

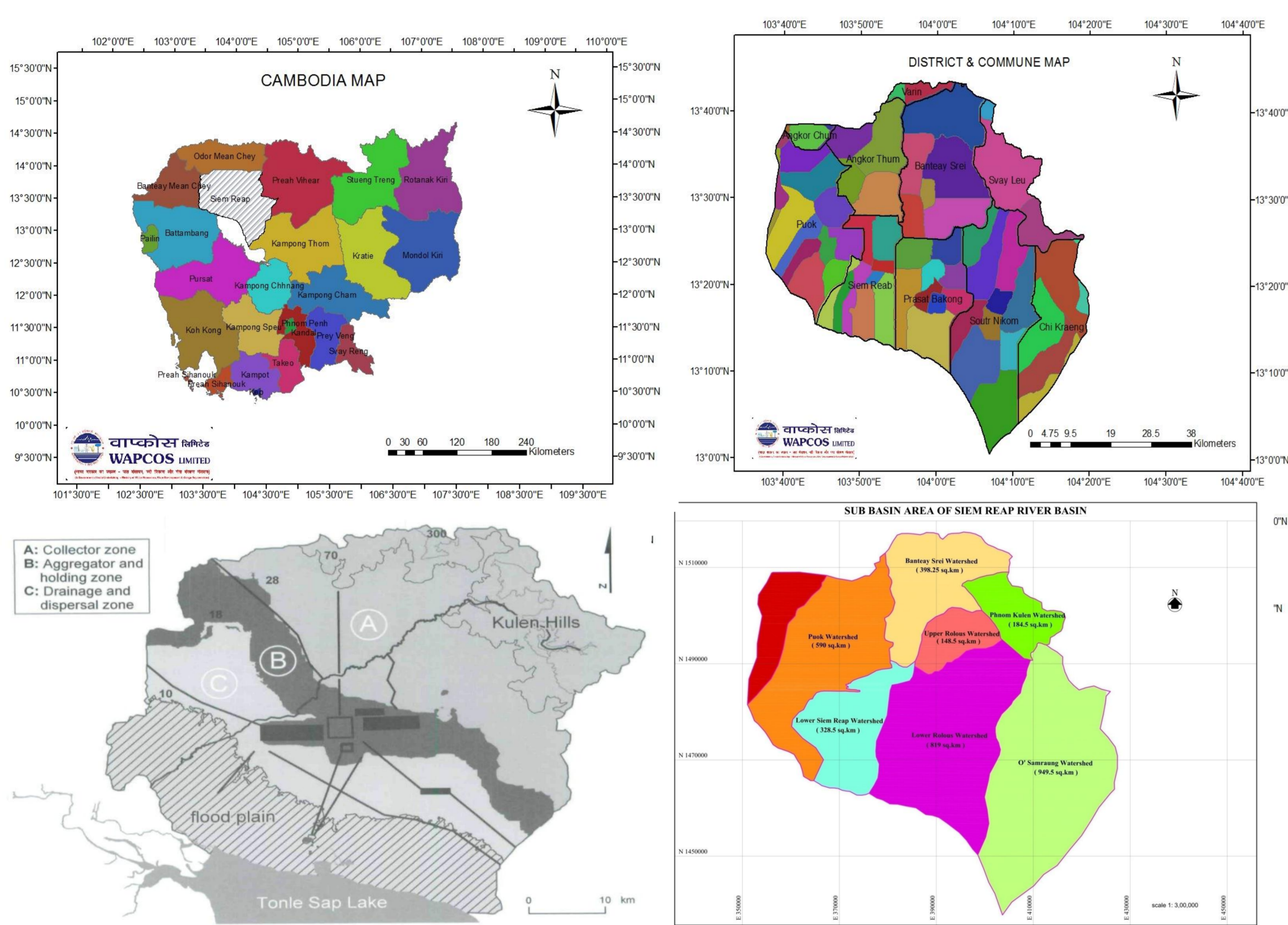
## INTRODUCTION

### SIEM REAP RIVER BASIN

Siem Reap River Basin is located in Northwest of Cambodia in Siem Reap Province. It is the major tourist hub in Cambodia, as it is the closest city to the world famous temples of Angkor Wat. It consists of three main river catchments: Puok, Siem Reap and Rolous. Beside these catchments on eastern sides of basin; there are small river catchments O' Samraung, O' Anhchanh and O' Phnum Changha which drain directly into Tonle Sap. Siem Reap Basin covers 10 districts out of 12 districts of basin and comprises an area of 3619 km<sup>2</sup>

The topography of Basin area shows three zone i.e. Upper Kulen mountain ranges, middle collector zone with various manmade and natural depression and lower discharge zone to Tonle Sap Lake

#### Description of Siem Reap River Basin



## FLOOD MECHANISM

Flooding is the major concern problem in Basin area. However, there is no remarks of flooding & draughts in basin area from ancient history. Ancient Angkor area has been remarked as "Hydraulic City" for its massive reservoirs and water network which provide support for water supply, irrigation and Flood control to big capital of around 1 million population.

#### Ancient and Present Hydraulic Structure

S.No.	Name of Reservoir	Year of Construction	Capacity of reservoir during construction	Present Capacity of Reservoir	Purpose of Reservoir	Past Irrigation Potential	Present Irrigation Potential
1.	Indratataka	8 <sup>th</sup> Century	7.5 MCM	Abundant	Irrigation & Water supply	2880 ha	0
2.	East Baray	9 <sup>th</sup> Century	54 MCM	Abundant	Flood control & Irrigation	8162 ha	0
3.	West Baray	Later 10 <sup>th</sup> Century	156 MCM	56 MCM	Flood control & Irrigation	24,500 ha	17,000 ha
4.	Angkor Wat	11 <sup>th</sup> Century	1 MCM	1 MCM	Structure stability & Irrigation	100 ha	0
5.	Angkor Thom	13 <sup>th</sup> Century	2 MCM	2 MCM	Irrigation & Flood Control	120 ha	0
6.	Jayatataka	13 <sup>th</sup> Century	10 MCM	5 MCM	Flood control	Nil	Nil

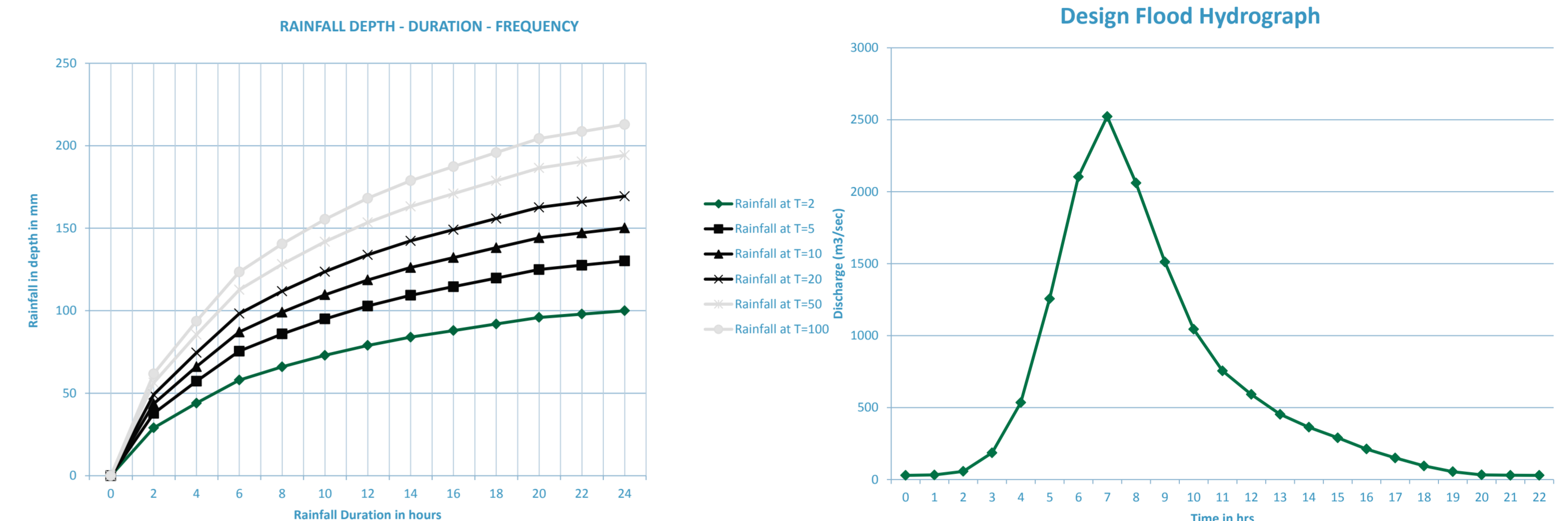
#### Aerial View of Ancient West Baray and Angkor Wat Moat



## FLOOD ESTIMATION

Flood frequency analysis is carried out in the upper catchment of Siem Reap River to estimate the flood occurrence for Return Period of 50 years in the middle collector zone. Based on the analysis, a flood of 2521 m<sup>3</sup>/sec estimate to strike the collector zone.

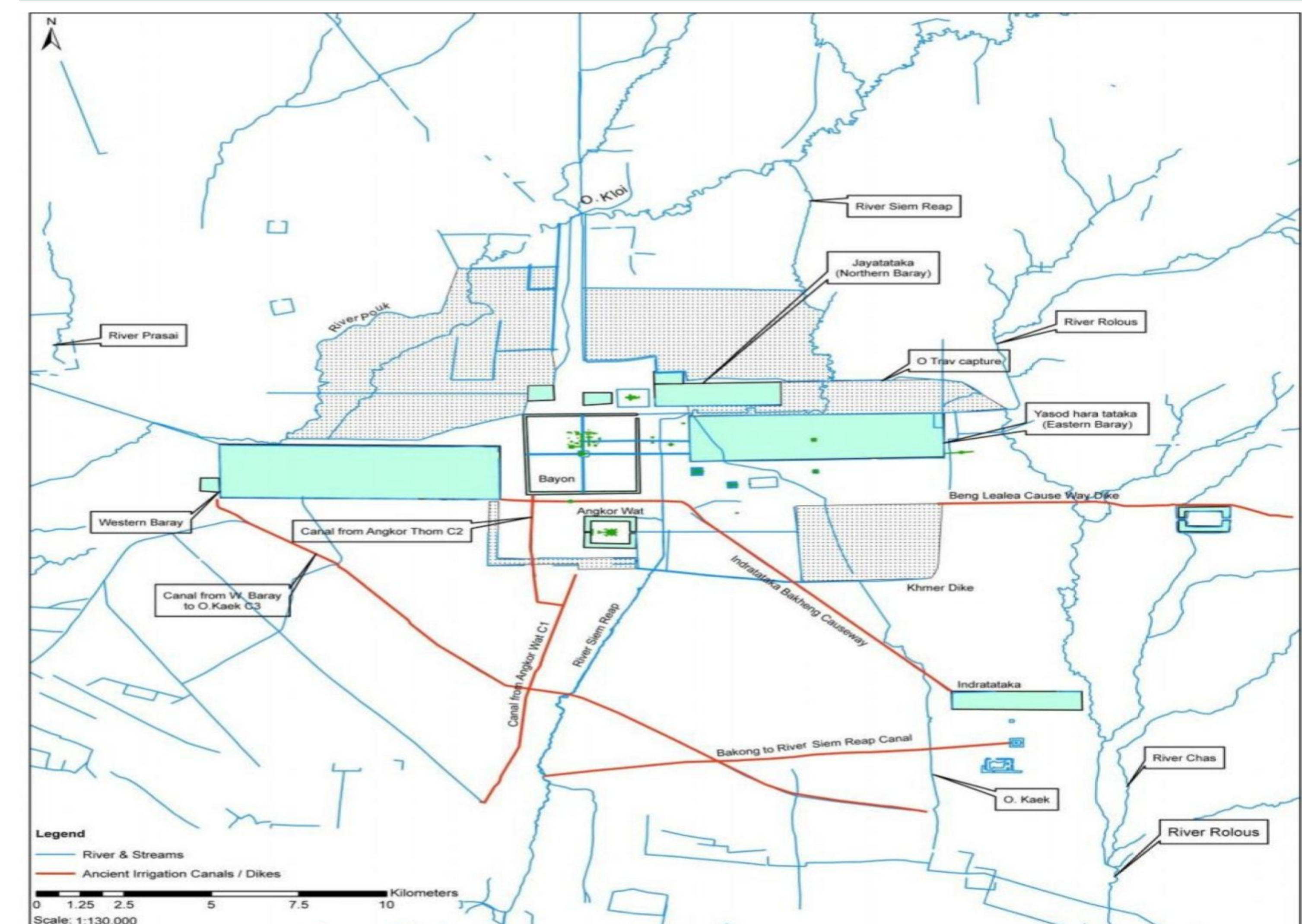
#### RAINFALL AND FLOOD FREQUENCY ANALYSIS



## RESULTS & DISCUSSION

- From the above studies and flood analysis it is found that siltation & sedimentation and also redundant structure of ancient reservoir and water network reduces water bearing capacity and irrigation potential in Basin area which intends to promote the flooding in the middle zone.
- The topography of the middle zone shows that there is a vast land on the left and right banks of Siem Reap river which gets flooded due to overflow of river water from redundant embankments as Siem Reap River is an artificial course way from ancient Puok river results in formation of number of ponds and marshy land.

#### ANCIENT RESERVOIRS AND WATER NETWORK



## RECOMMENDATIONS

Based on the analysis conducted, it will be recommended to restore the courseway of ancient Puok river to diverge the excess Siem Reap river water during flooding. It is also recommended to restore the ancient reservoir as East Baray (54 MCM) and Jayatataka Baray (10 MCM) to provide excess flood water storage which will be further utilized for irrigation purpose during lean period.

#### PRESENT RESERVOIR AND WATER NETWORK

