

# Traffic and Transportation : Vision 2030

*For Bhubaneswar*



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# Overview of Planning Process



## Planning in Bhubaneswar:

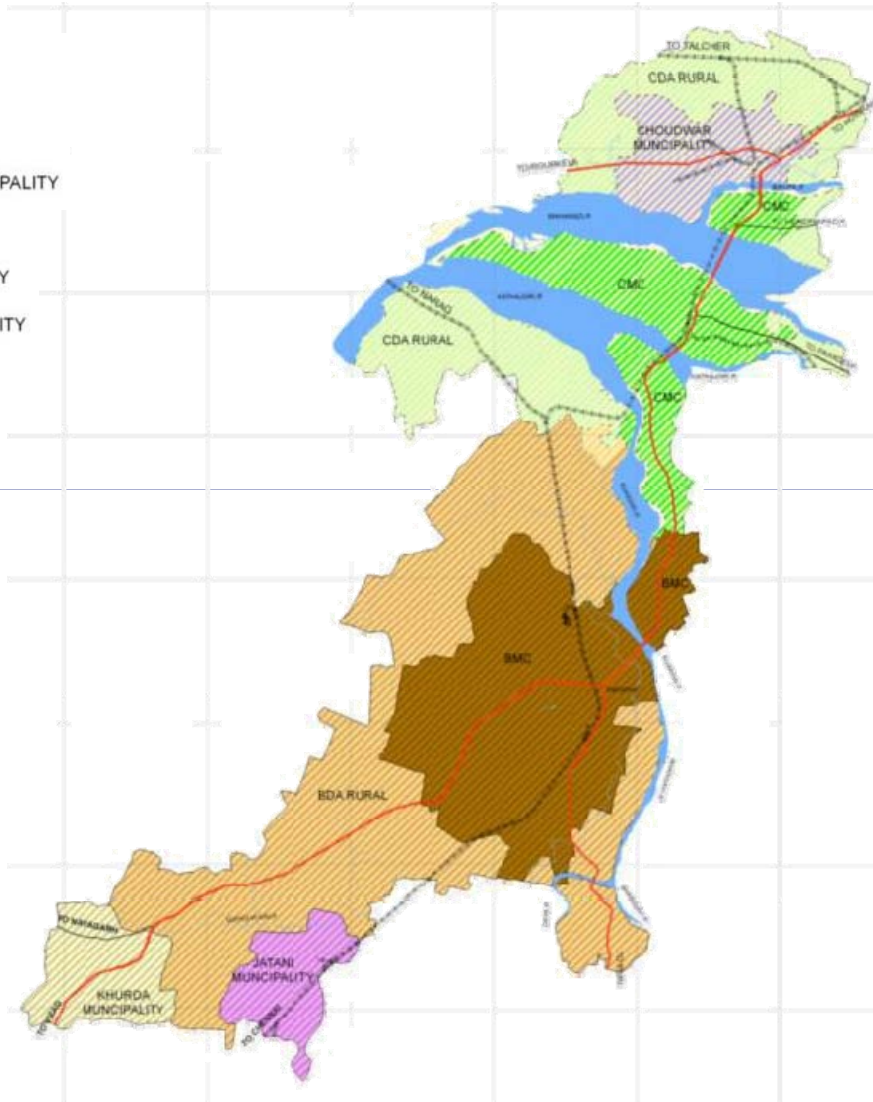
- ④ **Perspective Plan: Vision 2030 for Bhubaneswar - Cuttack Urban Complex (2007)**
- ④ **Comprehensive Development Plan for Bhubaneswar (2010)**
- ④ **Zonal Development Plan for Bhubaneswar (Ongoing)**



## *Aspects considered in Development Plans*

- ④ Demography
- ④ Economy
- ④ Traffic & Transportation
- ④ Housing
- ④ Physical Infrastructure
- ④ Social Infrastructure
- ④ Culture, Recreation & Tourism
- ④ Heritage & Conservation
- ④ Environment
- ④ Development Management and Finance

- BDA RURAL
- BMC
- CMC
- CHODWAR MUNICIPALITY
- CDA RURAL
- JATANI MUNICIPALITY
- KHURDA MUNICIPALITY



**Total Area = 720 sq km**

**Existing Population (2001) = 15 lakh**

**Projected Population (2030) = 42 lakh**



### Extensive Development Zone (11 nos.):

Areas of new development of varying density using the vacant land, agricultural land and govt. land etc;

### Intensive Development Zone (4 nos.):

Re-densified for new urban functions through a process of Urban Renewal

### Restricted Development Zone (3 nos.):

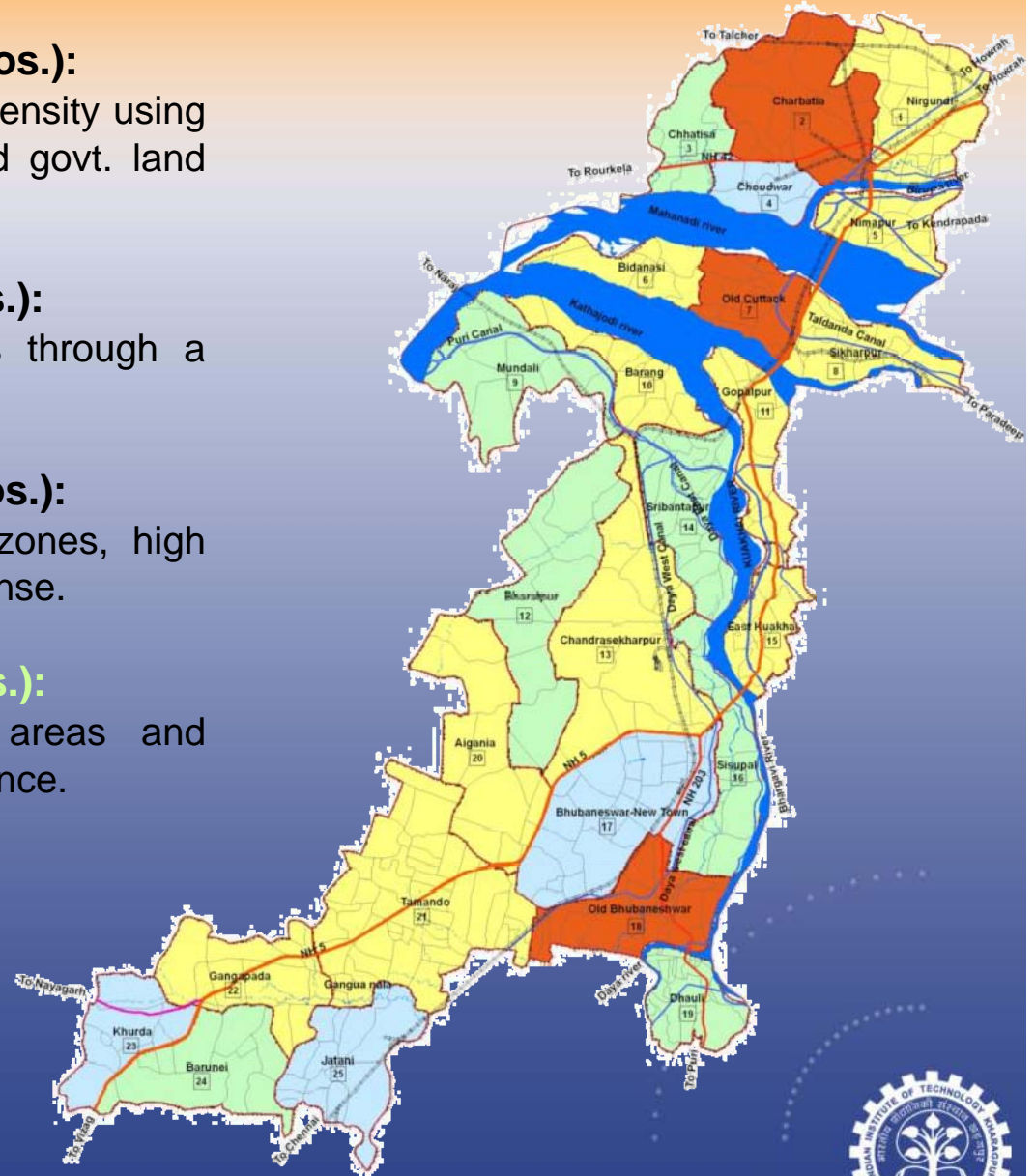
To protect the rich cultural heritage zones, high density urban area and area under defense.

### Sensitive Development Zone (7 nos.):

To protect the vegetation/forest/hill areas and swampy/wetlands, of ecological importance.

#### Planning Zones

	Extensive Development / New Areas
	Intensive Development / Renewal
	Restricted Development
	Sensitive Development



## BDPA Overview:

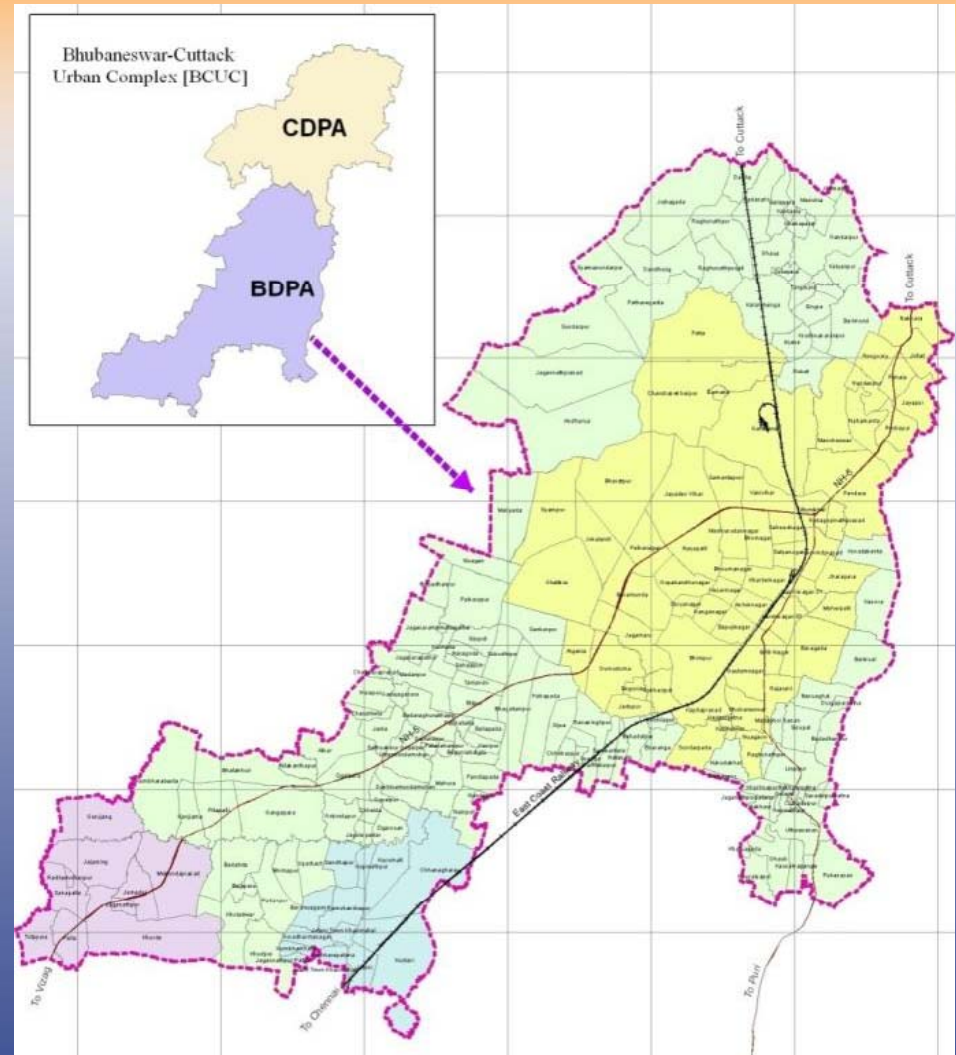
**Area: 419 sq.kms.**

**Existing Population: 8.57 lakhs (2001)**

**Projected Population: 30 lakhs (2030)**

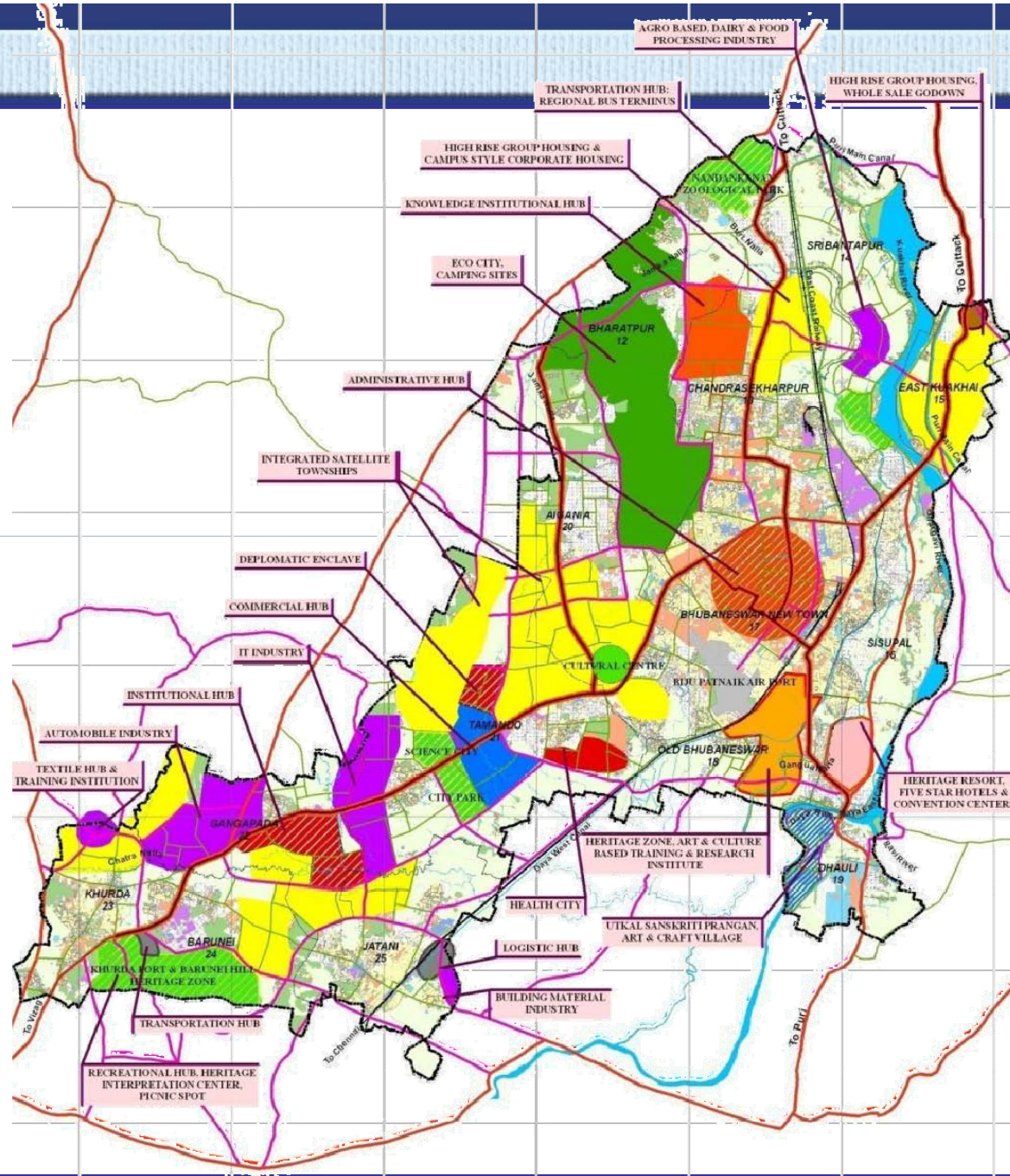
BDPA consists of:

<b>Municipal Corp./Municipality / Other</b>	<b>Revenue Villages</b>	<b>Wards</b>
<b>Bhubaneswar</b>	<b>60</b>	<b>47</b>
<b>Jatani</b>	<b>1413</b>	<b>24</b>
<b>Khurda</b>	<b>910</b>	<b>22</b>
<b>BDPA Rural</b>	<b>122</b>	<b>0</b>
<b>Total</b>	<b>205</b>	<b>93</b>



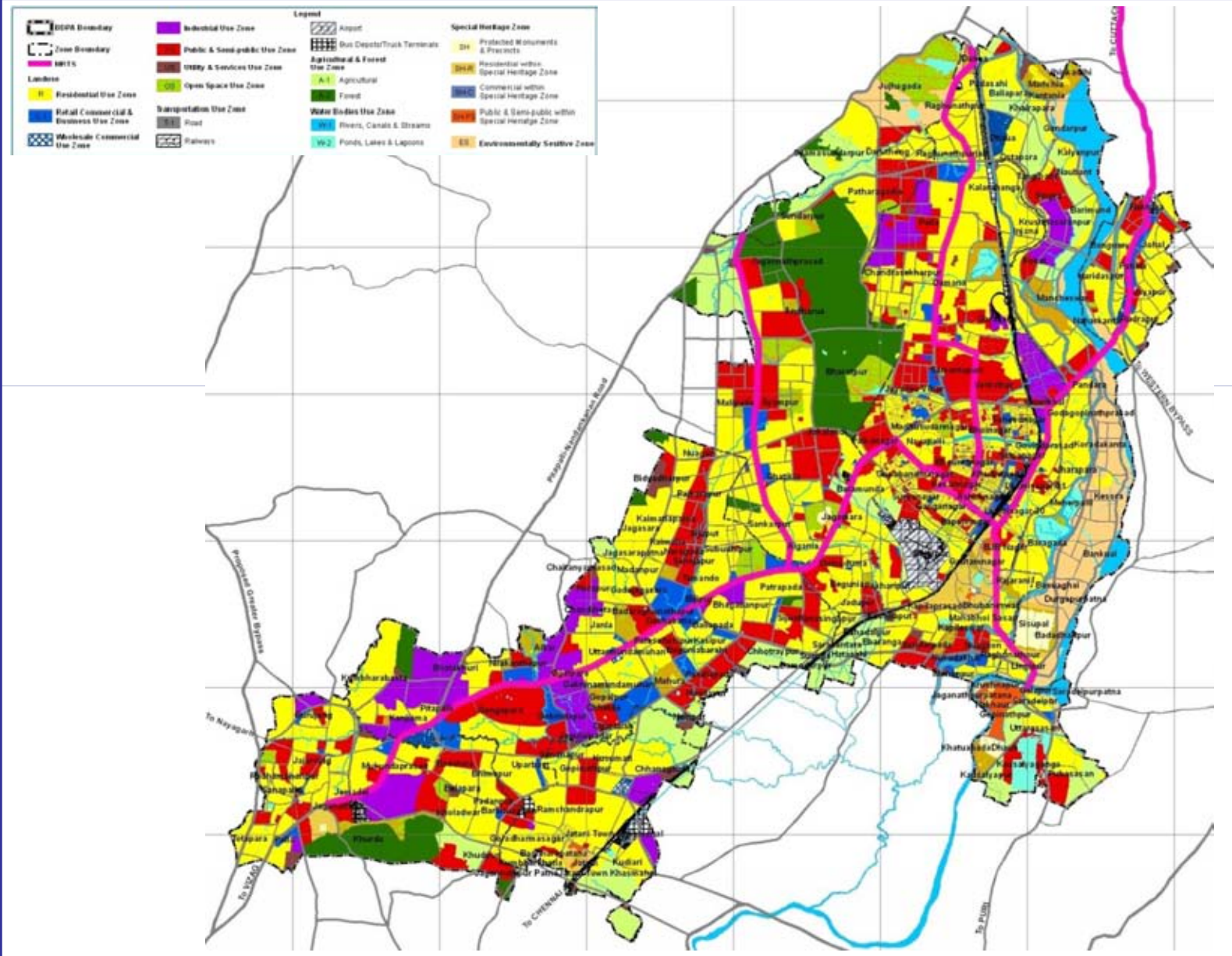


# Concept Plan



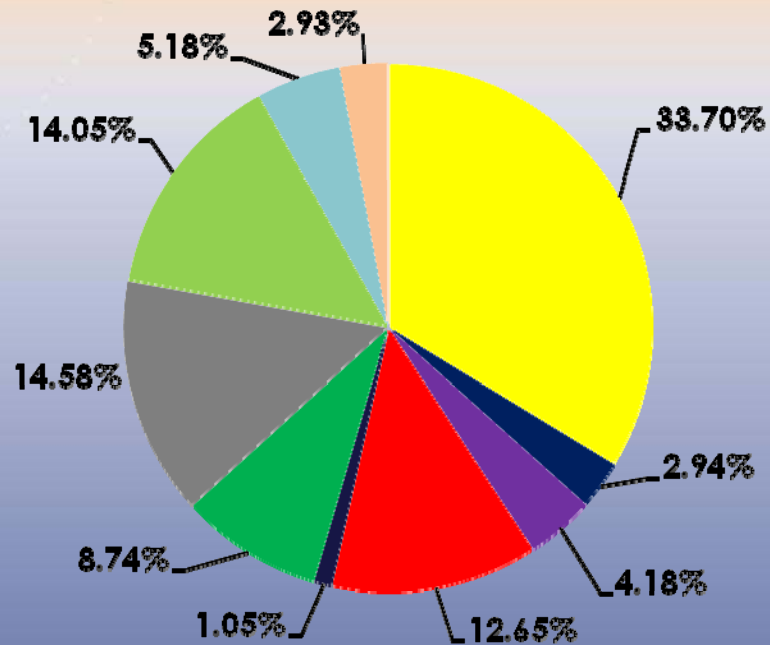


# Final Land Use Plan: CDP, Bhubaneswar





## Proposed Land Use Distribution in BDPA



### INDEX:

- Residential
- Commercial
- Industrial
- Public & Semi-Public
- Utilities & Services
- Recreation
- Transportation
- Agriculture
- Water bodies
- Special Area

# Traffic & Transportation



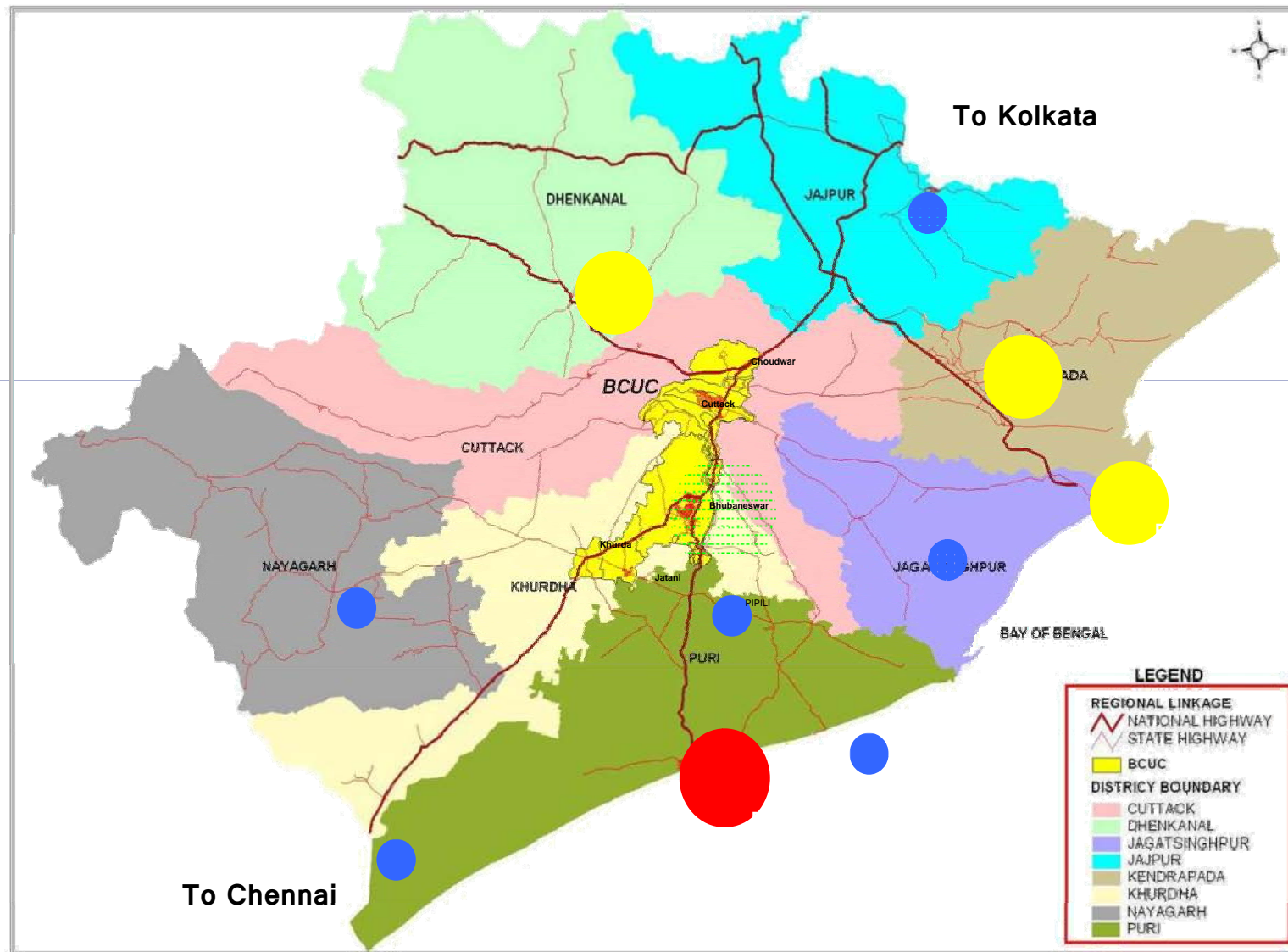


## Key considerations for Traffic and Transportation:

- ❑ Improvement in **Connectivity and Accessibility**
- ❑ **Environmental Improvement** (Reduce congestion and Pollution)
- ❑ **Efficiency** (Improvement in Level of Service)
- ❑ **Equity** (Pedestrian, Cyclists, Transit facilities)

# Regional Connectivity







- ❑ Spatial dispersion of the urban centers reveals that the future **direction of regional interaction**, both people and goods, will be primarily **towards Kolkata Metropolitan Region** and its adjoining urban clusters. However, the urban cluster in the south will also exert reasonable pull.
- ❑ The **existing transit facilities** are a **serious impediment** for regional level passenger interaction and needs immediate intervention. The **terminal facilities** for bus and rail are incapable to cater to the existing demand.
- ❑ **Need for modern freight handling depot and facilities** to cope with the rising freight movement needs to be addressed.
- ❑ **Regional freight movement** within BCUC passes through many busy urban settlements. This has caused serious interference with the urban operations resulting in intermixing of the local and regional traffic, consequential reduction in travel speed, congestion, pollution, along with high accident rates.
- ❑ A **rapid growth in the air passengers' demand** is expected due to a steady rise in the service industries and rising per capita income and declining airline costs.

## Road and Rail Connectivity

- **Recommendation 1: Construction of bypass alignment along the fringes of the BCUC**
  - ✓ **Action I:** Bypass link to Cuttack-Puri Road (NH-203) from Pipli crossing Bhargavi and Kushabhadra River and joining at Janmajaypur (near Pahal-Phulnakra area)
  - ✓ **Action II:** Extension of the bypass link from Pipli to Kuradmal connecting the NH-5 via Jatni and Khurda
  - ✓ **Action III:** Extension of this bypass alignment from Phulnakra to Paradeep road and further connecting NH-5 near Nirgundi.
- **Recommendation 2:** Creation of **Regional level Integrated Multi-modal Logistic Hub** at Choudwar
- **Recommendation 3:** Construction of **new regional level bus passenger terminal facilities** at Barang
- **Recommendation 4:** Alignment for **high capacity Mass Transit system** connecting Jatani, Khurda, Bhubaneswar, Barang, Cuttack and Choudwar.



# Intra-Regional Connectivity



## *Intra-Regional Level: Key Issues*

- ❑ The Bhubaneswar-Cuttack Region comprises **two major urban centers namely Cuttack and Bhubaneswar**. In and around Bhubaneswar and Cuttack, few Class II and Class III towns have flourished having strategic importance in the functioning of BCUC, namely **Khurda, Jatani and Choudwar**.
- ❑ The **inter-urban trips** between the cities constitute **10 – 15%** of the total trips generated in Bhubaneswar and Cuttack.
- ❑ The proportion of **work and education trip** contribute **60-70% and 10-20%** of the interaction, respectively.
- ❑ Modal split shows the **share of public transit is about 20-30%** (of which train services comprise about 5% and rest served by regional bus services) and **70%** running on **privately owned vehicles** (two and four wheelers with a **predominance of two wheelers**).
- ❑ **Lack of overall public transit facilities**, particularly poor quality transit vehicles, improper route selection, low transit frequency and high waiting time, unacceptable journey time is a serious impediment to inter-urban passenger interaction via public transit.





## *Intra-Regional level: Major Proposals*

### ▪ **Recommendation 1: Improving connectivity of Jatni with Bhubaneswar urban area**

- ✓ **Action I:** Construction of link from Jatni to Bhubaneswar (till Bhadalpur) parallel to the rail alignment on western side.
- ✓ **Action II:** Upgradation of the Aiginia-Bhadalpur Road connecting NH-5 and the proposed Jatni-Bhubaneswar link and further linking it to the Lingaraj road and meeting Cuttak-Puri link (NH-203) near Dhauli.

### ▪ **Recommendation 2: Upgradation of the link** connecting NH-5 (from Pitapally –Gangapada) with the Nandankanan road (at Sribantapur) via north of Bharatpur forest

### ▪ **Recommendation 3: Upgradation of the link** connecting Nandankanan road (from Sribantapur) to the outer ring road of the Cuttack urban area via new proposed bridge on River Kathjori (near Krishnachandrapur).

### ▪ **Recommendation 4: Construction of new link** from outer ring road of Cuttack urban area (near Badambadi bus stand feeder road) to NH-42 (near Choudwar) via new bridge over River Mahanadi.

### ▪ **Recommendation 5: Construction/upgradation of the various links** connecting NH-5 with the proposed north-south corridor (from Pitapalli-Ganapada connecting Choudwar via Cuttack).

### ▪ **Recommendation 6: Upgradation of the road alignment** connecting NH-5 (near Gopalpur) with the proposed Greater bypass road near Athagarh town via Naraj Barage bridge on River Mahanadi. A part of this road alignment is parallel to the River Kathjori and meets Nandankanan road at Krishnachandrapur.



## *Intra-Regional level: Major Proposals*

- **Recommendation 7: Construction of feeder links** from the greater bypass on western periphery of BCUC
  - ✓ **Action I:** Upgradation of link from Nandankanan to the greater bypass via Mundali – following an existing alignment parallel to River Mahanadi on southern
  - ✓ **Action II:** Construction of an eco-trail through Chandaka forest reserve from proposed north-south corridor (from Mendhasal reserve forest area)
  - ✓ **Action III:** Construction of a link road from proposed north-south corridor along the southern periphery of the Chandaka reserve forest area
- **Recommendation 8: Upgradation of the Cuttack Paradip road** (from NH-5 intersection near Orissa State Press chowk)
- **Recommendation 9:** Construction of a whole sale trading hub for perishable goods along with **freight carrier terminal and storage facilities in Pahal-Baliana area** (near the intersection of NH-5 and bypass alignment from Pipli via Kakatpur)
- **Recommendation 10:** Construction of whole sale trading hub for non-perishable and building materials along with **integrated multi-modal transshipment facilities at Jatni**
- **Recommendation 11:** Suburban commuter rail services along the Jatni-Bhubaneswar-Cuttack-Choudwar rail alignment with inclusion of Khurda after the proposed **augmentation of rail connectivity**
- **Recommendation 12: Appropriate Mass transit options** along alignment along Jatni-Khurda-Bhubaneswar-Barang-Cuttack-Choudwar





# Traffic and Transportation Proposals

- ■ ■ ■ ■ Proposed Regional Links
- ■ ■ ■ ■ Proposed Links (Tentative Alignment)
- Upgraded Links (Tentative Alignment)

Bus  
Terminal at  
Bidanasi

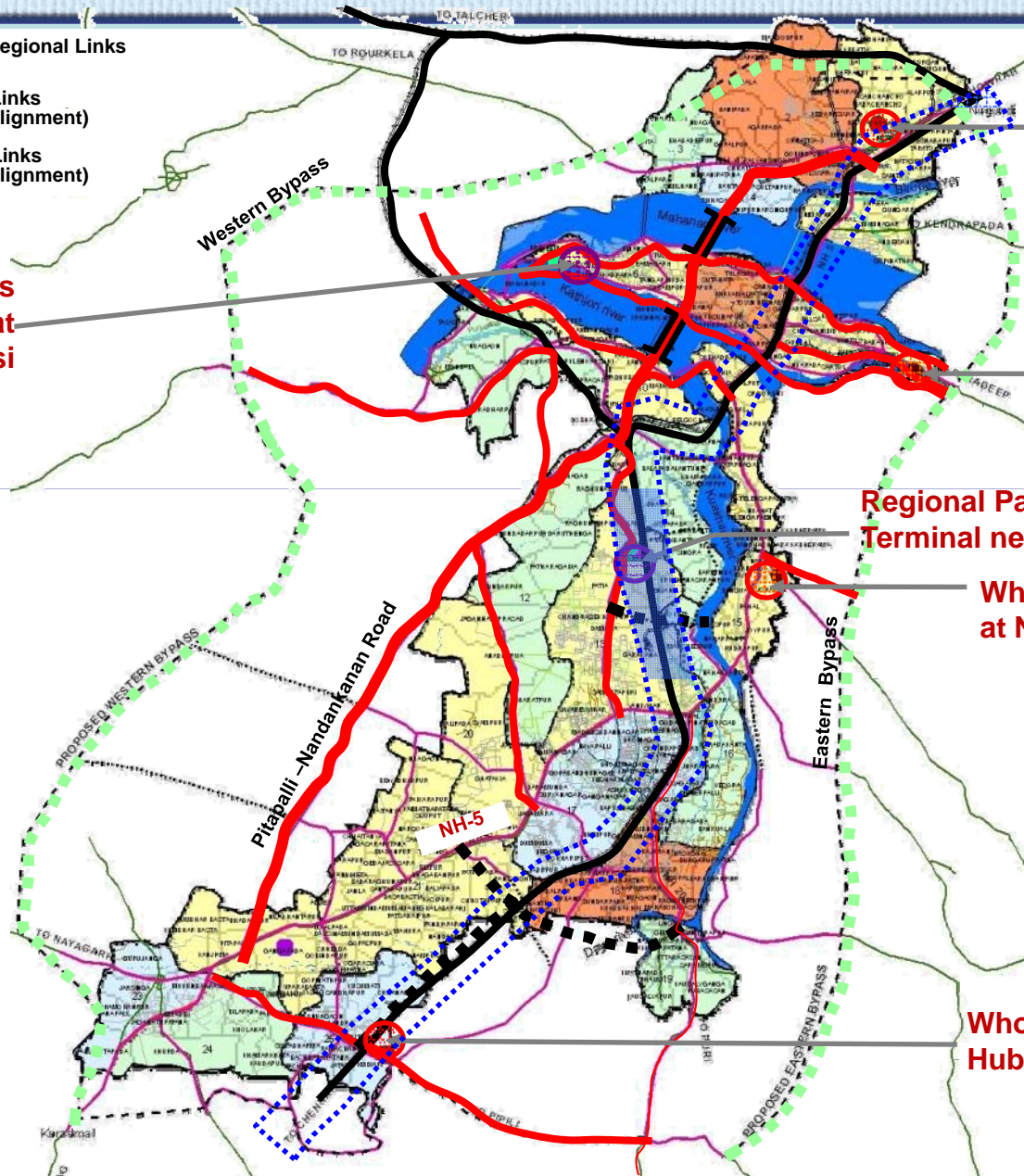
Logistic  
Hub at  
Nirgundi

Wholesale  
Godown at  
Mangarajpur

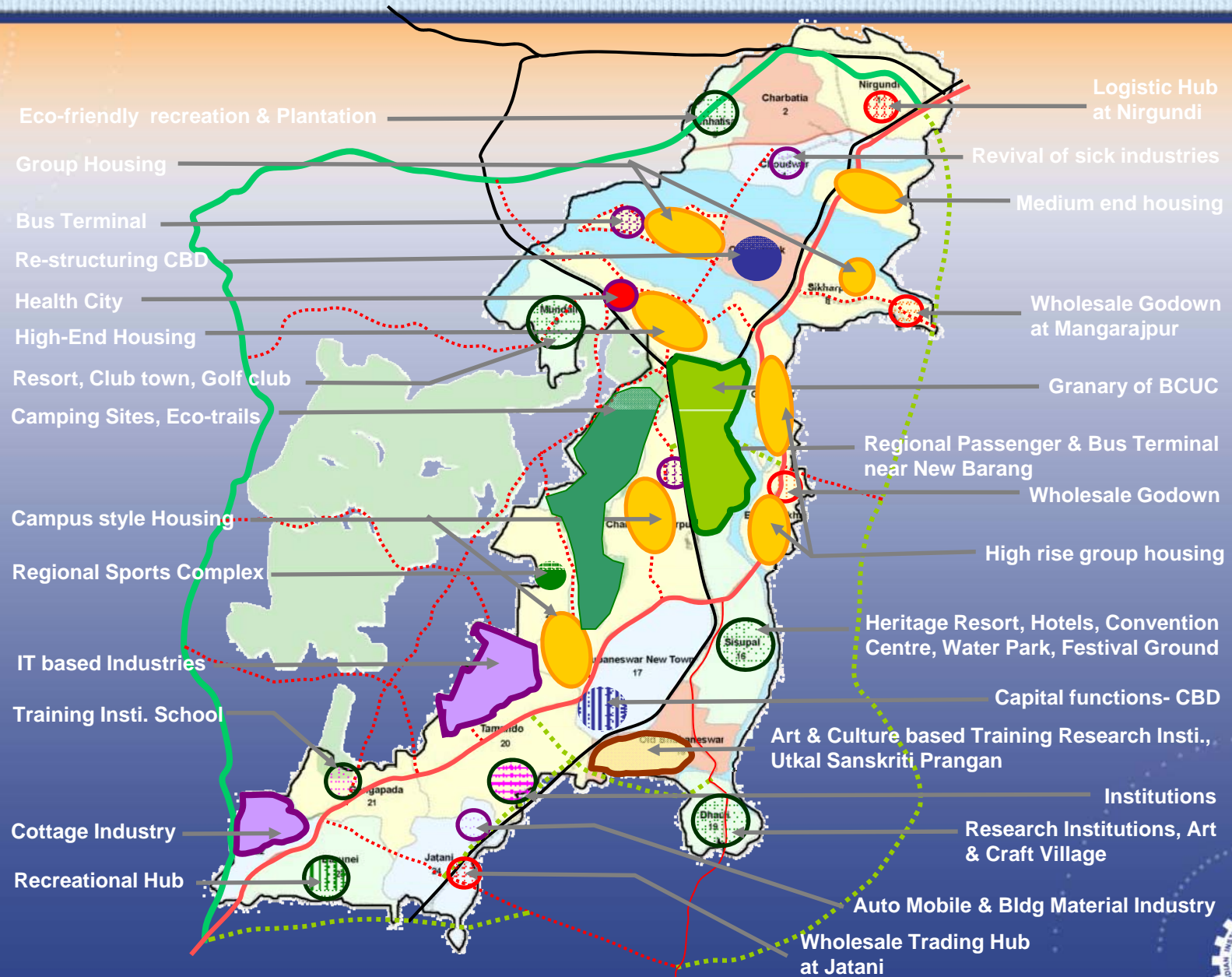
Regional Passenger & Bus  
Terminal near New Barang

Wholesale Godown  
at Nakhara

Wholesale Trading  
Hub at Jatani

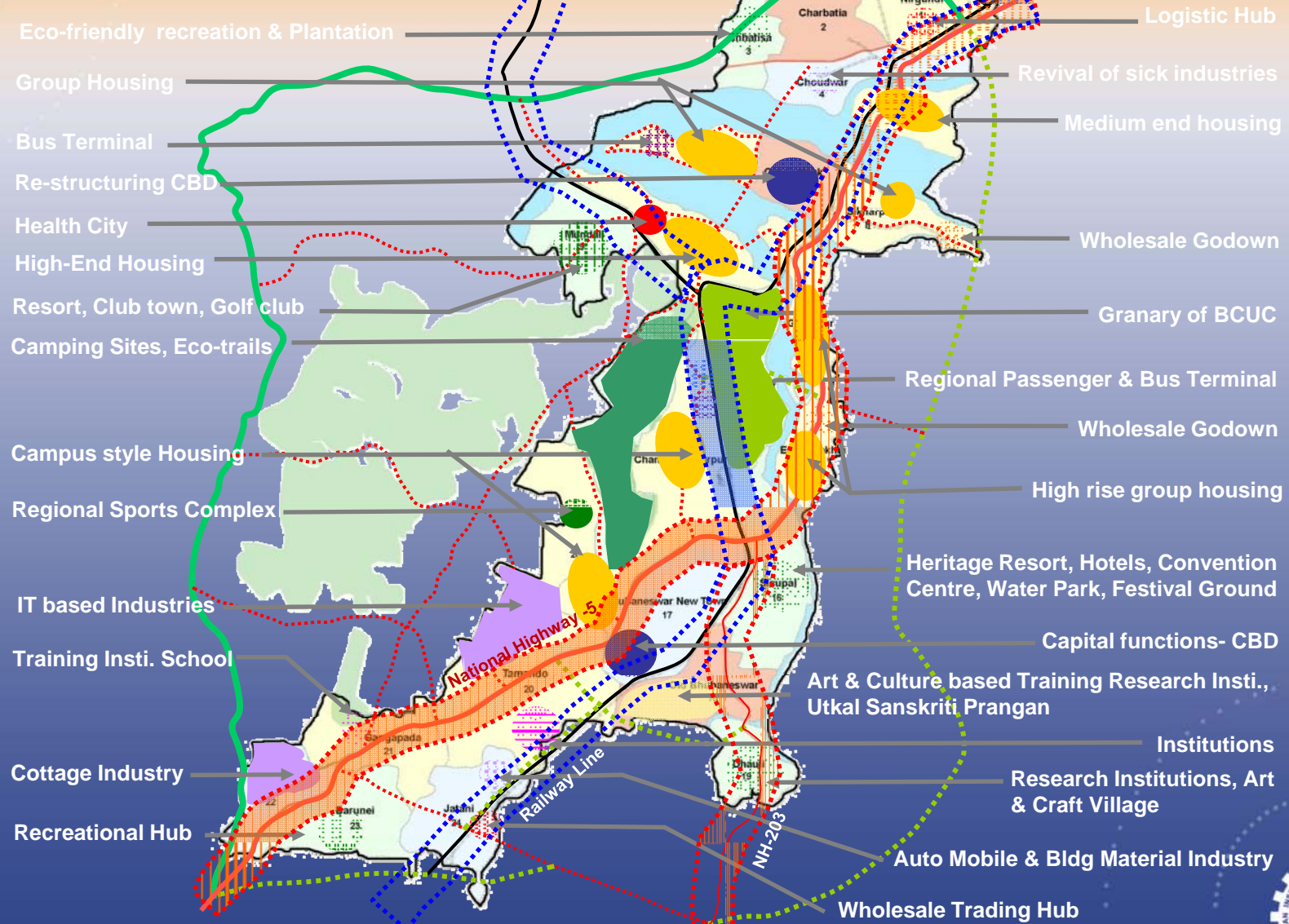


## Proposed Functions in Future Planning Zones





## Proposed Functions in Future Planning Zones





## *City Level Connectivity*



● **Vehicle ownership pattern:**

4/5th of vehicle stock **2-wheeler** growing at a rate of 24 percent per annum

● **Trip characteristics:**

- 55 % trips made on private transit
- 11.6 % para transit
- 11.8 % **public transit**
- Nearly 2/5th of the total trips non-motorised
- Trip distances very high for BDPA rural areas, Khurda and Jatani
- Mode transfer rate low – between 1 and 2



## *City Level: Appraisal of Road network and Connectivity*

- **Road Inventory analysis** (for 1960 kms of road length)
- **Intersection analysis** (for 55 major intersections)
  - Approaching traffic volume
  - Turning volume analysis
  - Pedestrian volume
  - Modal split
    - Share of fast and slow moving vehicles
    - Share of passenger and goods vehicles
    - Share of various types of transit among passenger vehicle traffic
- **Midblock analysis** (for 73 road links)
  - Traffic volume
  - Pedestrian volume
  - Modal split
- **Parking accumulation survey** (for 57 locations)
  - Private transit parking (2-wheeler and 4-wheeler)
  - Para transit parking (fast and slow moving)
  - Freight vehicle parking

## *City Level: Appraisal of Passenger Transit facilities*

### ● **Bus passenger transit facilities**

- Fleet strength and coverage
- Terminal locations and their capacities
- Passenger boarding and alighting facilities

### ● **Rail passenger terminal handling capacities** for various important stations i.e. Bhubaneswar and

Khurda Road.

### ● **Growth of air traffic**

- Passenger - 33.7 percent in June 2005 – 2006 (more than 40 percent for Bangalore)
- Goods – 12.9 percent (around 20 percent for Bangalore)
- Handling capacity of the domestic airport sufficient for at least 2015
- Needs to increase the runway length to a further 13000 feet to handle larger size
- aircrafts i.e. Boeing 747





- ❑ **Mixing of local traffic with regional traffic** movement and slows them down. Moreover, the intersection geometry at certain junctions has been found inappropriate which leads to significant delay at those intersections.
- ❑ It is observed that some **urban arterial roads are very congested**.
- ❑ Provision of **both off street and on street parking facilities are lacking**.
- ❑ Special attention need to be given to the **wholesale market** operations located along with urban arterials as loading/ unloading operations often spill over upto vehicular carriageway.
- ❑ **Overall level of public transit services is poor**. Existing bus stand facilities and auto rickshaw terminal facilities are less in number compared to the need, of inadequate capacity, poorly designed and in need of immediate planning intervention.
- ❑ Insufficient foot path width at many places, poor foot path surface quality and less numbers of zebra crossings at intervals results in **poor and unsafe pedestrian movement**.
- ❑ **Nonexistent or inappropriate cycling facilities** lead to intermixing of slow moving vehicles with fast moving ones – reducing the vehicular travel speed.



## Improvement of Transit facilities:

**Better transit facilities reduce congestion, pollution and help to give access to the disadvantaged class who are not able to afford/use motorized private vehicles.**

### ● **MRT alignment after evaluating four alternative alignments:**

- Tamando – Baramunda – CRPF SQ – AG SQ – Kalpana SQ
- AG SQ – Acharya Vihar SQ – Sainik School – NALCO – Chandaka Industrial
- Estate – Barang – Bidanasi –Buxibazar – Malgodown
- Lingaraja Temple – – Rasulgarh SQ – Phulnakhara – Malgodown –
- Choudwar – Malyanpur

### ● **ROW of 200-300 ft has been reserved** to accommodate any type of mass transit technology options.

### ● **Mass transit alignment needs to be extended:**

- beyond Tamando upto Jatni via Khurda
- beyond Lingaraja Temple upto Dhauli.

## Intersection Traffic management:

- Grade separated pedestrian facilities
- Cycle tracks
- Traffic rotaries
- Traffic signals
- Interchanges

Grade separated interchanges in at least 10 locations by Year 2015:

- Four locations need them immediately (Master Canteen Chowk, Kalpana SQ, Vani Vihar SQ and Rajmahal SQ)
- Acharya Vihar SQ, CRPF SQ, Baramunda Fire Station SQ, AG SQ, Bayababa Chowk and Shriya Chowk need them by 2015

Rotaries are not advisable within the urban areas

- land intensive in nature.
- better to replace them with signalised intersections

## Example of Recommendations for an Intersection Traffic management:

	Facility	Remarks	IRC Code
Intersection 1:			
	Grade separated Pedestrian Facilities	Not Advisable	IRC:103-1988
	Cycle Tracks	Advisable in 2008	IRC:11-1962
Hansapal SQ	Traffic Rotaries	Not Advisable	IRC:65-1976
	Traffic Signals	Advisable	IRC:93-1985
	Interchanges	Advisable in 2030	IRC:92-1985





## ● Link traffic management

- Link capacity augmentation
- Controlled pedestrian crossing facilities
- Cycle tracks

### Links requiring six laning to meet the demand for Year 2015:

- Hanspal SQ – Rasulgarh SQ – Jaydev Vihar SQ and Baramunda Fire Station – Khandagiri (along NH-5)
- Jaydev Vihar – Damana SQ
- Rasulgarh SQ – Laxmisagar – Kalpana SQ – Ravi Talkies
- Acharya Vihar SQ – Rabindra Mandap – AG SQ
- Vani Vihar SQ – Master Canteen Chowk – Sishu Bhawan SQ
- Master Canteen Chowk – Rabindra Mandap and Rajmahal SQ – AG SQ

### Example of Recommendations for Links Traffic management:

Sl. No.	Link	Controlled Pedestrian Crossing	Cycle Tracks	2015	2030
1	1 - Cuttack	Advisable in 2008	Advisable in 2008	4 Lane	6 Lane* ( additional 2 Lane Road required)
2	1 - 2	Advisable in 2008	Advisable in 2008	6 Lane*	6 Lane* ( additional 6 Lane Road required)

## Improvement of Freight Terminal and Parking facilities:

● **Construction of a wholesale trading hub** for perishable goods along with freight carrier terminal and storage facilities **in Pahal-Balianta area** (near the intersection of NH-5 and bypass alignment from Pipili via Kakatpur)

- Truck parking facility for 500 freight containers to be planned along with 2 million sq.ft of warehousing and cold storage space

● **Construction of wholesale trading hub** for non-perishable goods and building materials along with integrated multi-modal transshipment facilities **at Jatani**

- 1000 freight carriers along with at least 5 million sq.ft of warehousing and storage space.
- Integrated multimodal transshipment hub with mechanized container handling capacity.
- Provision of developed land for processing and packaging industries, automobile assembly units and other non-polluting downstream ancillary industries



● **Off-street parking facilities (surface/multi-level)**

- Rasulgarh SQ – Vani Vihar SQ – Acharya Vihar SQ – Jaydev Vihar SQ –Banyan Tree Chowk – CRPF SQ – Baramunda Fire station Sq – Khandagiri SQ (along the NH-5)
- Museum Chowk – Kalpana SQ – Ravi Talkies – Samantrapur SQ
- Acharya Vihar SQ – Nicco park SQ
- Xavier's SQ – Jaydev Vihar SQ – Power House Chowk – Raj Bhawan SQ – AG SQ
- Poonama Gate – Shishu Bhawan SQ – Ganganagar SQ – Siripur SQ – Delta SQ – Baramunda Fire station SQ

● **Partial/temporal restriction on on-street parking**

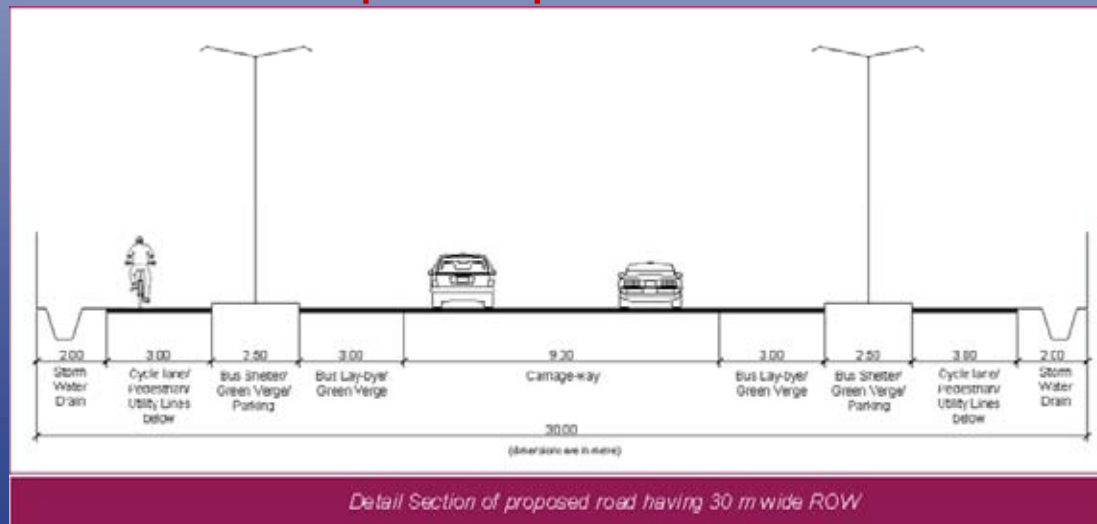
- Rasulgarh SQ – Shaheed Nagar rail crossing - Laxmisagar SQ – Chintamani SQ - Kalpana SQ
- Vani Vihar SQ – Rupali SQ – Baya Baba SQ – Forum Mart SQ – Rammandir SQ – Shriya Chowk – Master Canteen Chowk – Rajmahal SQ – Shishu Bhawan SQ
- Xavier's SQ – Kalinga Hospital Chowk – Nalco SQ – Omfed Chowk – Damana SQ
- Kalpana SQ – Rajmahal SQ - AG SQ

● **Para transit parking facilities**

## Hierarchy of Road:

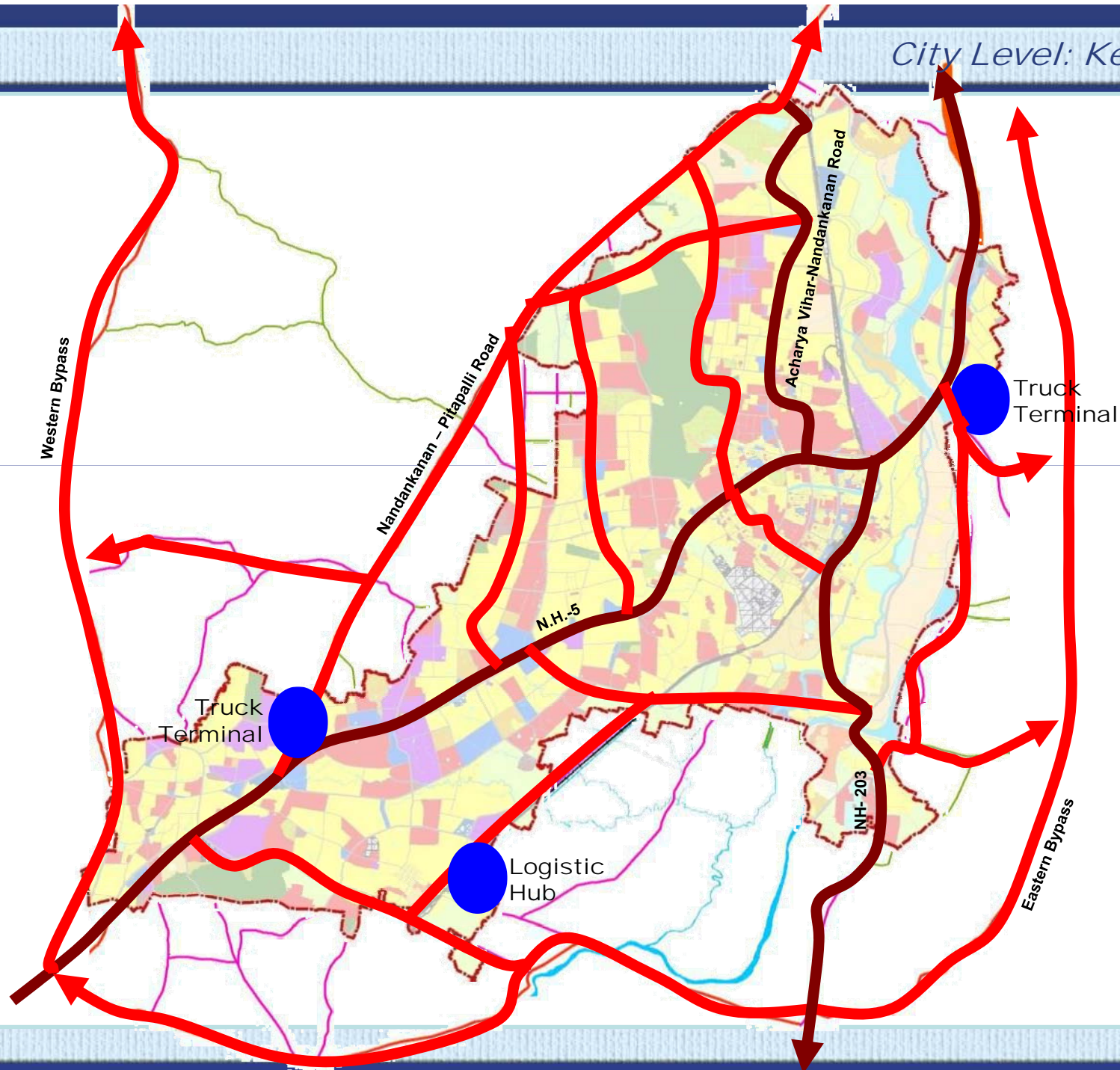
- Ⓐ Roads with **90m** Right of Way (ROW)
- Ⓑ Roads with **60m** Right of Way (ROW)
- Ⓒ Roads with **30m** Right of Way (ROW)
- Ⓓ Roads with **24m** Right of Way (ROW)
- Ⓔ Roads with **18m** Right of Way (ROW)
- Ⓕ Roads with **12m** Right of Way (ROW)

### Example of Proposed Road Section:



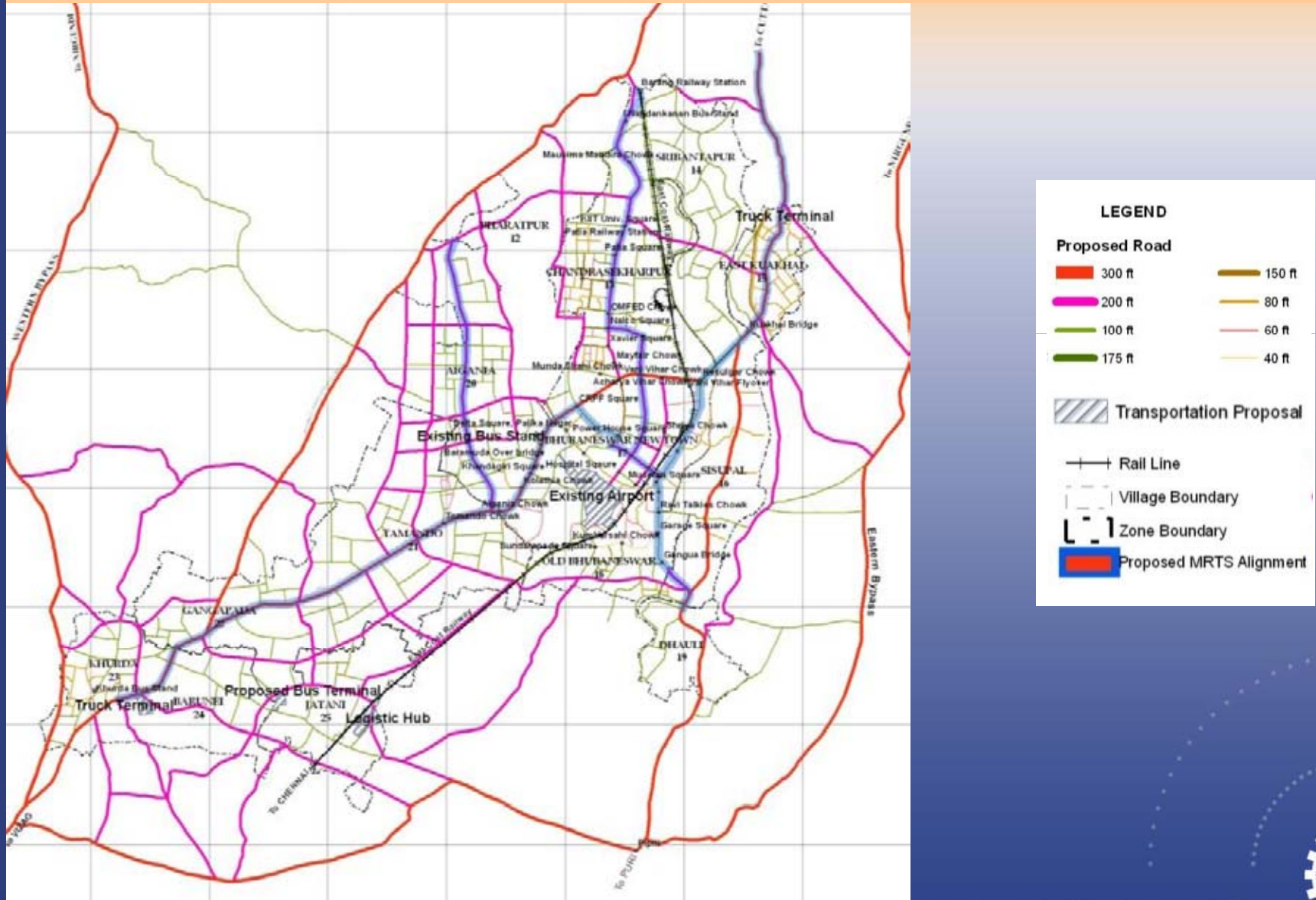


## City Level: Key Proposals



### City Level: CDP Proposed Road Network

- 🌐 In addition connectivity to existing rural areas has been enhanced by proposing new roads.





*THANK YOU*

