

AMARAVATI DEEP DIVE WORKSHOP

14, 15 DECEMBER 2017

THE GATEWAY HOTEL, VIJAYAWADA

Liveability | Economic Powerhouse
Infrastructure | Governance



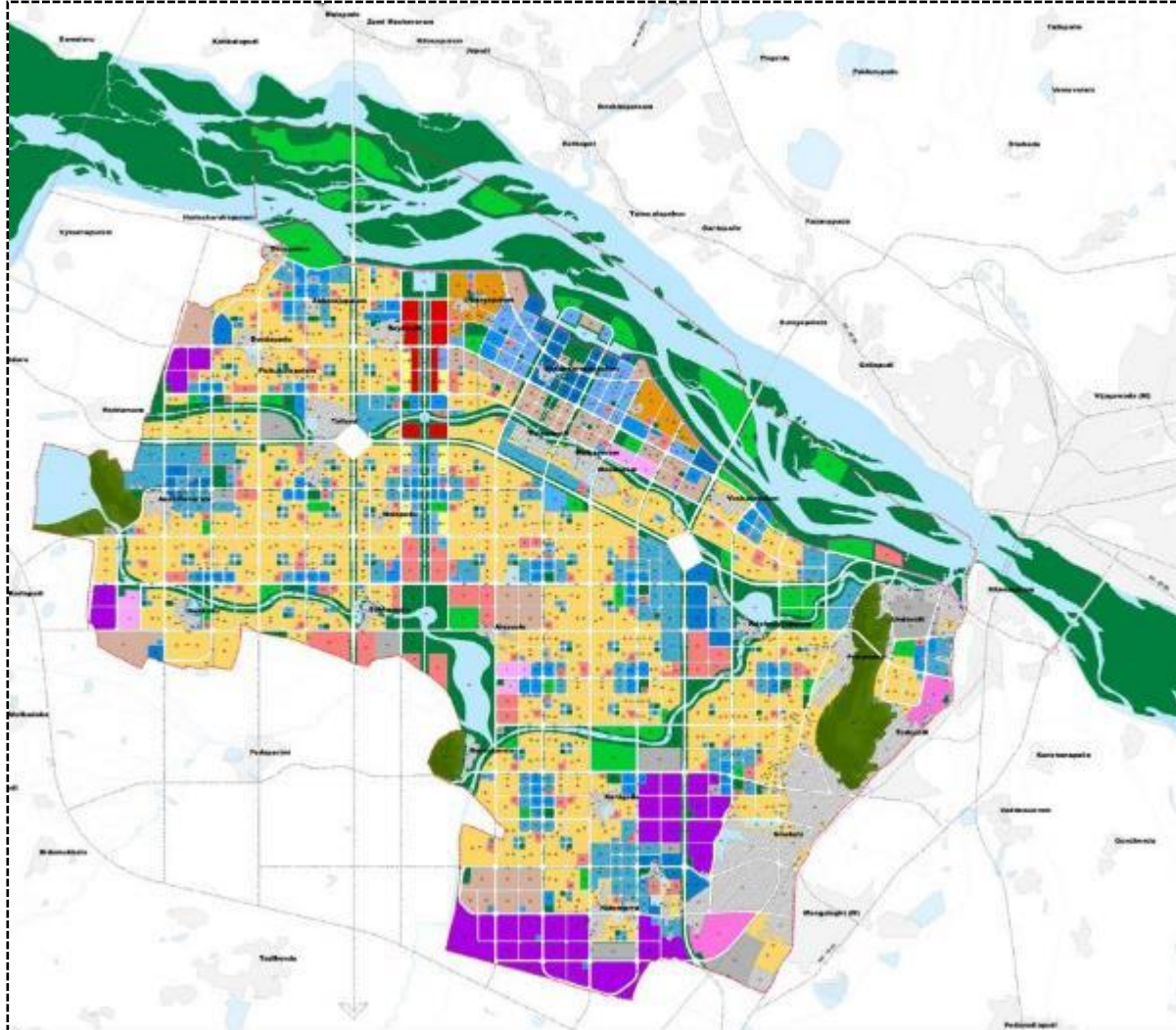
Happy City- Plan, Vision & Action

1	Amaravati masterplan: principles, concepts & key success factor	
2	Land Pooling Development layout	
3	Livability & happiness framework: Elements & metrics	
4	Amaravati happy city vision	
5	Opportunity for Amaravati: Based on global benchmarks & learnings	
6	Inclusion of technology to improve livability in Amaravati	
7	Questions for the panel	
8	Government action plan & way forward	





Amaravati Capital City Master plan



- **25** Existing Settlements
- **9** Themed Cities
- **22 km** of Riverfront
- **55 km** length & 9.2 Sq. km of Green & Blue
- **5** River Island with approx. **3000 Ac.** land

3.5 million resident population (Holding capacity)

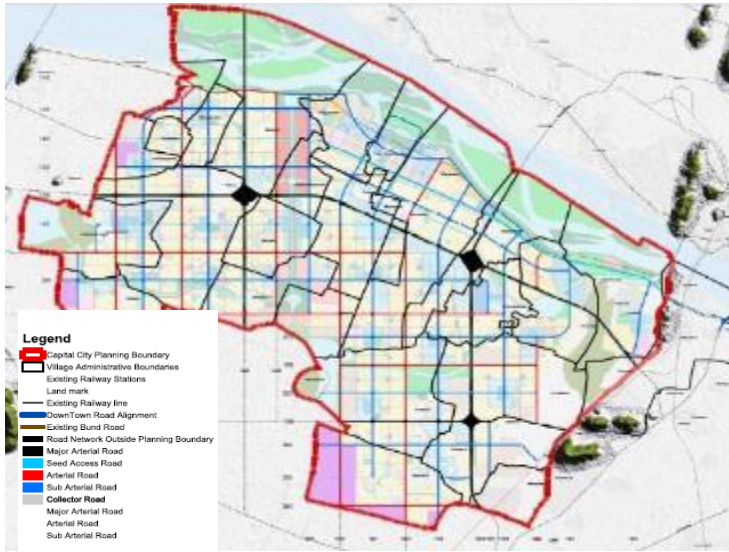
1.5 million jobs

30% area reserved for open spaces and recreational

> 350kms Bicycle/ Jogging tracks on all Arterial roads and Green & Blue network with easy intermodal connectivity within 5 minutes



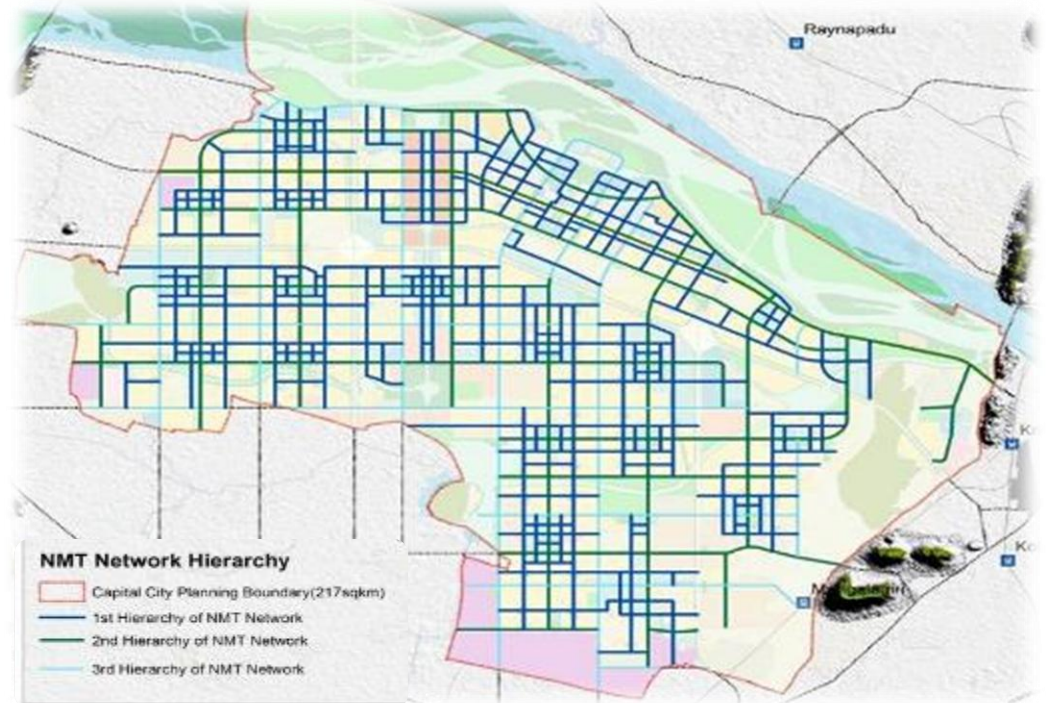
Transportation: Non-Motorized Transport Plan & Public transit network



S.No.	Type of Road	ROW in mt	Length in KM
1	Major Arterial Road	60	51.70
2	Arterial Road	50	88.20
3	Sub Arterial Road	50	158.40
4	Seed Access Road	60	19.30
5	Collector Road	25	324.57
Grand Total			642.17

LPS Road Network Summary

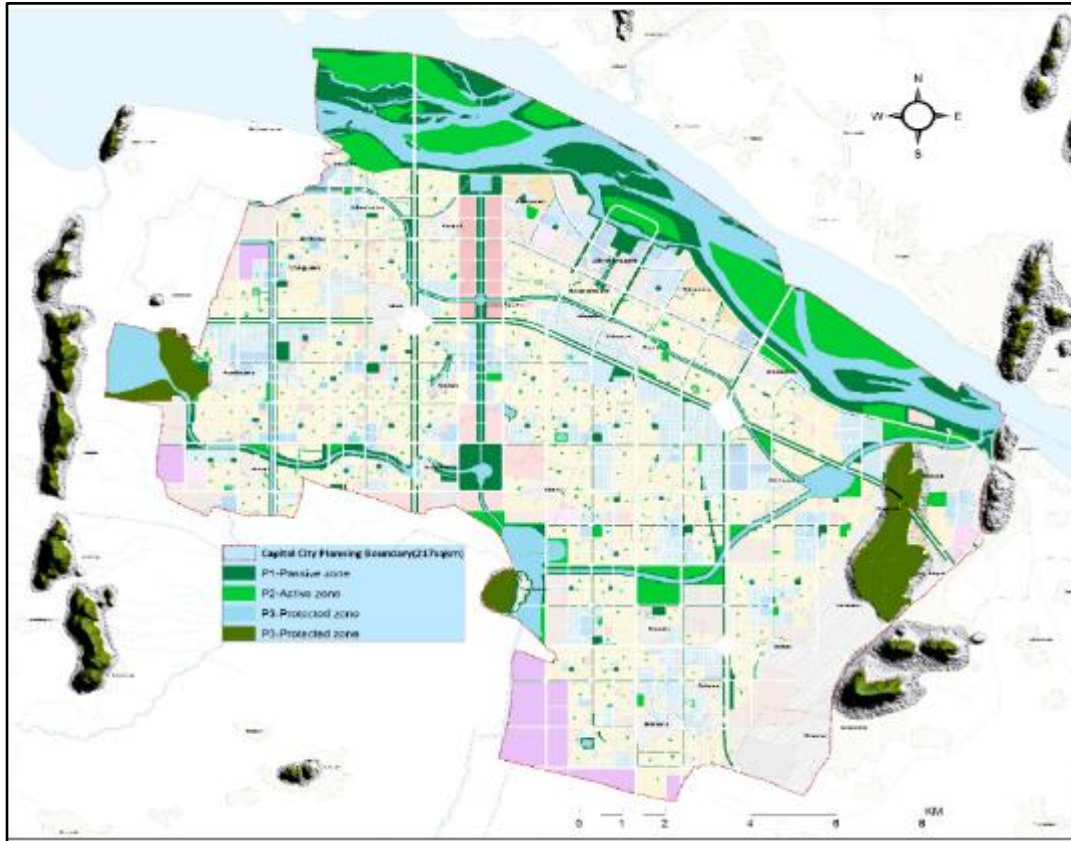
S.No	ROW in mt	Length in KM
1	12	66.83
2	15.6	355.42
3	17	579.30
4	25	79.94
Total Length In KM		1081.49



- **Bicycle/Jogging tracks** on all the roads and Green & Blue network with easy intermodal connectivity within 5 mins.
- **The network** connects **green areas with City parks &** consists of the **neighborhood parks and town parks** -connected with storm water drains and linear parks.
- **Dedicated pedestrian pathways** and **cycle tracks** for approximately road length around **3200 km**.
- All **parks, recreation and open spaces** are **interconnected** with pedestrian pathway and cycling network.



Blue green network



P1-Passive zone(Road Green Buffer, Blue Network Buffer, Island's, River Front Land)	5070ac.	11504 ac.
P3-Protected zone(River, Canal)	4978ac.	
P3-Protected zone(Hills)	1457 ac.	

Primary green spaces: Primary green spaces including large city parks, lakes, town parks, neighbourhood parks, water bodies and public plazas, planned along the existing canals and water bodies to serve as city's main ecological corridors.



Land Pooling Mechanism

A voluntary land pooling mechanism as an alternate to land acquisition mechanism.

Integration of existing villages

All the existing settlements of the Capital city have been retained and strengthened by seamlessly integrating with the new land pooling scheme developments.

Bottom up approach and Public Consultations

Continuous bottom up engagement process with landowners and citizens of Amaravati in day-to-day interactions through public consultation, participation and knowledge sharing workshops

Social Inclusion

This would aim at achieving seamless integration of the neighbourhood level local community/ village planning unit with the broader city level unit through improved connectivity, mobility, communication system as well as promoting social integration and inclusive planning principles in terms of **urban design guidelines**, town planning concepts and zoning regulations that targets population of varied age groups as well as social class structure and gender.



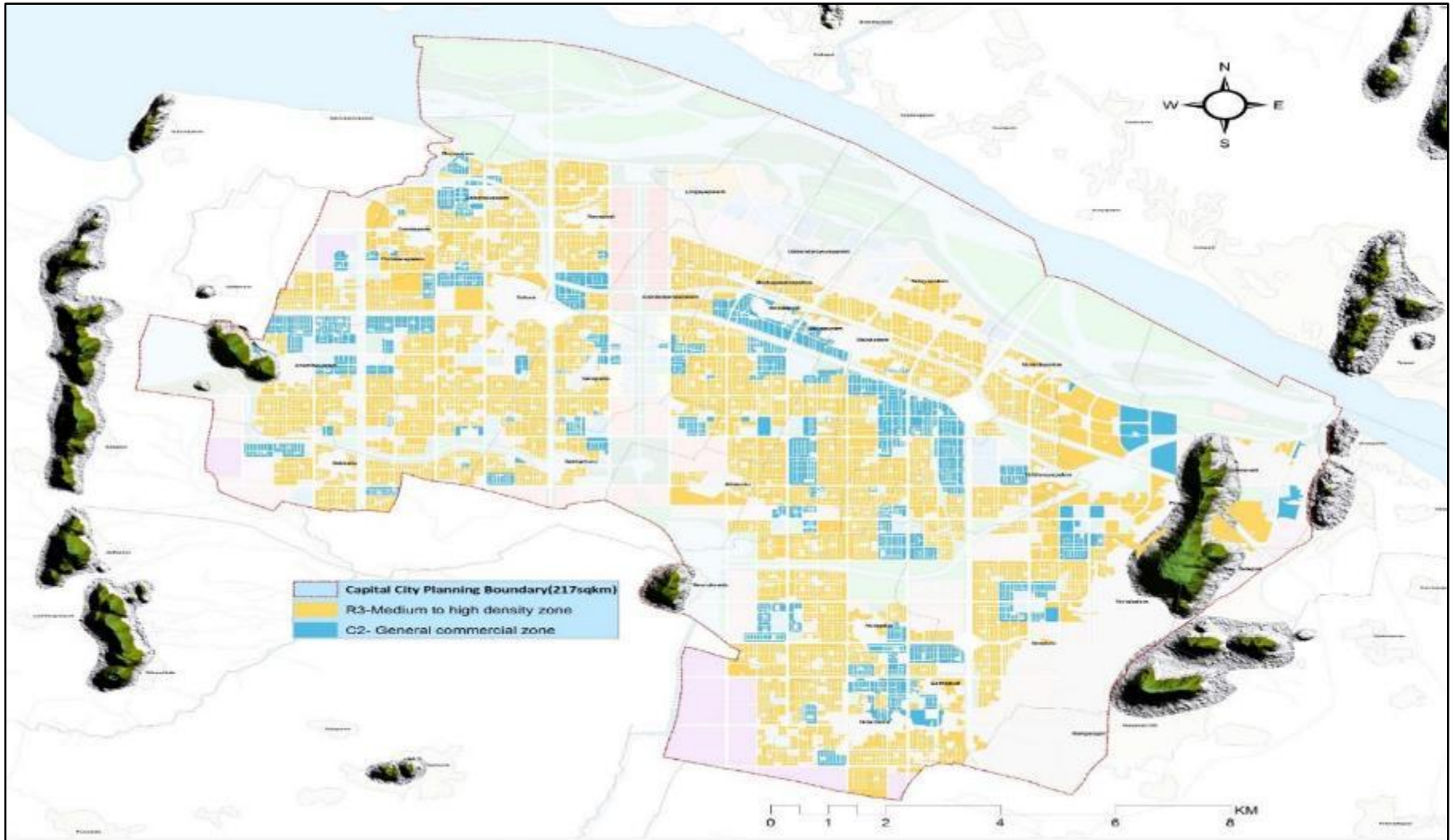
Amaravati Masterplan: Provision of Social Infrastructure



	<u>City Level</u>	<u>Township Level</u>	<u>Neighbourhood Level</u>
Educational Facilities	Technical Education Centre, Engineering College, Medical college, Other Professional College etc.	Junior College	Primary School, Secondary School
Health & Medical	General Hospital etc	Polyclinic, Multi-specialty Hospital	Health centre/ clinics/ Dispensary
Civic & Community Institutions	Police, Civic Facilities etc	Fire Station, Police	...
Parks & Open Space	City Level Park, Botanic Garden	Town Park	Neighborhood Park
Sports & Recreation	Divisional Sports Centre, City Square, Convention Centre, Museums etc.	District Sports Complex	Religious
Commercial Facilities	Local Whole Sale Markets/ Sabzi Mandis	Town Centre	Local Market
Special zone	2233.66	2237	
		Education zone	85 ac
			1250 ac
			1335 ac.
Total area allocated for social amenities: 3572 ac.			

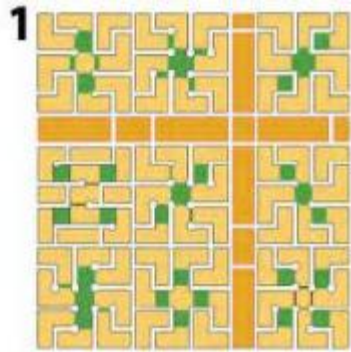


Land Pooling Development layout : Returnable land allocation for Land Pooling Scheme





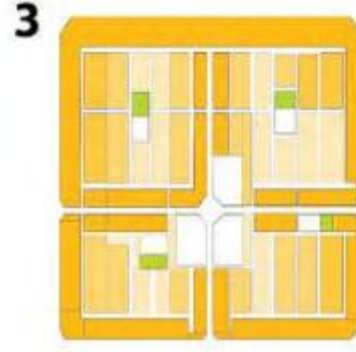
Land Pooling Scheme: planning principles adopted in preparing layouts



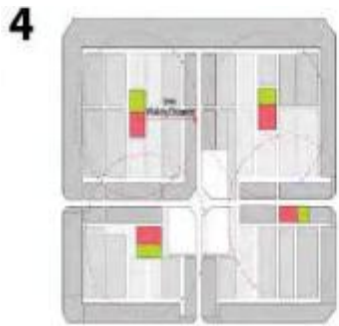
1 Modified Fused grid concept for walkable and livable communities through avoiding unwanted traffic into the neighborhood.



2 Neighborhood facilities and access to public transport within 10 minutes walking distance.



3 Heterogeneous mix of plots in all the communities. 850 types of options in plot sizes to serve the plot requirements of all the farmers. Higher density and big plots like D and E category plots.

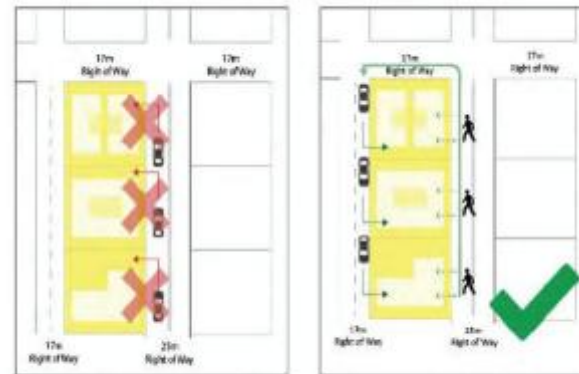


4 Communities are centered around primary school, community centers and community parks within 5 minutes walking distance



5 T-Junctions were avoided for returnable plots by providing urban plug-ins.

Vehicular Plot Access



No vehicular access from plots from collector

Plots facing 25m and above roads will have internal ROI for car access to the major extent possible. However pedestrian entries are permitted for plots facing 25m ROI

1. Pedestrian friendly walkable environments.
2. Community and Neighborhood facilities at 5min and 10min walking distance.
3. Restricted vehicular access to promote NMT.



Integration of existing settlements to New layouts



- Social inclusion through shared public spaces.
- Social Infrastructure like schools and educational institutions as shared amenities between the new and existing settlements.
- Revitalizing and conserving existing natural and socio cultural features.
- Upgrading village level road and storm water infrastructure.



Neighbourhood Park



NMT Network



Community parks and centres



Revitalizing existing natural features: Water body



Planting Strategy

- Withstand with Dry and wet season.
- Low growing ground covers on side slopes
- Leguminous Plants for Bio-filtration
- Ornamental grasses

Hardscape Strategy

- High reflective index.
- Permeable –Semi-permeable paving.
- Antislid Finishes.



Slope protection

- Surface protection as vegetative cover
- Surface drainage –Catch pits & surface channels
- Subsurface drainage –weep holes and subsoil drain

Design Intent:

- Protection of natural features.
- Providing social spaces.

Key design features:

- Pedestrian connectivity along the water body.
- Bio filtration, slope protection, permeable surface.
- Localized programming along the edge (farmers markets, informal sector etc.)



Urban Centers for active mixed use neighbourhoods



- Potential Multilevel parking space on the rear end of the site.
- Visually permeable courtyards and plazas allow for through pedestrian movement connecting the neighbourhood.
- Active ground floor uses contribute to public realm.
- Inclusive spaces for informal sector
- Public plazas
- Table top crossing for safe movement



Neighbourhood Park



NMT Network



Community parks and centres

- Active built edge
- Inclusion of informal sector
- Secondary pedestrian connectivity
- Open spaces.



Street scaping: Objectives, road hierarchy & pedestrian safety



Street hierarchy adopted in preparing Land Pooling Scheme layouts:



Key Considerations:

- Pedestrian friendly environment
- Encourage Non Motorized Transit
- Safety
- MF Zone dedicated for surface level street infrastructure
- Accommodating Pre-Planned utility corridor





Happiness & Livability framework for Amaravati



Developed an integrated happiness & livability framework for cities after assessing 10 global ranking

Leveraged global rankings...

...to develop comprehensive livability and happiness framework

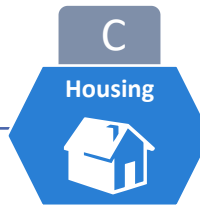
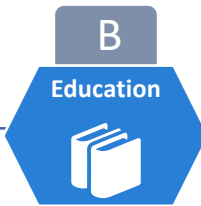
Happiness Indices



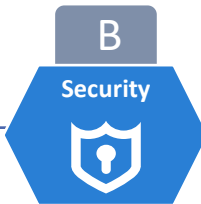
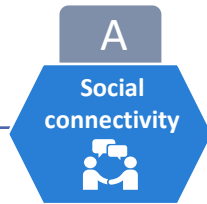
Livability rankings



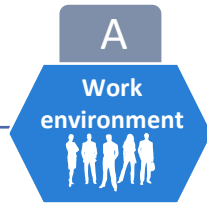
1 Social Infrastructure



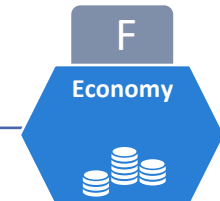
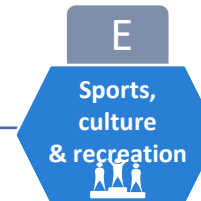
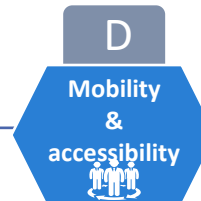
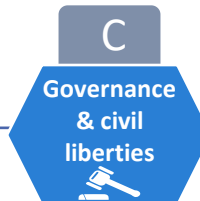
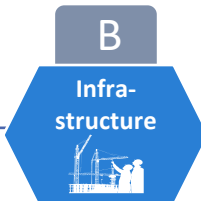
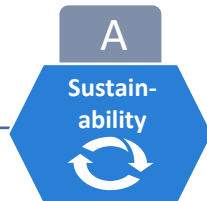
2 Community elements



3 Work-life balance




4 Other elements

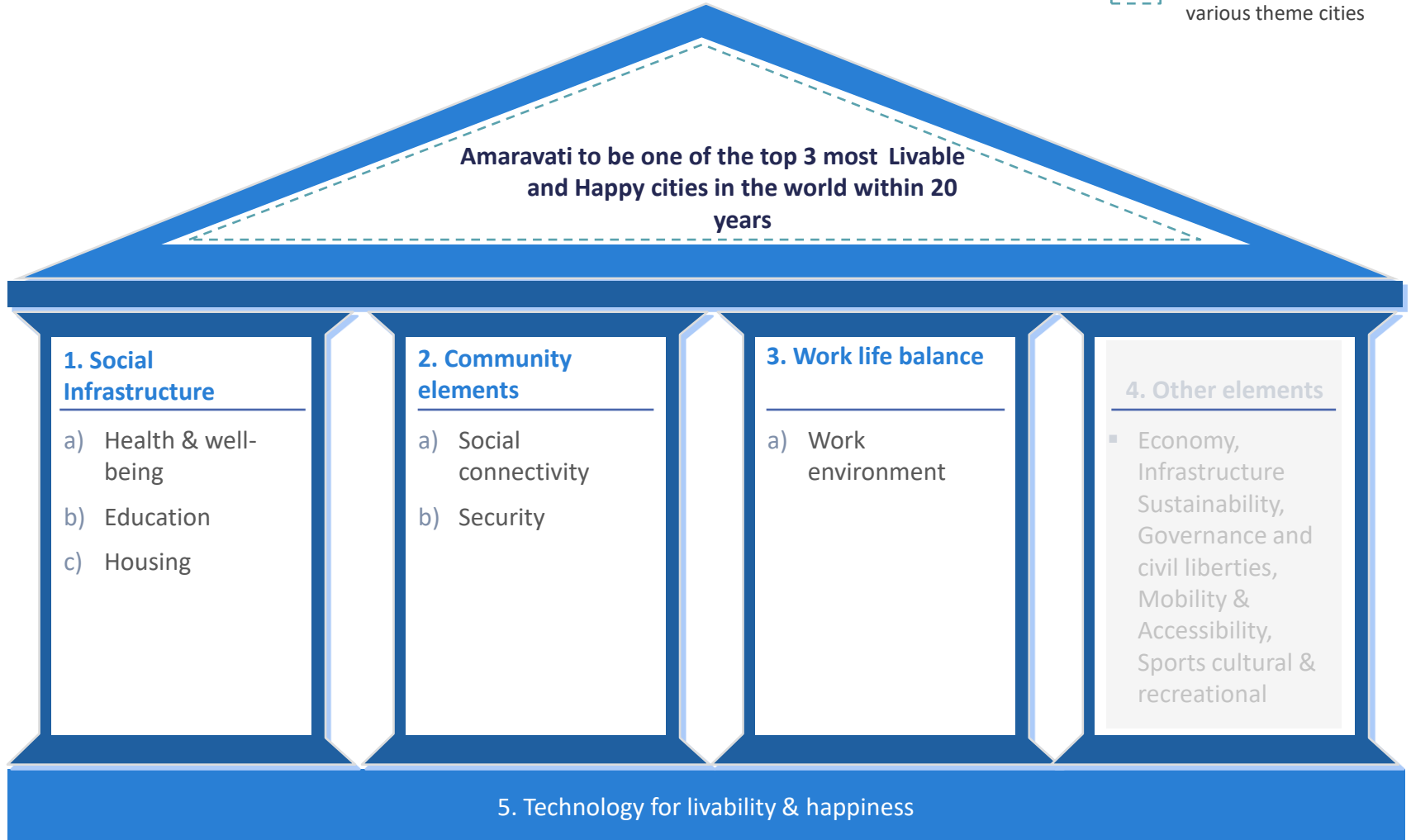




Amaravati's vision is to be one of the top 3 most livable and happiest city globally within 20 years: All 12 elements of Happiness and Livability fall into 5 major groups



 Elements covered under various theme cities





Comprehensive metrics across all elements (1/2)

Elements

Livability Metrics

Happiness Metrics

1a

Health & well being



- Life Expectancy and WHO's Healthy life expectancy (HALE)
- Availability & quality healthcare (patient satisfaction, preventable hospitalization rate)

- Risk to Mental Health
- Healthy and active behavior (smoking and obesity prevalence and access to exercising opportunities)
- Healthy food habits
- Sleep
- Stress
- Youth health

1b

Educa- tion



- Access of education
- Availability of education
- Quality of education

- Early education
- Entrance requirement
- Opportunities to learn and skill advancement

1c

Housing



- Accessibility of quality & affordable housing
- Availability of housing communities
- Shared facilities for housing communities

- Average housing price
- Average rent level

2a

Social connecti- vity



- Civic and social engagement
- Access to neighborhood amenities
- Social interaction

- Neighborhood relationships
- Sense of community
- Volunteer rate



Elements

Livability Metrics

Happiness Metrics

2b Security



- Number of murders per million people
- Economic risk of natural disaster

- Prevalence of crime
- Threat of terror

3a

Work environment



- Opportunity for employment
- Equal and Fair pay

- Life- work balance
- Level of employee satisfaction
- Sense of purpose & quality of work

- Assessment of elements across top livability & happiness indices highlights **interesting overlap across all the 12 elements**
- However, livability metrics measure **objective physical aspect** whereas happiness metrics measures equally important **subjective softer aspects**

“It is not simply a planning, architecture, urban design, or engineering issue; the issue is how to shape an urban environment that facilitates social interaction and development of community and social capital using these tools”

Charles Montgomery, Happy City



1a Health & well-being: Encourage public bike sharing to encourage healthy and active behavior



Opportunity for Amaravati:

- Encourage walking and cycling culture by offering first- and last- mile commuting – via bicycles interconnected urban areas
- Promote bike sharing companies such as Ofo, Bykup, Uber, Ola and Rapido to launch services in Amaravati

Elements

Benchmarks

Best practices and learnings

1 Healthy and active behavior

- **Denmark, Copenhagen:** Healthiest city as per Gallup's Global Wellbeing Index

- *Copenhagen wheel project transforms ordinary bicycles into hybrid e-bikes to save energy dissipated while cycling*
- *Controlled through phone, maps pollution levels, traffic congestion and relative humidity in real-time*



2 Access to quality healthcare

- **Singapore:** World's best healthcare systems

- *Singapore has developed nation-wide electronic medical records system*
- *Promotes healthcare innovation for improved clinical outcomes and operational efficiencies*





1b Education: Inviting leading schools from India and abroad to offer innovative curriculum



Opportunity for Amaravati:

- Invite India's top 15 schools in International (e.g., IB, CIE) and National (e.g, CBSE) curriculums and top 10 schools from countries e.g., Finland recognized for excellence in schooling to setup schools in Amaravati to:
 - hone critical skills required to solve increasingly complex real life problems
 - encourage active extracurricular designed for all round development

Elements

Benchmarks

Best practices and learnings

1 Access, availability & quality of education

- **Finland:** Best school system, World economic forum

- *In Finland, focus in on helping students learn better and not take tests by building innovative curriculums*
- *Students have short school day rich with school-sponsored extracurricular*



2 Opportunities to learn & skill advancement

- **Hong Kong:** 3rd best educational system, Global Index of Cognitive Skills and Educational Attainment

- *In Hong Kong students are tested not only with traditional assessments, but also with real life applications*
- *Educational system values constructivist based learning offering hands on training*





1c Housing: High quality housing at affordable cost to attract global talent



Opportunity for Amaravati:

- Provide rental cost subsidies to employees through companies who made significant investment for job creation in Amaravati
- Attract top developers in affordable and budget categories for quality housing at affordable rates
- Adopt innovative construction techniques such as pre fab, 3D printing & industrialized building system techniques

Elements

Benchmarks

Best practices and learnings

- **Singapore** 2nd rank on Mercer quality of life ranking

- *Singapore's housing development board offers affordable houses to 80% of its population, with about 90% as owners*

- **Berlin, Germany:** Metropolis's second livable city

- *Berlin city implemented "rental price brake" to fix standard median price per sqm for each city district*
- *No new rental contract is permitted to cross 10% limit above the standard median price*

1

Accessibility of quality & affordable housing

2

Average housing price and rent level





2a Social connectivity: Developing social connectivity groups to engage citizens

Opportunity for Amaravati:

- Actively create events/groups to connect citizens from different communities to come together for common interest such as Yoga, Art of Living, Carnatic music and Dance
- Build urban green spaces to act as neutral space within which people come together for social interactions

Elements

Benchmarks

Best practices and learnings

1 Social interaction

- **Gothenburg, Sweden:**
Most sociable city in the world, The 'Sociable Cities' study

- *Gothenburg offers social networks and activities such as language cafes, book clubs, religious congregations, parent groups and expat groups*
- *Has a language coffee shop offering language themed evenings to promote social interactions*

2 Access to neighborhood amenities

- **San Jose, USA:**
Happiest, Healthiest Cities In America

- *San Jose offer multiple community shared facilities such as community gardens, libraries, community centers, & houses of worship*
- *Helps develop strong social connect within different neighborhood areas*



Opportunity for Amaravati:

- Build responsiveness to critical issues such as health and fire emergencies through crisis prevention policies aimed to institute rapid response and through citizen and government collaboration
- Create an intelligence driven policing strategy leveraging video analytics and IOT technology e.g automated vehicle location, predictive policing, cyber security, public safety communications

Elements

Benchmarks

Best practices and learnings

1 Prevalence of crime

- **Tokyo, Japan** : 1st rank on Economist Intelligence Unit's (EIU) Safe Cities Index

- *Tokyo uses mix of measures such as high police visibility to top-ranking digital security*
- *Leverages technology into monitoring infrastructure and traffic, criminal activity, weather in real time*



2 Threat of terror

- **Singapore:** 2nd rank on Economist Intelligence Unit's (EIU) Safe Cities Index

- *Singapore's high reliance on video analytics help Government predict crowd behaviour, coordinate resources & respond to incidents*
- *Facilitate collaboration among agencies to achieve goal of delivering public service for future*





3a Work environment: Encourage companies in Amaravati to focus on employee development and satisfaction



Opportunity for Amaravati:

- Institutionalize companies for positive work environment through annual “Best employee friendly company award by APCRDA” with significant tax and financial incentives
- Formulate policies to assess knowledge of local market needs & skills gaps to ensure equal employee opportunity in Amaravati

Elements

Benchmarks

Best practices and learnings

1 Opportunity for employment

- **London, UK:** 1st rank on PWC’s City of opportunities index

- *To ensure equal employee opportunity, government adopted multiple initiatives e.g. improving knowledge of local market needs & skills gaps*
- *Encourage employers to engage with local education providers, recruit & retain marginalized groups from workforce*



2 Life- work balance

- **Paris, France:** Highest ranked city on work life balance

- *French government initiated law to guarantee employees “right to disconnect” outside office hours*
- *Has policy of working 35 hours a week to ensure higher employee satisfaction*





Upcoming technology trends Amaravati can adopt to offer world class livable and happiness standard (1/2)



Trends

A Testing site for Driverless Cars



B Launching electric bike sharing systems



Amaravati action plan



- *Use Amaravati roads as test patch for autonomous vehicles & driverless cars with self parking*
- *Partner with companies such as Google, Volvo and Uber to support them with trial runs*

- *Promote electric bike sharing systems to serve as main mode of transportation in Amaravati*
- *Collaborate with research labs such as MIT Senseable City to develop social innovation through design*



Upcoming technology trends Amaravati can adopt to offer world class livable and happiness standard (2/2)



Trends

C Using autonomous intelligence-
“City Brain” project



D Happy citizen governance



Amaravati action plan

- Create **city operating system through low-cost wireless sensors** to measure transport congestion, air pollution etc
- Leverage artificial intelligence and analytics for **real time decision making**
- Build an **image of Govt. with a face-** comprehensive video collaborative environment with smart kiosks in different locations e.g any property/ utility service issue resolution



How will day in the life of an employee look like in the office of the future



No need of pre reserved parking – Huge costs savings

No need of Access cards and associated frauds

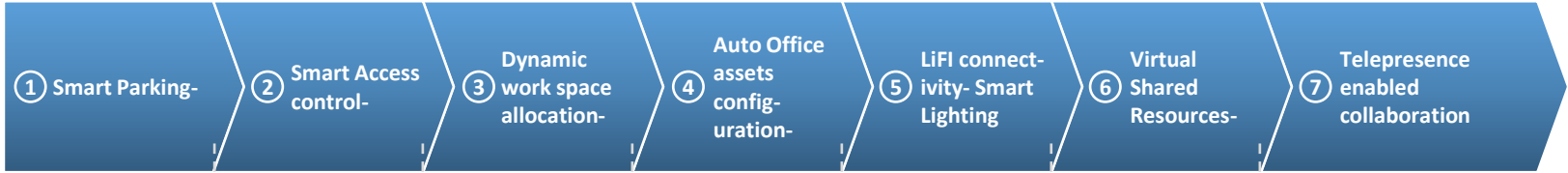
40-50% cost savings

Improved productivity

Improved data connectivity

Improved productivity

No need of travel and remote team management



Employee smart parking through Access control and smart signage - smart phone

Facial Recognition Camera based access management

Work space is allocated on dynamic basis in the neighborhood concept-

Improved productivity through IT and work place resources auto configured

Smart Lighting – and High speed WiFi connected offices –No cables connectivity

Conference rooms, demo rooms, shared spaces and other resources allocated virtually

Complete Telepresence enabled collaboration devices



1 Auto Inventory management

2 Dynamic Utilization of the office real estate

3 Efficient Energy Monitoring-

4 Project based utilization of third party resources

Office services getting notification of the Fax machine that is running out of paper

Weekends and less than peak occupancy, Dynamic allocation of floors to save energy

Dynamic energy management- Solar energy, temperature control on people load, Tubular day lighting

Clear record of rooms that have been used for the day and that need targeted maintenance at the end the of the day Efficient use of third party resources



A Day in the life of an employee at office of the future

B Utilities optimisation in the office of the future

1 Given Amaravati would be a high density city, what specific elements do you recommend for helping Amaravati achieve its vision to become one of the top 3 happiest and most livable cities globally?

2 What can be the key specific action plan for Government 2021 project view? What is the way forward?

3 How can we address the specific Amaravati Masterplan challenge of promoting active mobility and public transport?



Government action plan to achieve the Amaravati happy city vision



Health & well being

- **Promote bike sharing companies** such as Ofo, Bykup, Uber, Ola and Rapido to launch services in Amaravati to ensure first and last mile connectivity through cycling

Education

- Invite International schools recognized for excellence in honing critical skills required to solve increasingly complex real life problems and **encouraging active extracurriculars designed for all round development**

Housing

- Provide **rental cost subsidies to employees** through companies who made significant investment for job creation in Amaravati

Security

- Develop “City Brain” project- **intelligence driven policing strategy leveraging artificial intelligence** to make real time decisions to reduce traffic congestion, road accidents and crime rates

Social connectivity

- Actively create events/groups to **connect citizens from different communities** to come together for common interest such as yoga, art of Living, carnatic music and dance

Work life balance

- **Institutionalize companies for positive work environment** through annual “Best employee friendly company award by APCRDA” with significant tax and financial incentives

Infrastructure

- Partner with companies such as Google, Volvo and Uber to invite them to use Amaravati roads as **test patch for autonomous vehicles & driverless cars**
- Utilize public spaces more effectively for revenue generation by hosting meetings, conferences and exhibitions