

URBANIZATION & T.P. SCHEMES

By:

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Contents

Need to Change T.P. Scheme Act

Evolving Master Plan from T.P.S. (Micro to Macro)

Need for Bhruhad City Master Plan (Macro to Micro)

Drainage and Disaster Management for Surat City

Water Resources for Urban Growth

Conclusion

❖ Need to Change T.P. Scheme Act

SMC in 1963 resolved intension to prepare comprehensive development plan for old & extended city areas.

T.P. schemes as per 1954 Bombay T.P. act (Existing Gujarat Town Planning and Urban Development Act, 1976) shows three stages – Draft, Preliminary & final approval by Government

The general trend shows 10 years or more time to finalize a T.P. scheme after declaration of intension and more than 30 years to implement it.

The schemes even if completed as per T.P. after 40 years do not serve useful purpose as fast growth of urbanization has changed the category, originally considered namely, predominantly residential, commercial, industrial etc.

When it is stated T.P. scheme is implemented in Nanpura in 1995 as predominantly residential zone has not satisfied objectives.

The area by another decade has a different use. The T.P. schemes provision of all amenities & infrastructure including population statistics have put sector in unplanned zone for the today's users.

The total T.P. scheme system, time function and unprecedented growth, unless continuously monitored and modified, has been a useless exercise.

The question of review of T.P. scheme completed, for 2008 infrastructural needs, uses and density, is literally uneconomical infeasible and impracticable.

This is cancerous disease which has to be resolved.

Therefore there is need to scrap existing practice and evolve new strategies to accommodate unprecedented growth. Socio-economical, political planning will must evolve better planning with review of it acknowledging the changing pattern of needs.

❖ Evolving Master Plan by pasting Isolated T.P. Schemes (Micro to Macro):

The planning of area, by the time it is partly implemented, expansion of city boundary is observed in all urban centers.

Surat for example grew from,

7.4 sq.km	(5 L population)	in 1971,
to 55.6 sq.km	(7.8 L population)	in 1981,
& 111.2 sq.km	(15 L population)	in 1991,
Presently 334 sq.km	(30 L population)	in 2007.

Hence to prepare City Plan pieces of T.P. schemes are joined together.

This type of evaluation of city will have perpetual cancerous problems of services – communication, water source & supply distribution, drainage & final disposal of treated effluents for each T.P. scheme, management of disaster hazards like fire, flood, etc.

Also T.P. Schemes do not take in to account impact of flood , fire etc.

❖ Need for Bhruhad City Master Plan to guide T.P.S. (Macro to Micro):

Unless there is overall Master Plan with telescopic projections of traffic, water supply, drainage, storm water, flood with ultimate disposal station planned, for projected probable outermost city limits, are defined, there will be only piecemeal solutions as per existing practice.

Such solutions create side effects and unending chain of problems. Even temporary partial solutions are very expensive.

There must be overall imaginary extreme limits of expanded city and projected ultimate population.

Then essential services, communication, sources of water and network of distribution, drainage mains and branches, disaster management for floods, fire etc. and sewage - partial & ultimate treatment as well as final disposal, could be planned with telescopic projections (macro) for guiding micro level T.P. Schemes.

This will drastically reduce cost of urbanization and poses less problems & least side effects.

To illustrate point, Surat city has ring road, outer ring road and recently proposed outer most ring road. The Ring Road, Udhna-Magadalla Road - Hajira roads are naturally planned above the flood level. Each has raised level from River bank at RL (+)10m, Pala RL (+)13m, Road cum Rail banks at RL (+)14m and probable outer ring road now proposed (originally suggested by me as shown in **Fig. 1** in 1989, Ref.-1) will have severe side effect of constraining flood drainage and add afflux in flood for city.

Has outer ring road 2008 proposal been checked for flood aspect by SUDA?

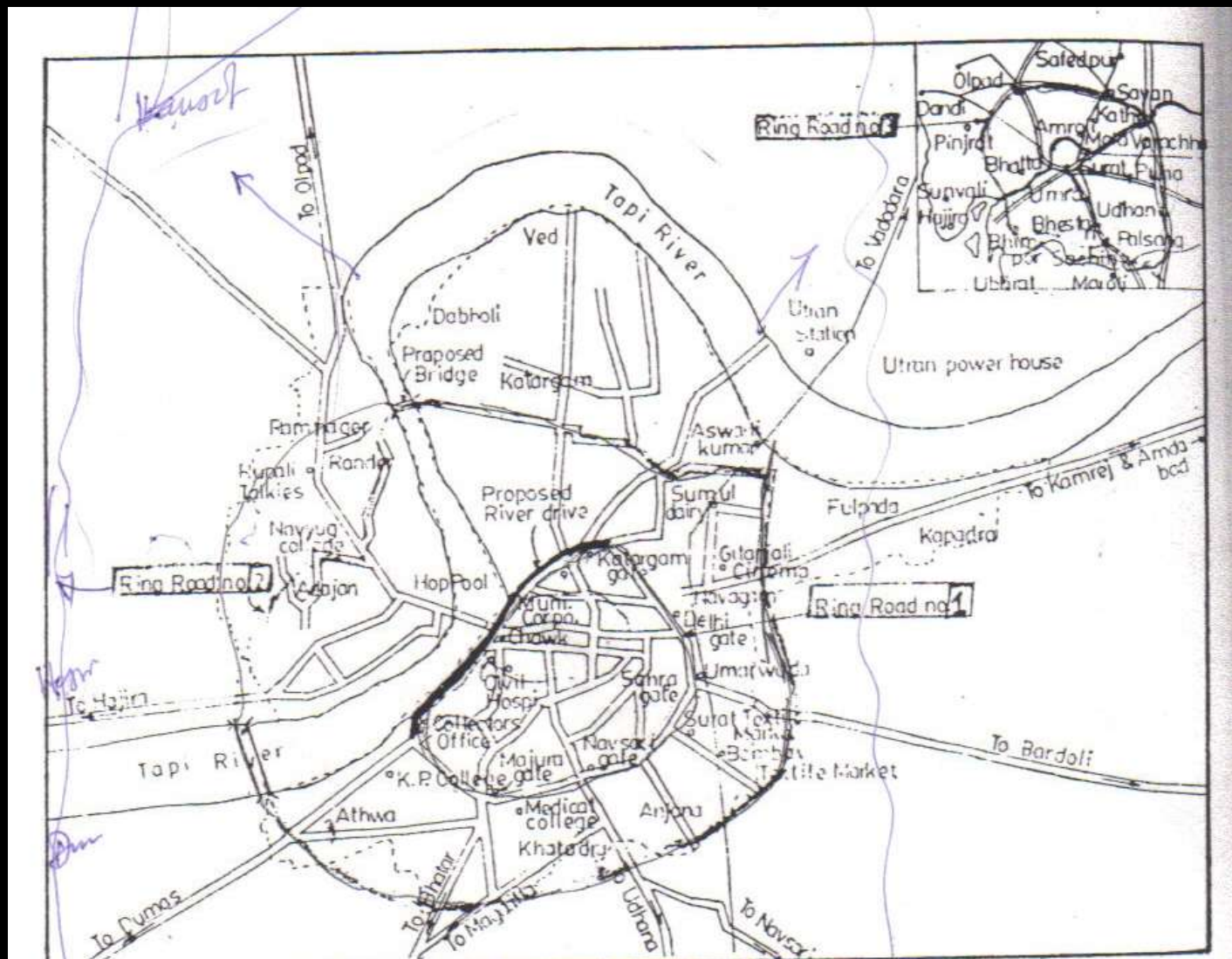


Fig. 1 - Map showing proposed ring road by Dr. M.D. Desai in 1989 for City of Surat

In existing practice,

The sewage treated has to be drained by number of treatment plants to Khadis & Kotar e.g. Kakara khadi to Mindhola River and sea.

Now for bigger city, river is polluted by storm & sewage drains affecting the sources of water.

A **Master Plan** for city with sea on West, Kim on North, Mindhola river on South and Kadodara NH -8 on East as boundary must envisage, level drop of 15 m to 4 m is available

a) from East to West,

b) North & South zones along Tapti banks drains with tidal river level has slope of RL (+) 8 m to (+) 4 m.

18 storm drains & 28 sewerage pumps pass polluted water only by receding tide to the sea via river in micro plan ignoring the facts.

Now spending hundreds of Crores for connecting drains to dispose of storm (rain) & sewage water to sea at Dumas or Hazira will pose problems & sides effects.

A master plan with **trunk drains increasing telescopically from East-West** with branches & sub-branches from each T.P. scheme was feasible, economical & efficient solution taking less time to implement. (Macro to Micro)

It could have planned road cum drains and river front development incorporated with it.

❖ Drainage and Disaster Management:

City drains storm water to River Tapti & Mindhola. Even treated effluent of sewage treatment plant covering piecemeal job for zones or T.P.S. have been drained mostly to Tapti River by numerous outfalls. This has posed environmental problems in water reservoir, Balloon dam as well as tidal reach downstream. High tide stagnante such effluents till low tide drain it to sea.

Even urban centers like Surat, Bombay etc., by spending crores, cannot be efficiently interconnected to drain into sea near extended city boundary.

The Surat city has perpetual problems of floods and as per the Global warming hypothesis the sea level will be rising considerably. This will submerge all present outfall drains in tidal estuary & coastal belt of Dumas - Hajira.

The alarming erosion of coast line is seen by satellite pictures form Fig. 2, 3 and 4 and damages to Udawada, Tithal, Dandi are expected to be accelerated by sea level rise.

The expanded khar land area near Surat is shown in Fig. 5.

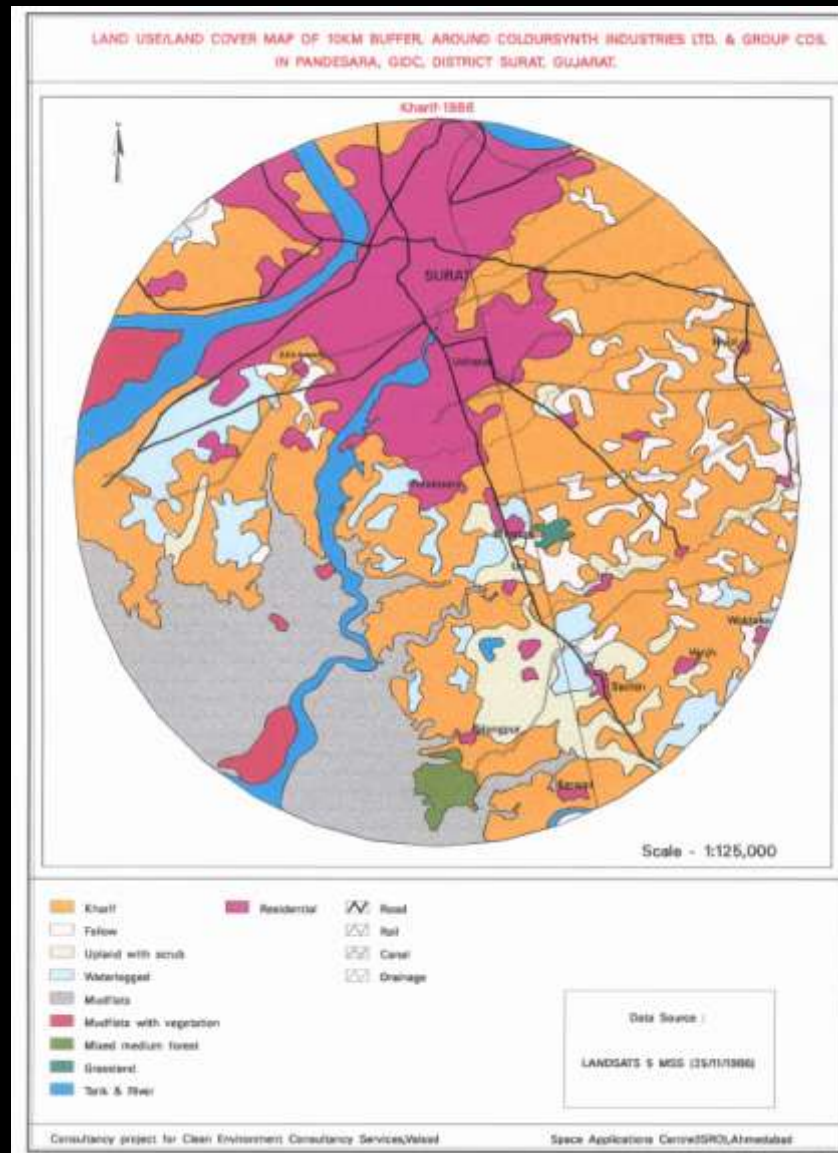


Fig. 2 - Satellite image showing Sea boundary at Surat in Year 1986.

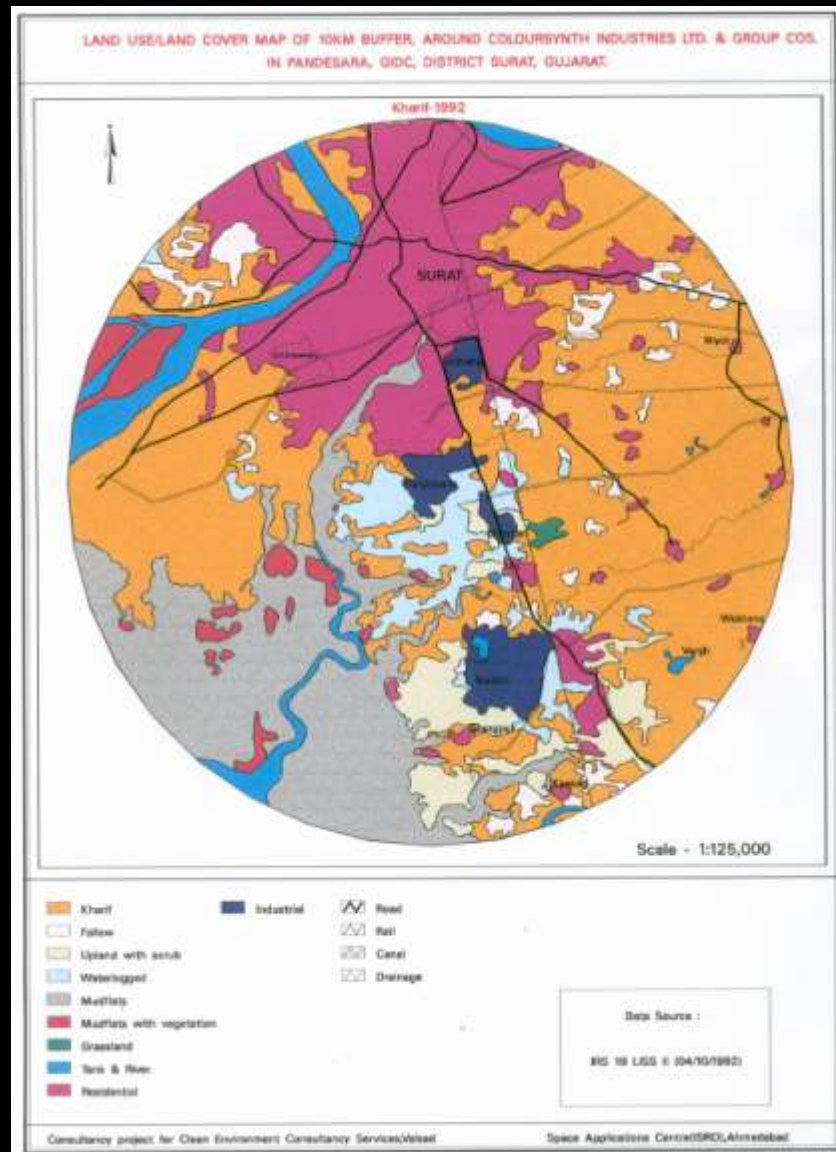


Fig. 3 - Satellite image showing Sea boundary at Surat in Year 1992.

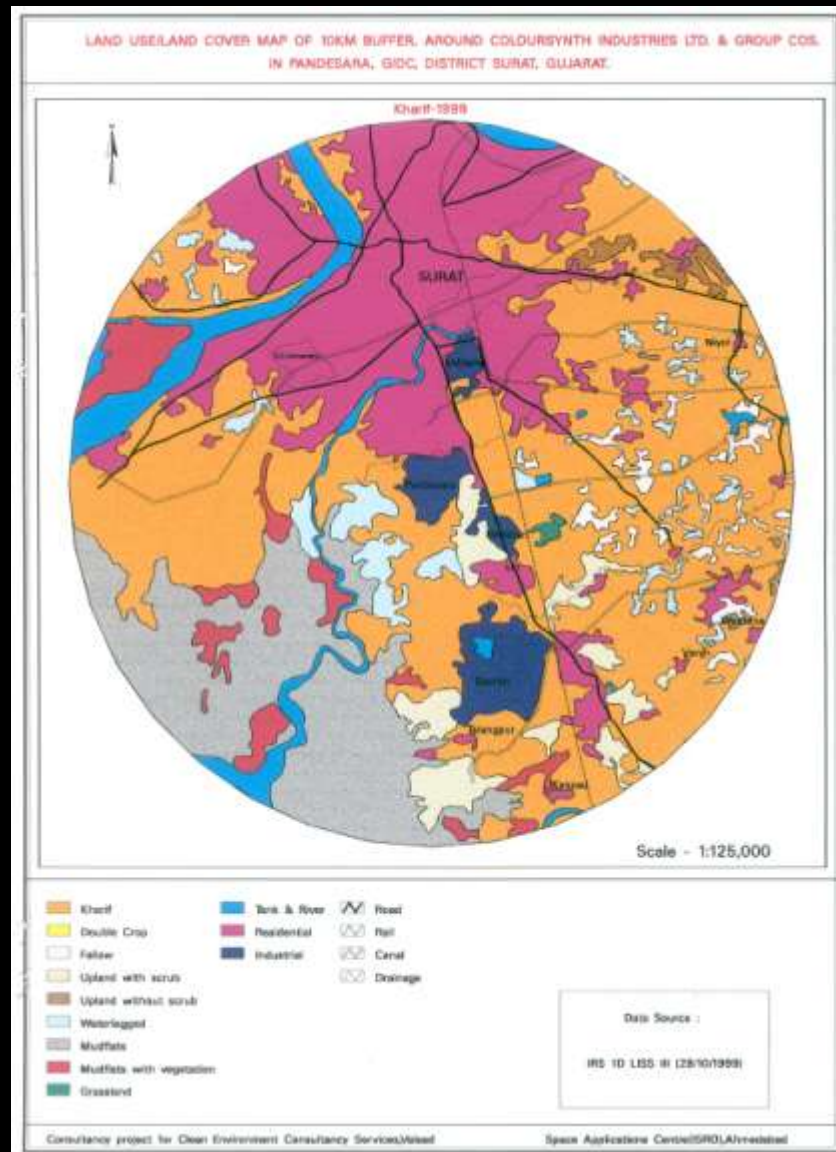


Fig. 4 - Satellite image showing Sea boundary at Surat in Year 1999.

Coastal Erosion - Swaminarayan Temple, Tithal, Valsad









Big chunk of Antarctic ice shelf falling apart

PRESS TRUST OF INDIA

NEW YORK, MARCH 26

A HUGE chunk of ice measuring 13,680 square kilometres or about seven times the size of Manhattan island has begun to collapse because of climate change in the fast-warming region of Antarctica.

The scientists at the US National Snow and Ice Data Center (NSIDC) at the University of Colorado, USA,

Wilkins has been in place for at least a few hundred years. But warm air and exposure to ocean waves are causing a break-up."

Satellite images, scientists say, indicate that the Wilkins began its collapse on February 28 and a large iceberg, 41 by 2.5 kilometers, fell away from the ice shelf's southwestern front, triggering a runaway disintegration of 405 square kilometers of the shelf interior.

SCIENCE NOTES

have based their calculation on the satellite imagery received by it.

The Wilkins Ice Shelf is a broad plate of permanent floating ice on the southwest Antarctic Peninsula, about 1,600 kilometers south of South America.

In the past 50 years, the western Antarctic Peninsula has experienced the biggest temperature increase on Earth, rising by 0.5 degree Celsius per decade.

NSIDC Lead Scientist Ted Scambos, who first spotted the disintegration in March, said, "We believe the

The edge of the shelf crumbled into the sky-blue pattern of exposed deep glacial ice that has become characteristic of climate-induced ice shelf break-ups such as the Larsen B in 2002. A narrow beam of intact ice, just 6 kilometers wide was protecting the remaining shelf from further breakup as of March 23, they said.

Scientists track ice shelves and study collapses carefully because some of them hold back glaciers, which if unleashed, can accelerate and raise sea level.



A satellite image shows the Wilkins ice Shelf on the Southwest Antarctic Peninsula as it began to break apart. AP

1 m rise in sea level will displace 1.7 million Indians, says report

EXPRESS NEWS SERVICE
CHENNAI, JUNE 22

THIS is not from the film *Day after Tomorrow*, but the Government of India's report to the United Nations on climate change.

Parts of it read like a weather-horror story: The sea levels in India are rising and even a further one metre increase in sea levels is estimated to displace about 1.7 million people in the country, wash away 4,200 kms of roads and destroy 5,764 sq.kms of land.

The Gulf of Kutch and the West Bengal coast have recorded the highest rise in sea levels in the present climatic conditions, ranging between 0.4 and 2 mm per year.

According to the initial national communication to the United Nations Framework Convention on Climate Change (UNFCCC) released by the

Environment Minister, A. Raja, at a national workshop here, "Future climate change in coastal zones is likely to be manifested through worsening of some of the existing coastal zone problems."

The report containing climatic projections, with 1994 as base year, will be presented this week to the U N

Convention, which aims to stabilise greenhouse gas concentrations in the atmosphere.

India's coastline stretches over 7,500 sq km and the population density in coastal areas is 455 persons per sq km — 1.5 times more than the national average of 324 persons per sq km.

The report indicates increases in both the minimum and maximum temperatures by 2-4 degree Celsius in the 2050s. In the

north, the increase in maximum temperature may exceed 4 degrees, which may further rise in southern parts. There is also a possibility of overall decrease in the rainfall days.

This decrease is greater in the western and central parts by 15 days, while closer to Himalayas, it may increase by 5-10 days.

The report predicts more water scarcity in river basins. Especially, the river

Gulf of Kutch and West Bengal coast have recorded the highest rise in sea levels

basins of Sabarmati and Lunel, which occupy about a quarter of Gujarat and 60 per cent of Rajasthan. The Cauvery, Ganga, Narmada and Krishna River basins are likely to experience seasonal or regular water-stressed conditions.

Consequently, the food security of India "may be at risk in future", says the

report. "Food security of India may be at risk in future due to the threat of climate change leading to increase in frequency and intensity of droughts and floods."

The positive side to the report states: Greenhouse gas emission by India is "very low" — per capita emission is 0.87 tonnes of carbon dioxide equivalent per annum and aggregate emissions are about 3 per cent of the global total.

Addressing the workshop on Coastal Regulation Zone (CRZ) in Chennai, the Environment Minister said a CRZ management system that balances both conservation and development aspects has to be evolved.

An expert committee headed by scientist, Dr. M.S. Swaminathan, has been set up to consider the entire gamut of issues, which will submit its report in three months.



Fig. 5 - Map showing the khar land area for Surat



Fig. 5(a) - Map showing the enlarged view of khar land near Olpad, above the Surat City.

To prevent loss of land and prevent flood from sea in addition to river a Town Planning, by act, has to assess the planning and projects from, angle not considered till day.

The afflux sensitivity of city for rise of flood level by schemes planned. (Township like Vesu, expansion of HADA, etc) should be critically considered by Town Planner.

Detailed flood atlas of city is must. Unfortunately, even in 2008 there is no contour map of city & flood contours for the probable floods for present situations – use of land.

To make planning a useful exercise macro level plan of drainage, storm and sewage, disaster like flood and fire in HADA must guide the T.P. schemes for new areas added (almost 3 times old area).

To conceive idea, city limits to sea on West, Kim river on North, NH-8 on East and Purna on South is imagined & frozen. For this area contours & flood drainage will be derived to evolve,

- a) Trunk Roads cum drains, storm sewage North - East to South - West with major link roads & drains say North – South (RL 20 to RL 0)
- b) The location shall consider natural drainage of city to Tapti, Mindhola & Kim.



Water Resources:

Unfortunately, planning and indication of water resources for growing urban centers in master plan has been vague or absent for all cities – Surat, Bombay, Delhi, Chennai etc.

Even at huge cost, patches of T.P. distribution system cannot effectively avert chaos.

Cities without own source of water could face crisis if sources are outside city boundary.

Surat has riparian source from Ukai reservoir to cater average 600 MLD. If d/s of Ukai to Surat is mismanaged by users of villages, industry such as sand mining this source could create crisis.

For city of 2020 with projected 45 lakhs census population and 8 - 10 lakhs floating population and surrounding no source villages, 1200 MLD needs requires extra source.

The ground water is saline and sea water, rain water harvesting are birds in bush.

Can planners correct me to cite source considered in planning?

Even with all water works u/s of weir have perpetual problems every summer and cannot provide economical reliable quality distribution to added areas 30 – 40 km away from Water works.

Macro level plan even now is inevitable.

Only source is **flood water**.

For its economy and planning, integrated development plan needs to consider other problems of development,

1. As shown in Fig. 6 & 7, water detention reservoir along the coast line Hajira, Bhimpore on mud – khar lands, 2 – 3 nos. of 200 MCM or so capacities to detain & download extra flood into sea by Balloon dam tidal structures (Fig 8). This is huge raw water source above tidal level.

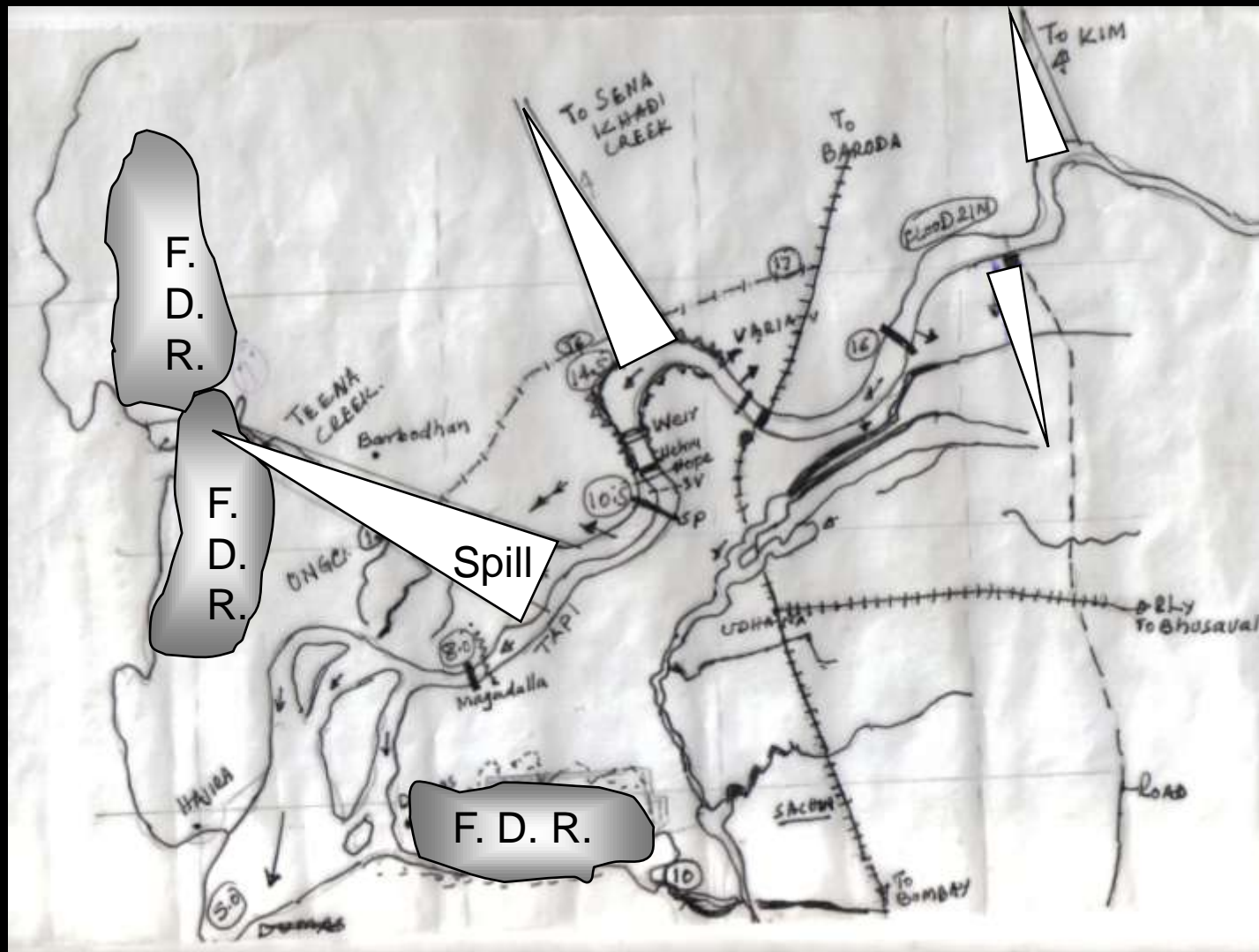


Fig. 6 - Map showing proposed flood detention reservoir with integrated planning

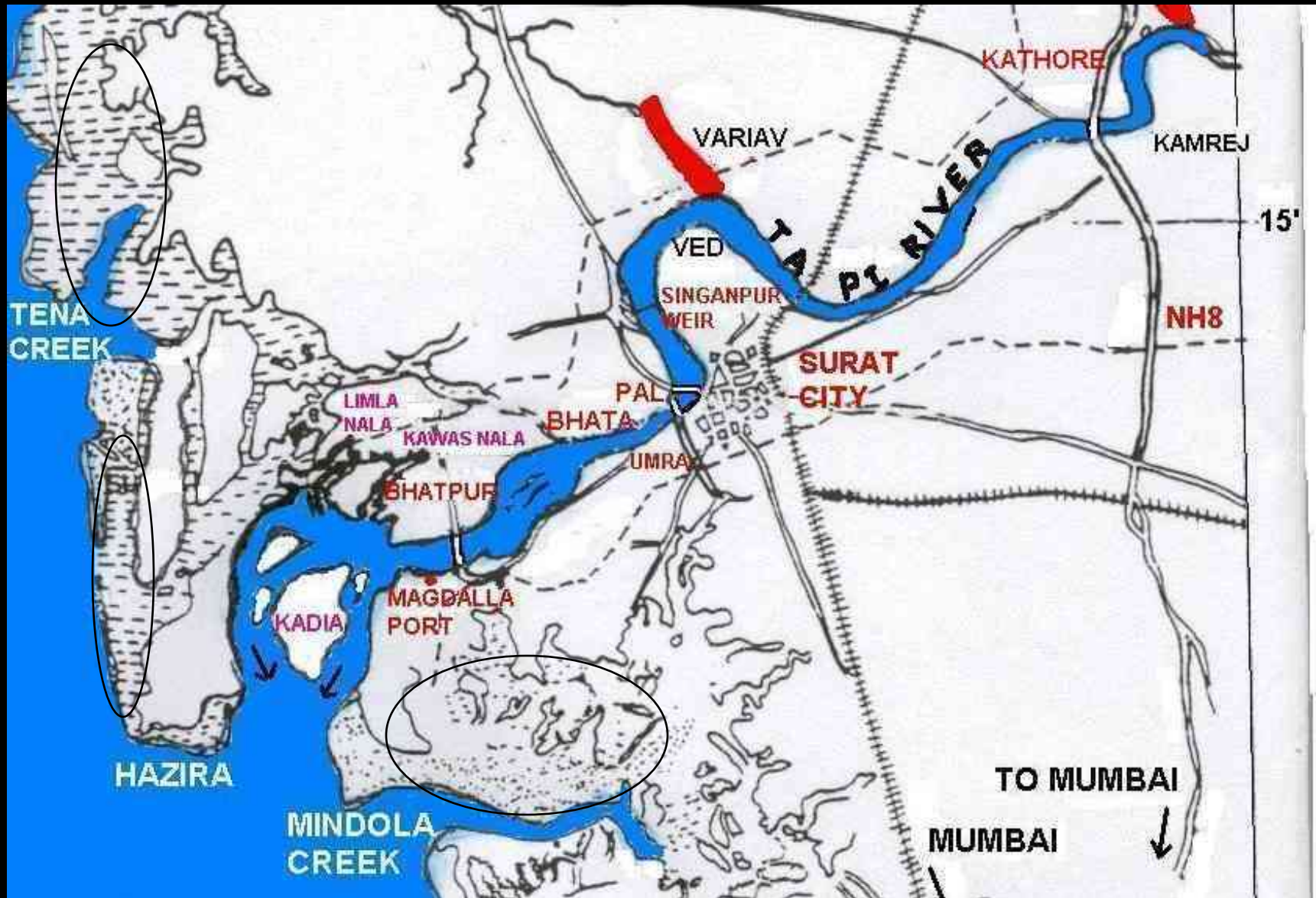


Fig. 6(a) - Map showing proposed flood detention reservoir on khar land

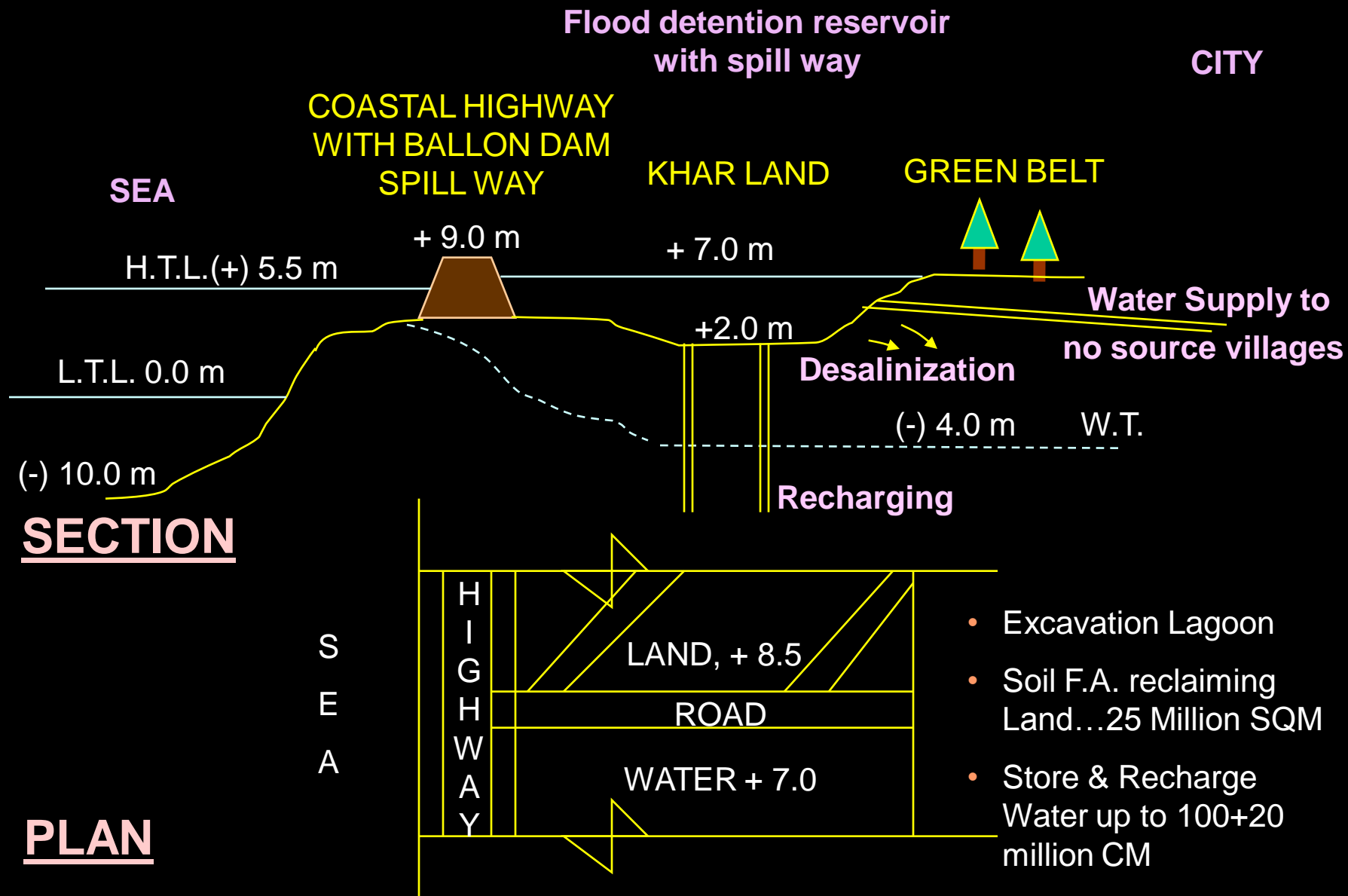


Fig. 7 - Sketch showing the sectional details for proposed integrated planning with Flood Detention Reservoir

Proposed Barrage - Umra (Surat)



Fig. 8 - Proposed Balloon dam near Umra

2. Floods control d/s of Singanpore weir. (Diversion of floods from spills, natural & designed to detention reservoirs along coastline)
3. Beautification & development of river front by Road (100 m) cum storm drain barrel along river intercepting. Present 18 or so drains, spills system to spread flood so as to decrease depth, drain it through shortcut direct drains redesigned. The flood spills and planned spills on riverfront will drain water via coastal reservoirs to sea.
4. Coastal protection: The erosion of coast control is ensured by the dykes for detention ponds. Needs can be seen from Udawada, Tithal, Dandi & Dumas (Sultanabad). This will protect city from rise of sea water due to global warming & ice melting.

5. Communication: A coastal highway along dyke Hajira – Hansot, Dumas, Umbharat linked to NH – 8 could provide outer ring road without adding afflux to city.
(Fig. 9 & 10)
6. Recharge, khar land development by leaching and control of salinity ingress to city area are obvious side benefits.
7. Raw water source for dry 74 or so coastal villages ponds in mostly no source areas.
8. Long term recharge will revive old aquifer after 2 – 3 decades as ground water source.
9. Disaster management plans for Hajira via coastal road to jetties – sea or NH-8.



- NH-8.
- Proposed Coastal Highway

Fig. 9 - Proposed Coastal Highway with Flood Detention Reservoir

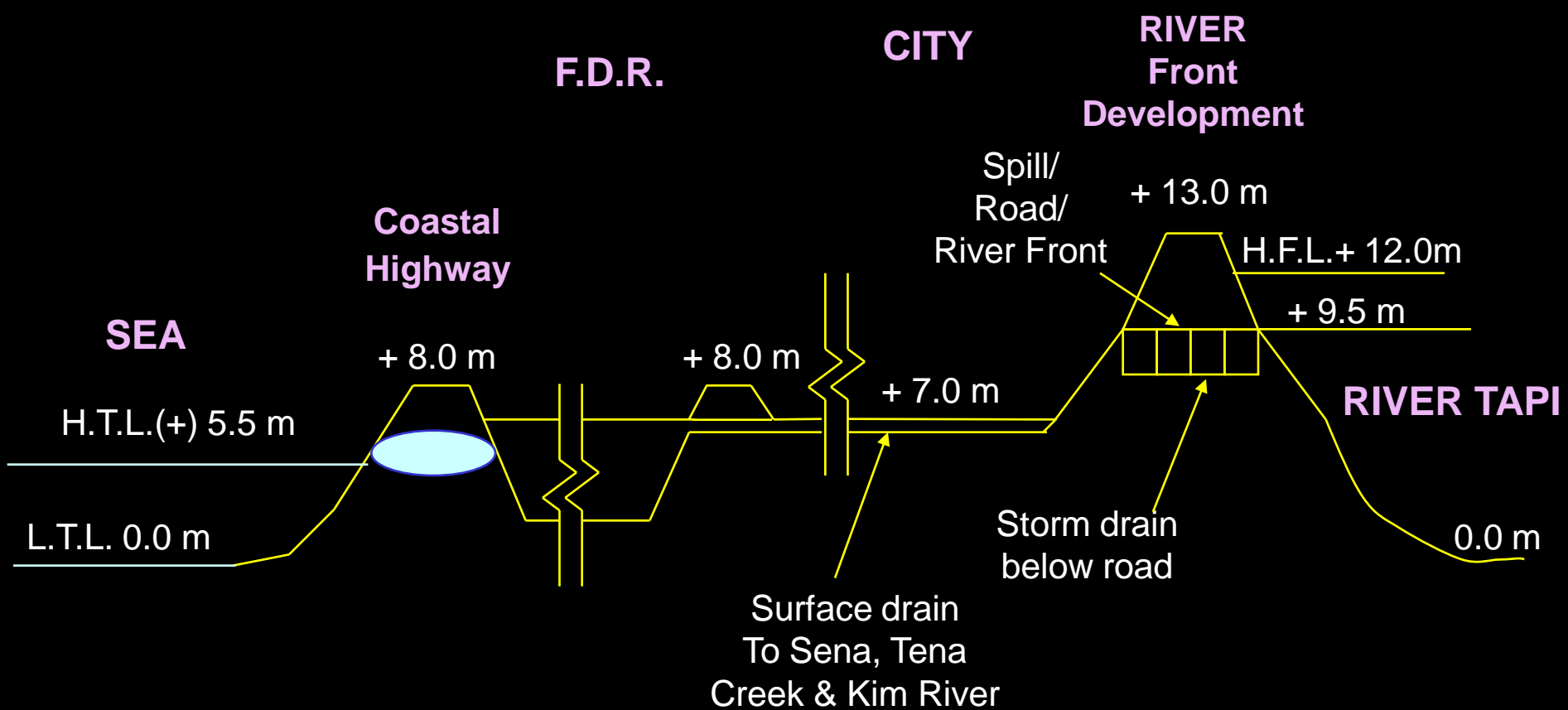


Fig. 10 - Sketch showing the sectional details for proposed Integrated planning with Coastal Highway & Flood Detention Reservoir

Plate shows flood, spills, barrel direct drain to act as storm drains interceptor, surface drain network to divert flood water to major khadies redeveloped, Tena, Sena, Kim, Mindhola.

10. Development of coast line beaches, gardens & entertainment areas for city of Surat.
11. Diversion of drains will make conservation of the surplus water from Singanpore weir by Balloon dam at Umra & water works near Gavier.

Some of these components do have projects of 800 crores or so, integrated proposal will justify mega planned project of thousands of crores.



Conclusion:

- i) Master Plan evolved by cutting pasting of T.P.S. planned and completed cannot deliver services. (Micro to Macro)
- ii) Correct approach of Macro plan for Bhruhad city (maximum expected boundary) for services should guide T.P.S. for zones and added new villages.

The need to evaluate every project for disaster management of flood, erosion and fire like earthquake has been established.

- iii) Lastly importance of multipurpose mega planning can only justify cost / benefit ratio. This is illustrated by illustration of feasibility of use of flood water as source for Surat.



THANK YOU