SIMPOSIUM MAKLUMAT GEOSPATIAL KEBANGSAAN (NGIS) KE-9

PENILAIAN KEROSAKAN AKIBAT BANJIR DI MALAYSIA

Gs. Baharudin Bin Ahmad
*Pengarah Bahagian Pengurusan Fasiliti dan GIS*
Jabatan Pengairan dan Saliran Malaysia
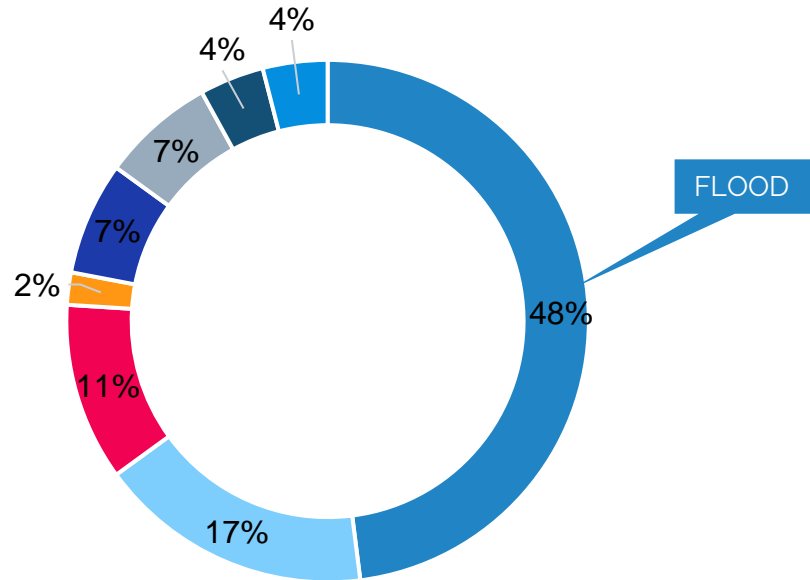*Kementerian Sumber Asli, Alam Sekitar & Perubahan Iklim (NRECC)*

NATURAL DISASTER

✓ Natural disasters are unfortunate events that we have faced over time and happens frequently and sometimes unexpectedly

✓ Malaysia is exposed to several types of natural disasters

Floods

Landslides

Thunderstorms

Common Natural Disasters

Tsunamis
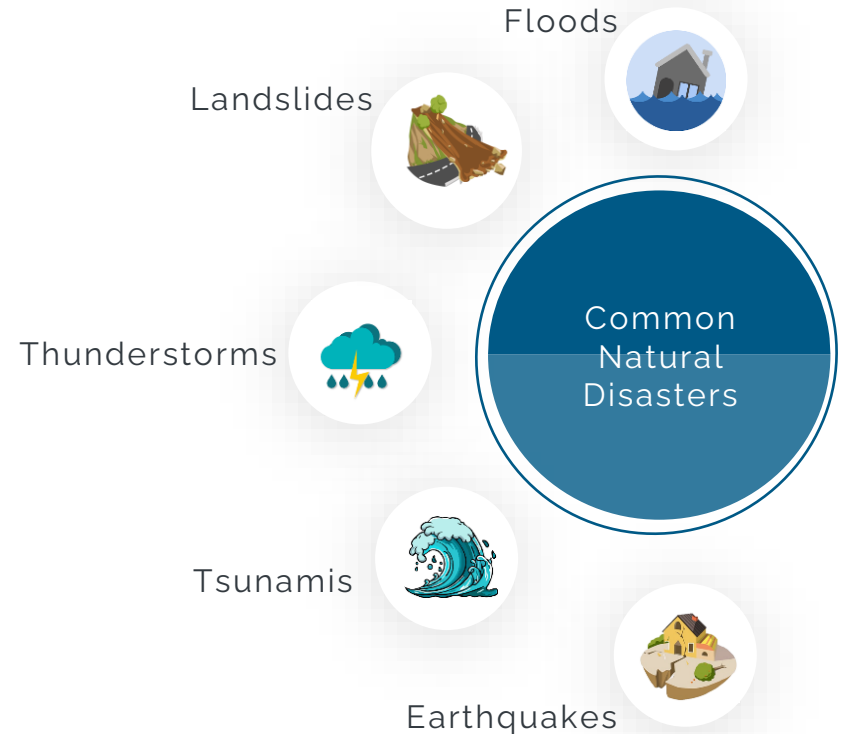
Earthquakes

NATURAL DISASTER IN MALAYSIA

Recorded Events From Year 1965 - 2016

FLOOD

48%

17%

11%

2%

7%

7%

4%

4%

- Flood
- Epidemic
- Storm
- Mass movement
- Landslide
- Wildfire
- Drought
- Earthquake

From: BH Online

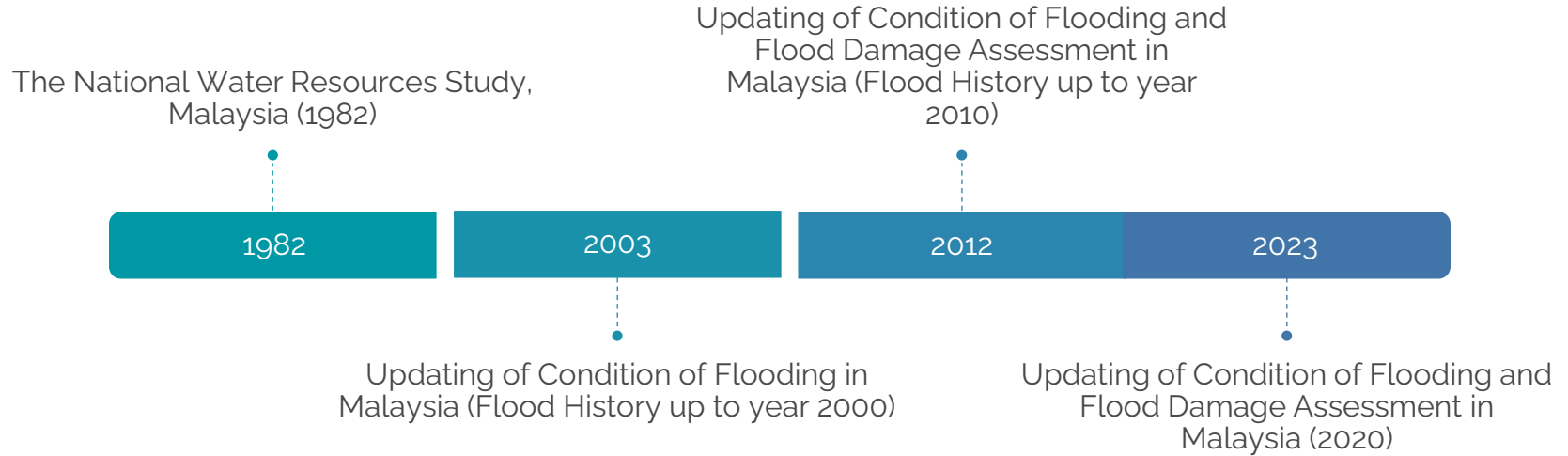*From: BH Online*

DISASTER RISK REDUCTION CYCLE

Disaster Risk Reduction (DRR), and Disaster Management Cycle.
From: World Risk Report 2016, United Nations University (Universitat Stuttgart)

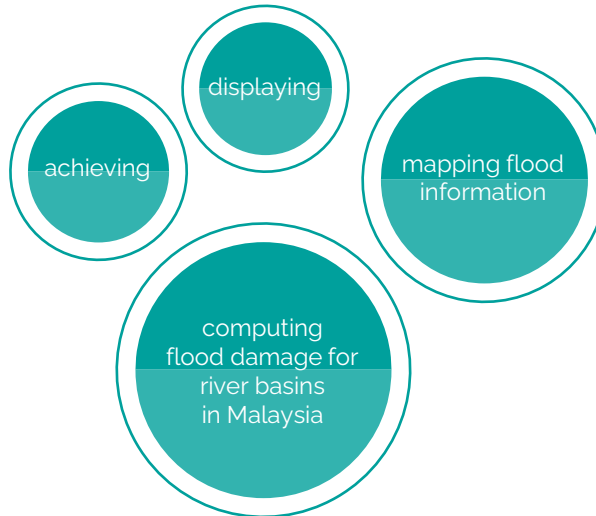Natural disasters potentially cause great **damage** and loss

Affects the **population** living in the flood-affected area and risks to their properties and lives

HISTORY

The National Water Resources Study, Malaysia (1982)

Updating of Condition of Flooding and Flood Damage Assessment in Malaysia (Flood History up to year 2010)

| 1982 | 2003 | 2012 | 2023 |

Updating of Condition of Flooding in Malaysia (Flood History up to year 2000)

Updating of Condition of Flooding and Flood Damage Assessment in Malaysia (2020)

MyFloodRAS

Updating Of Condition Of Flooding And Flood Damage Assessment In Malaysia

✓ GIS-based web application for flood damage assessment

✓ Combines flood information from Year 2000 to 2020

✓ Spatially varied object attributes and damage functions to assess flood damages

✓ Have been designed with the main decision-making features for decision support

displaying

achieving

mapping flood information

computing flood damage for river basins in Malaysia

✓ It can directly process the outputs

calculate direct and indirect damage

the number of population living in flood-affected area

the number of population living in individual flood events

MyFloodRAS

OBJECTIVES

✓ To share and provide information regarding flood damage assessment

✓ To enable information related to flood condition to be properly stored and easily retrieved

✓ To calculate and generate flood damage assessment for the desired flood-affected area

✓ To centralise and harmonise flood risk assessment

MyFloodRAS ARCHITECTURE
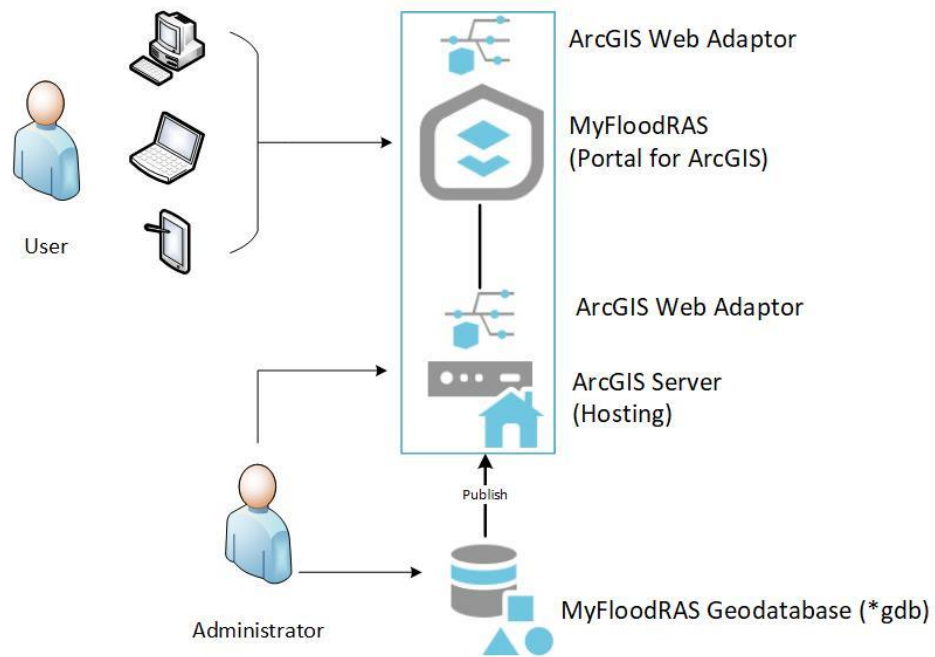
MyFloodRAS MAIN MODULES

Module 1: Flood Information

- Module 1 focuses on the historical flood information gathered from the JPS study year 2001, 2012 and 2023

- It's includes base data such as population, flood damage component, socio-economic information, RBMU, river network and administrative boundaries

- The output of this module is the calculation of flood damage based on the historical flood information

- This module enable user to digitize new layer such as Flood Affected Location, Flood Affected Area, and Flood Mitigation Project

- User also can print a map for desired location or area

Module 2: Flood Risk Assessment Tool

- Module 2 main functions can be categorized into two which are:

  1. Calculation of potential flood damage; and

  2. Calculation of mean flood damage

- Potential flood damage calculation will be based on the flood affected area generated or result from the flood simulation

- Calculation of mean flood damage will be using default parameter (State and National Mean for Flood Depth and Flood Duration) or based on user define parameter

- User can generate and print a flood damage calculation report

- User also can print a map for desired location or area

BASIC FUNCTIONALITIES
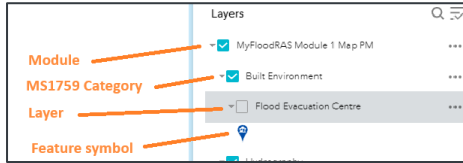
Layer List

Legend
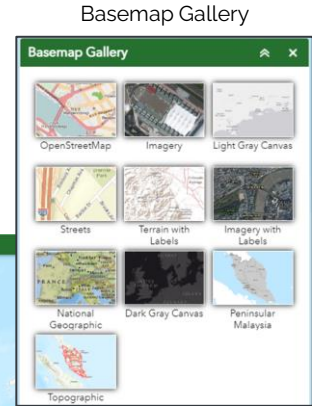
Basemap Gallery
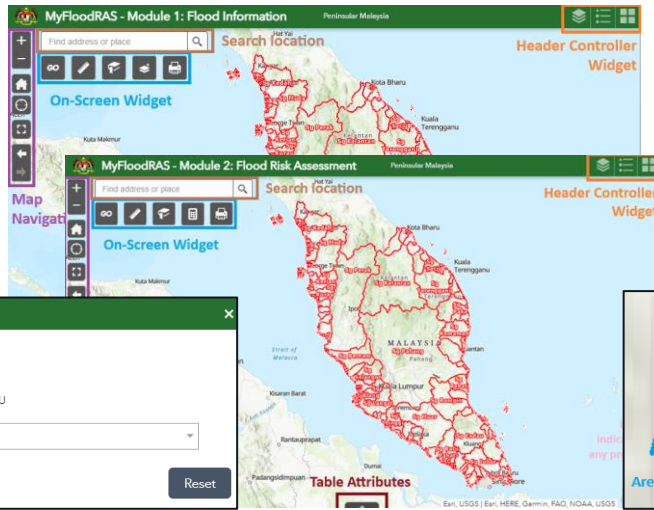
Go To
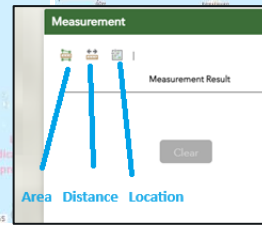
Measurement
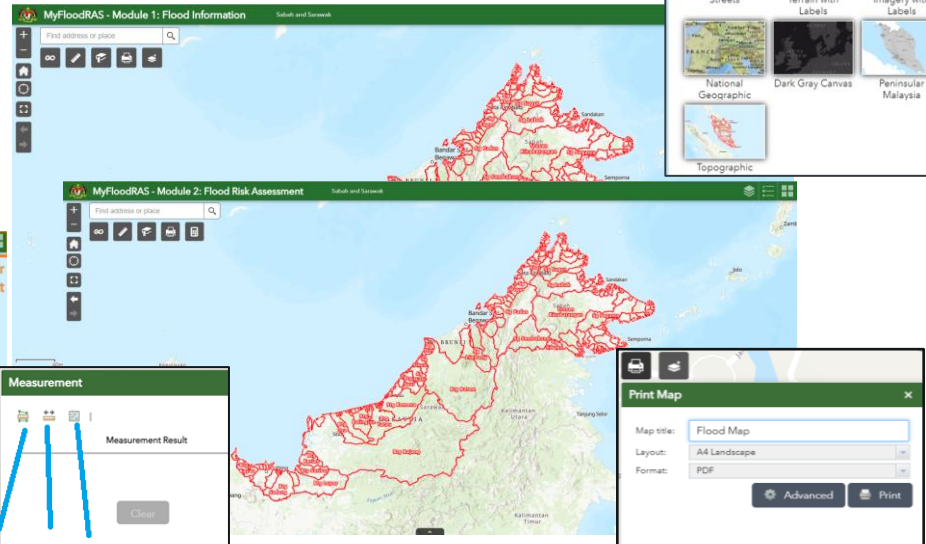
Print Map

BASIC FUNCTIONALITIES

Attributes Table

CUSTOM FUNCTIONALITIES
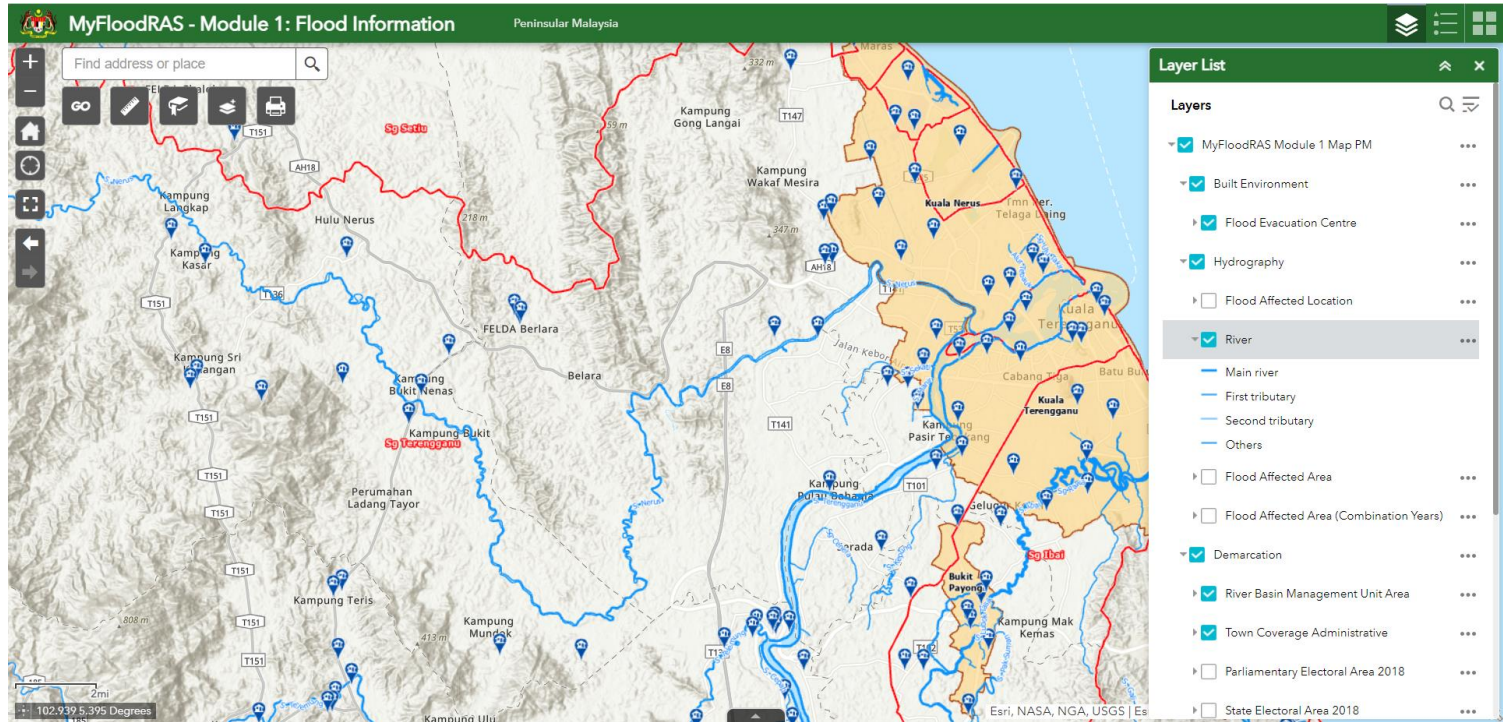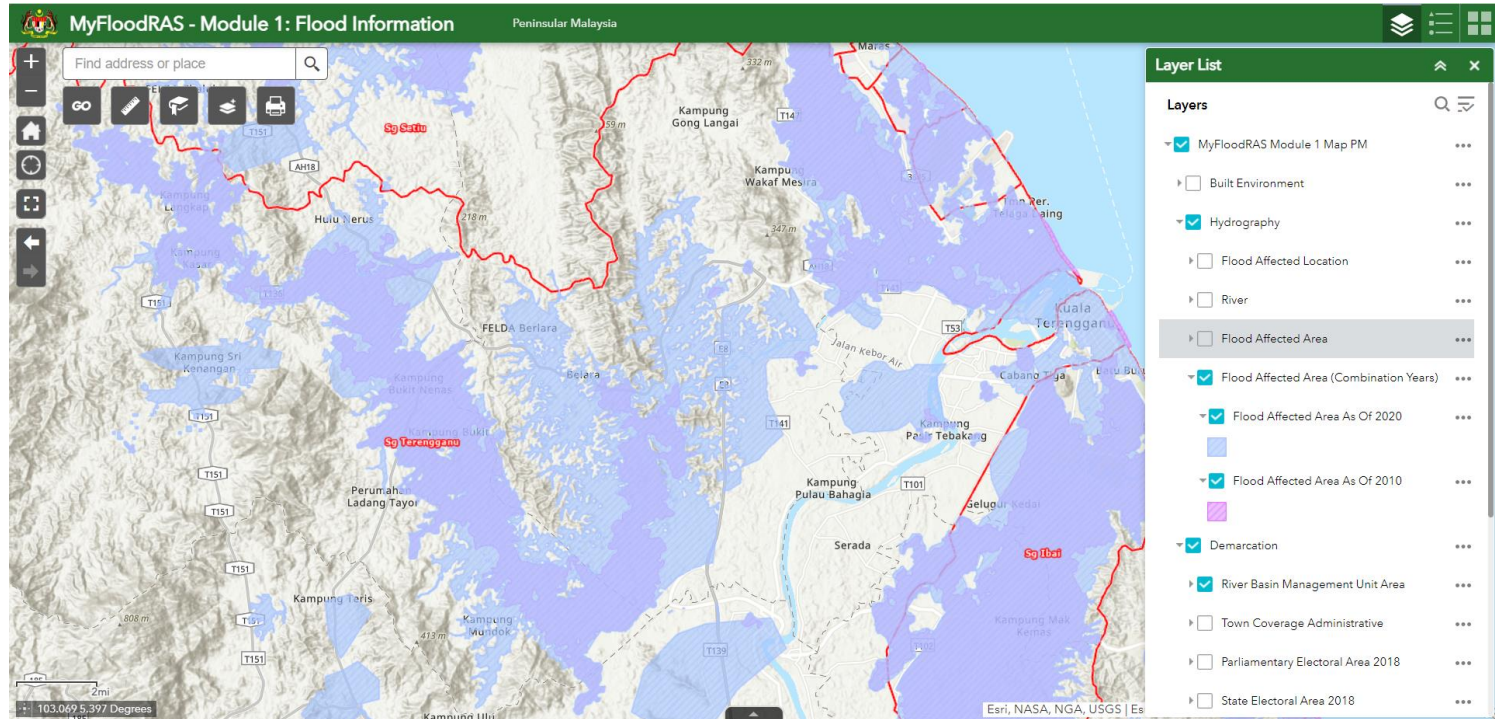

Add Layer

CUSTOM FUNCTIONALITIES
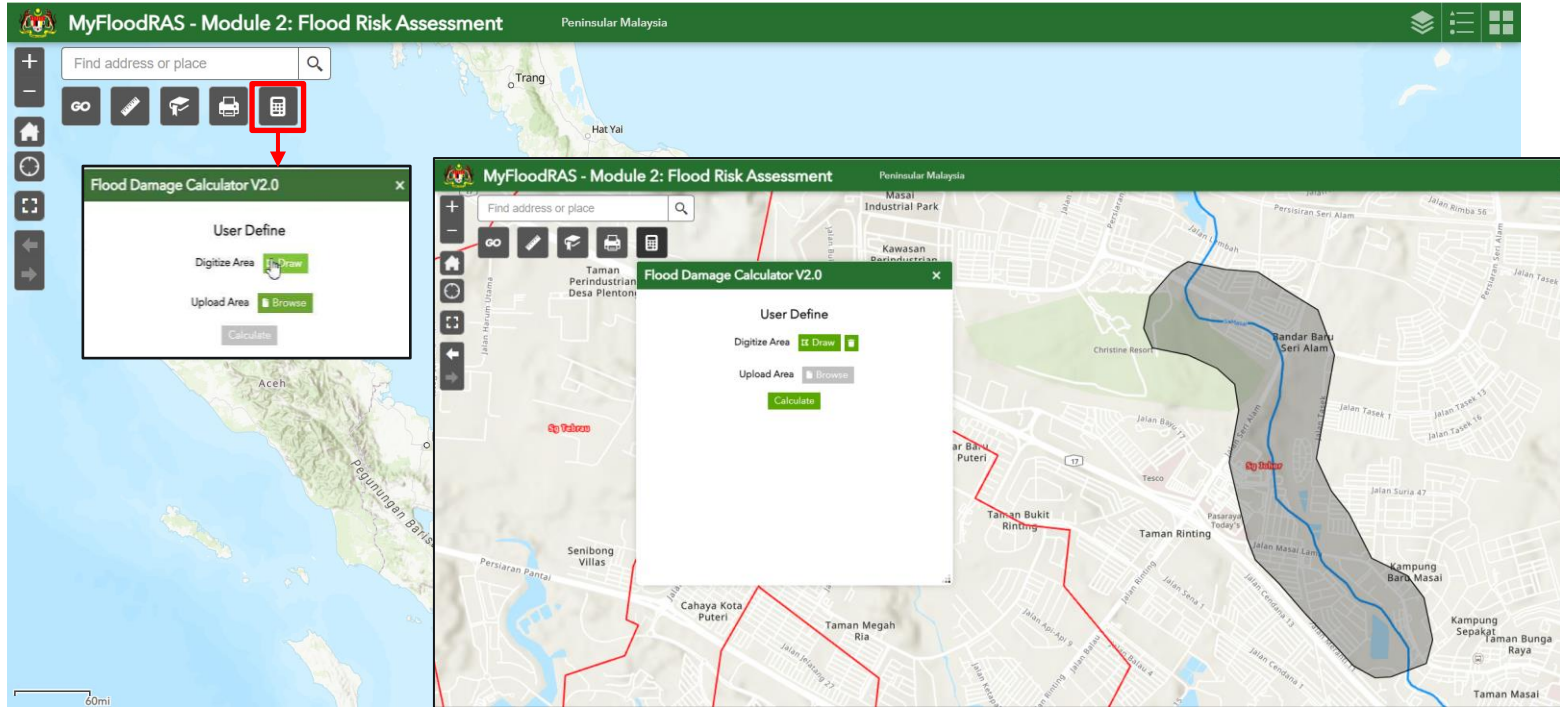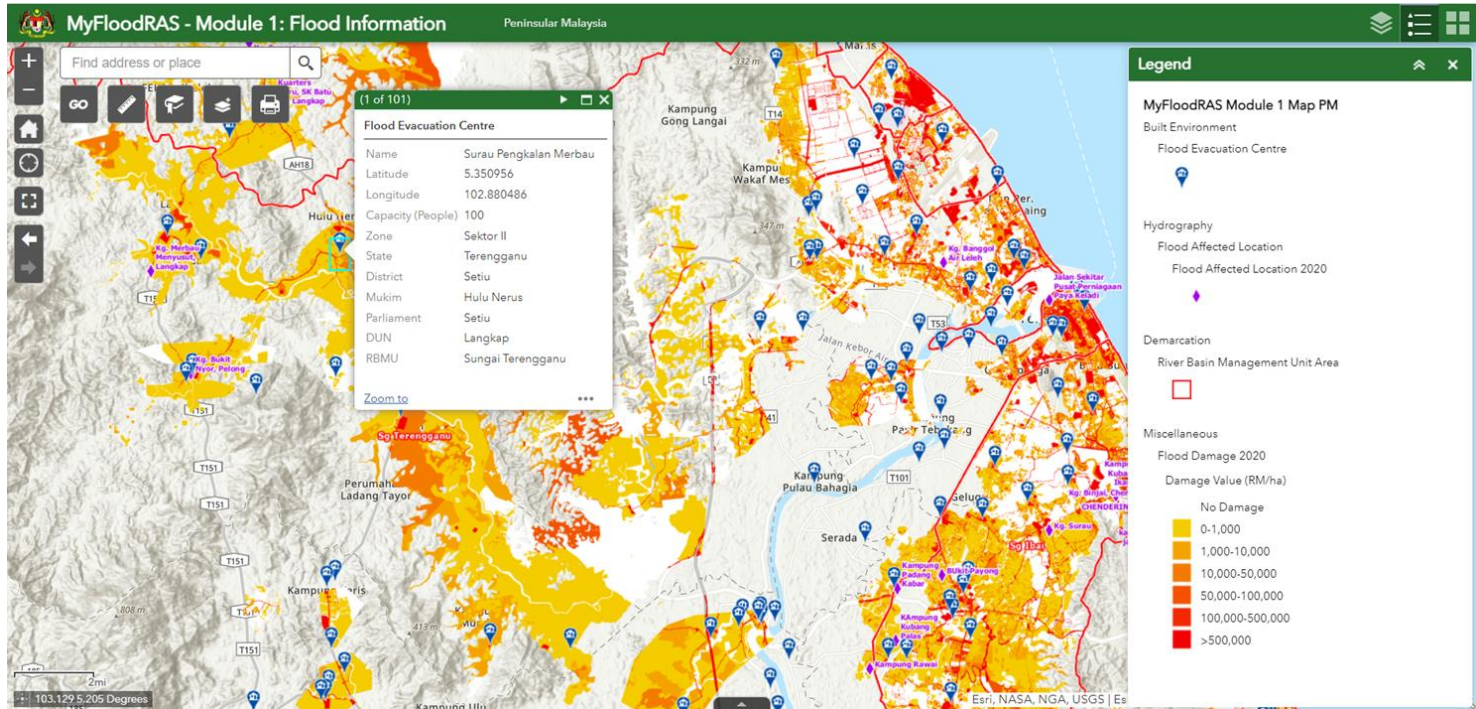

Flood Damage Calculator (Module 2 Only)
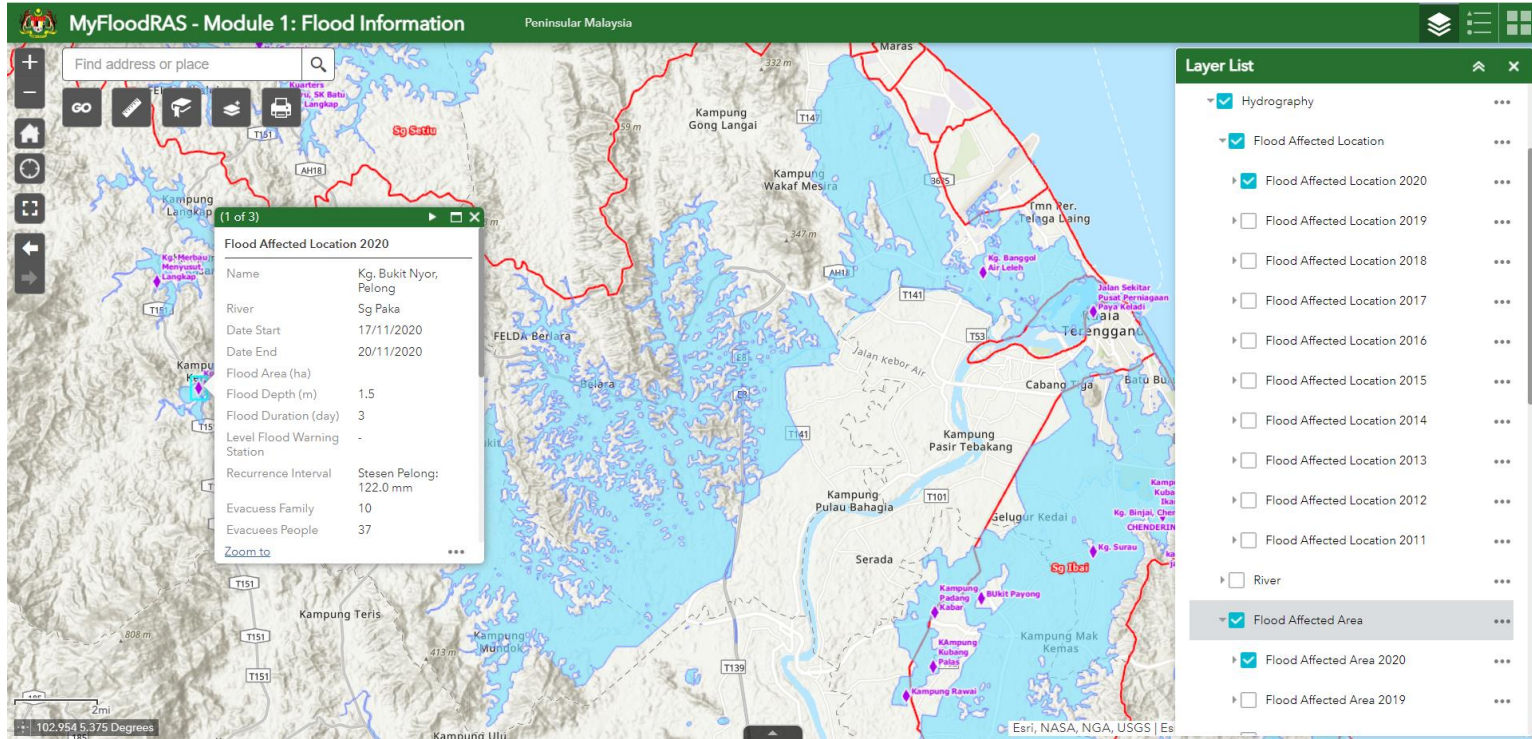
Flood Affected Location & Flood Affected Area

Flood Evacuation Centre, River & Town Coverage Administrative

Flood Affected Area As of 2020 & Flood Affected Area As Of 2010

Flood Damage, Flood Evacuation Centre & Flood Affected Location

OpenStreetMap Basemap

Imagery with Labels Basemap

Peninsular Malaysia Basemap

Flood Affected Location 2020 Table & Attributes

Calculate Flood Damage for Digitized Area
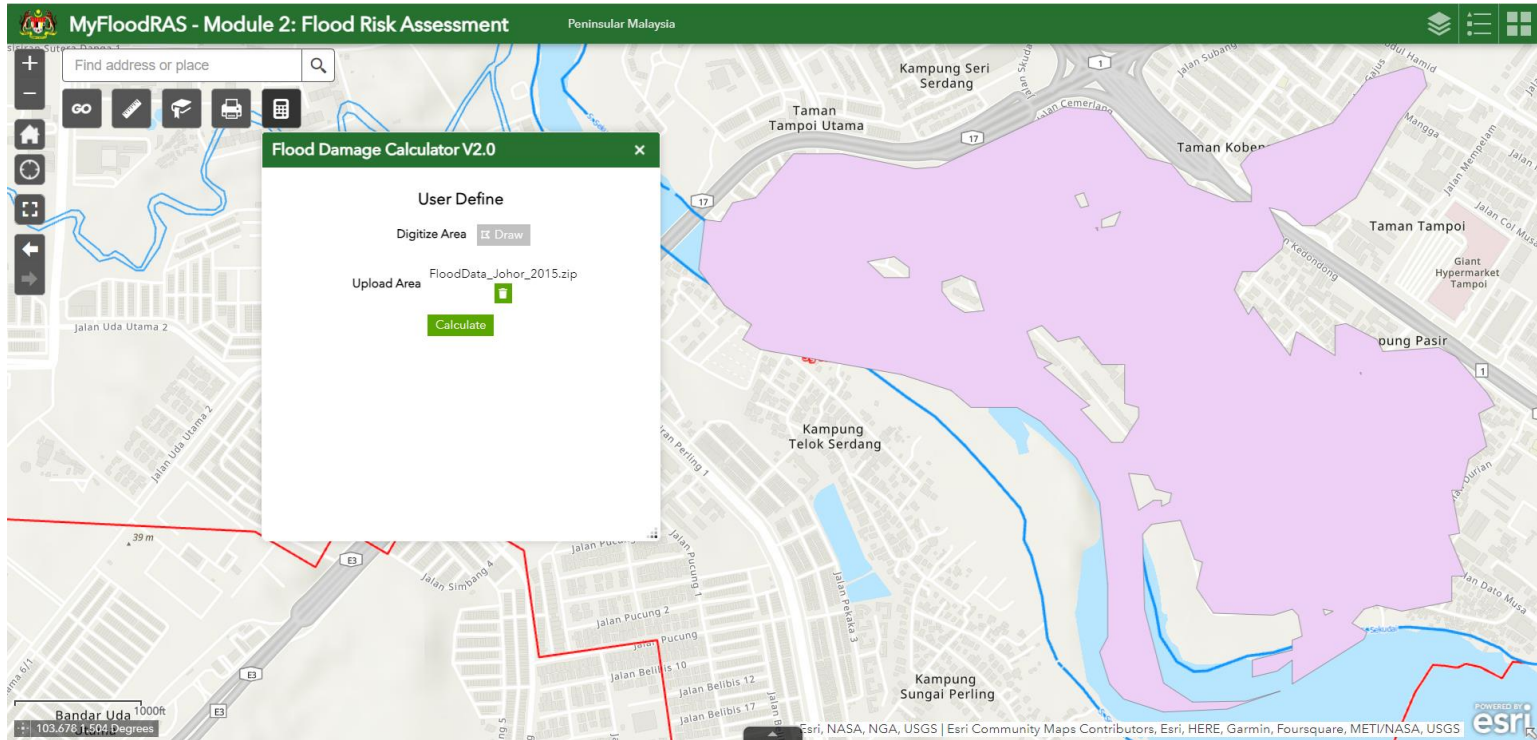
Upload Flood Affected Area
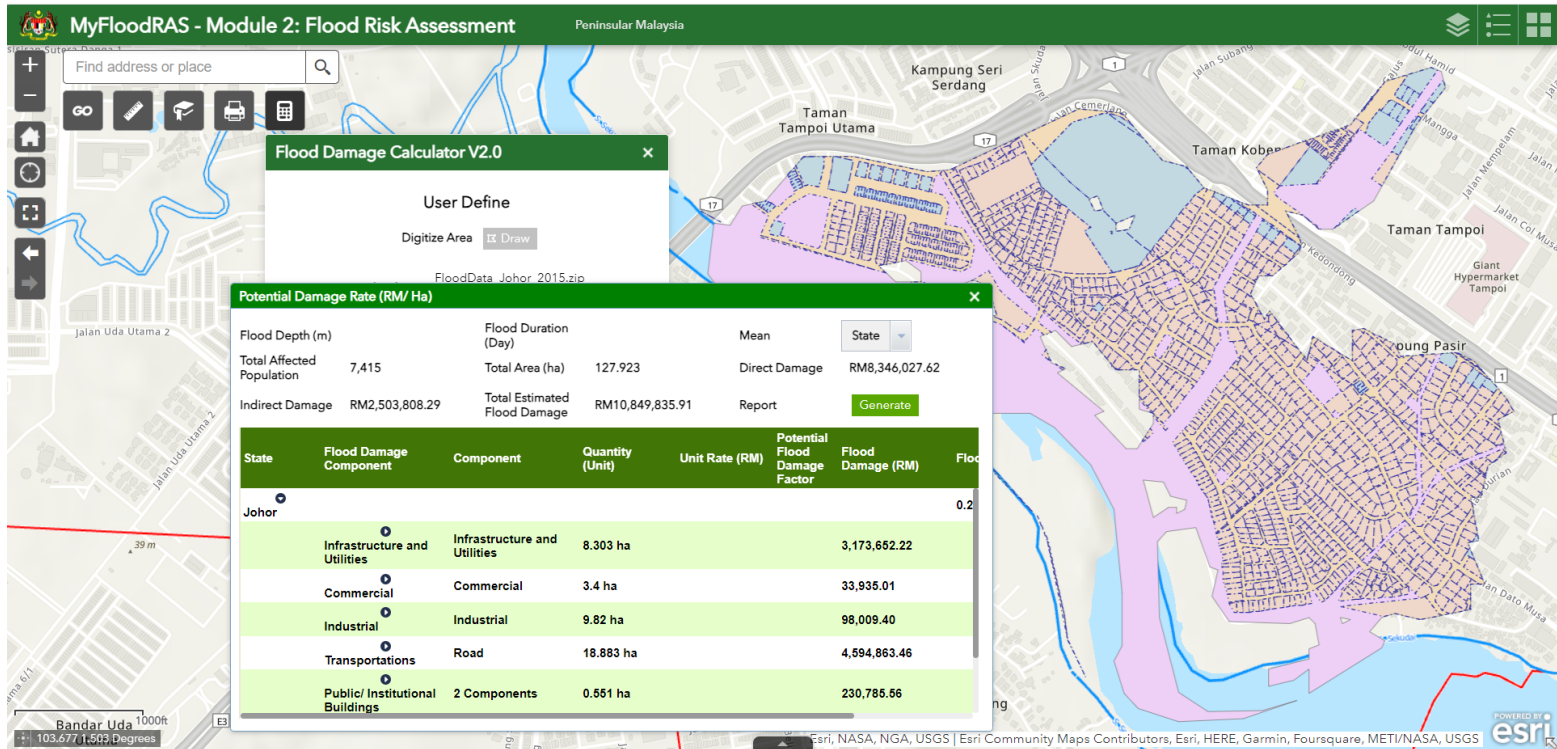
Calculate Flood Damage for Uploaded Area

Generate Report

Flood Report

GENERAL INFO

Date and Time of Issue: Wed, 27/09/2023, 10:48 am
Prepared by: GSE
State: Johor
District: Johor Bahru
RBMU Name: Sungai Skudai
RBMU No: 41
River: Sungai Skudai

FLOOD INFORMATION

Flood Events:
- **Date:** 27/09/2023
- **ARI:** 2 Year
Historical Flood Recorded:
- Kg. Pasir Tebrau [2019]
- Kg. Pasir, Skudai [2017]
- Kg. Pasir [2014, 2020]
- Kg. Serdang [2014]
- Kg. Sri Jaya, Skudai [2018]
- Jalan Sukun, Kg. Pasir, Skudai [2018]
- Kg. Seri Jaya [2020]
- Kg. Seri Serdang [2020]
- Kg. Sri Serdang [2015]
- Kg. Sri Jaya [2015]
- Kg. Pasir, Jalan Sukun [2015]
- Kg. Pasir, Jalan Limau Kasturi [2015]
- Kg. Pasir, Jalan Manggis [2015]
- Kg. Pasir, Jalan Limau [2015]

GENERATED MAP

Report

FLOOD DAMAGE ESTIMATION

State - Mean Depth and Mean Duration:

State	Flood Depth (m)	Flood Duration (days)
Johor	0.22	2.04

State - Average House Size:

State	Average House Size
Johor	3.7

Flood Damage Calculation:

State	Flood Damage Component	Component	Quantity (Unit)	Unit Rate (RM/unit)	Potential Flood Damage Factor	Total Damages (RM)
Johor	Residential	Urban Household	1,934 no	5,913.34	76.38%	8,735,121.98
	Commercial	Commercial	88 no	17,841.60	47.90%	752,687.15
	Industrial	Industrial	128 no	17,841.60	47.90%	1,094,817.67
	Public/ Institutional Buildings	Education	0.1363 ha	712,305.60	47.90%	46,543.63
		Religious	0.4145 ha	761,090.10	47.90%	151,237.20
	Infrastructure and Utilities	Infrastructure and Utilities	8.3034 ha	683,252.00	47.90%	2,719,787.05
	Transportations	Road	18.8825 ha	435,001.40	47.90%	3,937,750.34

Estimated Results:

Total Direct Damages (RM)	Total Indirect Damages (RM)	Total Estimated Damage Damages (RM)	Flood Damages Rate (RM/ha)
17,437,945.02	5,231,383.51	22,669,328.53	177,211.38

Flood Affected Area [FAA] (ha)	No of Population Living in FAA	No of Affected Population (no)	No of Affected Household (no)
127.9225	7,415	7,156	1,934

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BENEFIT OF MyFloodRAS

Early Warning

Risk Assessment

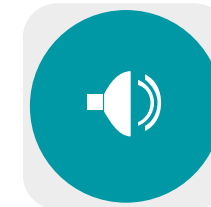Insurance Pricing

Post-Flood Recovery

Resource Allocation

Infrastructure Planning

Climate Change Adaptation

Public Awareness

Study On Updating Of Condition Of Flooding And Flood Damage Assessment (UCFFDA) In Malaysia

Special thanks to:

✓ Bahagian Pengurusan Banjir, Jabatan Pengairan dan Saliran Malaysia

✓ Dr Nik And Associates