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Presentation by

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Nature-based solutions for increased urban resilience

Date: 29.11.2018

Nature-based solutions

SOIL MOISTURE RETENTION, GROUNDWATER RECHARGE

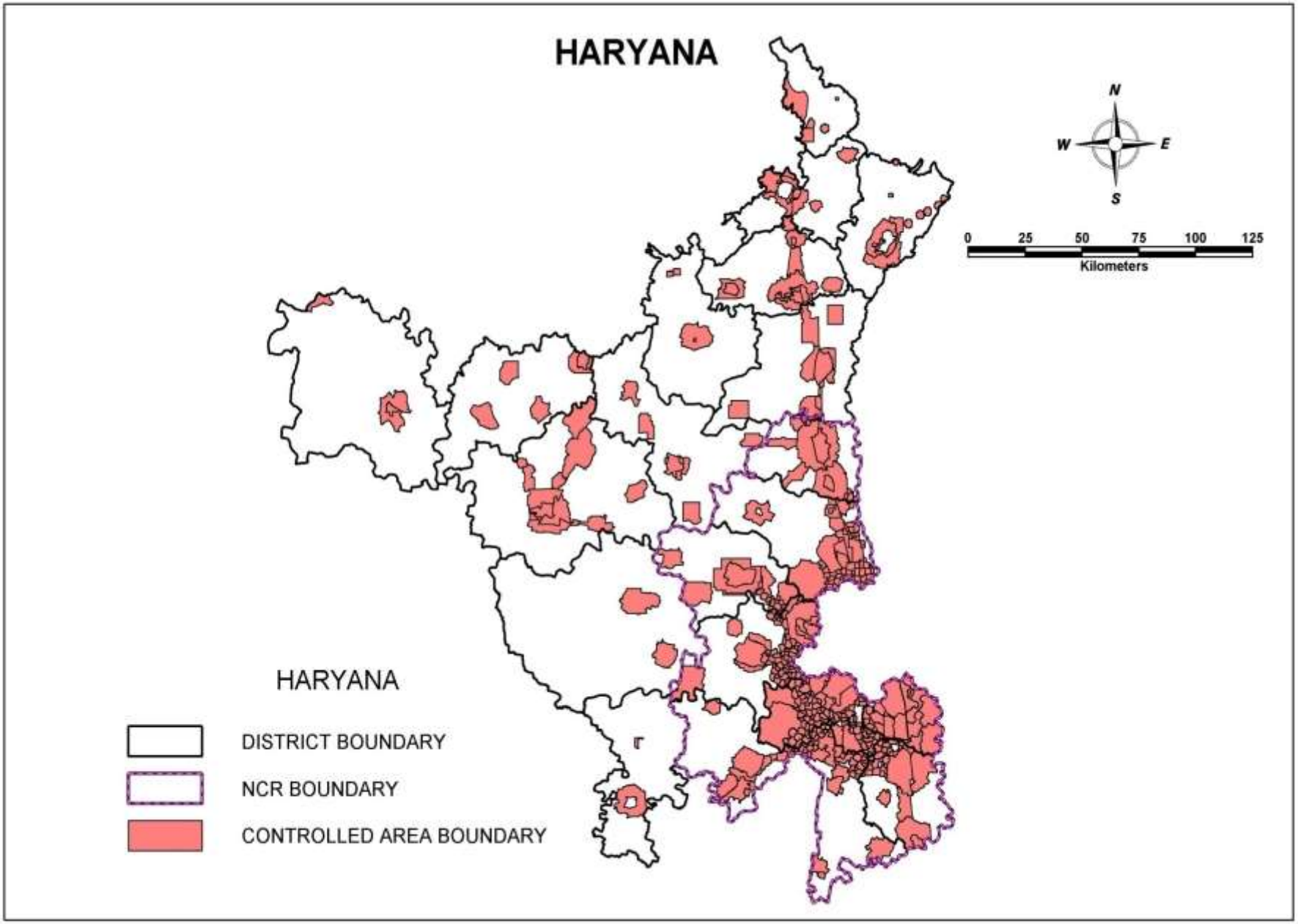
NATURAL AND CONSTRUCTED WETLANDS

REFORESTATION

RIPARIAN BUFFER STRIPS

URBAN GREEN SPACES AND GREEN BUILDINGS

DRY TOILET


HARYANA
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Kilometers
HARYANA
DISTRICT BOUNDARY
NCR BOUNDARY
CONTROLLED AREA BOUNDARY

hindustantimes

Wednesday, Nov 28, 201

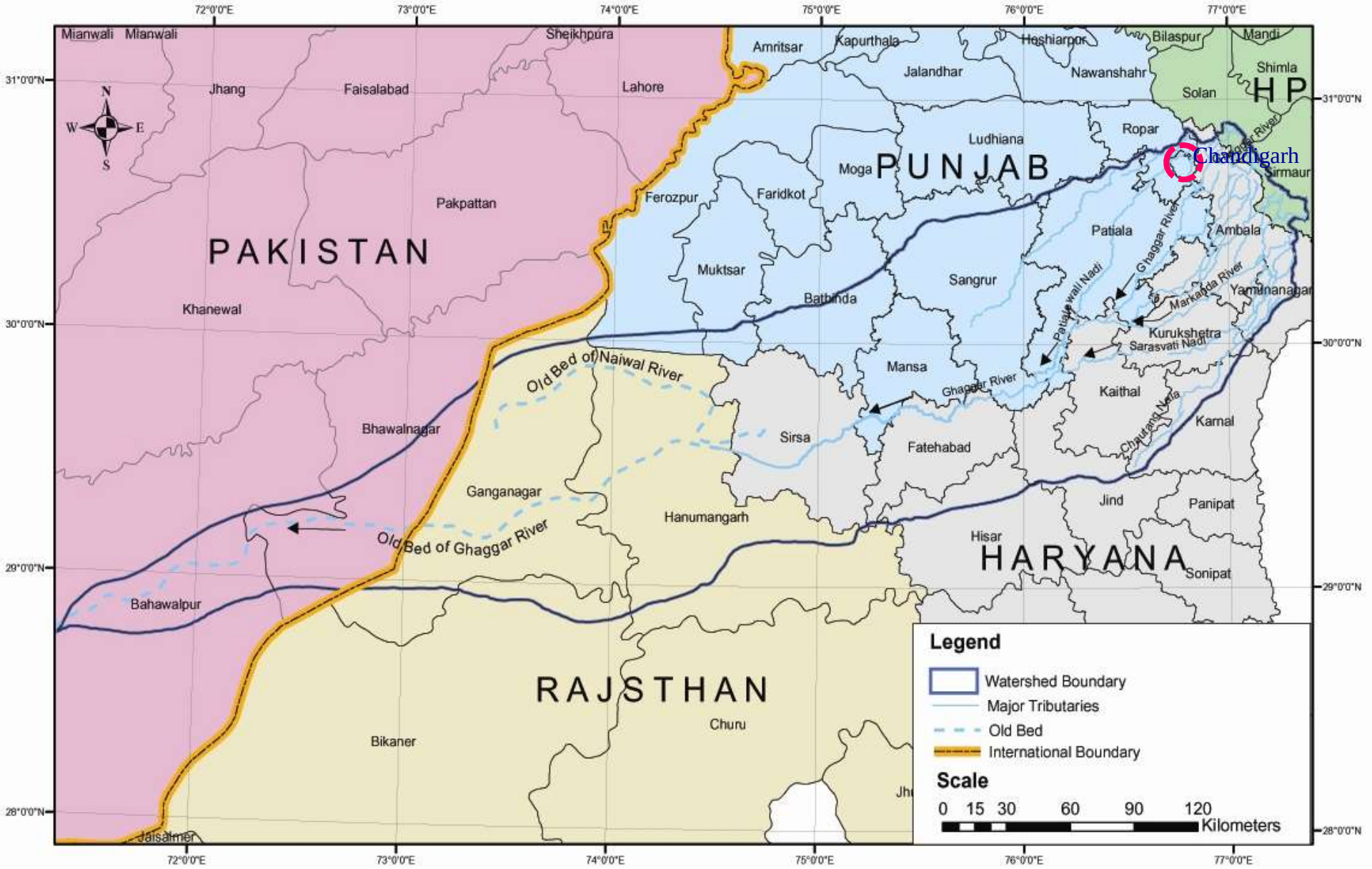
Flood threat looms in Patiala as Ghaggar in spate

The water-level near Sarhala head of the Ghaggar river, crossing through Patiala district, has been measured at 9-ft, and the danger level is marked at 16-ft.

PUNJAB Updated: Sep 25, 2018 10:25 IST

Navrajdeep Singh
Hindustan Times, Patiala

Ghaggar Basin



Ecological Settings of Kalka -Pinjore Watershed Zone

Comprises of small Himalayan gateway towns in Pinjore –Kalka urban corridor and its environs.

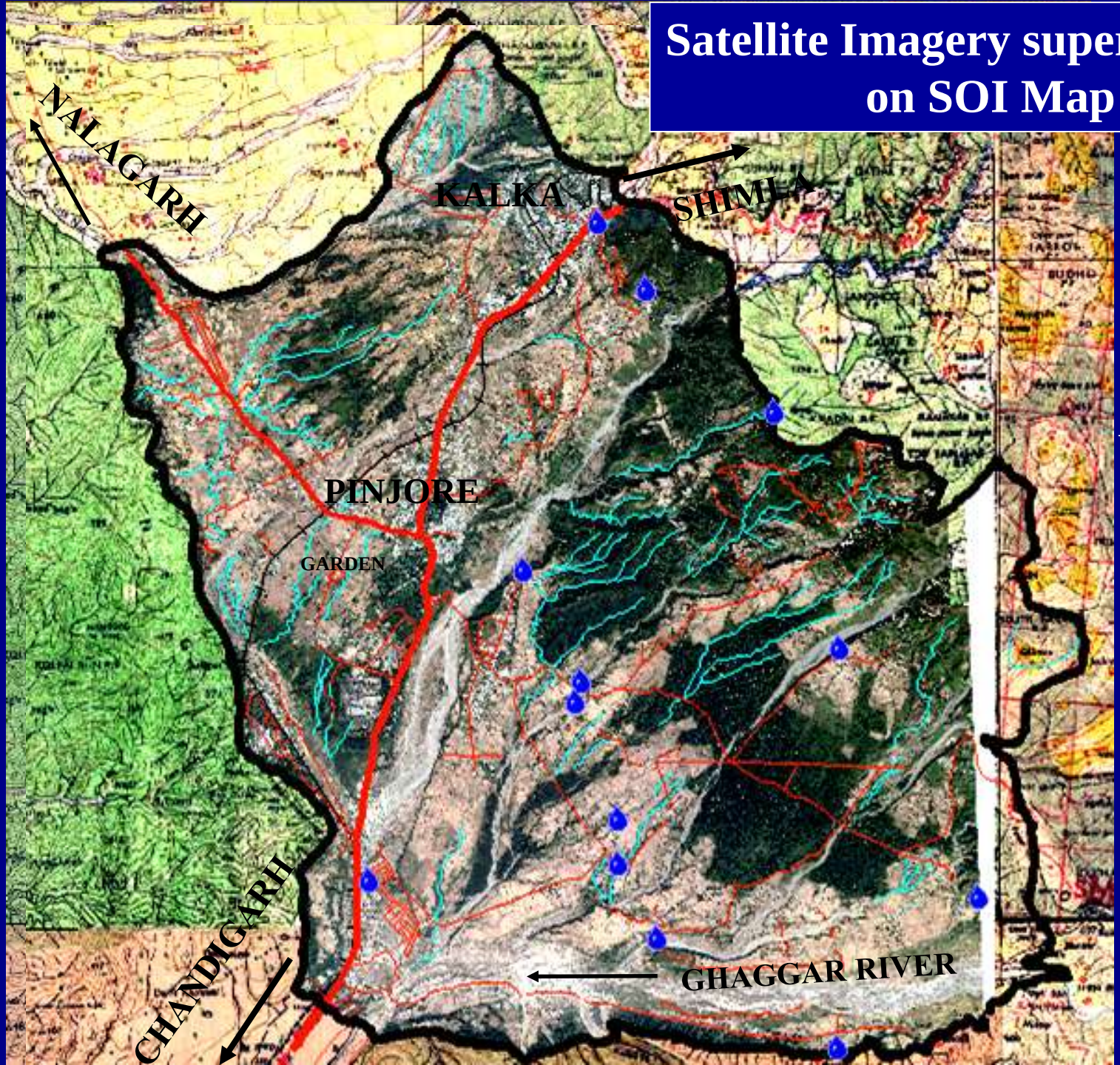
Location - $30^0 43'58"$N to$30^0 51'45"$N latitude and $76^0 52'10"$E to $77^0 00'45"$ E longitude.

Total Area- 119.70 km^2

Perimeter - 56.13km

Delimitation- Himachal Pradesh in the east and northeast and Thadugarh Dhar (reserved forest) and right bank of Sirsa Nadi in the North. Kolhai Dun reserved forest marks its western boundary. A contour line (8.65 km long) of 500m height and Kholhat Raitan reserved forest both along the left bank of the Ghaggar river demarcate its southern boundary.

Satellite Imagery superimposed on SOI Map



Water Springs

MAJOR AREAS OF CONCERN

1- Receding Groundwater table.

2- Scarcity of water particularly beyond Pinjore towards Kalka.

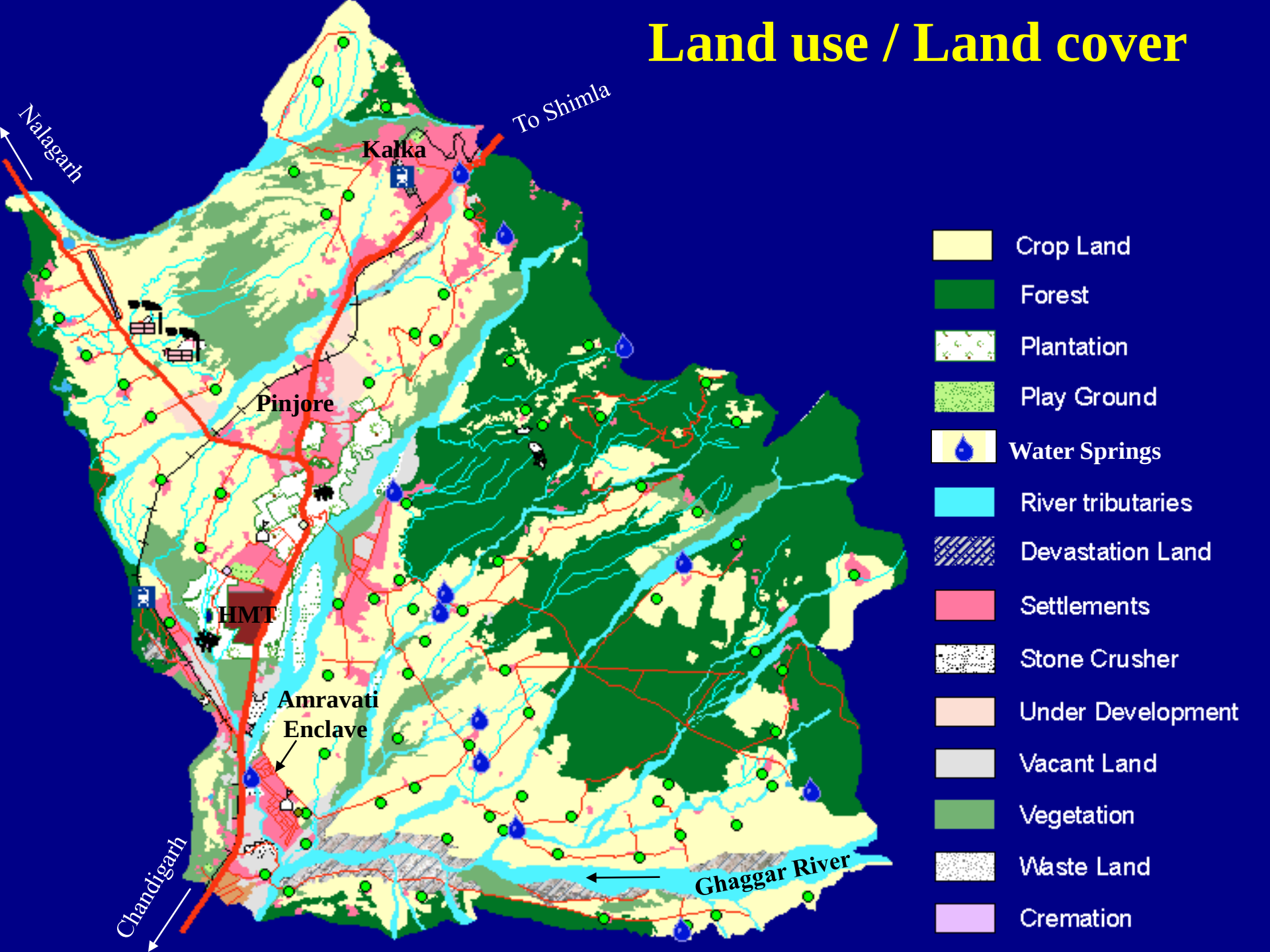
3- Surface runoff damaging the soil strata

4- Degradation of land by soil erosion.

5- Depleting vegetal cover

6- Decreasing No. of *Bawris* (Natural Springs) and Management thereof

Land use / Land cover

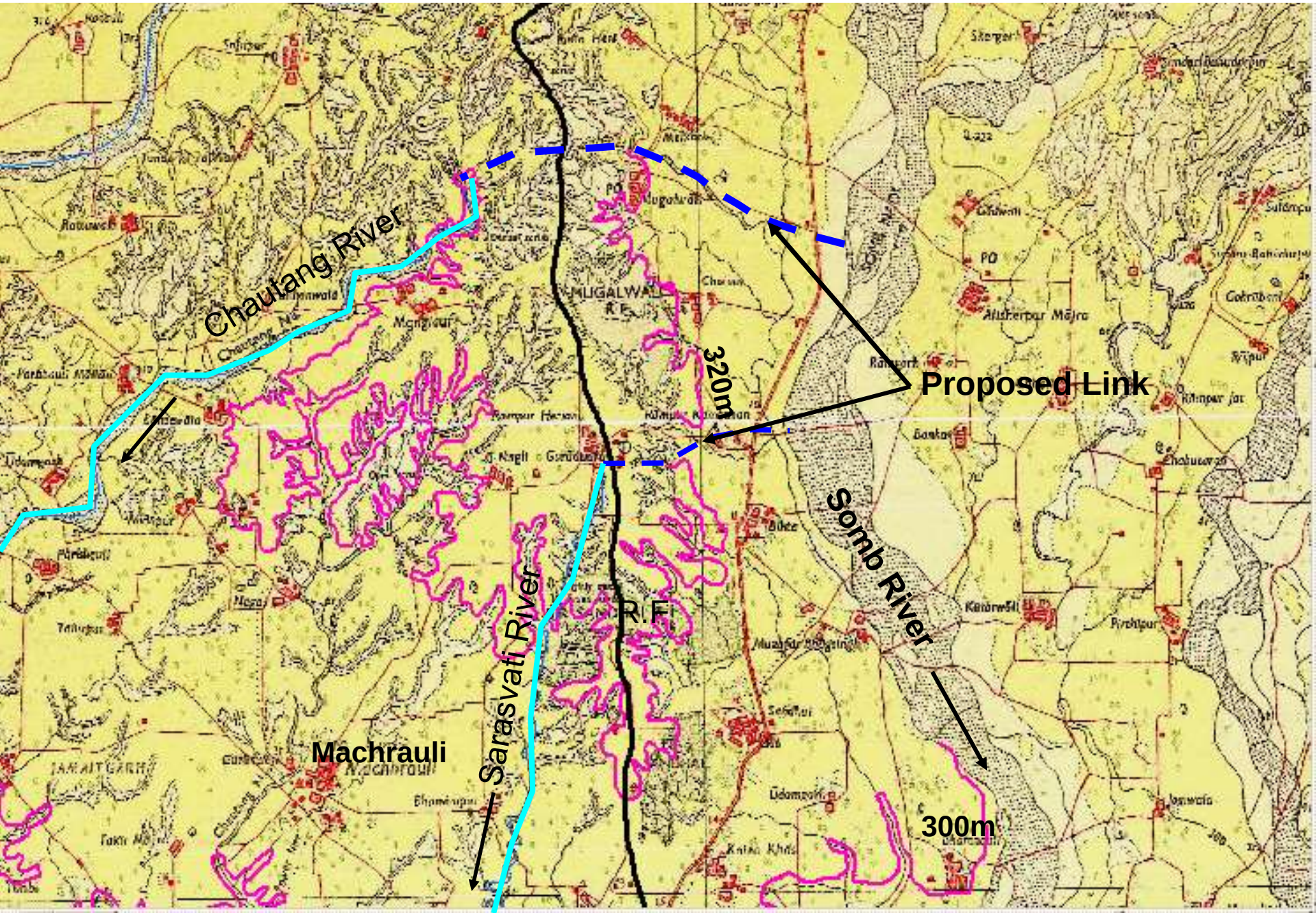


A View From Sky
Kalka-Pinjore Region

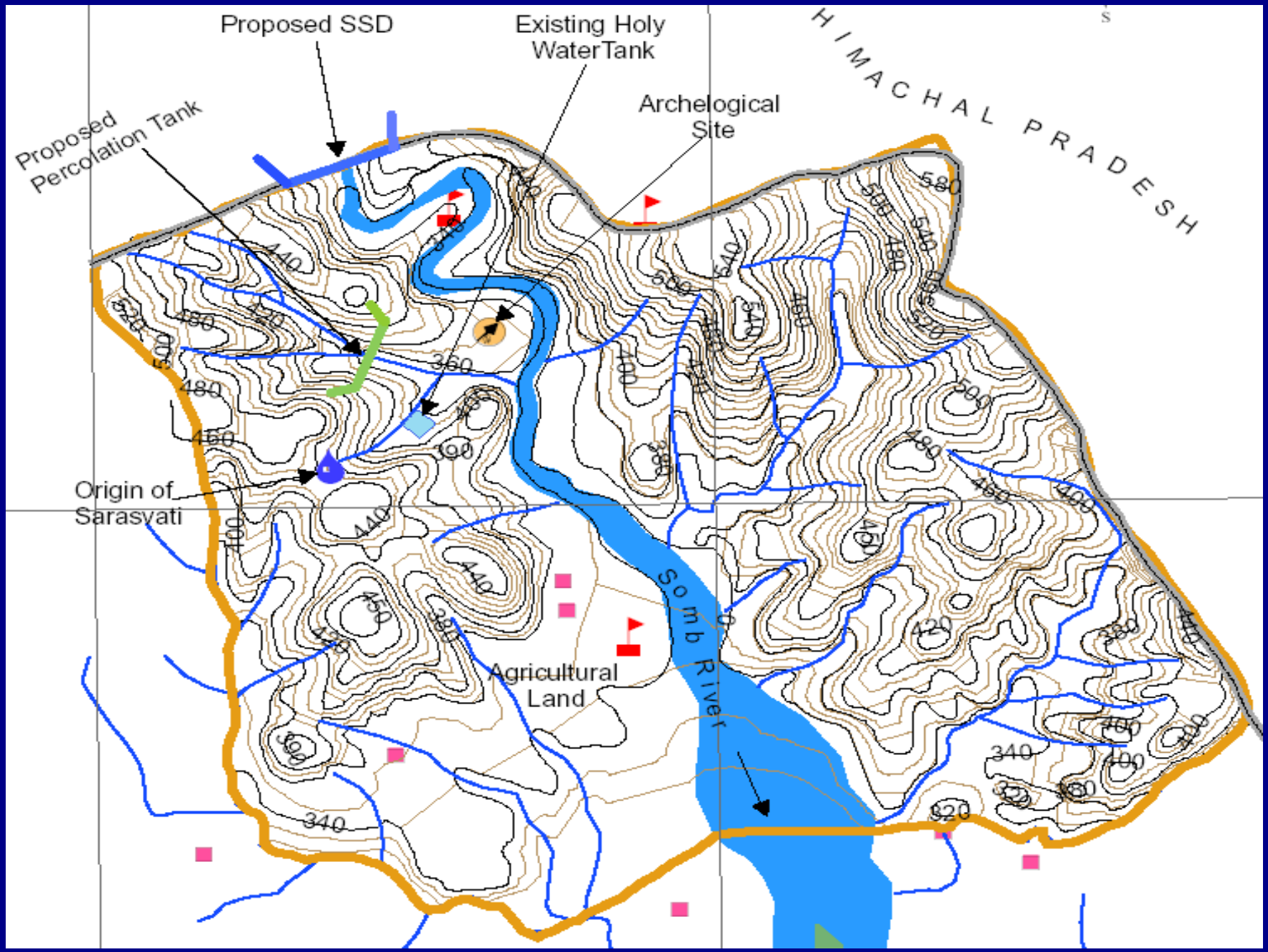
Way forward

- Preparing a comprehensive programme for preservation of vegetal cover.
- Preparing a comprehensive plan for revival of the extinct water bodies and managing the existing *bawris.*
- Delineating and prioritizing micro-watersheds for effective soil and water conservation measures.
- Identification of suitable sites for botanical and zoological parks, a heritage centre, and restricting of mining zone.
- Suggesting the effective sewerage system in shallow water zone in Pinjore - Kalka urban complex to check intermixing of sewer water with natural water resource.
- Wastewater treatment and creation of artificial lake for water recharging .
- Wildlife preservation and related revival of vegetal cover.

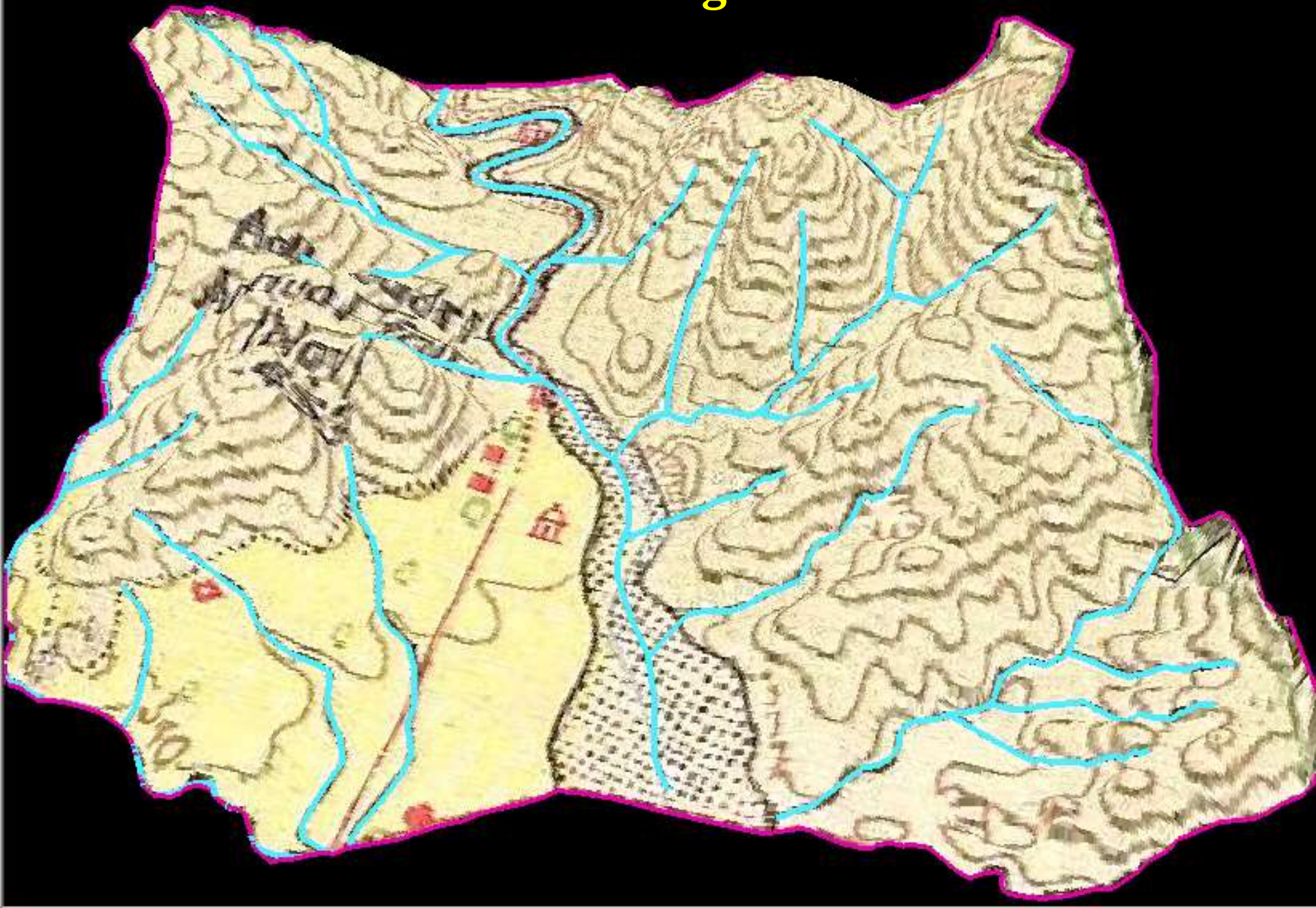
Proposed Somb- Chautang –Sarasvati Channel Link



ADI-BADRI PLANNING AREA



3-D View - Planning Area



Major Challenges of Adi Badri

- Ephemeral water source at Sarasvati head.
- Shortage of water in holy tank and gradual seepage.
- Lack of Basic Amenities (drinking water supply, electricity, bathing ghats with provision for change rooms, toilets, eating joints, bins, parking space, inadequate road width).
- Soil erosion and Over growth of ***lantana,*** to name a few.
- Gradual decline in the vegetal cover responsible for maintaining the perenniality of water resource.

Relief Structure

Sub-mountainous zone where upper Siwalik rocks are exposed in the shape of low hills

Altitude varies from the lowest 318 m in the somb river bed to highest 580 m at the top of the water divide

The Ad-Badri complex is located between 320 and 360m

Thank You