

Dhaka City : The Present and the Future

Focusing on Eastern Dhaka

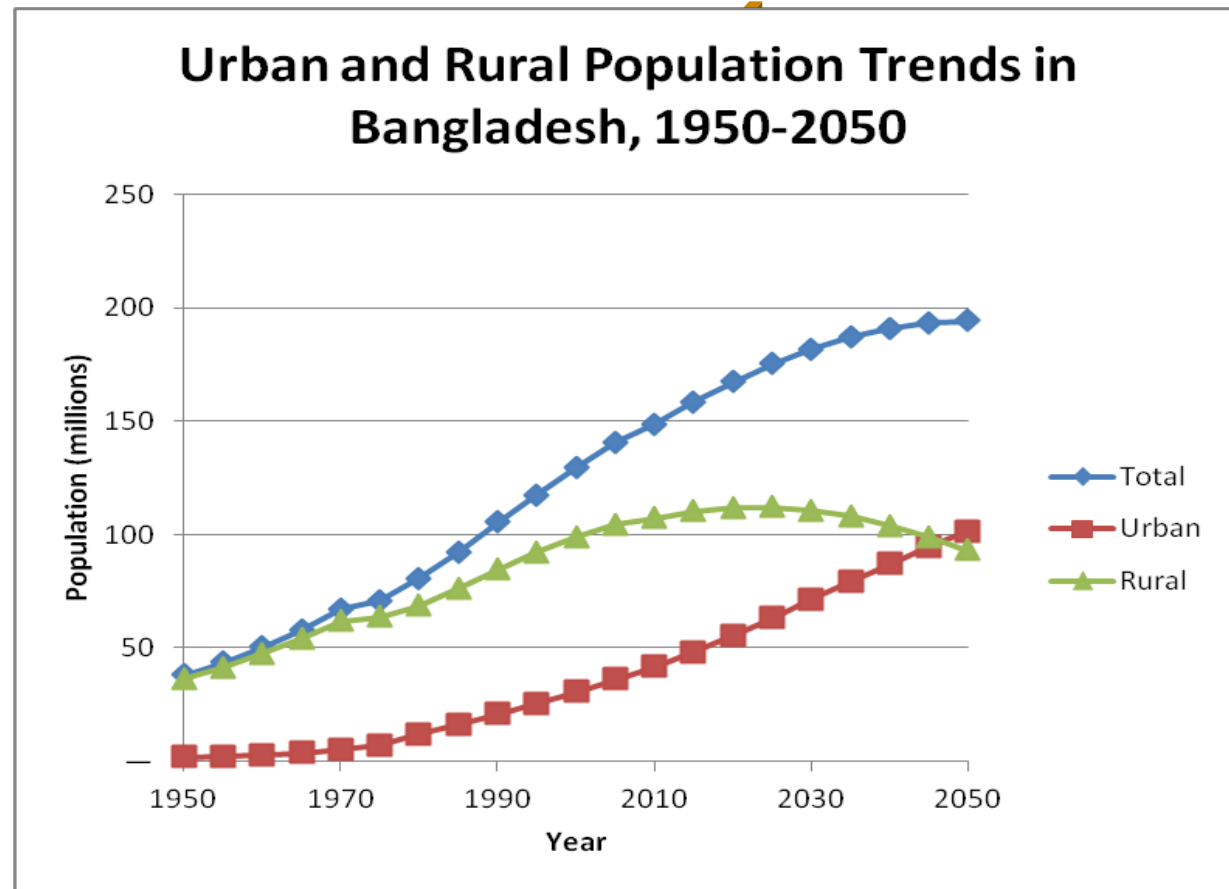
S M Mahbubur Rahman

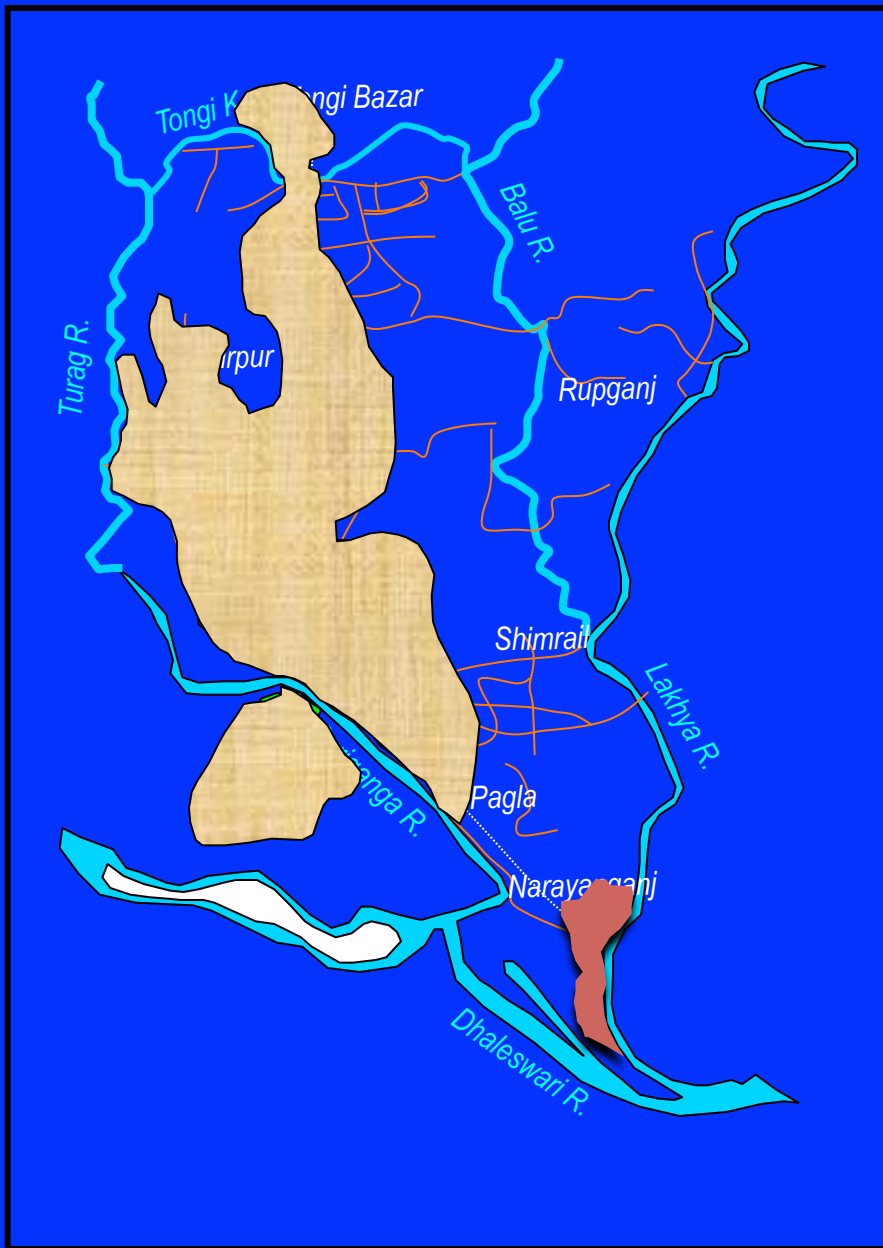
Director, WRP, IWM

- More people living in urban areas
- Expansion of urban areas
- More people and assets vulnerable to urban flood

Urban population will increase to 73 million by 2025, and 136 million by 2050. Major migration to Dhaka, Chittagong, Khulna & other cities

Water supply, sanitation and drainage problems will be major issues





Evolution of Dhaka City

Moghul period

British period

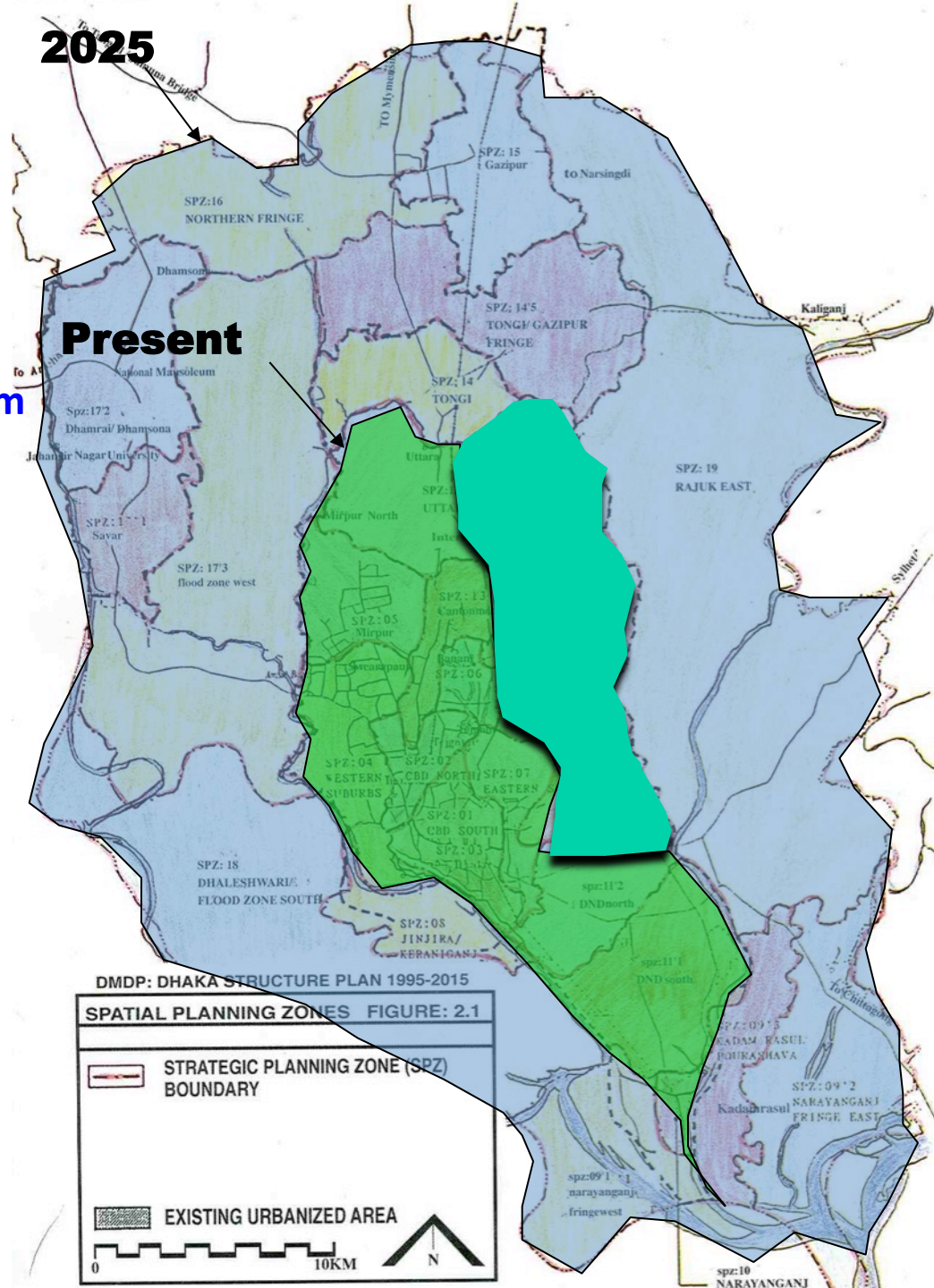
Pakistan period

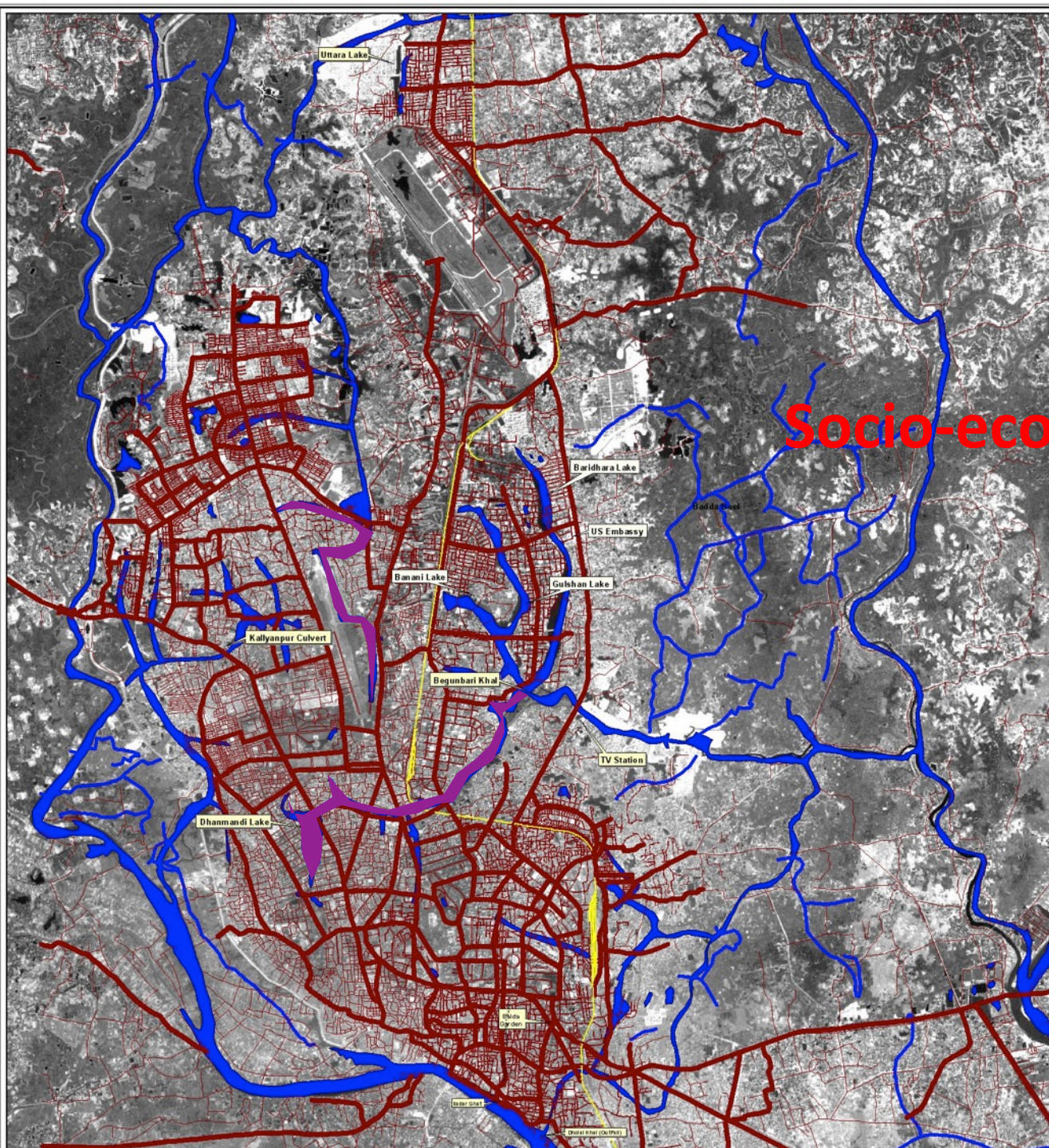
Bangladesh period 1990

City Expansion

Present area: 360 sq km
 Projected area in 2025: >1500 sq km

Present population: 14.0 mill
 Projected population in 2025: >25 mill





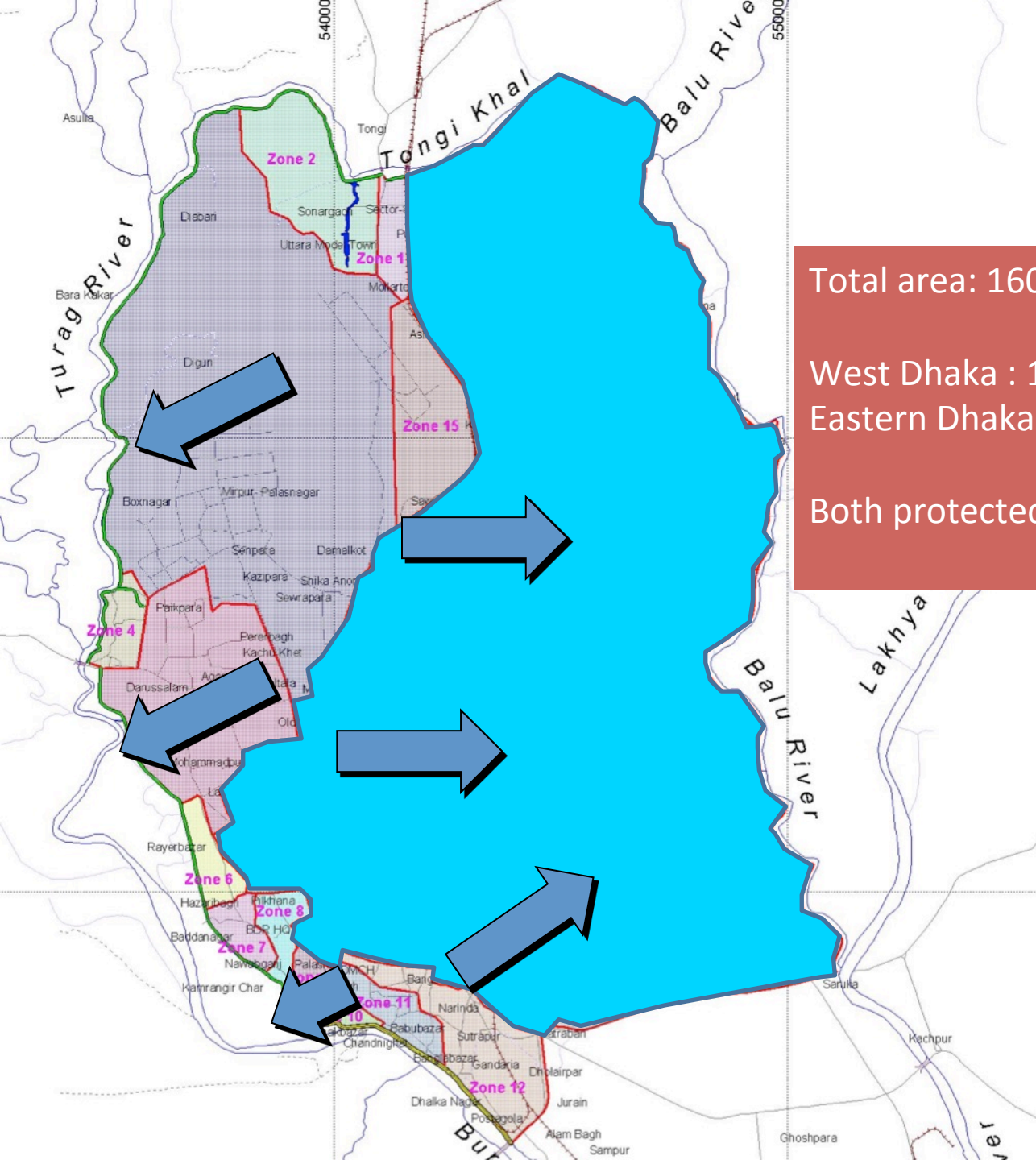
Natural drains-60
years back

Natural drains
intervened

Socio-economic changes

Large-scale
Urbanization

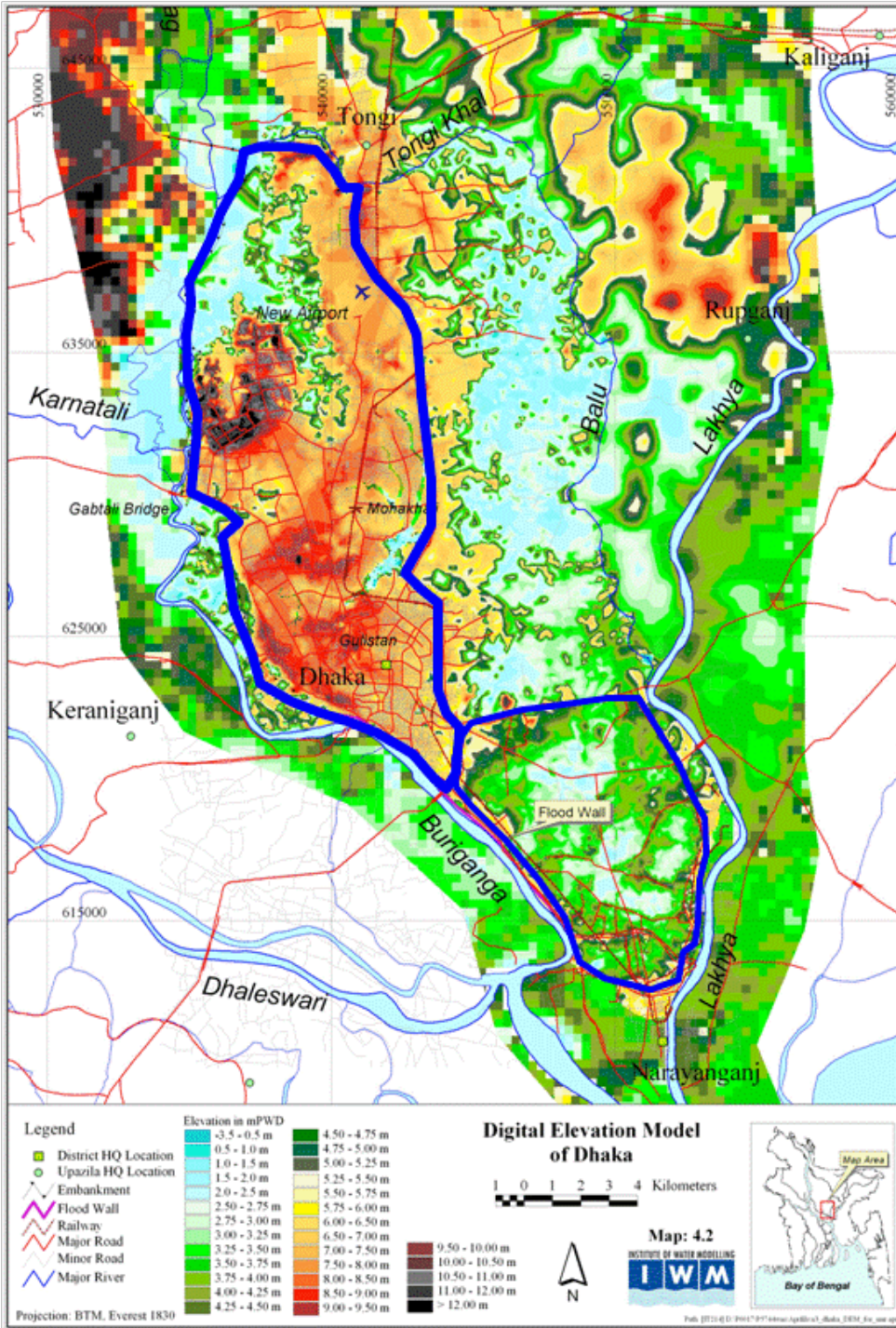
Dhaka
Drainage System

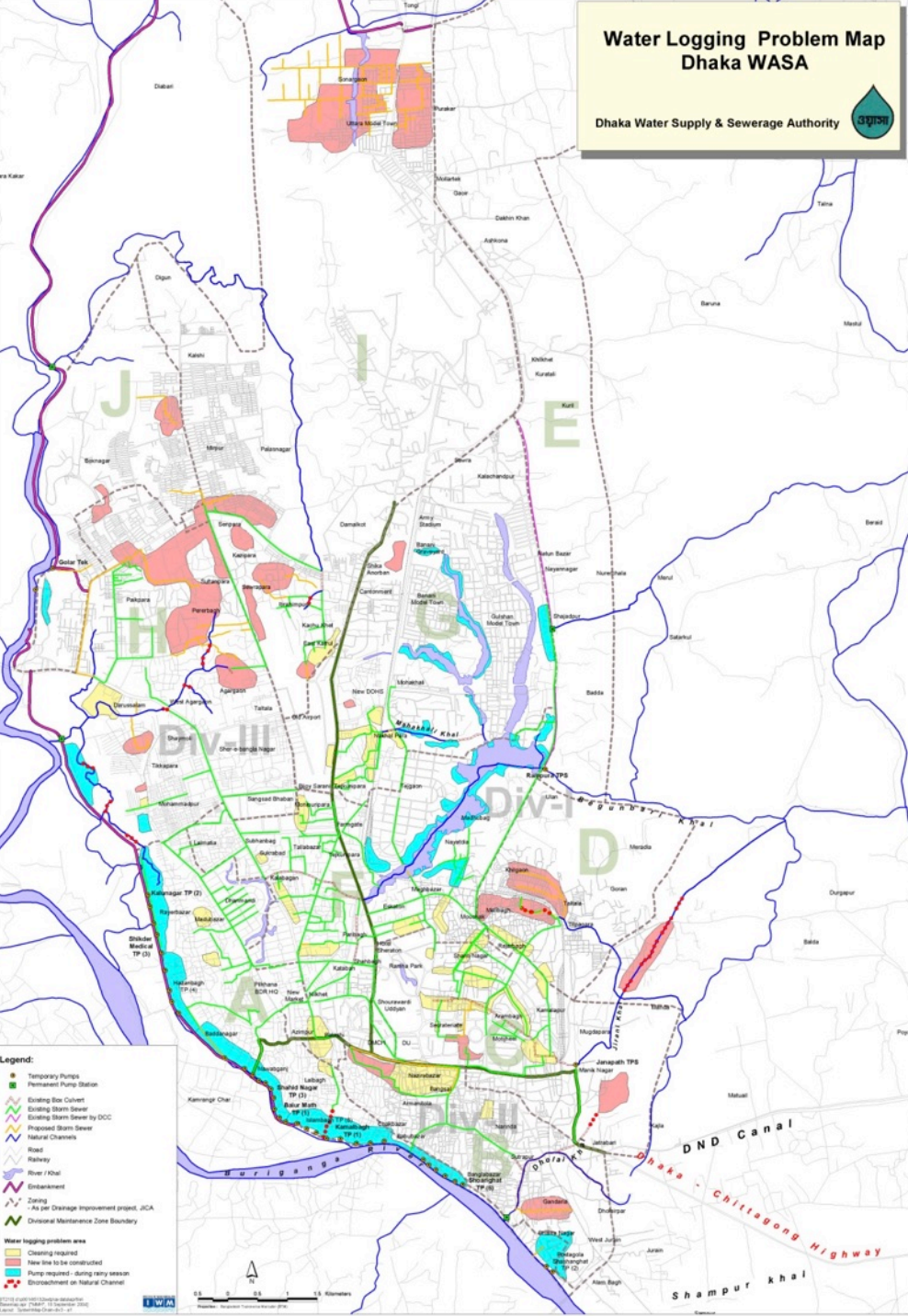


Total area: 160 km²
West Dhaka : 136 km²
Eastern Dhaka: 124 km²
Both protected and unprotected part

Floods in Dhaka City

- Urban Flood
- River Flood





Water Logging & Drainage Congestion in Dhaka City

14 locations in western Dhaka experience water logging



Floodwater near Palashi



Floodwater near Sheraton Hotel



Floodwater near Eijoy sharani



Floodwater in front of Air force officers mess

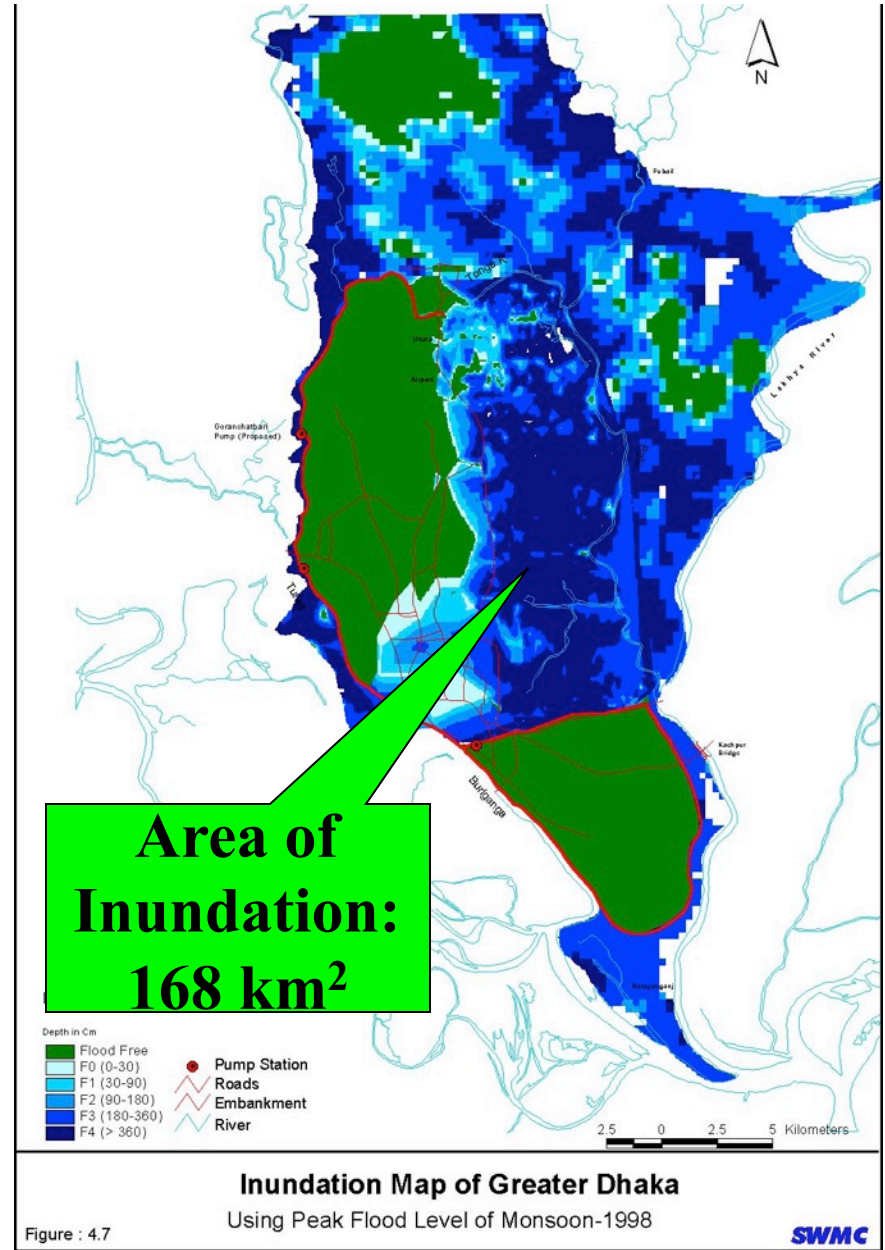
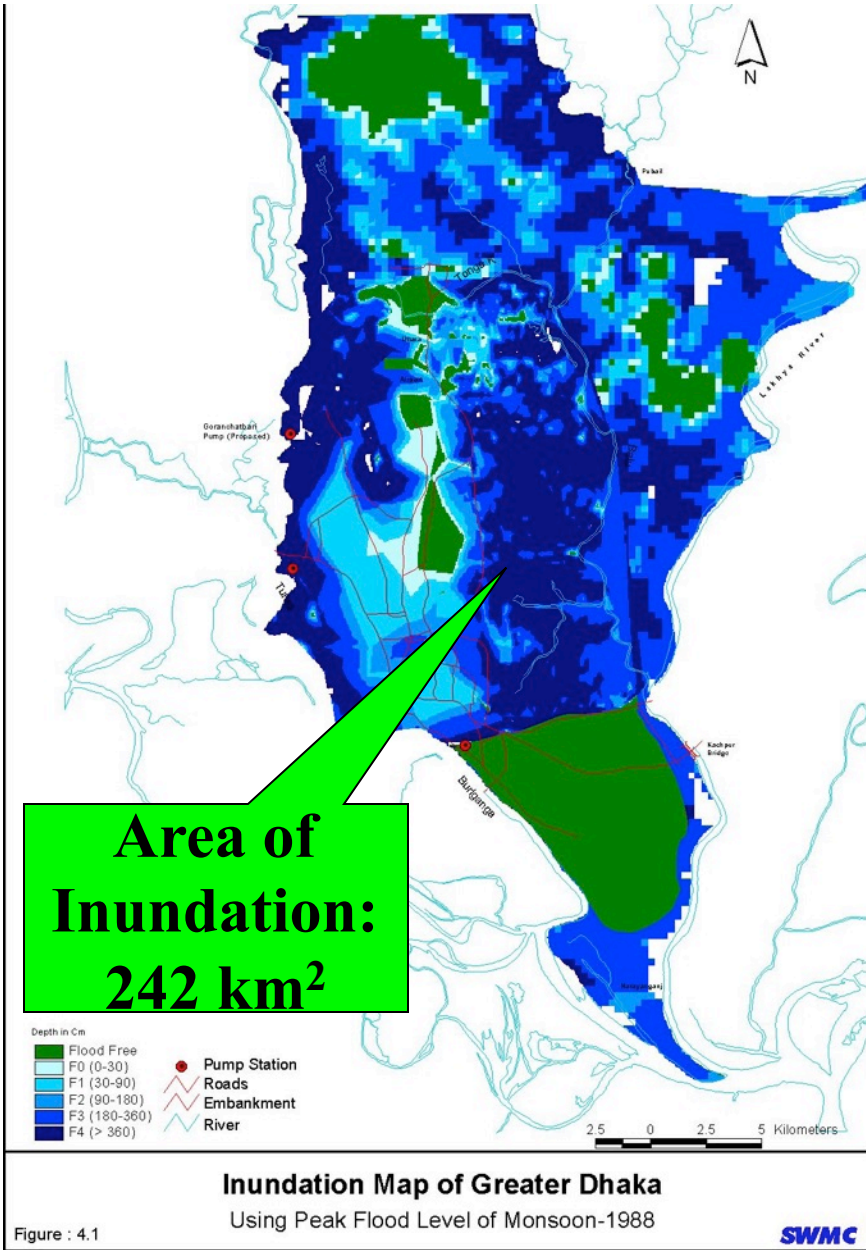
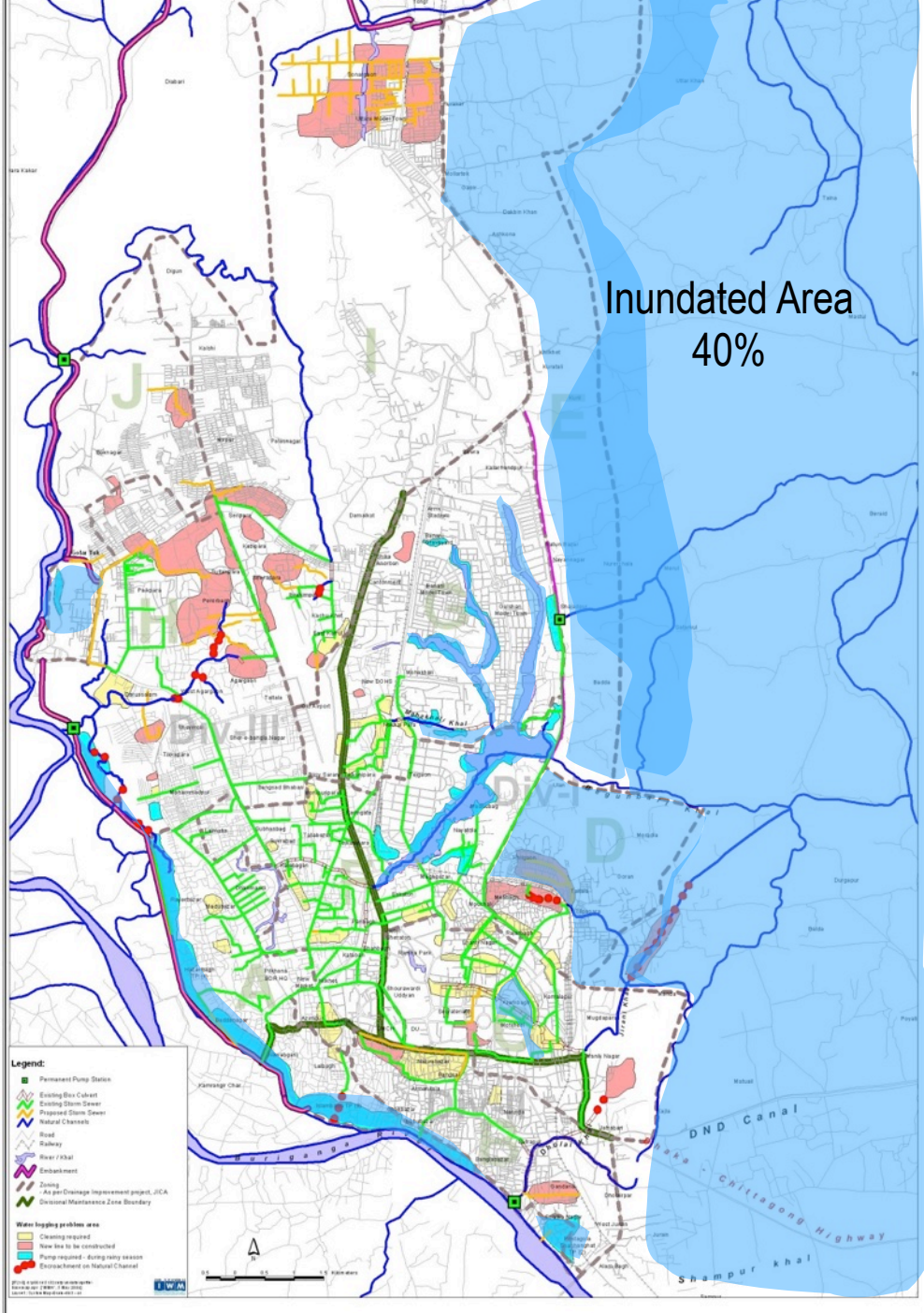


Figure : 4.1

Figure : 4.7

River Flood 2004 (July 21 – August 10)



Flood water near Education Board



Flood water near Azizpur area

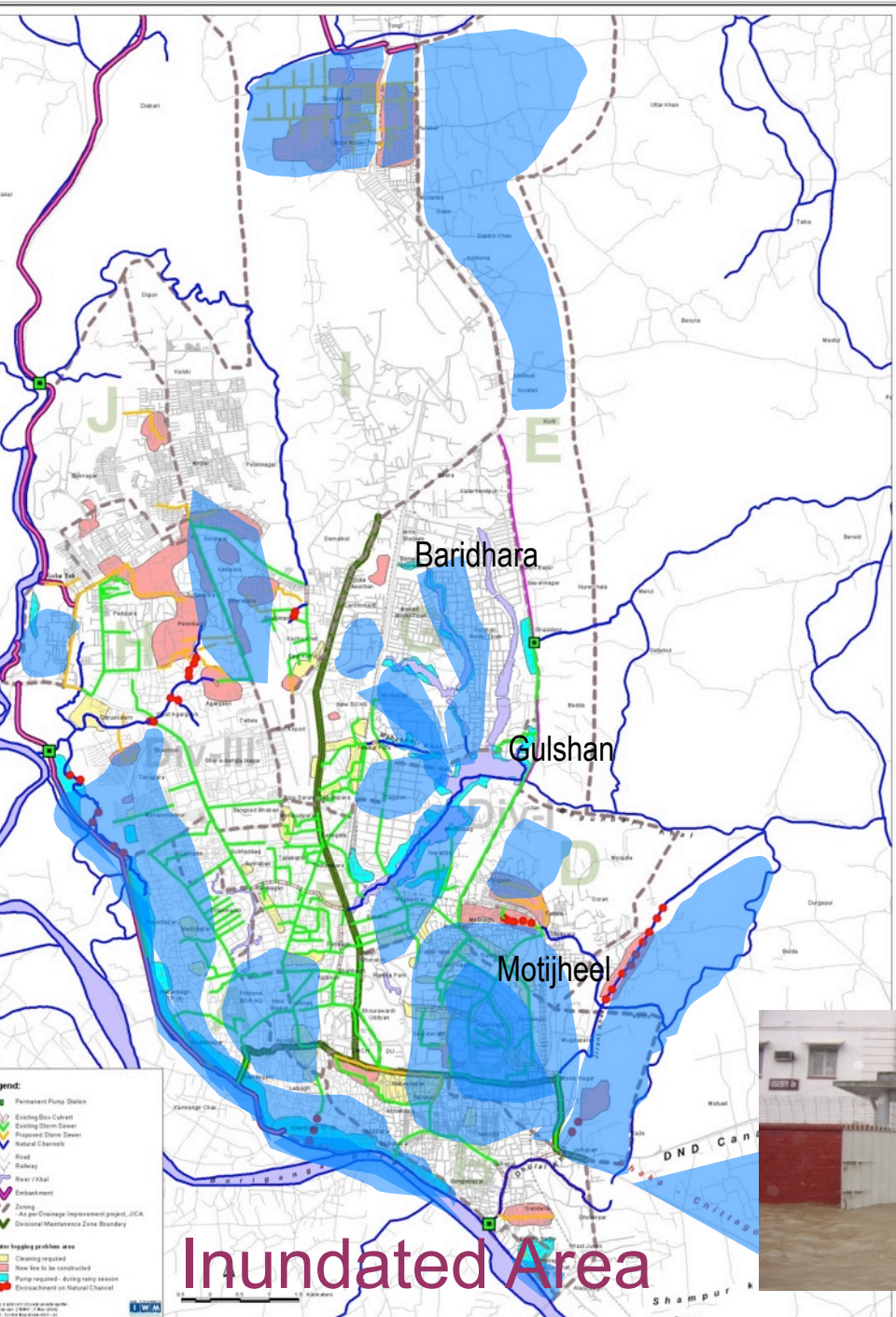


Flood water near University area



Flood water near New Market area

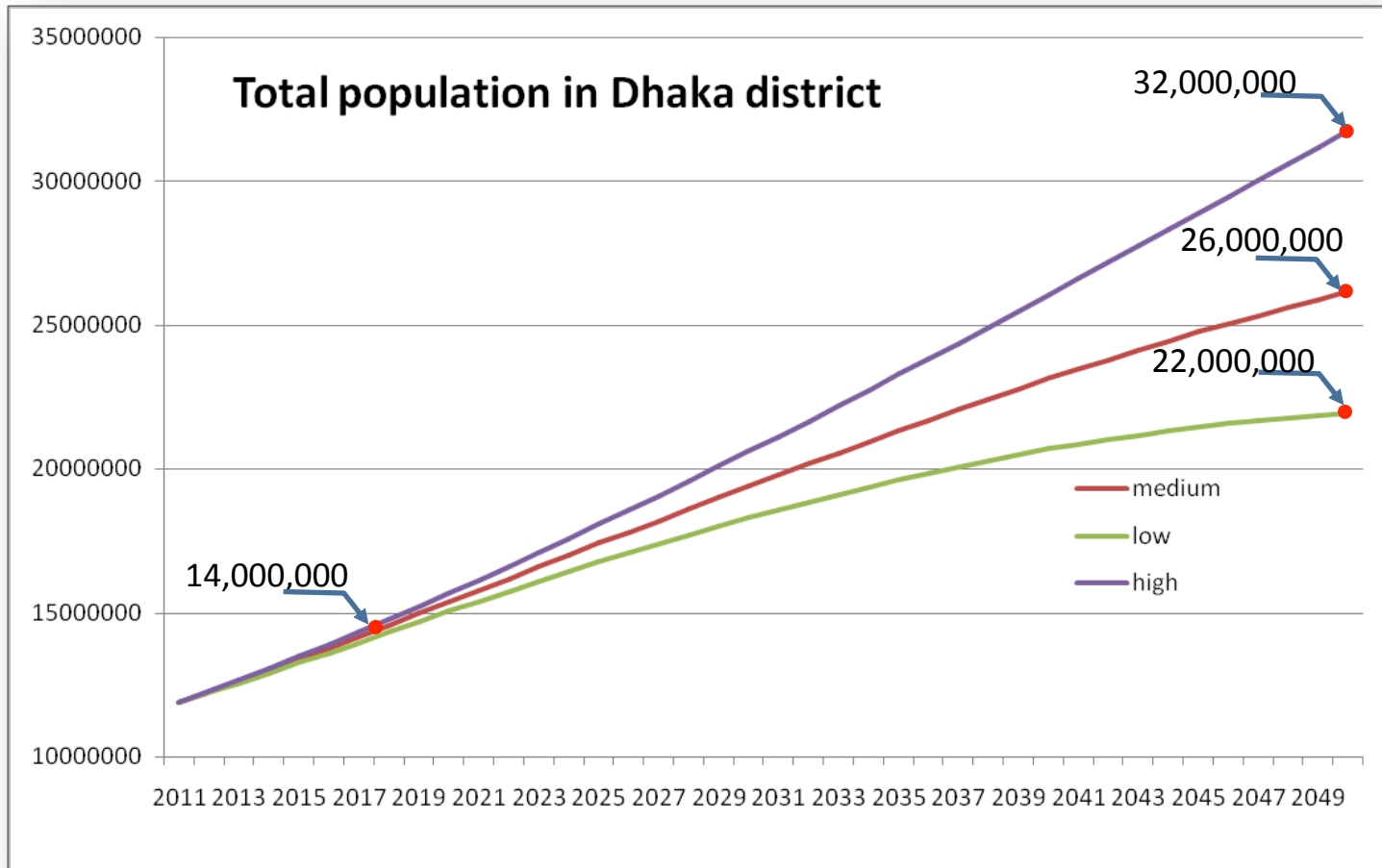
Urban Flood 2004 (September 13 to 16)



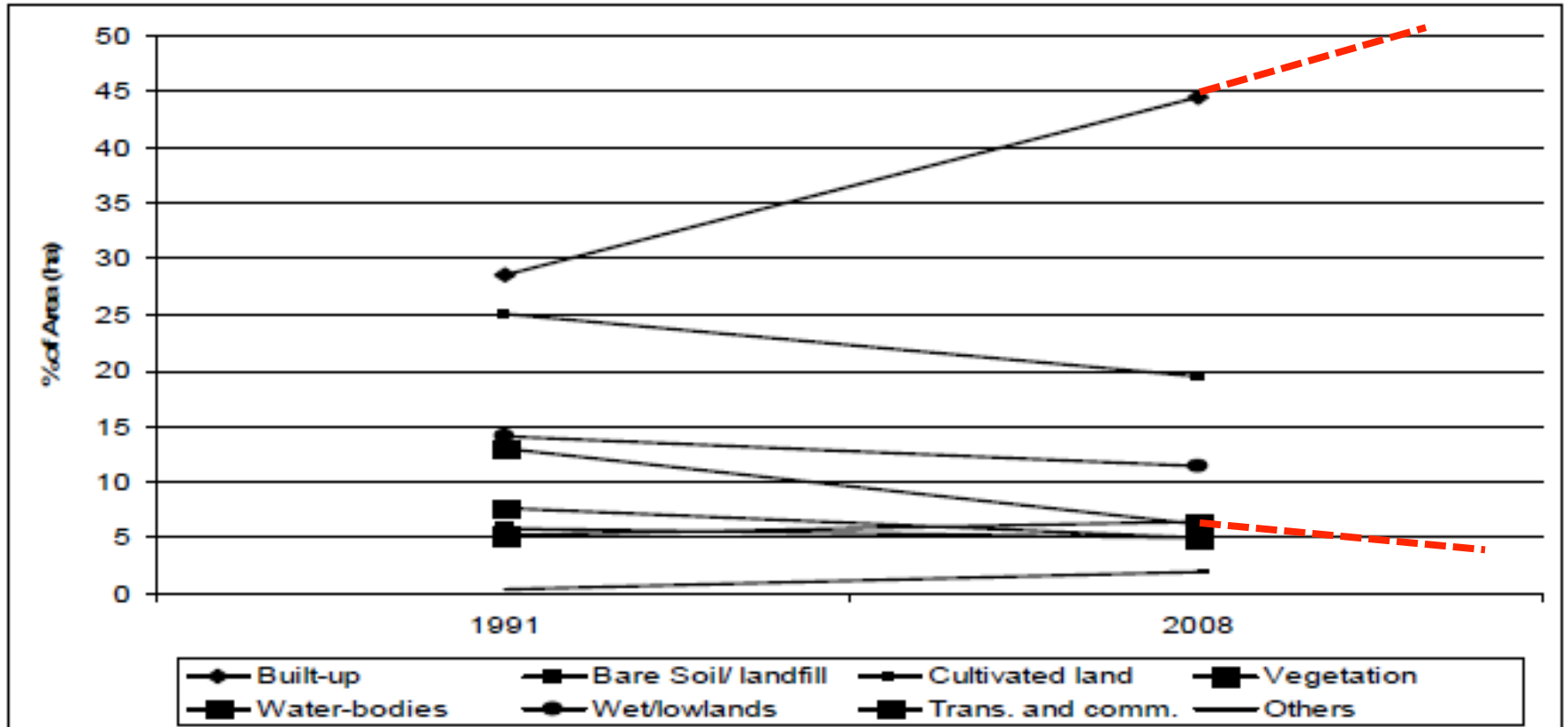
Rainfall in September 2004 in mm		5 days Cumulative Rainfall in mm	Average Monthly Rainfall in September
11 th Sept	29	600	297
12 th Sept	156		
13 th Sept	341		
14 th Sept	23		
15 th Sept	51		



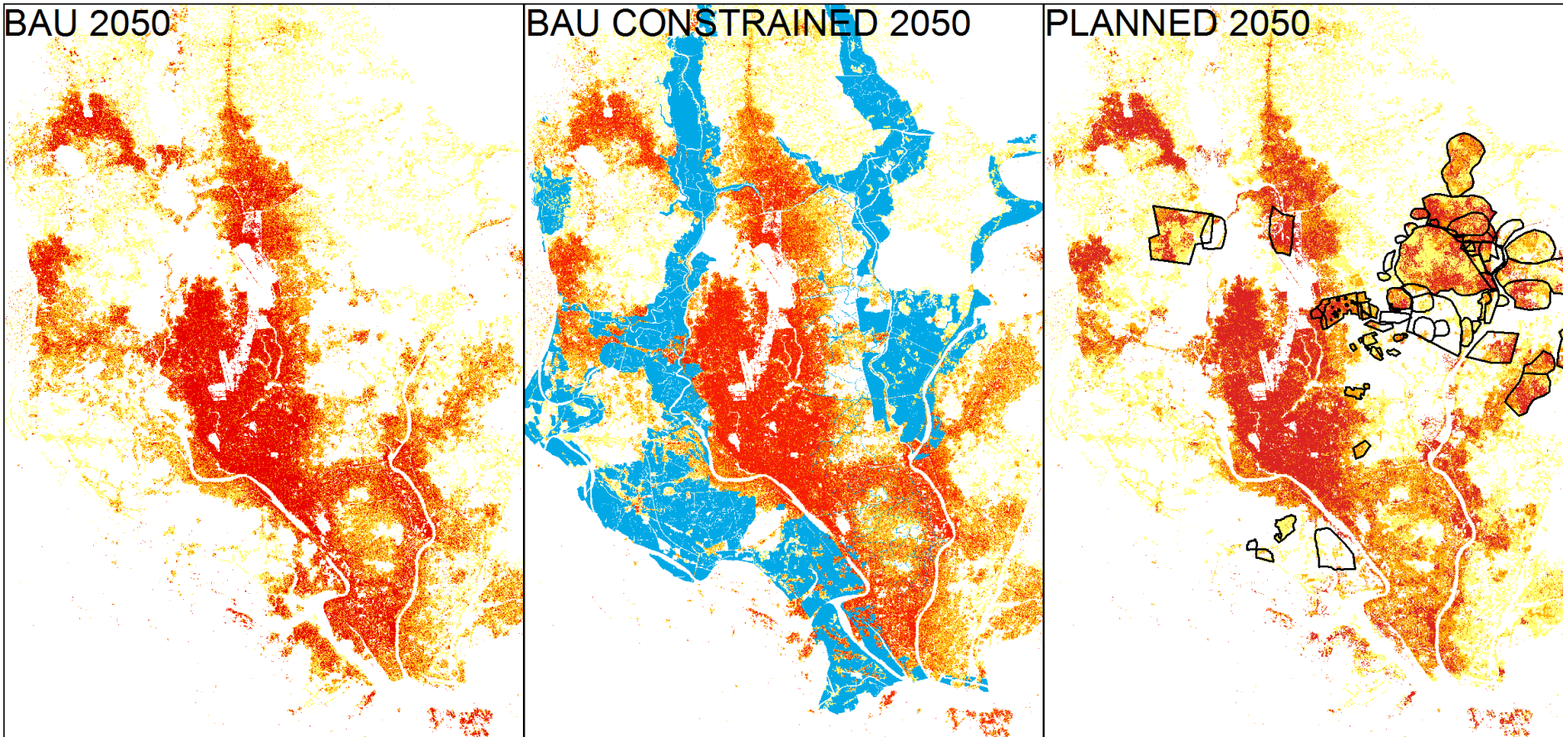
Population Projection of Dhaka



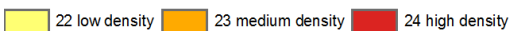
Landuse change trends in Dhaka city 1991 – 2008



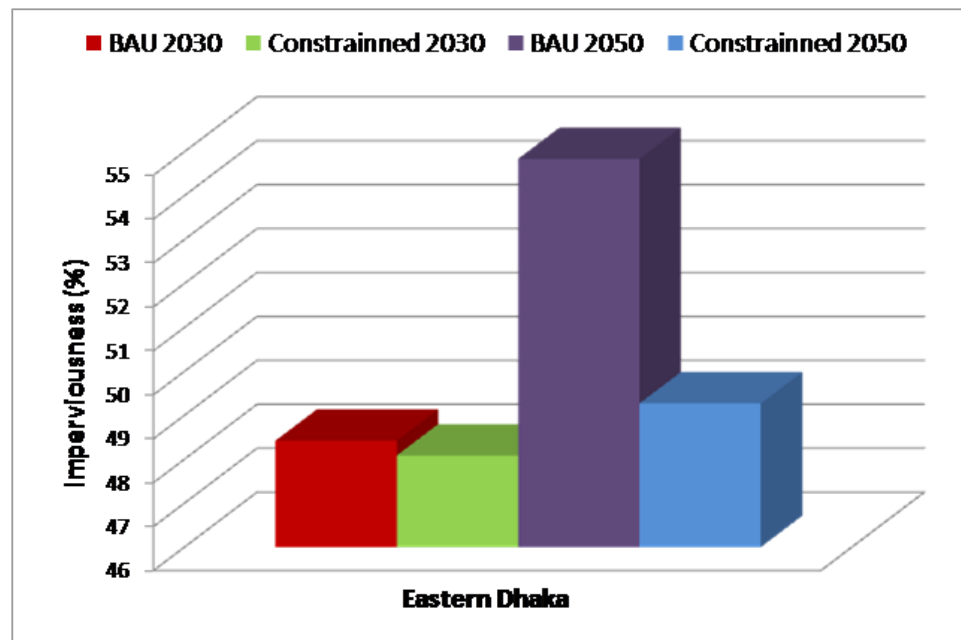
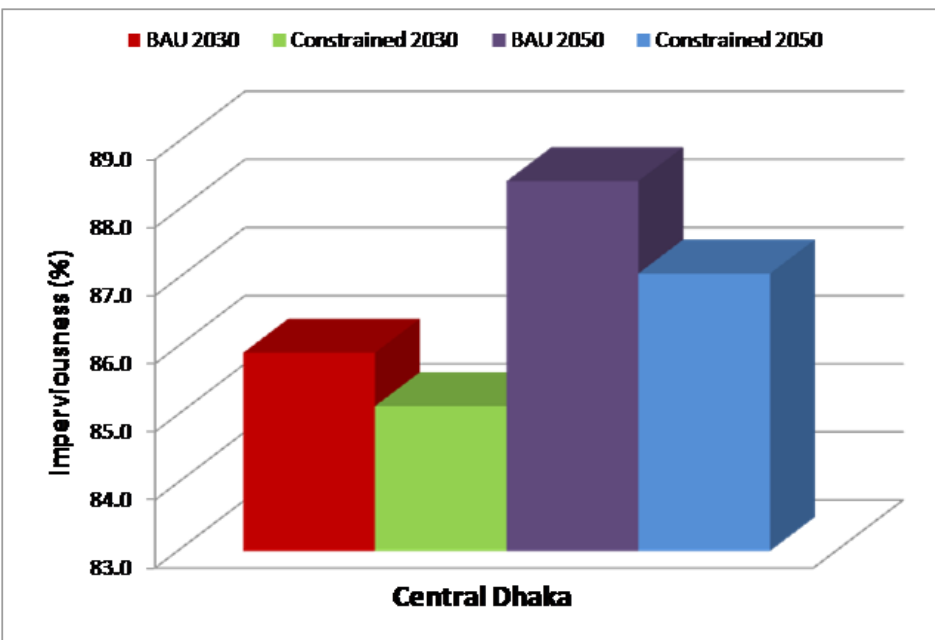
Urban Growth Modelling



Urban Landcover



Urban Growth Modelling

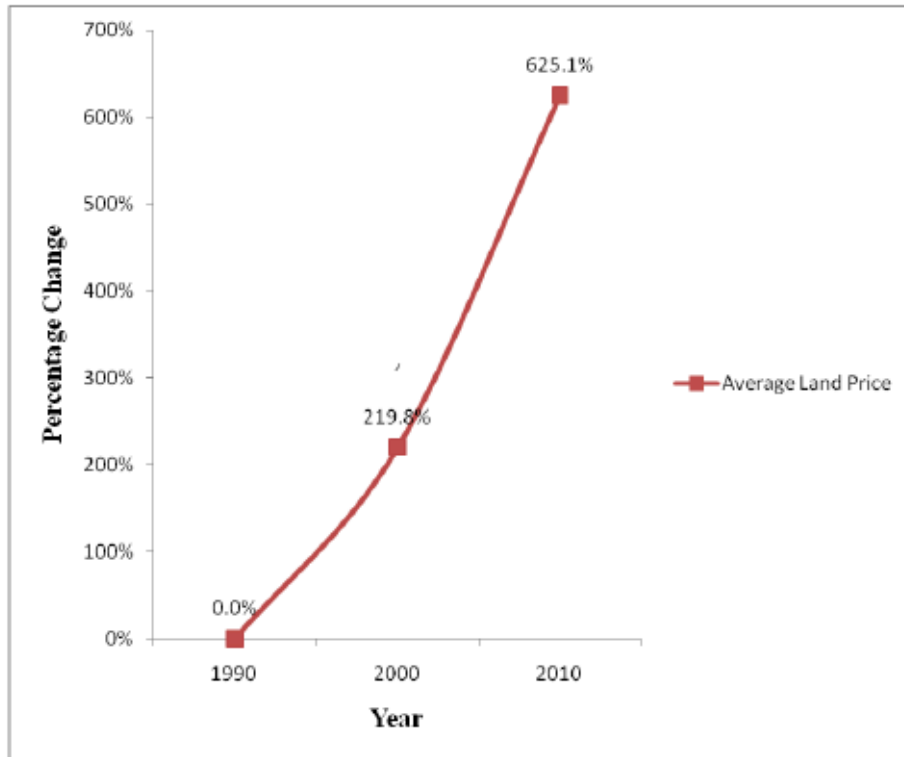


	Low priced land	Medium priced land	High priced land
Ave. Land price million Tk./sq m	0.009	0.02	0.04
Ave. main road width, m	16	23	31
Ave. access road width, m	2	3	5
Ave. Duration of water logging, hr	17	6	3



BUET Study, 2005

Land price hike trend in Dhaka city 1990 – 2010



Source: Statistical Yearbook, Bangladesh Bureau of Statistics (BBS)

Area	Price of land (Taka/Katha)				% Increase in price over the past two decades	
	Year				Between 1990-2000	Between 2000-2010
	1975	1990	2000	2010		
Baridhara	25,000	600,000	5,000,000	40,000,000	733%	700%
Gulshan	25,000	600,000	2,200,000	25,000,000	267%	1036%
Banani	25,000	600,000	2,000,000	15,000,000	233%	650%
Mahakhali	25,000	600,000	1,800,000	12,000,000	200%	567%
Dhanmondi	25,000	600,000	2,200,000	20,000,000	267%	809%
Lalmatia	20,000	600,000	1,800,000	15,000,000	200%	733%
Azimpur	175,000	600,000	1,600,000	5,500,000	167%	244%
Mohammadpur	25,000	500,000	1,200,000	7,000,000	140%	483%
Shantinagar	20,000	500,000	1,500,000	10,000,000	200%	567%
Shamoli	17,500	300,000	1,000,000	4,500,000	233%	350%
Uttara	20,000	300,000	1,000,000	7,500,000	233%	650%
Cantonment	20,000	400,000	1,000,000	7,500,000	150%	650%
Komlapur	17,500	400,000	800,000	4,000,000	100%	400%
Gendaria	10,000	400,000	700,000	3,500,000	75%	400%
Basabo	2,000	300,000	800,000	3,500,000	167%	338%
Kollanpur	17,500	300,000	800,000	3,200,000	167%	300%
Mirpur	10,000	200,000	700,000	4,000,000	250%	471%
Badda	4,000	200,000	600,000	3,000,000	200%	400%
Goran	4,000	200,000	600,000	2,600,000	200%	333%
Demra	4,000	200,000	600,000	18,000,000	200%	2900%
Motijheel	50,000	1,200,000	3,500,000	20,000,000	192%	471%
Kawran Bazar	41,500	1,000,000	2,500,000	15,000,000	150%	500%

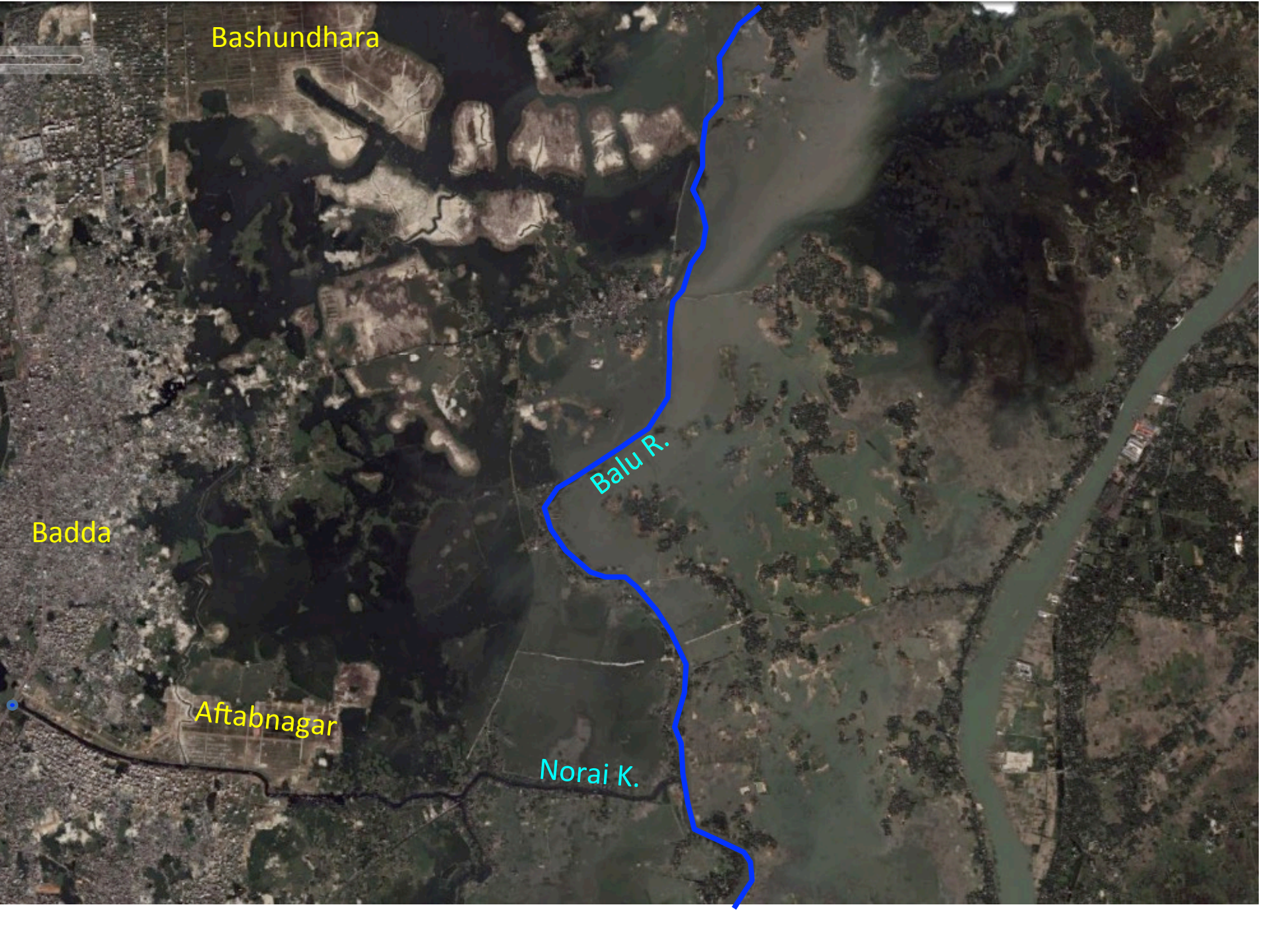
Bashundhara

Badda

Aftabnagar

Balu R.

Norai K.



11/17/2016

Bashundhara

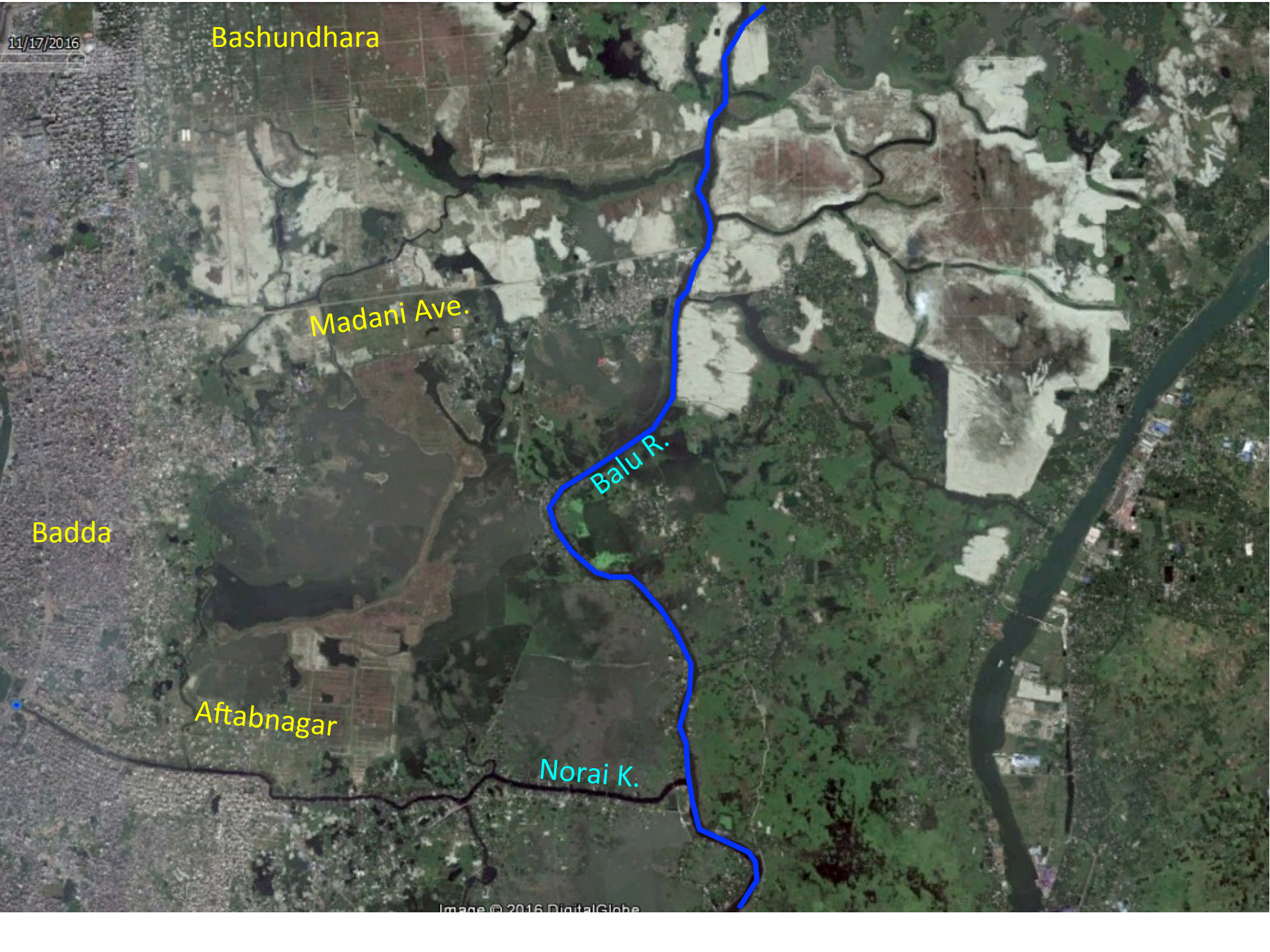
Madani Ave.

Balu R.

Badda

Aftabnagar

Norai K.

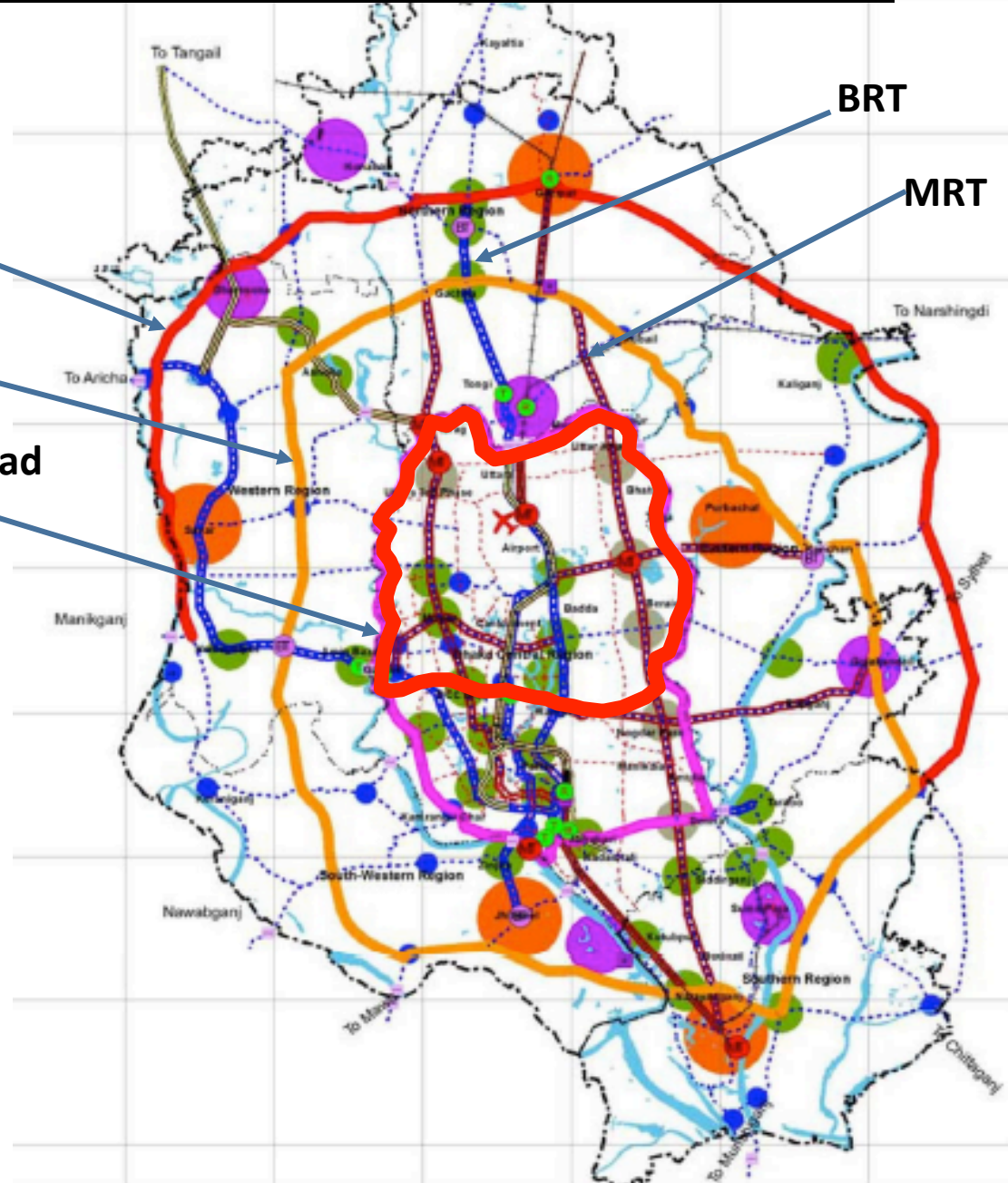


Conceptual Structure Plan of RDP - RAJUK

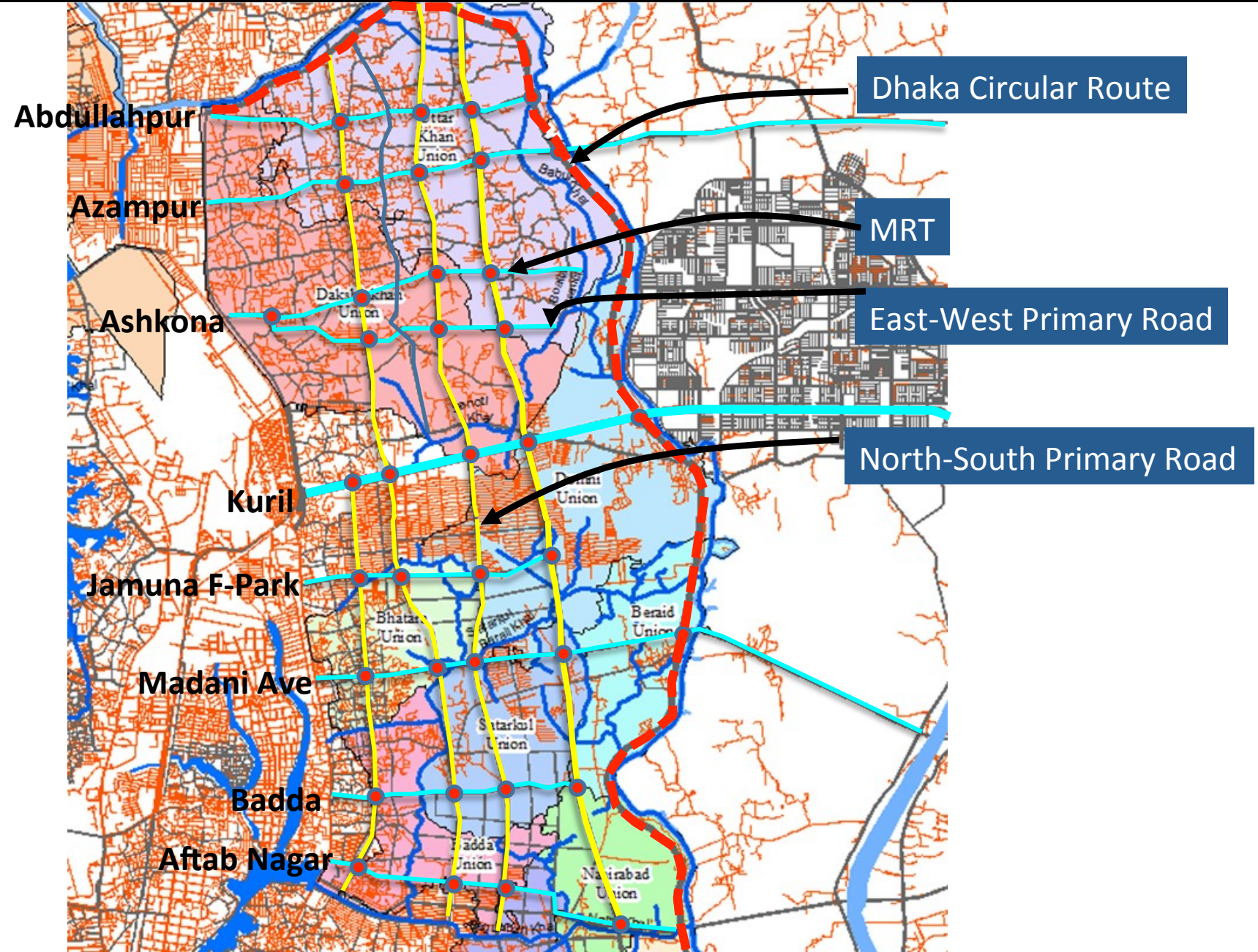
Outer ring road
129 km

Middle ring road
108 km

Inner ring road
73 km



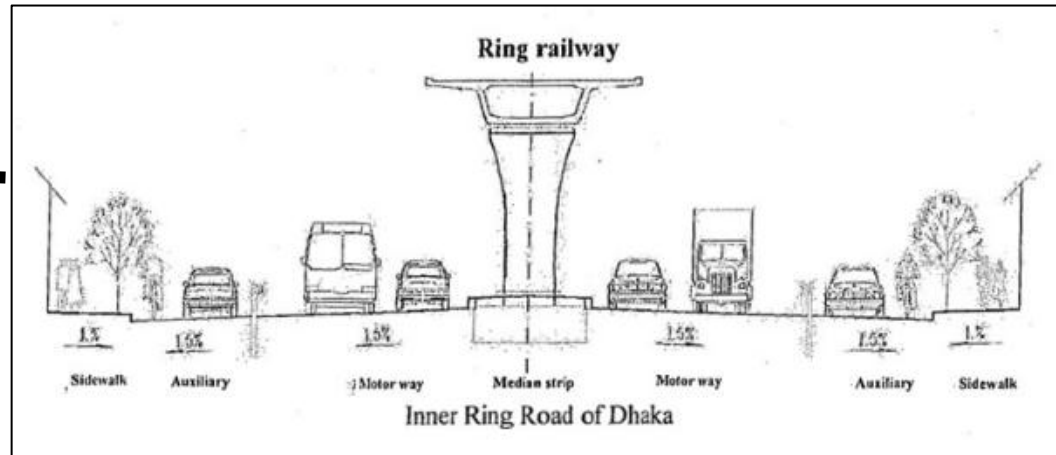
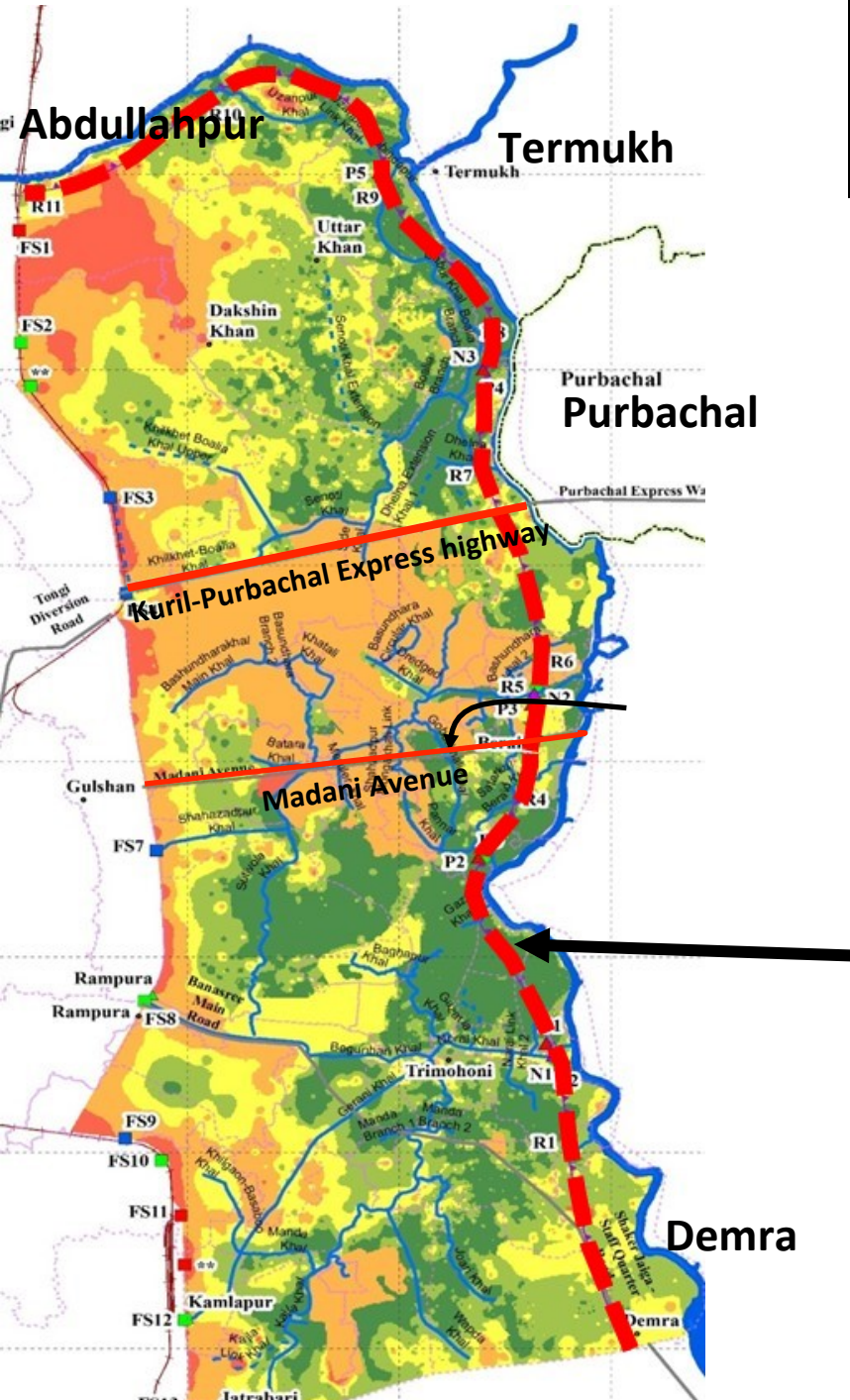
Strategic Transport Plan by DTCA | MoR&B



Dhaka Eastern Bypass Project BWDB | RHD | BR

24 km Flood Embankment, Four Lane Highway, flyover & Elevated Railway

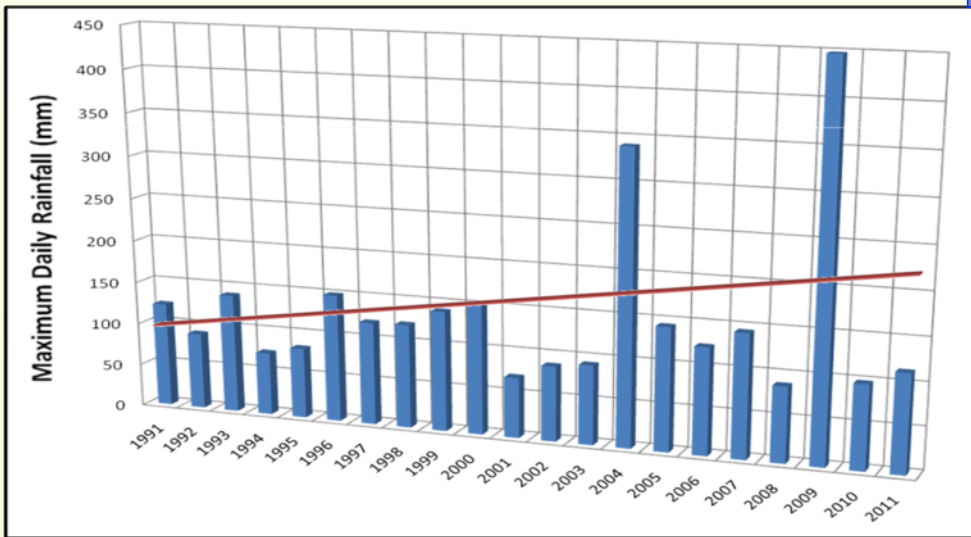
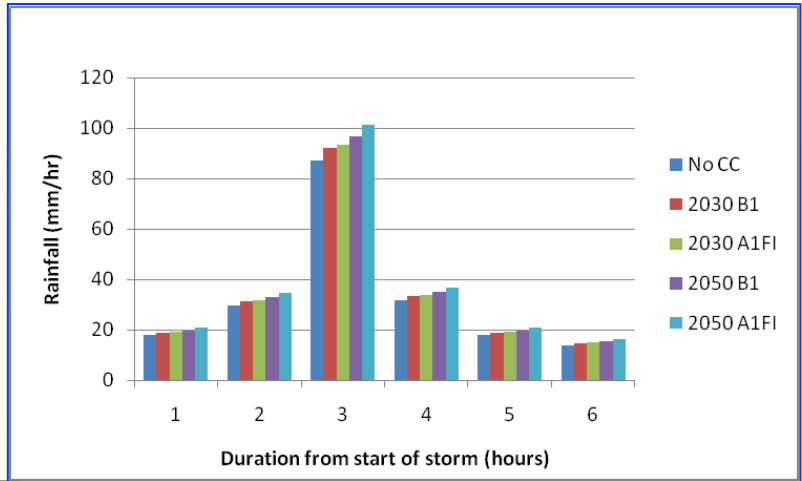
83 km Khal & Drainage Channel Improvement



Very Uneven Population Density



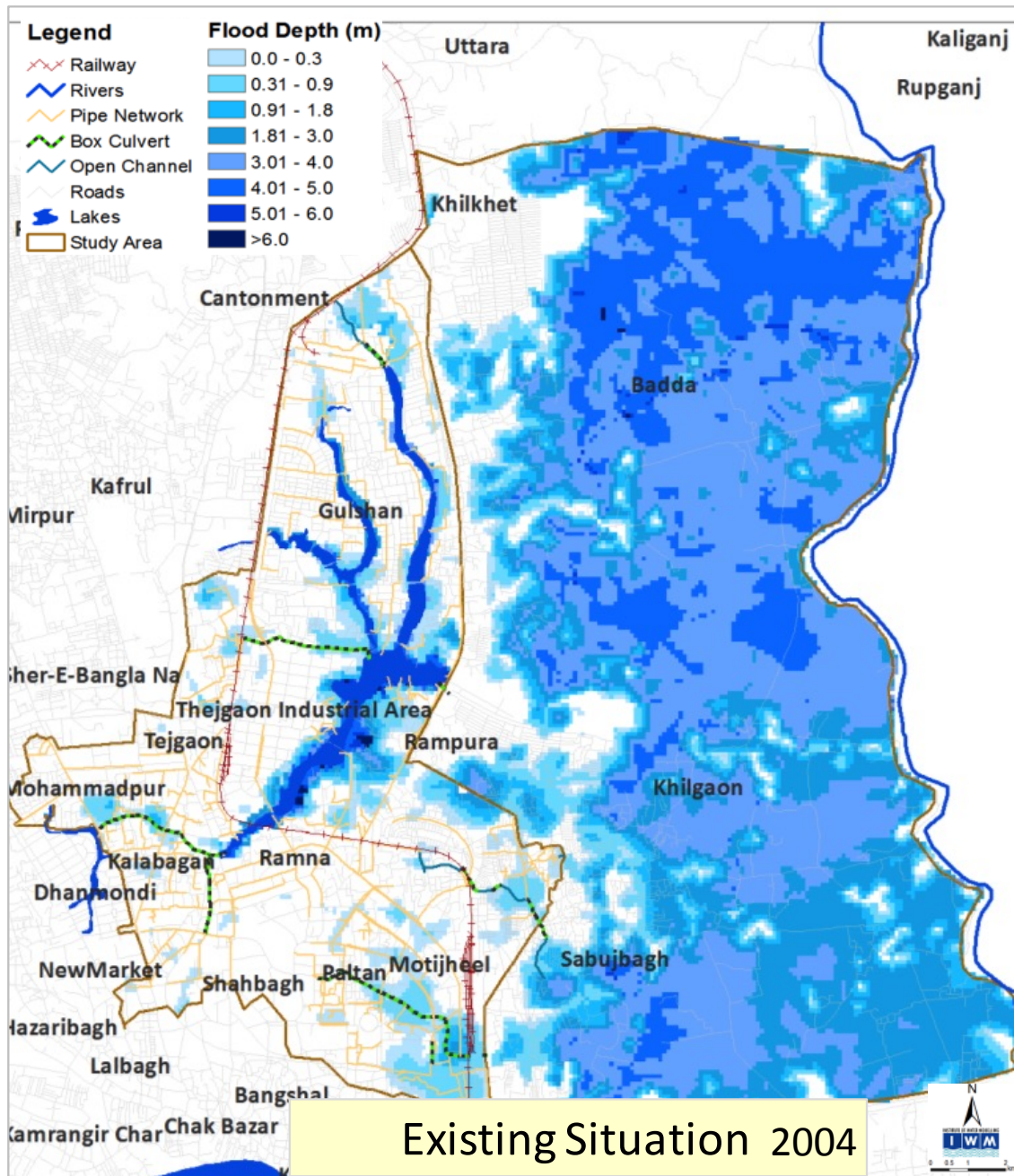
The densely populated and more western urbanized area is protected from river flood. Unprotected eastern area is frequently flooded by adjacent river. There is lack of proper maintenance in the protected area. Historical data shows the extreme events are more frequent in recent times



30-yr rainfall event without CC will be equivalent to 10-yr event under B1 scenario

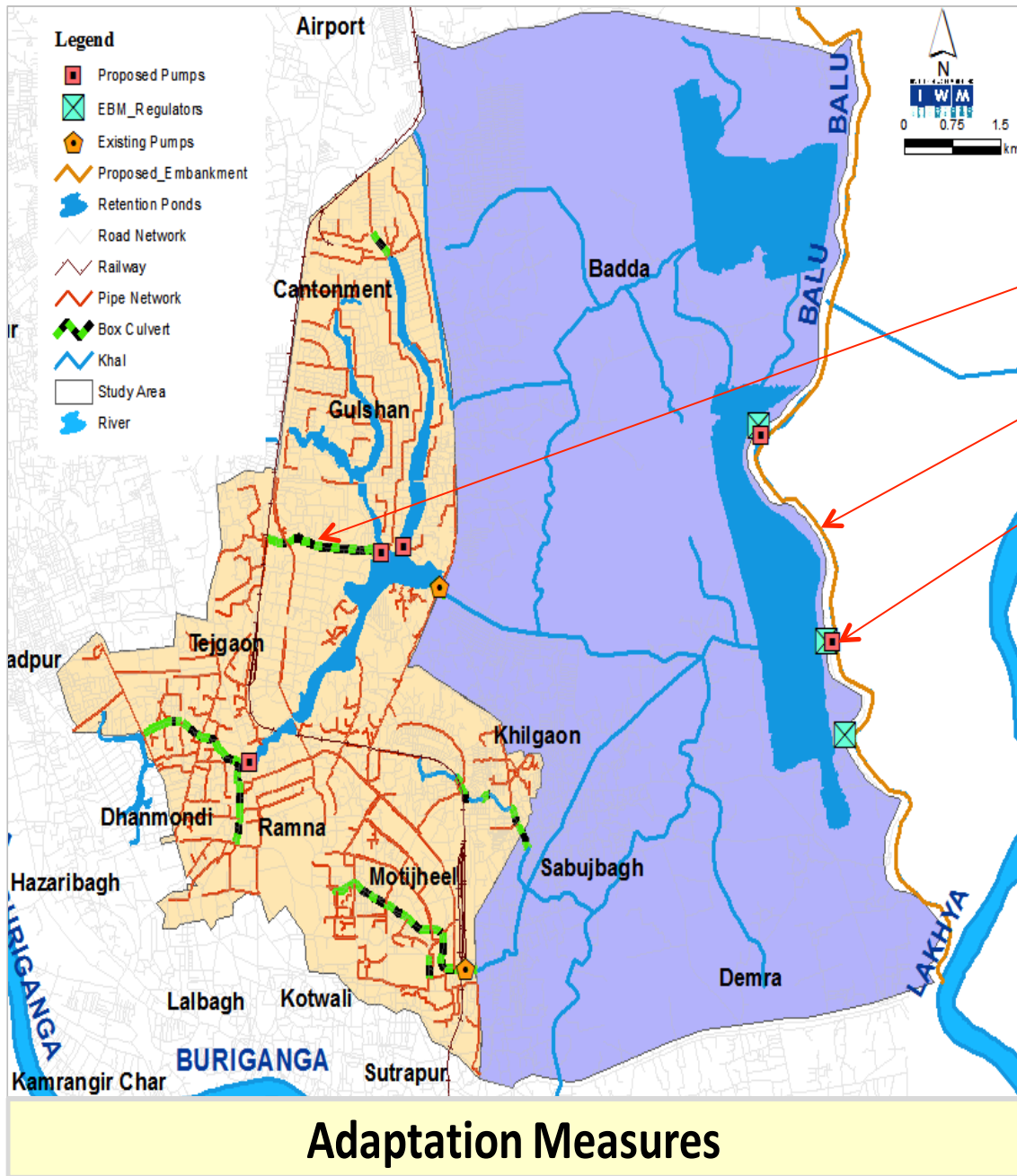
Which is a scenario of less CC impact and ecologically friendly.

Impact of A1FI is much more pronounced



Resilience measures

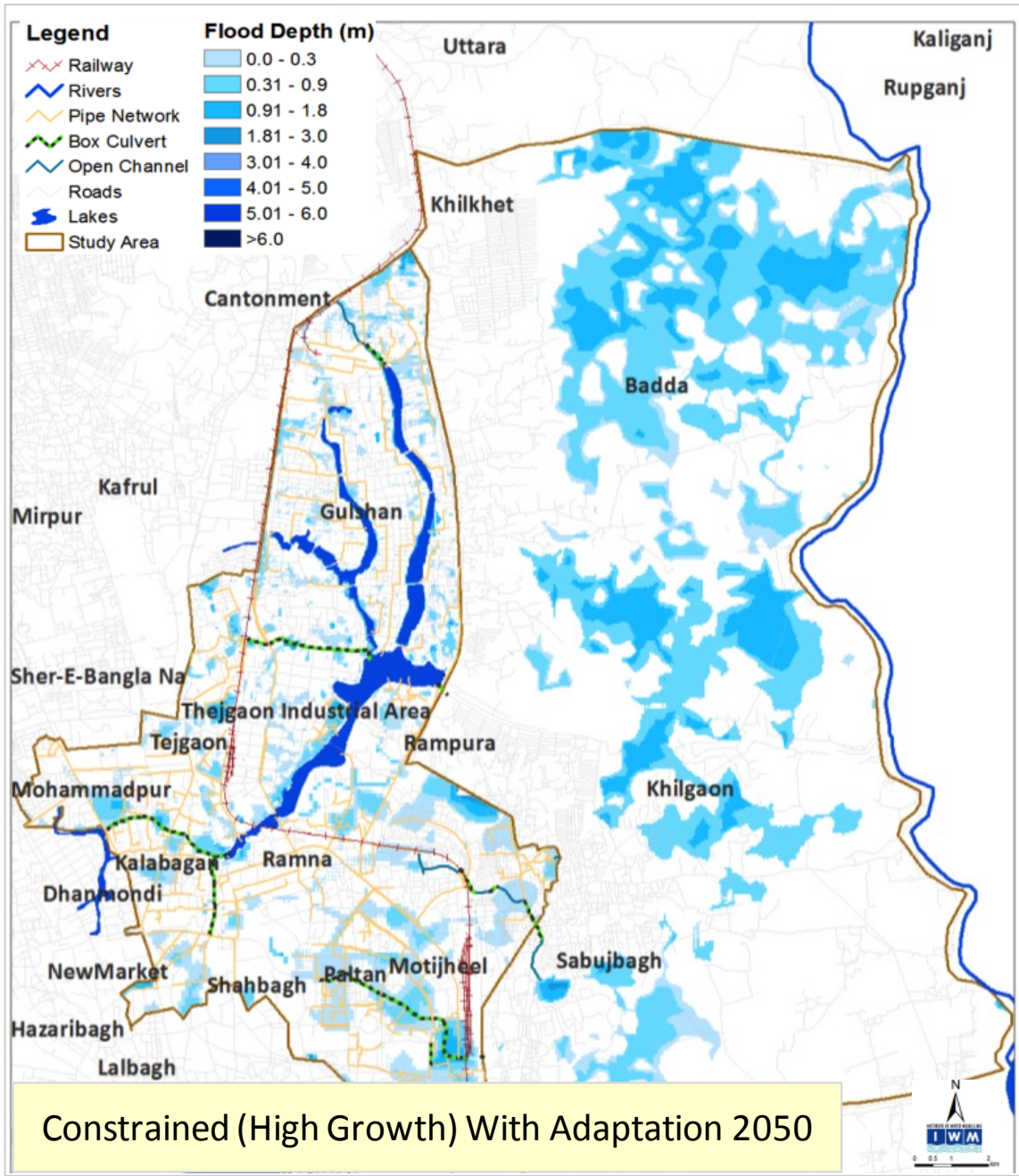
For extreme rainfall event, the drainage system of protected part of the city has to use pumps and proper maintenance also plays an important role. Several structural measures are required for flood mitigation in the unprotected part, land-use zoning and enforcement is also required to make it resilient.



Structural Interventions as Adaptive Measures

- Box drainage culverts
- Flood Embankment
- Pump houses

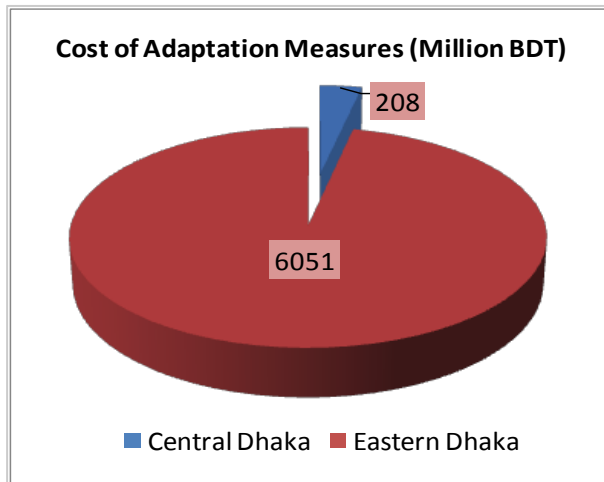
Adaptation Measures



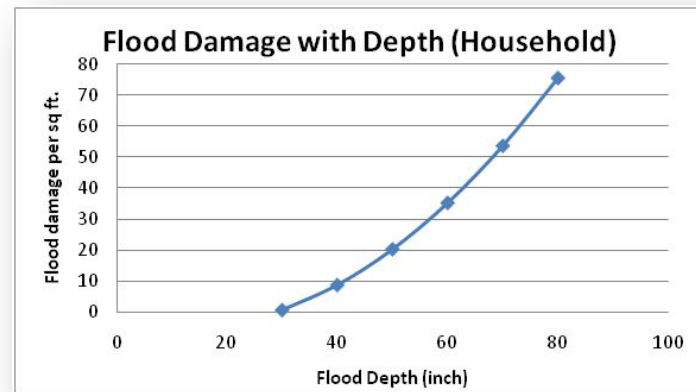
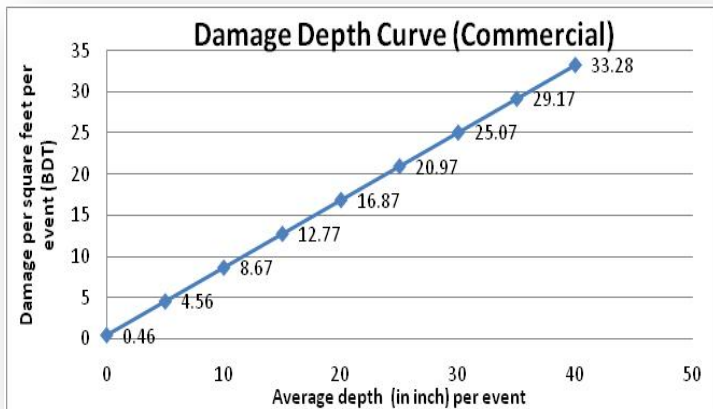
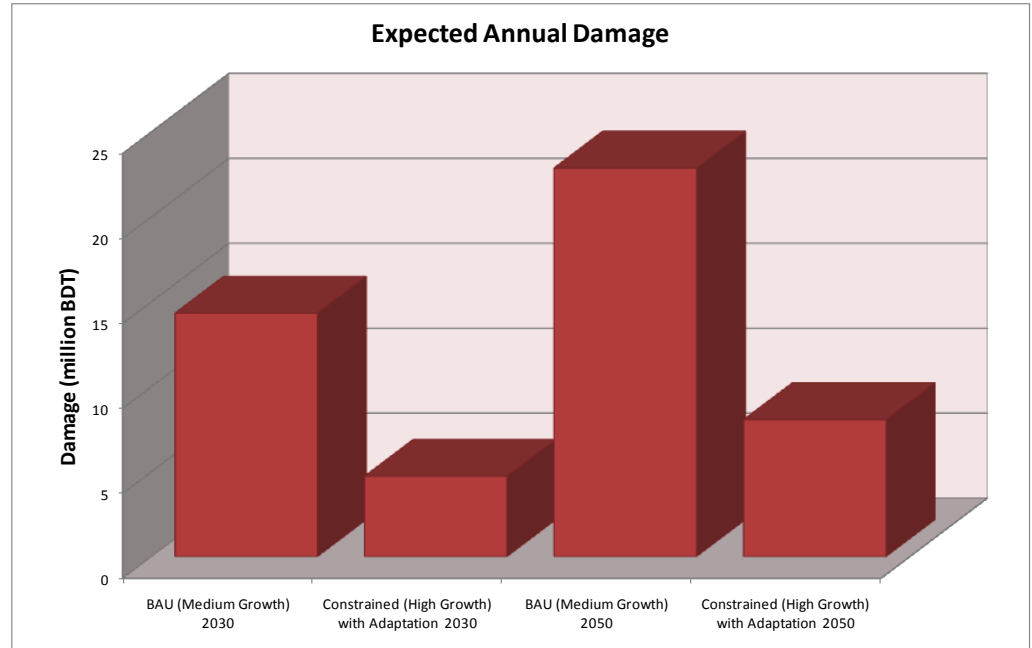
Constrained High Growth 2050

- No flood Embankment
- Land filling for real estate development allowed under certain conditions

Total Cost of Structural Measures: Tk. 12,000,000,000 ~ USD 1.5 billion



Cost of Adaptation: USD 75 million



Conclusion

- The western Dhaka was developed in an unplanned manner with short-term objectives
- This type of development has created long-term irreversible negative impact on natural system and society. Impacts include major water logging, traffic congestion, loss of ecosystem and water bodies
- Major Industrialization within the Dhaka watershed; industries not caring for wastewater treatment; consequence is major pollution of water bodies and rivers. Impact on public health and ecosystem are significant
- Major migration from the countryside to Dhaka increased the population density tremendously but the city planning authority were more focused on developing areas for the top 3-4% of the high income segment of the population ignoring lower income segments.
- We see the same pattern of development in the eastern Dhaka; we foresee similar fate like west Dhaka in the eastern part

Conclusion

- We see at least ten agencies with their own fragmented plans investing in multi-million dollar projects in eastern Dhaka. There is very little coordination or harmonization of these plans and projects. These projects will only serve 4-5% of the high income segment of the society
- There are gaps in the mandates and ordinances of these agencies which does not clearly say about the authority which will be responsible for overall coordination. Therefore there are overlapping or duplicating of the efforts.
- To our view the City Corporations which are headed by the Mayors - being public representatives and accountable to the people - should do the coordination and harmonization
- The role of the government should be more of providing the basic needs like safe water, sanitation, energy, communication, disaster management measures
- Let the people of the areas together with the mayor's office determine how they wish to see the area develop