

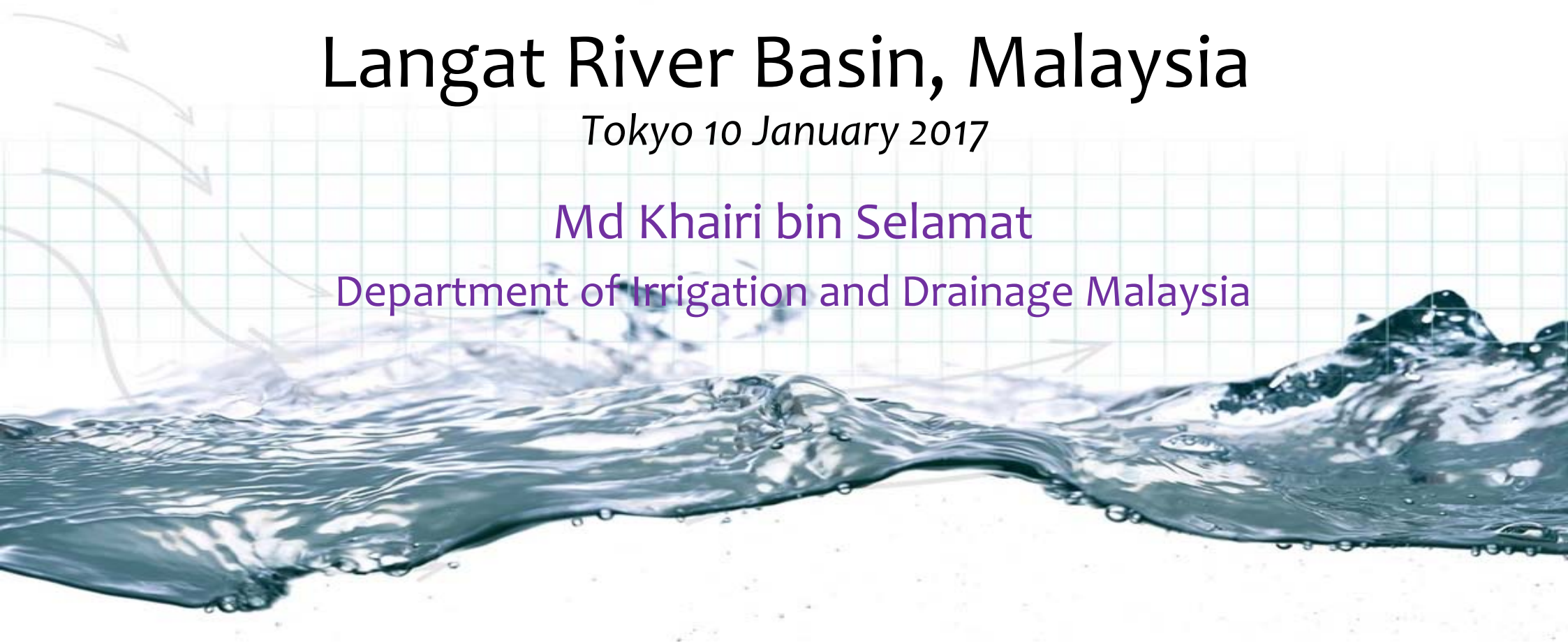
GEOSS-IFI in Asia-Pacific

Langat River Basin, Malaysia

Tokyo 10 January 2017

Md Khairi bin Selamat

Department of Irrigation and Drainage Malaysia



Implementation Planning Workshop on International Flood Initiative (IFI) in Asia - Pacific



CLIMATE CHANGE: OLD NEWS,

...presenting new evidence of
past and future climate change
based on many independent scientific analyses
including from observations of the
climate system, paleoclimate archives,
theoretical studies of climate processes
and simulations using climate models
from the past seven years of research...



NEW THREATS!



Content of presentation

- Introduction
- Flood situation in the river basin
- Comments on the matrix
- Conclusion



Introduction

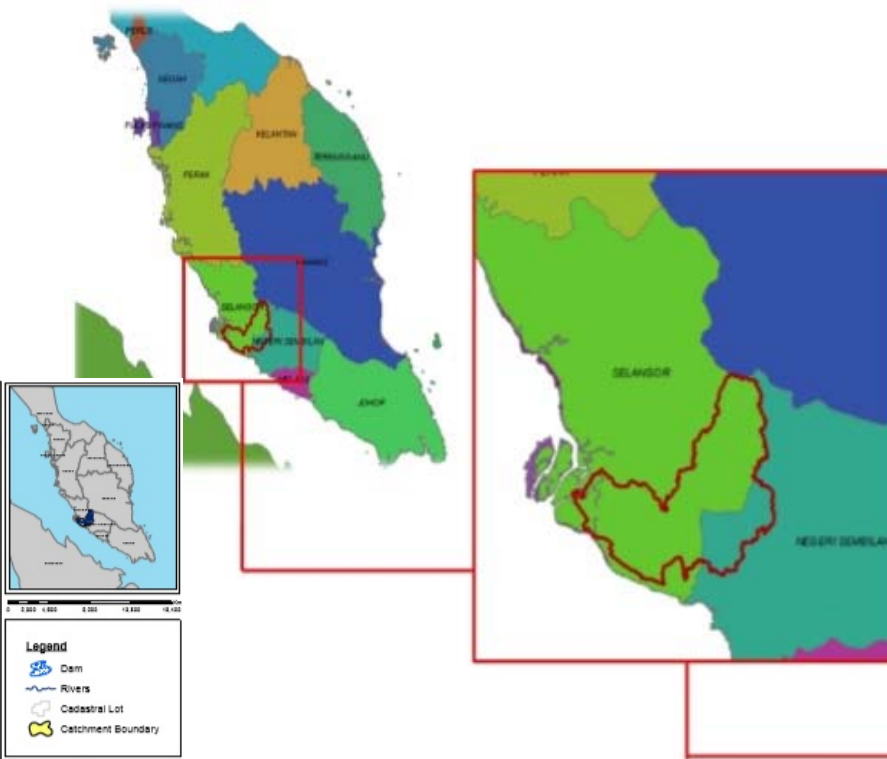


Figure 1.1: Location Plan of the Study Area

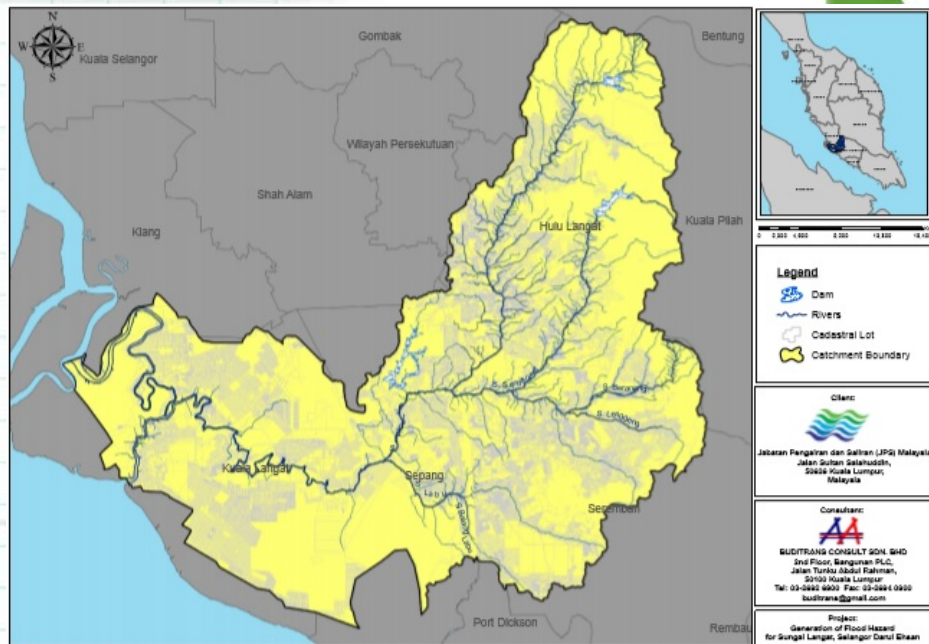
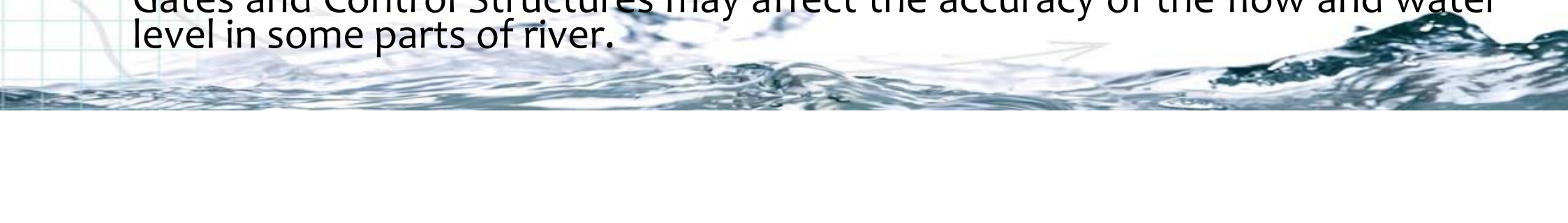


Figure 5.1: Sungai Langat River Systems

Langat River flood study conclusion

- i. Langat River tributaries, in present drainage conditions, are subjected to floods. The results of the modelling show that the existing river channels in these study areas could not even cater for the capacity of 2-year ARI.
 - ii. With the proposed flood mitigation works, Labu, Batang Labu, Chinchang and Jijan River will increase their level of protection to 100-year ARI, even with the adopted Climate Change Factor (CCF). The other flood-prone areas will still be subjected to floods.
 - iii. The hydrological analysis indicated that changes of land use have a significant impact on the physical properties of the soil. The agricultural areas show lower discharge compared to the built-up areas. This could generate a higher rate of surface runoff than agricultural and natural vegetation areas. Changing the land use type will result in increased surface runoff and peak discharge from the rivers within the basin. These will cause significant changes to the flood characteristics in the downstream floodplain by increasing the extent, depth and velocity of the flood water.
 - iv. Due to data limitation during the model development such as Pond, Tidal Gates and Control Structures may affect the accuracy of the flow and water level in some parts of river.
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Langat River Vision

Short term

- To improve water quality (Class II)
- Squatter and illegal development -free river corridor
- Unobstructed water ways

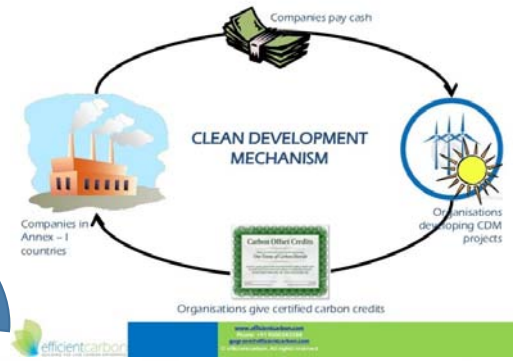
Long term

- Portable river water
- Water-based recreation
- **Flood free river corridor**
- Living river
- Adequacy of water resources availability



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Transformation



The Millennium Development Goals

Eight Goals for 2015

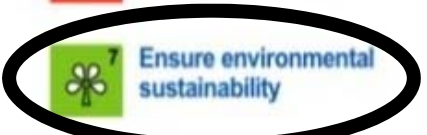
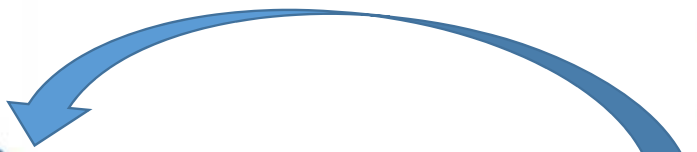
- 1 Eradicate extreme hunger and poverty
- 2 Achieve universal primary education
- 3 Promote gender equality and empower women
- 4 Reduce child mortality
- 5 Improve maternal health
- 6 Combat HIV/AIDS, malaria and other diseases
- 7 Ensure environmental sustainability
- 8 Develop a global partnership for development

SUSTAINABLE DEVELOPMENT KNOWLEDGE PLATFORM

- HOME
- HIGH-LEVEL POLITICAL FORUM
- SDGS
- TOPICS
- PROCESSES & UN SYSTEM
- STAKEHOLDER ENGAGEMENT
- PARTNERSHIPS
- RESOURCES
- ABOUT

Sustainable Development Goals

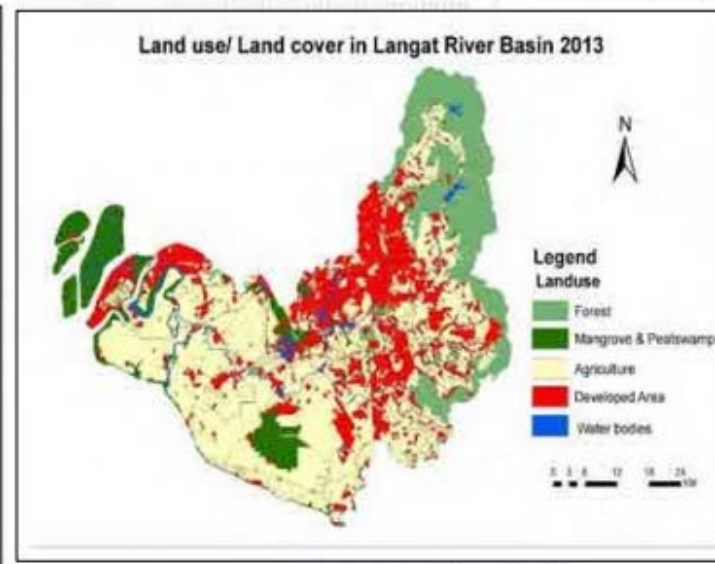
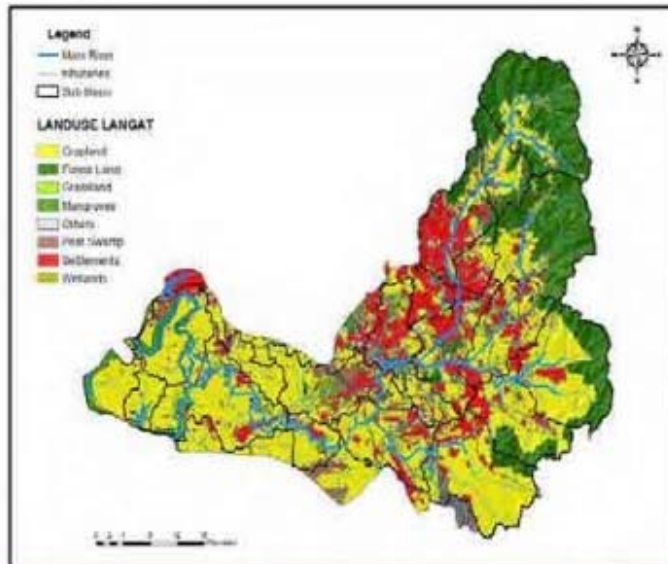
<p>1 NO POVERTY</p>	<p>2 ZERO HUNGER</p>	<p>3 GOOD HEALTH AND WELL-BEING</p>	<p>4 QUALITY EDUCATION</p>	<p>5 GENDER EQUALITY</p>
<p>6 CLEAN WATER AND SANITATION</p>	<p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>10 REDUCED INEQUALITIES</p>
<p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>13 CLIMATE ACTION</p>	<p>14 LIFE BELOW WATER</p>	<p>15 LIFE ON LAND</p>
<p>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	<p>17 PARTNERSHIPS FOR THE GOALS</p>			



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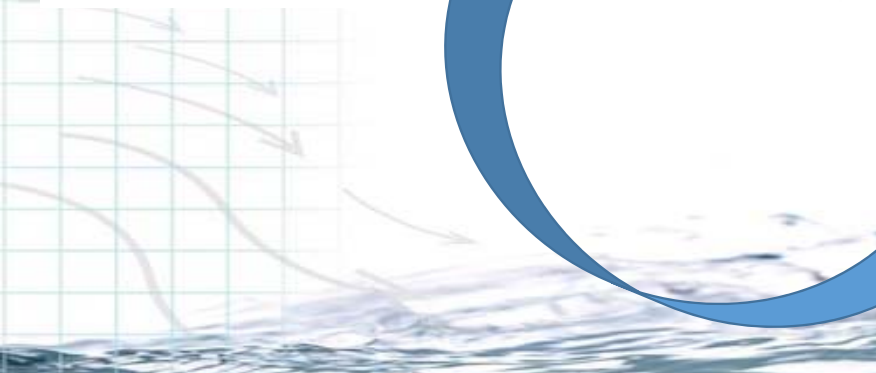
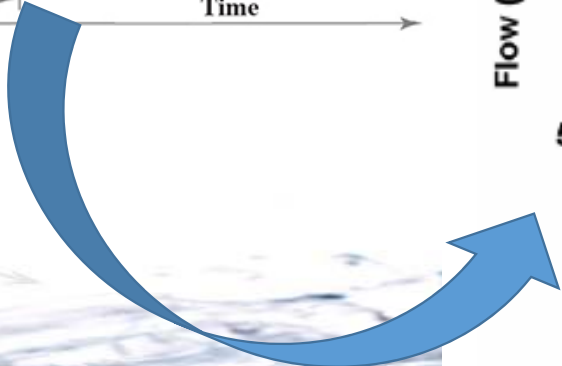
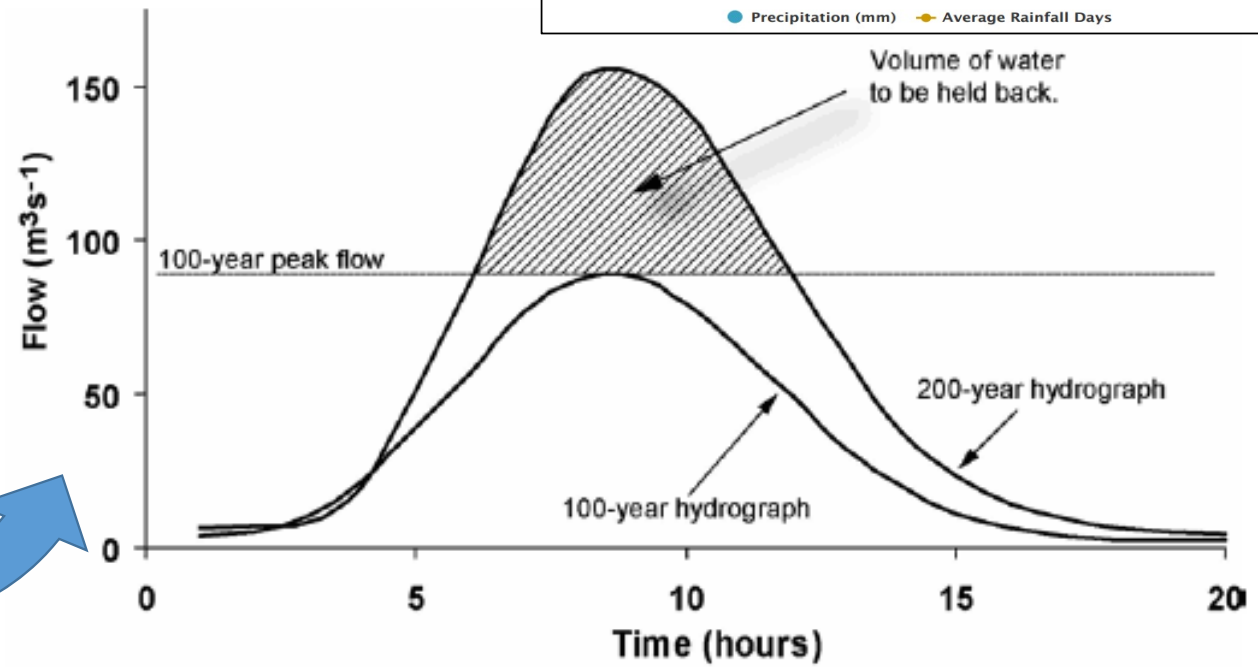
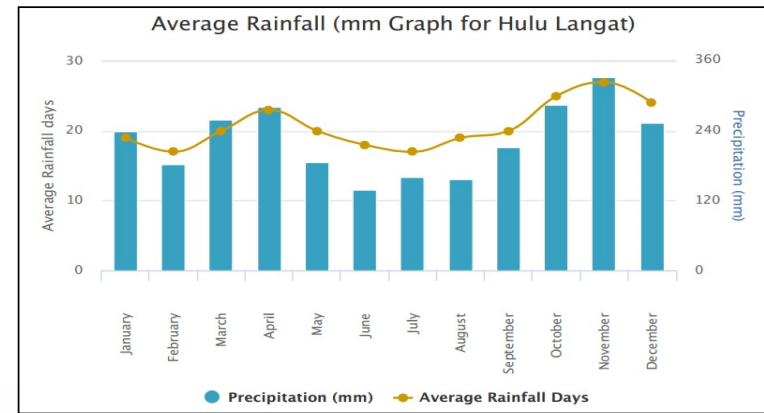
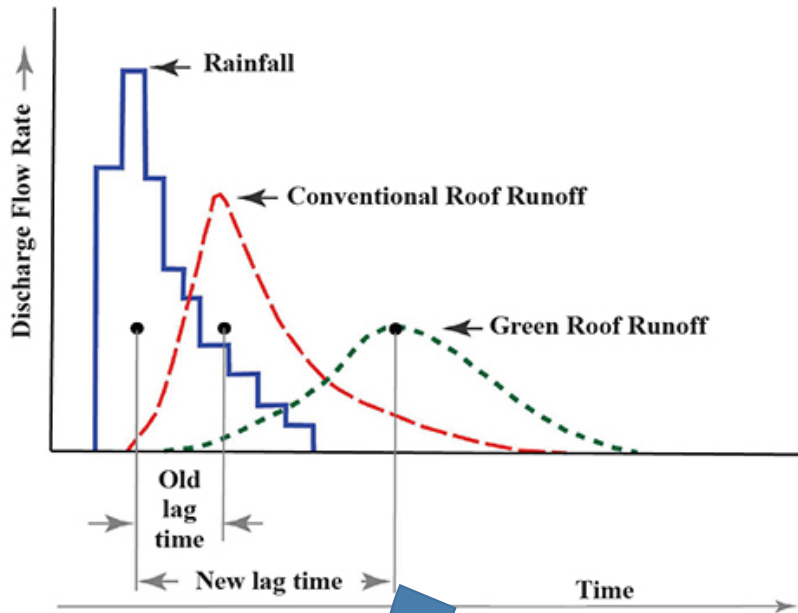


Overall Land Use Changes in LRB



Land use Types	1974 (ha)	(%)	1991 (ha)	(%)	2001 (ha)	(%)	2013 (ha)	(%)
Forest	52,579.7	17.9	50,906.4	17.3	45,071.9	15.4	48,285.0	16.5
Mangroves & Peat swamp	75,252.6	25.7	37,014.5	12.6	25,630.7	8.7	27,560.8	9.4
Agriculture	155,249.0	52.9	170,705.0	58.2	164,841.0	56.2	142,387.916	48.5
Developed Area	7,022.8	2.4	28,510.7	9.7	51,502.8	17.5	69,056.1	23.5
Waterbody	3,267.3	1.1	6,401.5	2.2	6,207.1	2.1	6,009.113	2.0
Total	293,370.3	100	293,340.5	100	293,253.6	100	293,298.875	100

Flood situation in the river basin



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Flood condition



Roads around the Pasar Besar Kajang area inundated following an hour-long afternoon downpour on Nov 12. — filepic



Annual Rainfall

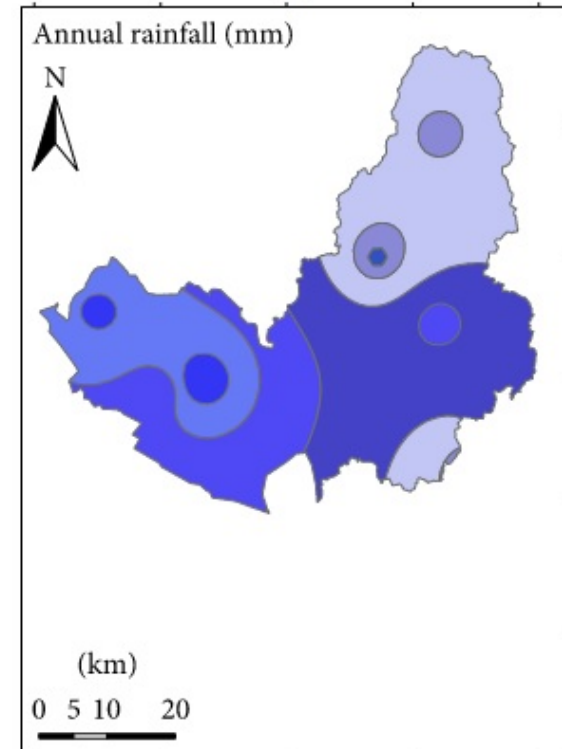
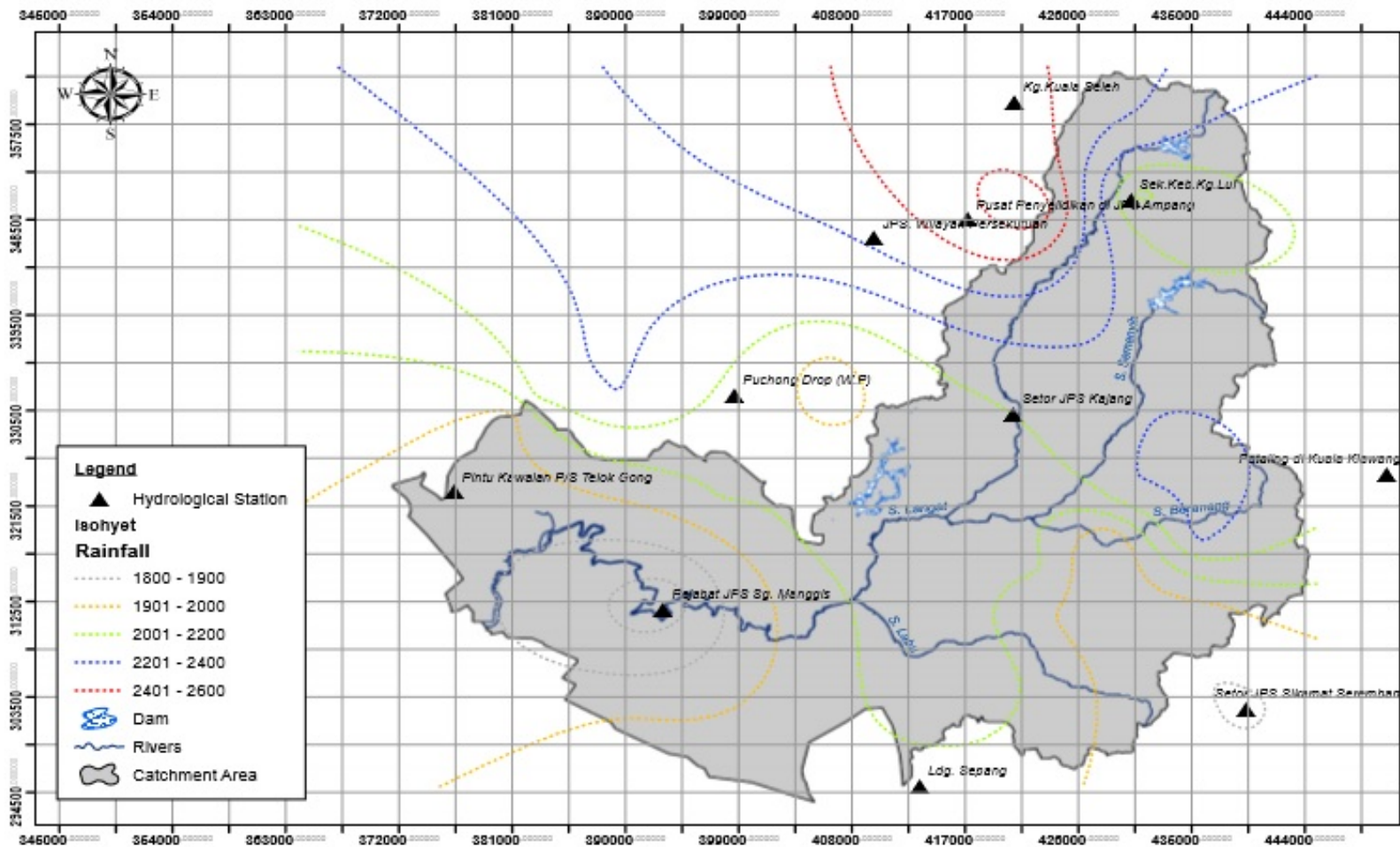


Figure 2.4: Isohyet Map for Sungai Langat Annual Rainfall

Historical flood event

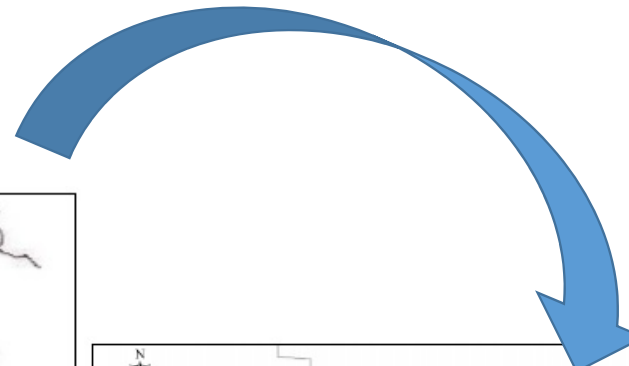
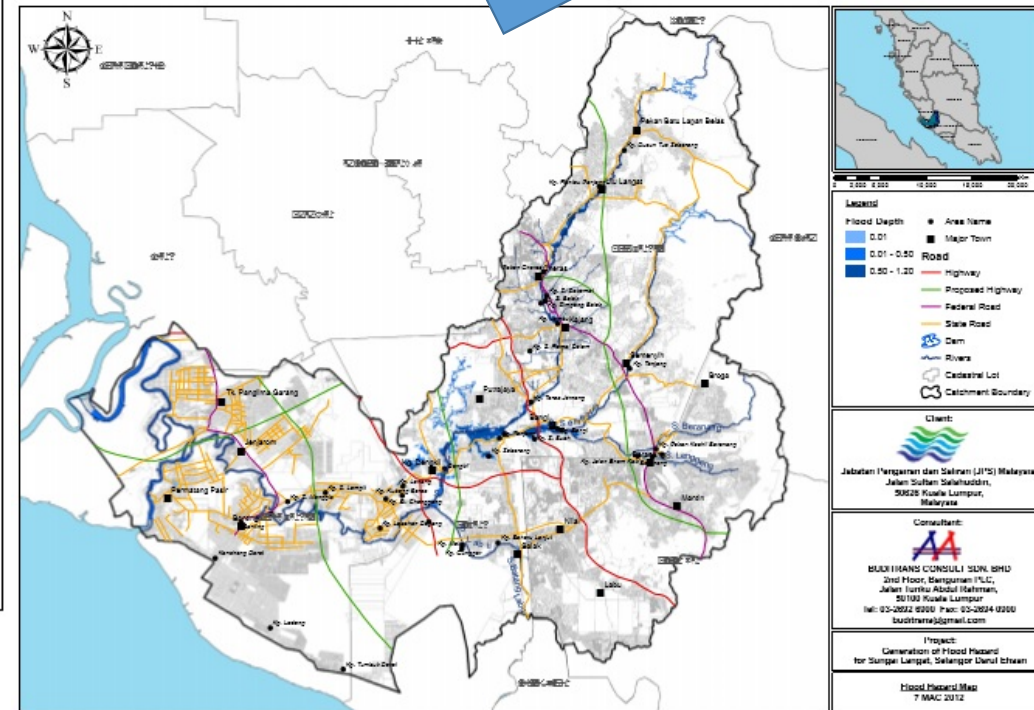


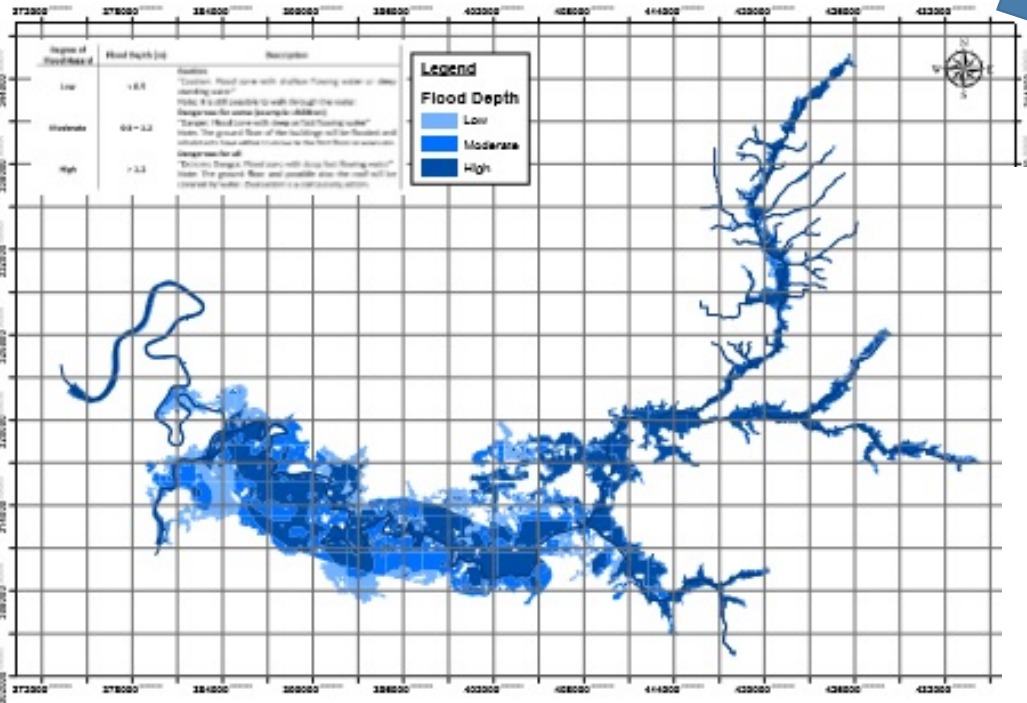
Figure2 : The Envelope of the 1971 worst flood event in the Sungai Langkat River Basin



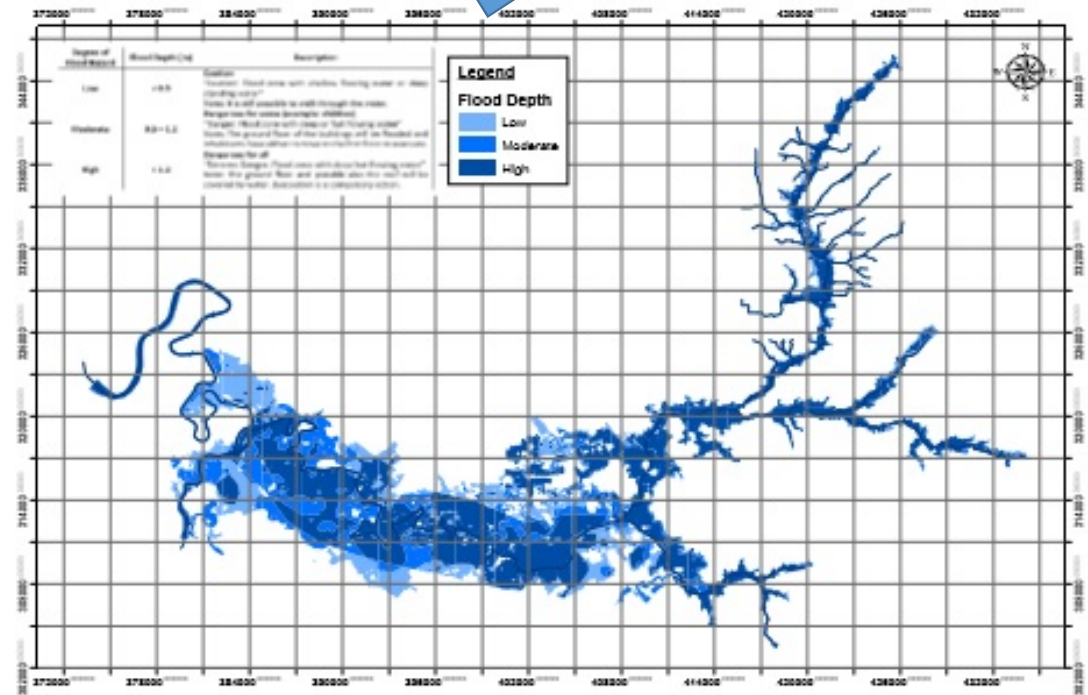
ES.1: Flood Inundation Map for 7th March 2012

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Flood modelling



ES.2: Maximum Flood Extent of 100-Year ARI (with CCF) Design Flood for Ca
Note: Case 1 – Present Drainage Condition with Present Land Use



ES.5: Maximum Flood Extent of 100-Year ARI (with CCF) Design Flood for Case 4
Note: Case 4 – Present Drainage Condition and Proposed Flood Mitigation Works with Future Land Use

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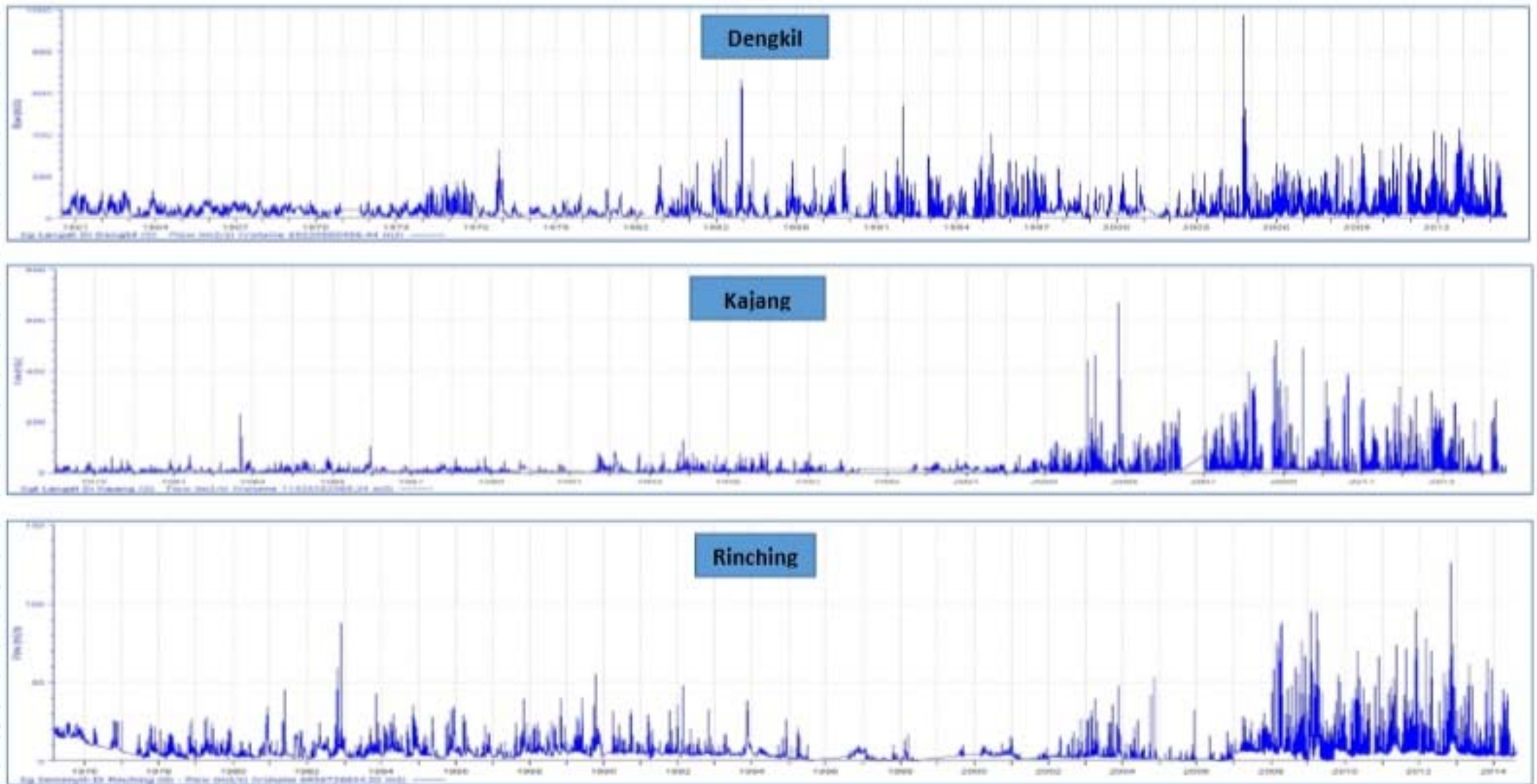
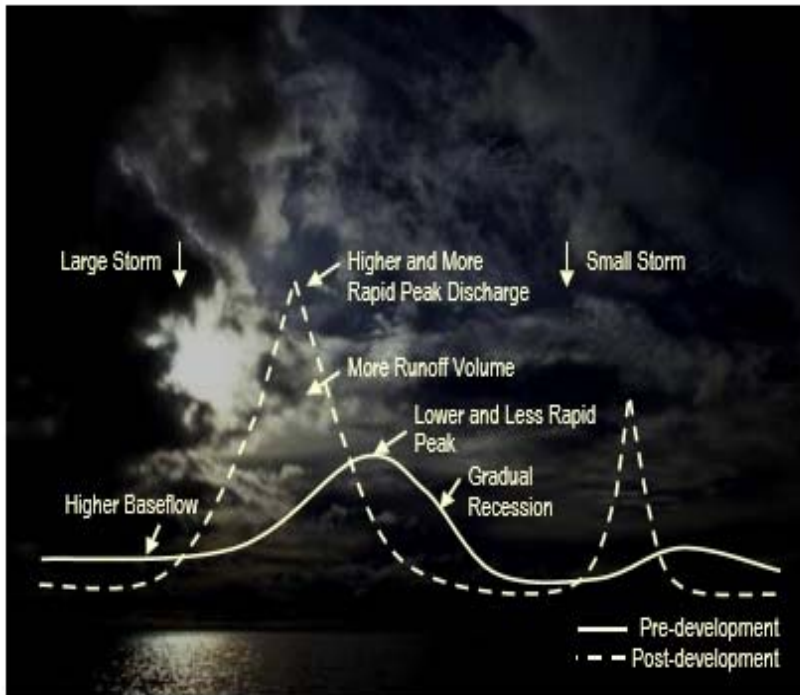


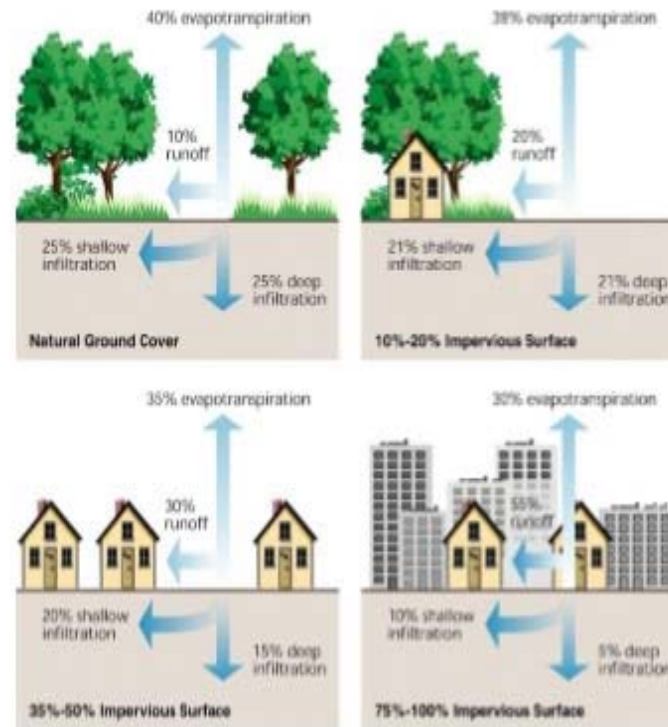
Figure 4.2: Impact of Urbanisation to the Streamflow at Various Location

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The science: Why current land development practices are a problem



Stormwater Hydrograph
Pre-development
Post Development



Impact of Impervious Surfaces



Impact on Hydrologic Cycle

Flood Mitigation Project

State	RBMU		River System	Flood Mitigation Project	Type of Mitigation Works	Project Completion
	No.	Name				
SELANGOR	16	Langat	Sg. Langat	RTB Sg. Langat	River Improvement	On going
			Sg. Langat	Rancangan Membaiki Kuala Langat/Sepang	River Improvement	On-going
			Sg. Semenyih	Rancangan Mengorek Sg. Semenyih	River Improvement	On-going
			Sg. Labu	Detail Engineering Design of Flood Mitigation Project for Sg. Labu, Sepang	River Improvement	On-going
			Sg. Reko	Rancangan Mencegah Banjir Sungai Reko, Hulu Langat	River Improvement	Completed

Table 2.1: Flood Mitigation Project and River Improvement Works in the Study Area

- Langat River Flood Mitigation Plan - Approved budget RM 41 mill

Approaches

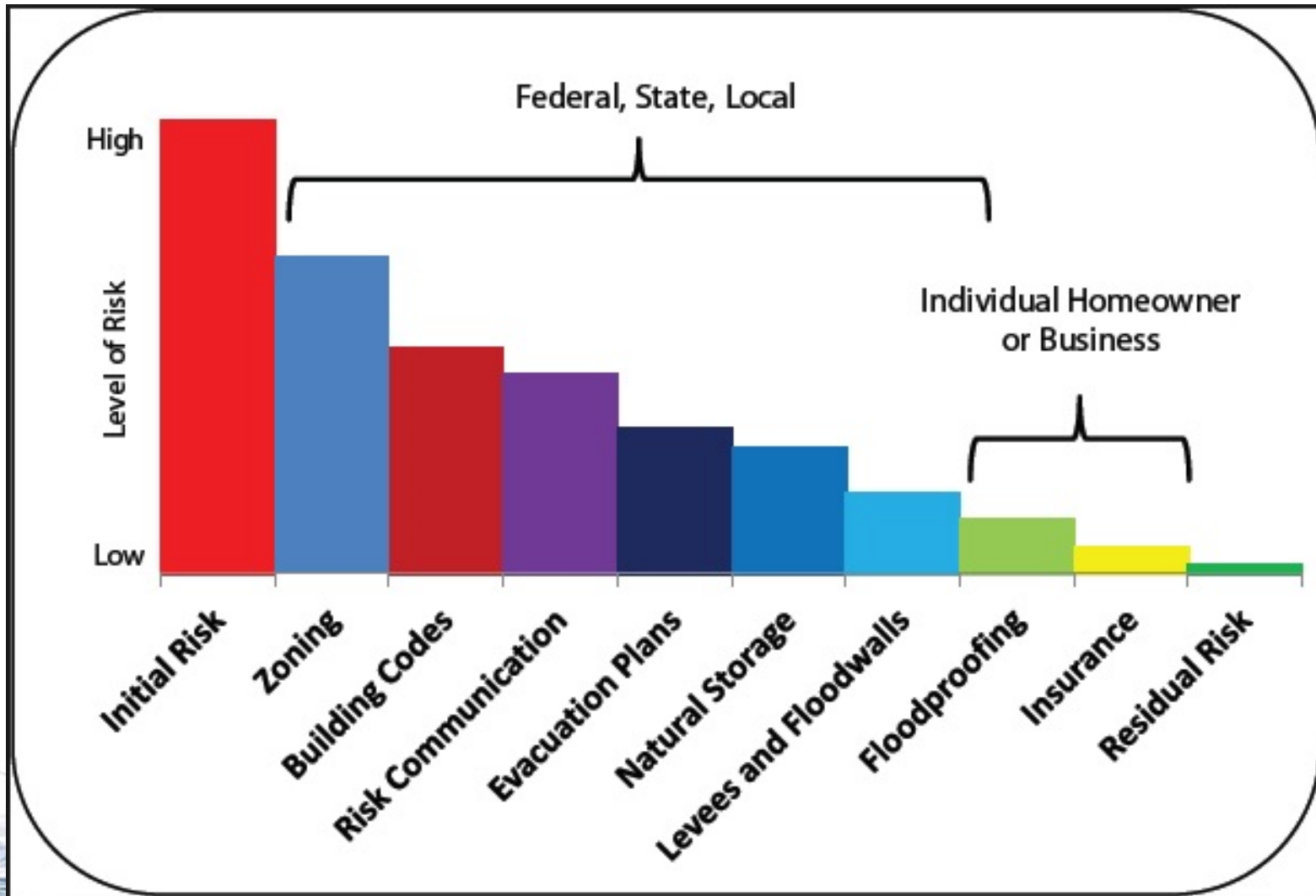
- Basin management; basin modelling and planning
 - ✓ Reduce flood risks, magnitude and damage (national IRBM)
 - ✓ Convert flood water to resource
 - ✓ Environmental enhancement
- Flood mitigation infrastructure development
 - ✓ Optimising the existing infrastructure
 - ✓ Adopt new approaches or innovation; environmental friendly
 - ✓ Increase water body area and volume
 - ✓ Regulate and peak flow control
- Consolidation of project objective



Comments on the project design matrix

- From the perspective of DID, all elements in the matrix have been considered for flood risk reduction;
 - ✓ Flood modelling
 - ✓ Flood hazards map
 - ✓ Priorities the flood mitigation
 - ✓ Community awareness and preparedness
 - ✓ Development concept adopting flood issues
 - ✓ Flood forecasting and warning system
 - ✓ Preparation of flood evacuation plan
- Require more science based solution in relation to water quality, best management practices
- Consideration to review the basin structure plan; population distribution and development pattern

Responsibility



Conclusion

22 interview with
ZULKEFLI HASAN



By CHRISTINA CHIN
sgchrist@thestar.com.my
Photos by IZZAFIQ ALIAS

DATUK Zulkefli Hassan has been heading DID officers nationwide since his appointment on March 21.
The 59-year-old Perakian, who rose through ranks from junior engineer more than three decades ago to Drainage and Irrigation Department (DID) director-general, we know what challenges he has faced. Zulkefli, a father of three, also wanted to drive home the importance of integrity to his personal KPI.
The youthful-looking grandfatherly k healthy jogging but with retirement 1/2 year away, he has his work cut out for him.
Recalling how his 91-year-old police father always stressed on education—regular haircuts—the third of four siblings about his cropped army look, an shares his plans to keep floods and drought at bay.
What's your main water management concern?
Water security because it concerns all sectors. Food, health, energy, industry, domestic sectors all need water. DID formed in 1952.
In the early days, the focus was on crops, farming and the rivers. Today, functions include flood mitigation, irrigation, drainage, coastal zones, hydrology and resources. But it's only now that we're starting on water resources because with climate change, we must.
Take food for example—we import almost

focus 23
Water security for future generations

Waterman on a mission

To mark the recent World Environment Day, Sunday Star caught up with newly-appointed Drainage and Irrigation Department director-general Datuk Zulkefli Hassan to talk about his plans. The man with a flood-fighting mission is also making water security his priority.

- Water security
 - water used → water demand
 - water storage → infrastructures → flood → drought
 - management → basin unit → systems

tion for flood mitigation works there. Projects are also on-going in Sungai Muar, Sungai Kemaman and Sungai Pahang.
We know roughly how much rain each state gets in a year. The bulk of it is in December.
As of June 2, Sabah and the peninsula have received between 24% and 30% of the year's average rainfall, but it's already up to 78% in Sarawak. So based on statistics, Sarawak is safe because the amount of rainfall has almost reached the estimated level for the entire year.
But it's not that easy. When I was Pahang DID director, the big floods happened in Kuantan. On average, the rainfall in December is 300mm per month but during the big floods, we had 1,000mm in three days. So every year, we carry out preparations but how much it rains is out of our control.
You turn 60 next year. Are you looking forward to retirement?
I'll retire August 2016 so I have about a year to achieve my goals. The previous D-G and I have relatively short tenures but the next guy who takes over should be given at least four years to carry out his duties.
I've already identified four possible successors and am grooming them. It's important for continuity and implementation of projects.
I like to travel, so maybe when I retire—probably in Ipoh—I'll finally get to do that with my wife. I'd like to visit New Zealand. For now, I'm content watching T.V. on Astro. I like exotic locations like Peru and the Bahamas.

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GEOSS-IFI Symposium in Tokyo, Japan

The international flood initiative and its new strategy was briefly introduced by Prof Koike.

Then what was expected for each national participant was introduced.

National Participants are requested to :

1. 10 January IFI session to give a 10 min presentation (refer to doc 05_IFI_planning WS 20161201.doc p2 from 13:00-14:30) :
 - Flood situation on respective river basin
 - Comments on the matrix

