY DEMAND AREAS

Areas with high demand for electricity supply are proposed to have addition of 11 KV supply as follows:

- |  Area | Electricity Supply |
|--|---|
| 1 Laguna Merbok | Supply from PPU of Sungai Tukang (Industrial Area); 2 X 30 MVA |
| 2 Taman Intan, Sungai Petani | Supply from PMU of Taman Intan that has the ability to step down to 11 kV |
| 3 Kawasan Industri Sungai Petani (SPID) | Main Distribution Substation (PPU) is now under construction |
| 4 Taman Bukit Banyan, Sungai Petani | Completed PPU |
| 5 Puteri Jaya, Sungai Petani | Propose new PPU |

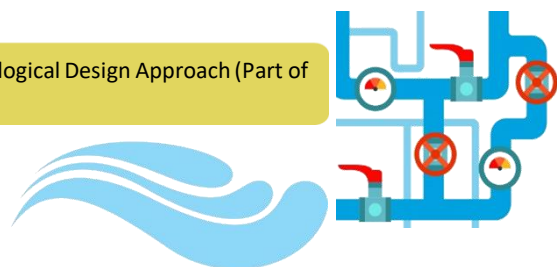


ACTION 7

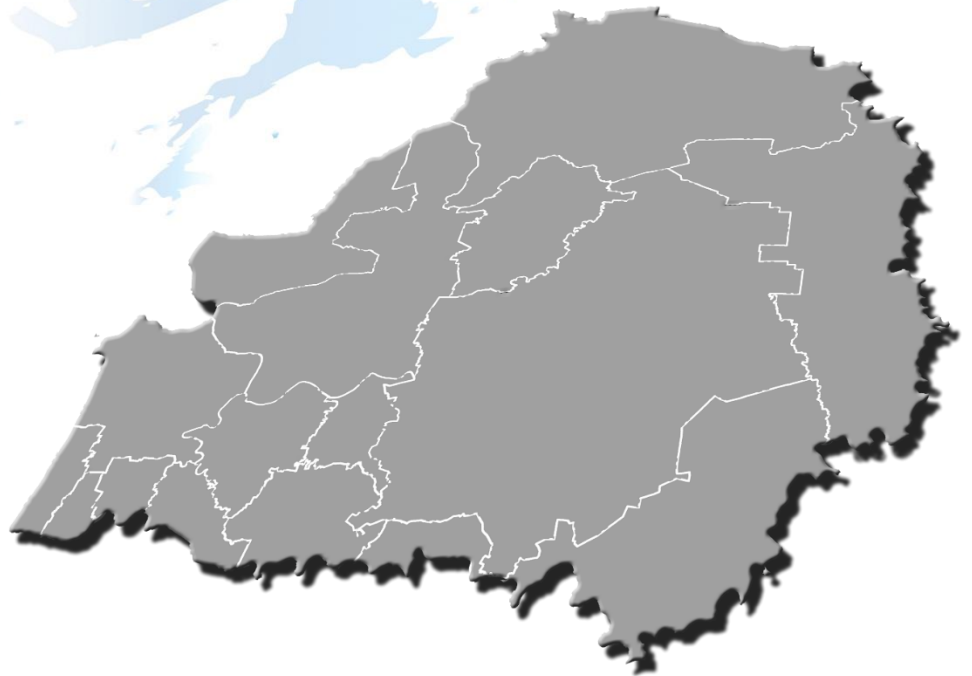
IMPROVE THE CAPABILITY AND EFFICIENCY OF IRRIGATION AND DRAINAGE SYSTEMS

Key actions to improve the capacity and efficiency of the irrigation and drainage system for Kuala Muda District are as follows:

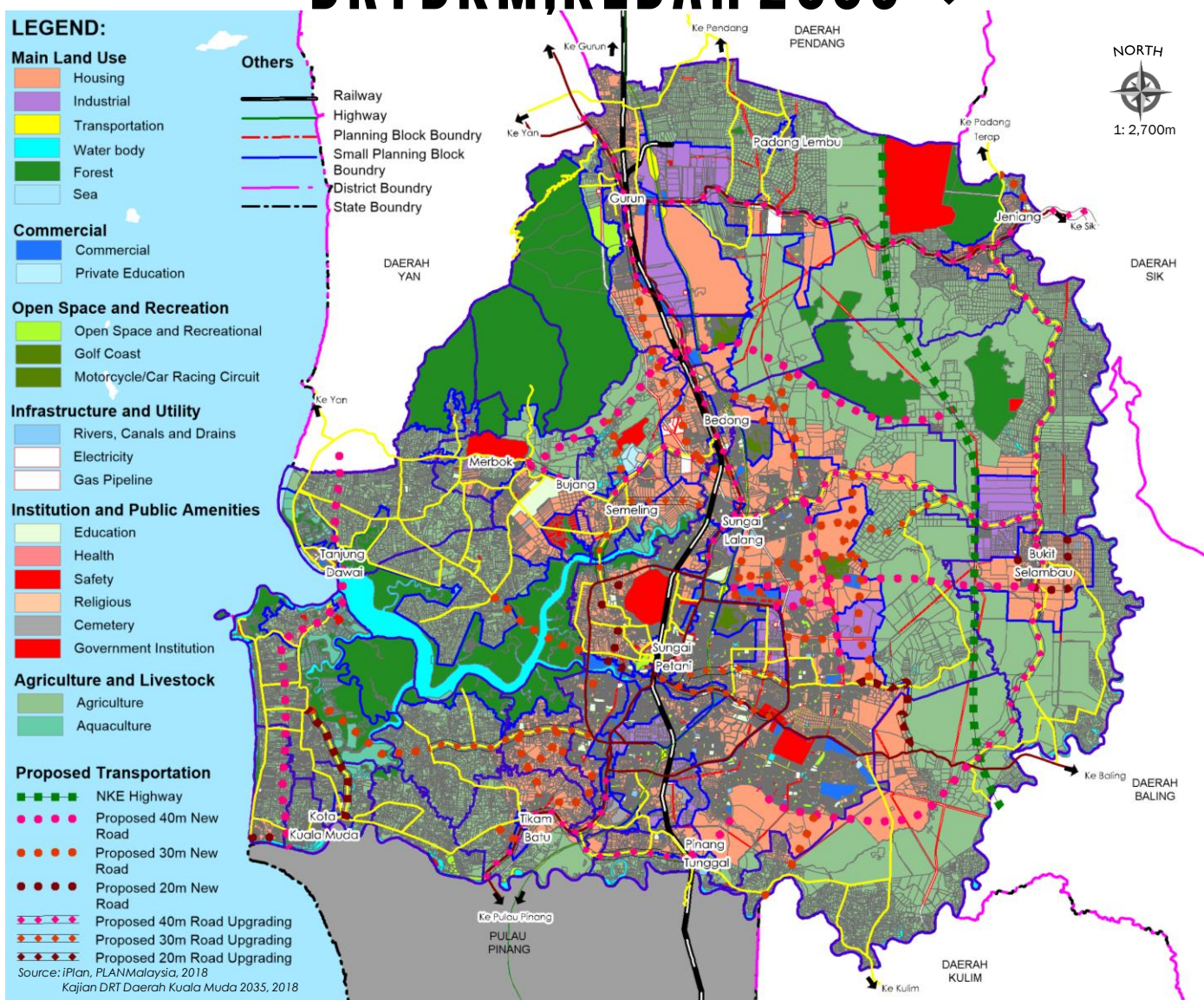
- | | |
|--|--|
| 1 River Channel Improvement | 6 Proposed of Bandar Sungai Petani Flood Retention Pond |
| 2 Proposed of Sungai Petani Tidal River Control Door and High-capacity Pump | 7 Design Approach of OSD, RHS & Control at Source (Part of MSMA) |
| 3 E-Flood Sg. Merbok Basin | 8 Enforcement on Trap Installation of Food Waste, Oil and Grease also Trash Screen at all Outlet Entering Sungai Petani |
| 4 Proposed of River Mouth Development Sg. Merbok | 9 Bio Ecological Design Approach (Part of MSMA) |
| 5 Proposed of Wastewater Biology Treatment Plant | |



PROPOSED LAND USE PLAN 2035

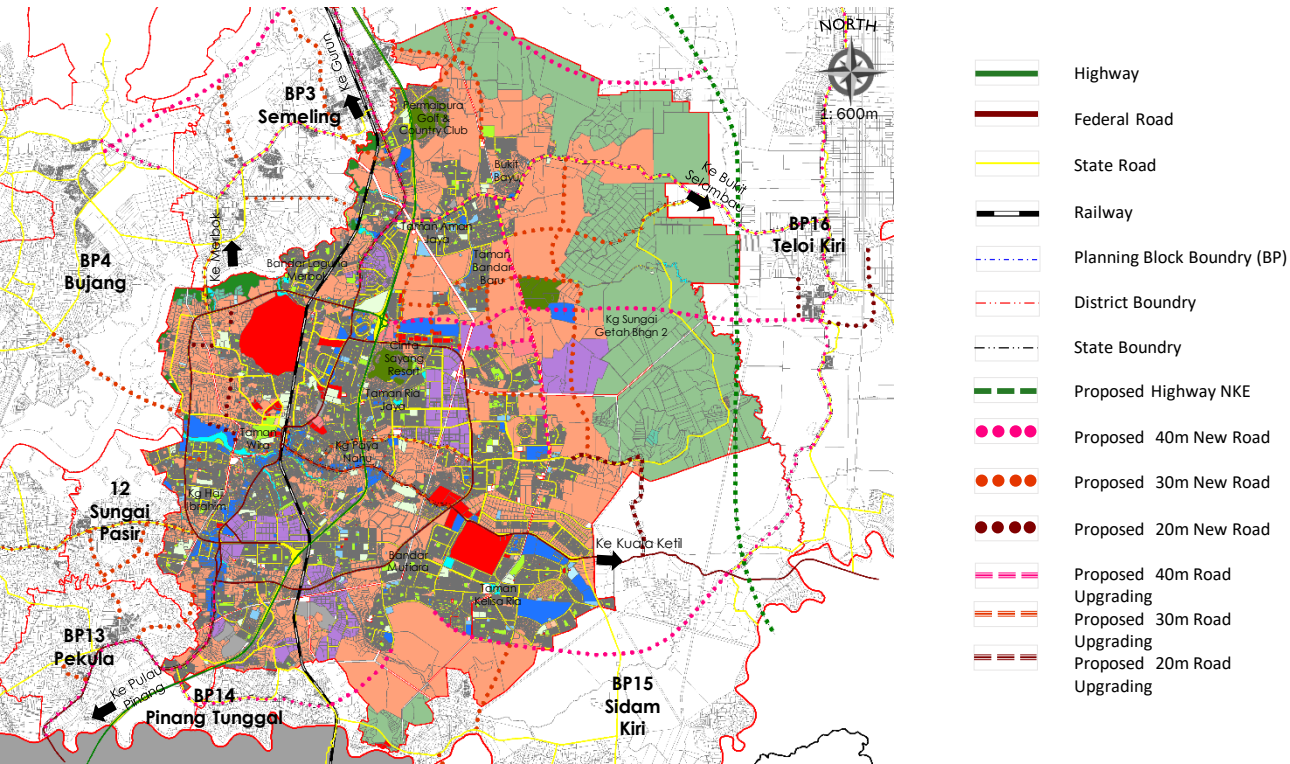


PROPOSED LAND USE DRTDKM, KEDAH 2035

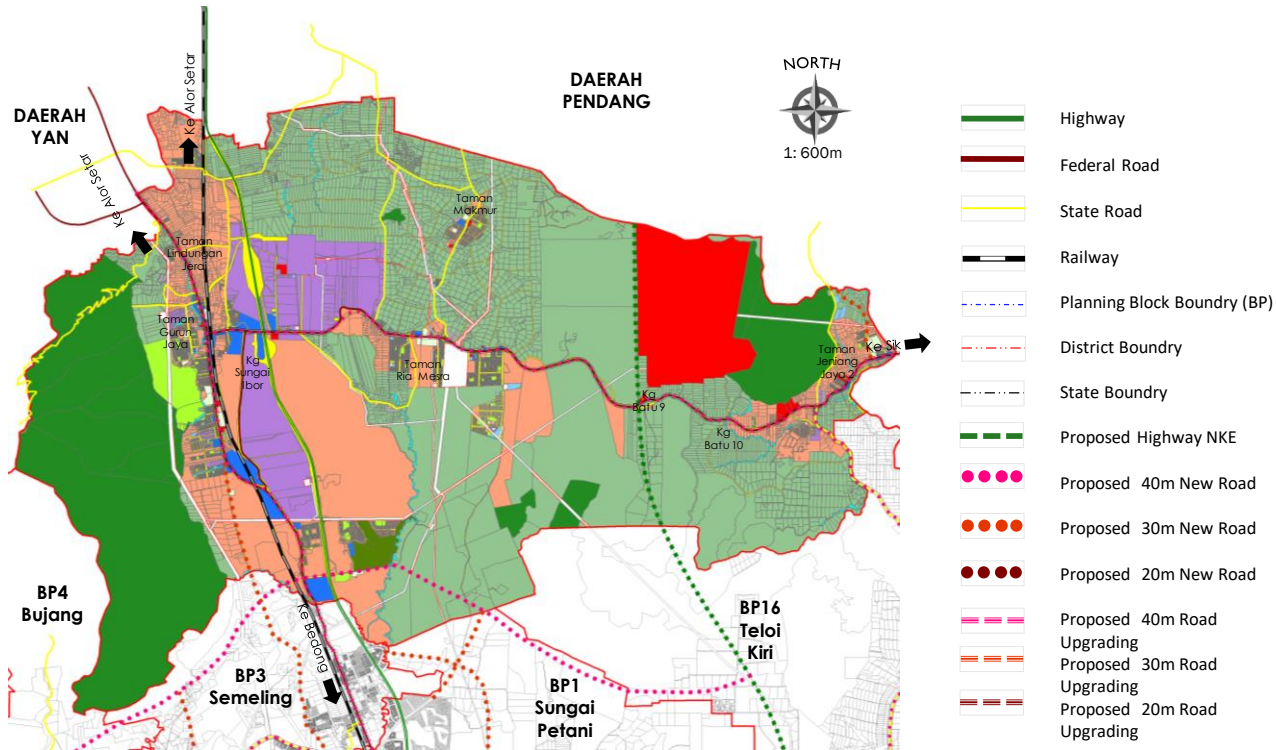


Proposed Land Use 2035	Area (Hectares)				Land Use Change (Hectares)
	Current 2017	%	2035	%	
Housing	6,226.08	6.71	20,865.75	22.48	14,639.67
Commercial	531.33	0.57	1,328.23	1.43	796.90
Industrial	1,857.16	2.00	3,297.79	3.55	1,440.63
Institution and Public Amenities	2,014.54	2.17	3,450.67	3.72	1,436.13
Open Space and Recreation	1,353.61	1.46	1,408.69	1.52	55.08
Transportation	4,873.58	5.25	5,493.55	5.92	619.97
Infrastructure and Utility	2,011.10	2.17	2,060.75	2.22	49.65
Agriculture	53,981.17	58.15	39,759.50	42.83	-14,221.67
Vacant Land	3,800.29	4.09	-	-	-
Water Body	3,181.38	3.43	3,181.38	3.43	-
Forest	12,921.79	13.92	12,921.79	13.92	-
Sea	83.35	0.09	83.35	0.09	-
Total	92835.39	100.00	92,835.39	100.00	

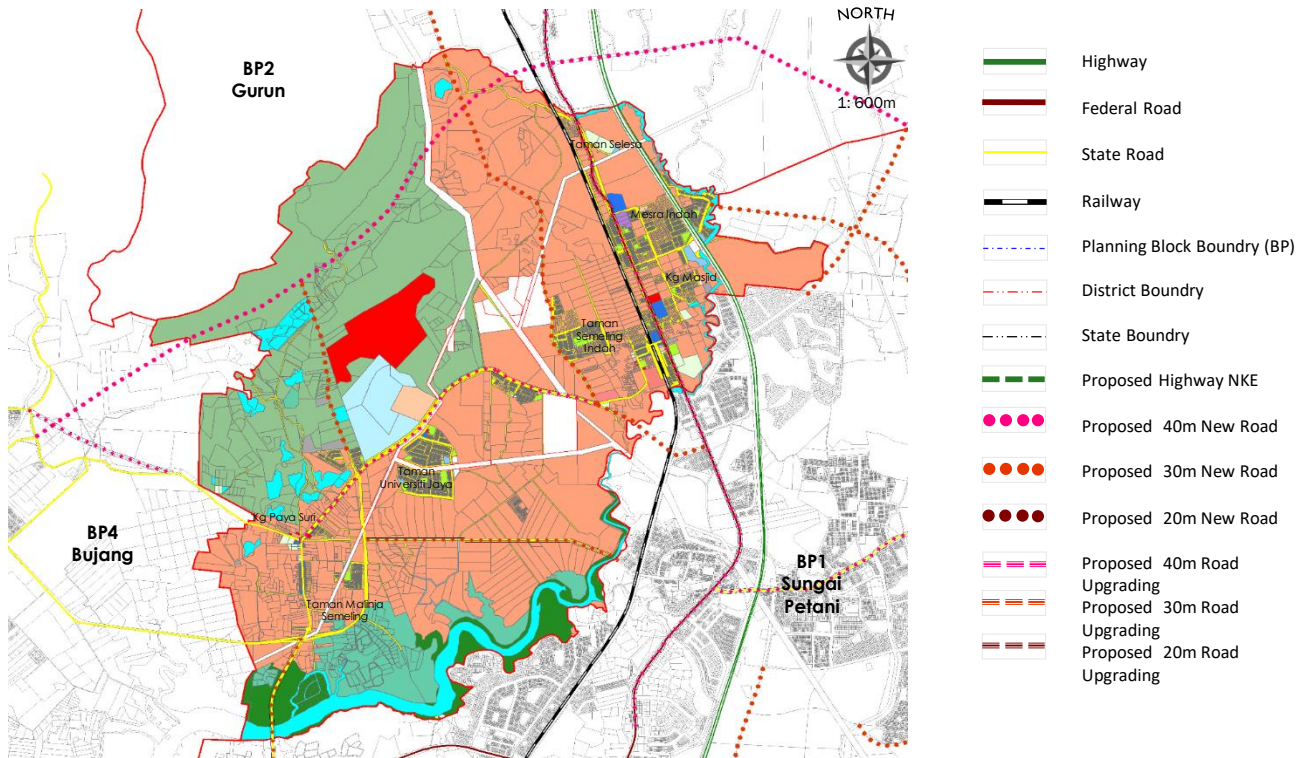
PLANNING BLOCK 1



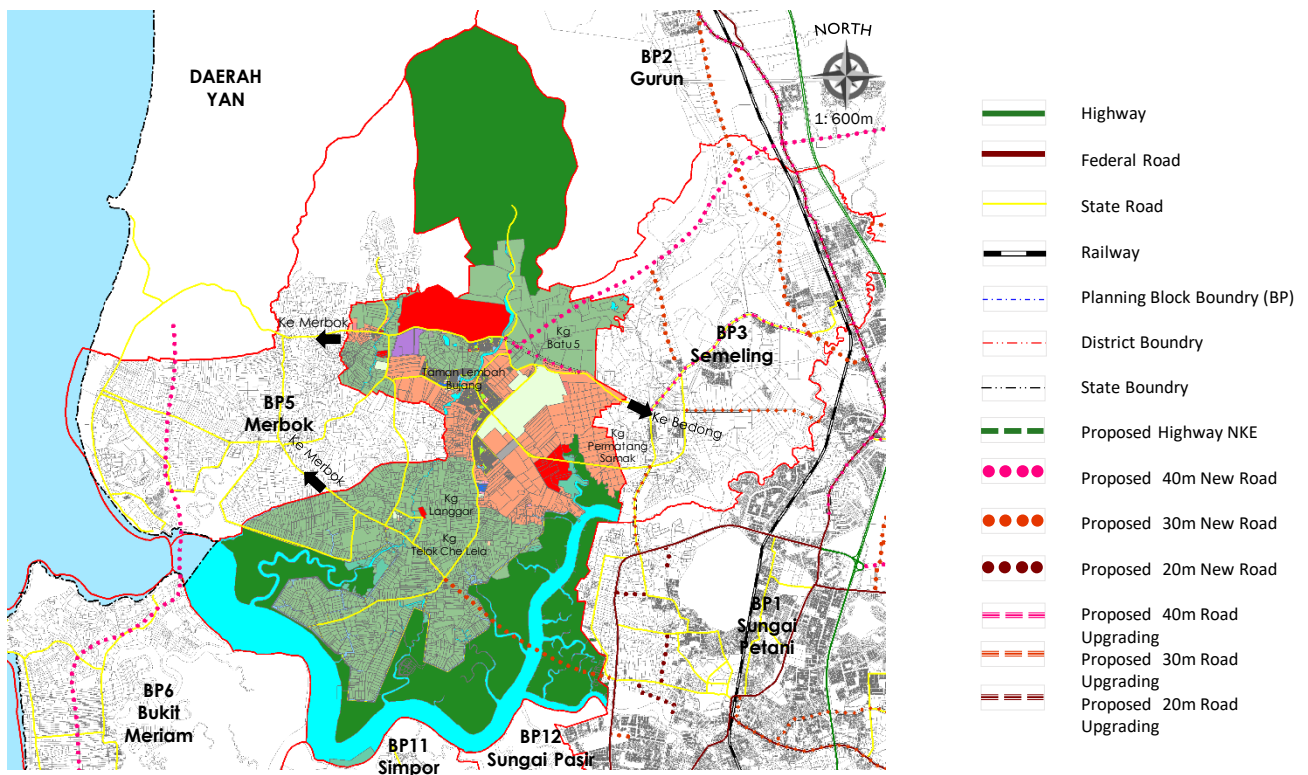
PLANNING BLOCK 2



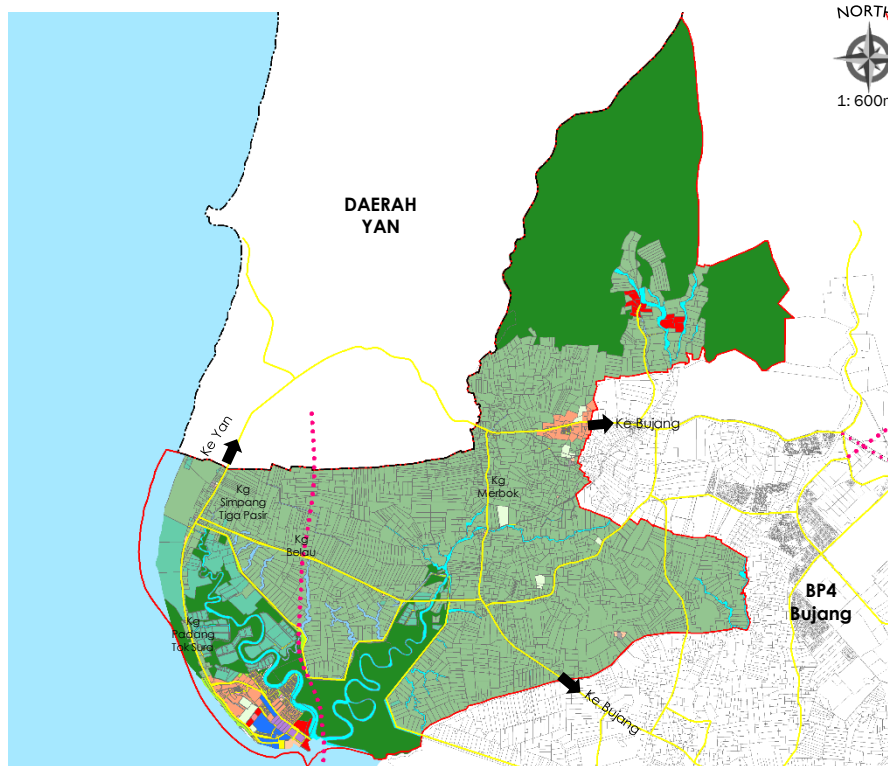
PLANNING BLOCK 3



PLANNING BLOCK 4



PLANNING BLOCK 5



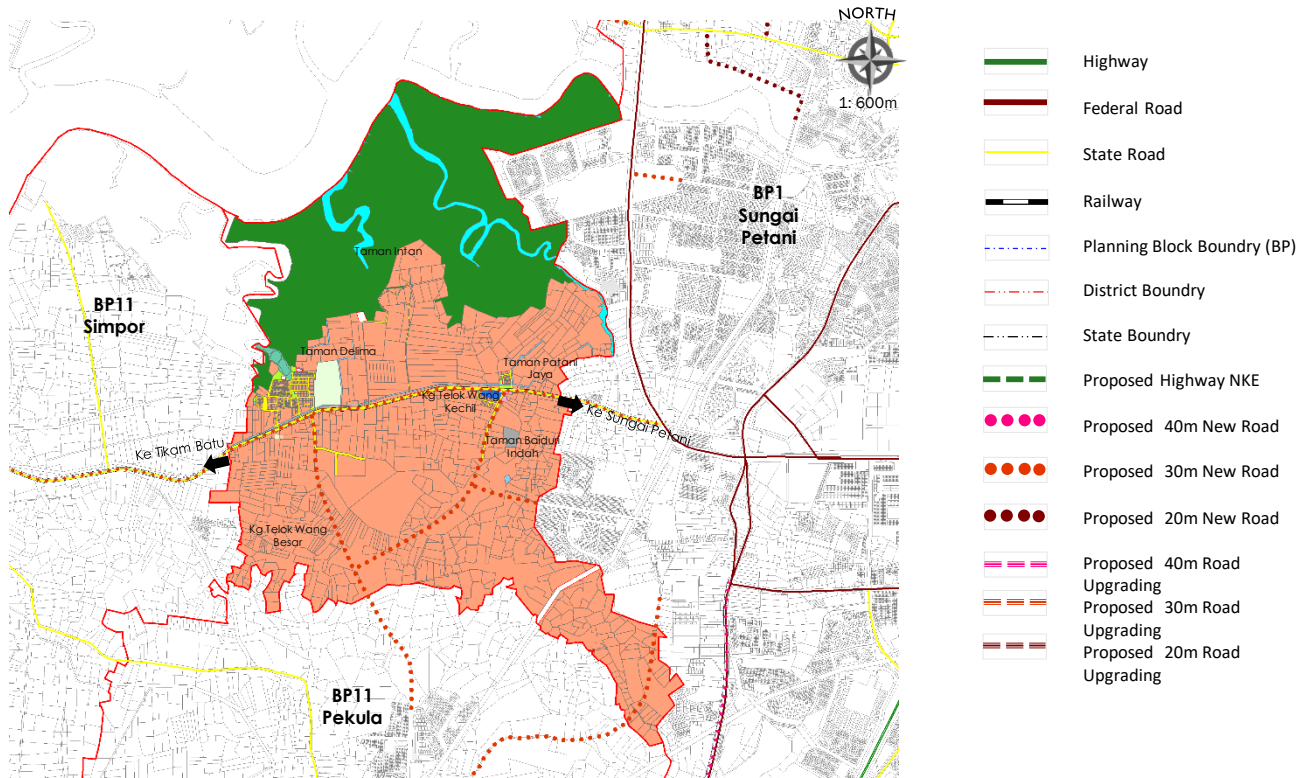
- Highway
- Federal Road
- State Road
- Railway
- Planning Block Boundry (BP)
- District Boundry
- State Boundry
- Proposed Highway NKE
- Proposed 40m New Road
- Proposed 30m New Road
- Proposed 20m New Road
- Proposed 40m Road Upgrading
- Proposed 30m Road Upgrading
- Proposed 20m Road Upgrading

PLANNING BLOCK 6-11

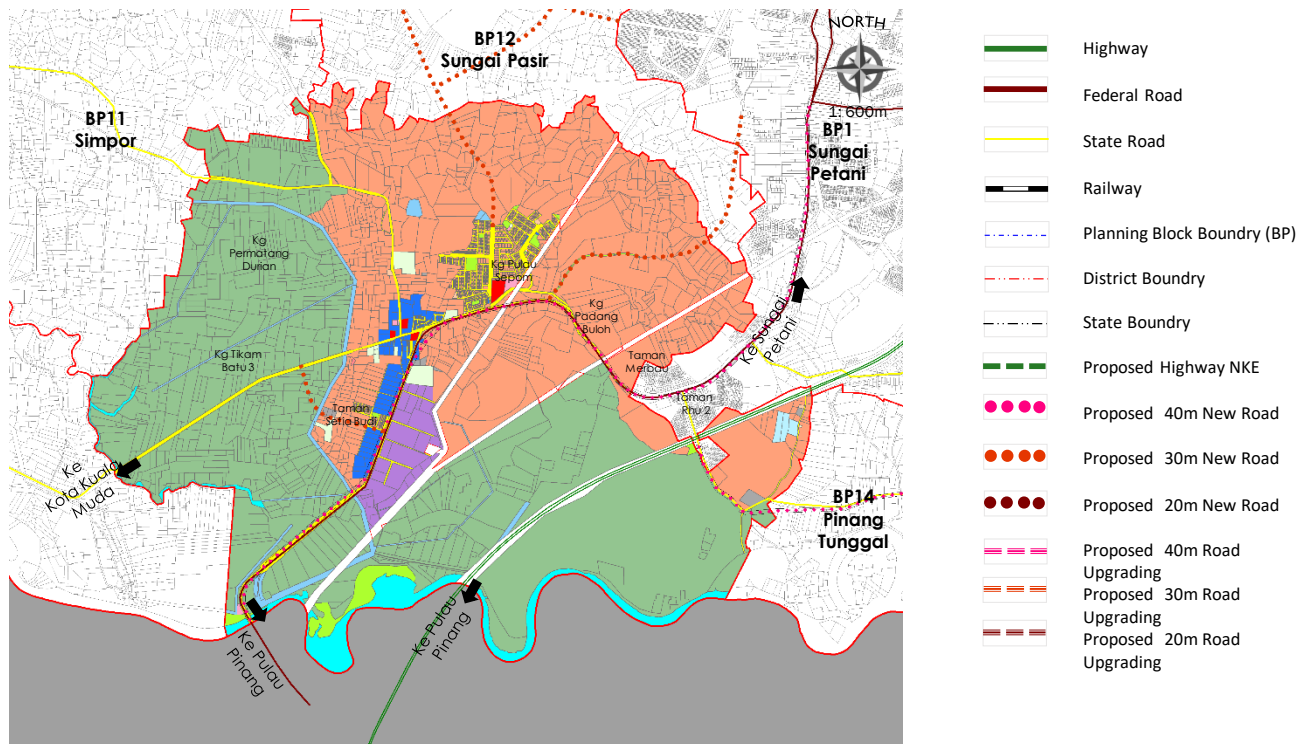


- Highway
- Federal Road
- State Road
- Railway
- Planning Block Boundry (BP)
- District Boundry
- State Boundry
- Proposed Highway NKE
- Proposed 40m New Road
- Proposed 30m New Road
- Proposed 20m New Road
- Proposed 40m Road Upgrading
- Proposed 30m Road Upgrading
- Proposed 20m Road Upgrading

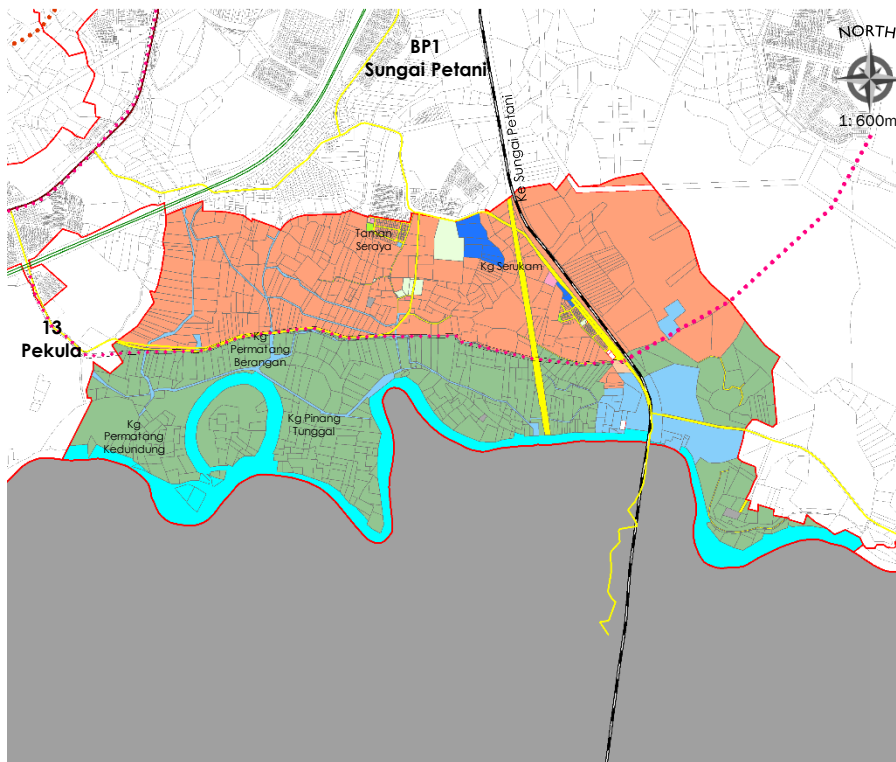
PLANNING BLOCK 12



PLANNING BLOCK 13

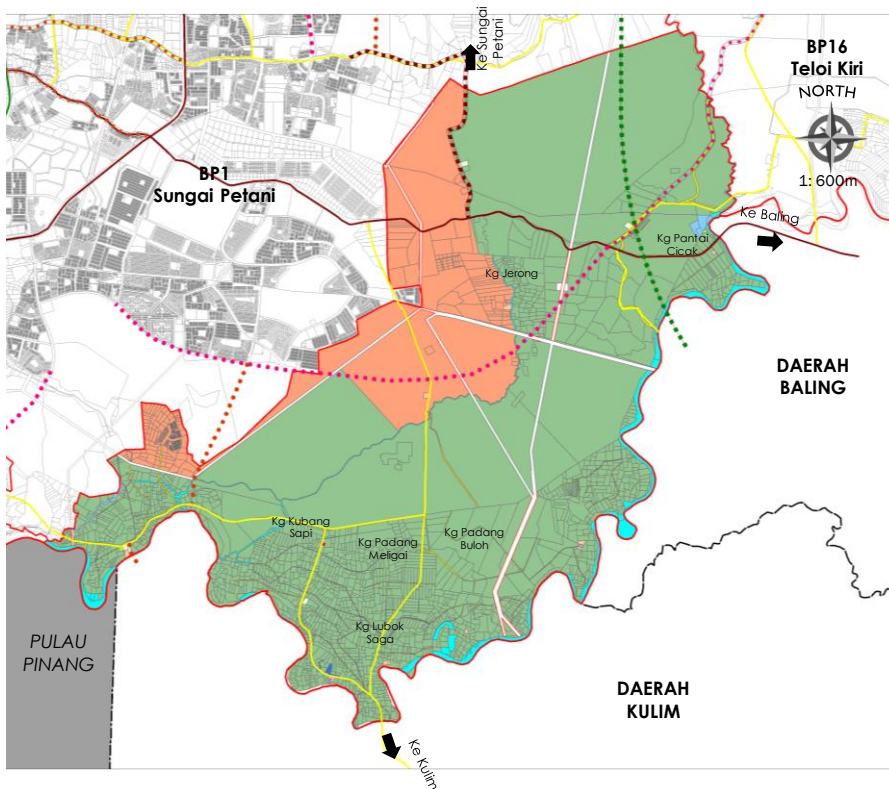


PLANNING BLOCK 14



- Highway
- Federal Road
- State Road
- Railway
- Planning Block Boundry (BP)
- District Boundry
- State Boundry
- Proposed Highway NKE
- Proposed 40m New Road
- Proposed 30m New Road
- Proposed 20m New Road
- Proposed 40m Road Upgrading
- Proposed 30m Road Upgrading
- Proposed 20m Road Upgrading

PLANNING BLOCK 15



- Highway
- Federal Road
- State Road
- Railway
- Planning Block Boundry (BP)
- District Boundry
- State Boundry
- Proposed Highway NKE
- Proposed 40m New Road
- Proposed 30m New Road
- Proposed 20m New Road
- Proposed 40m Road Upgrading
- Proposed 30m Road Upgrading
- Proposed 20m Road Upgrading

PLANNING BLOCK 16

