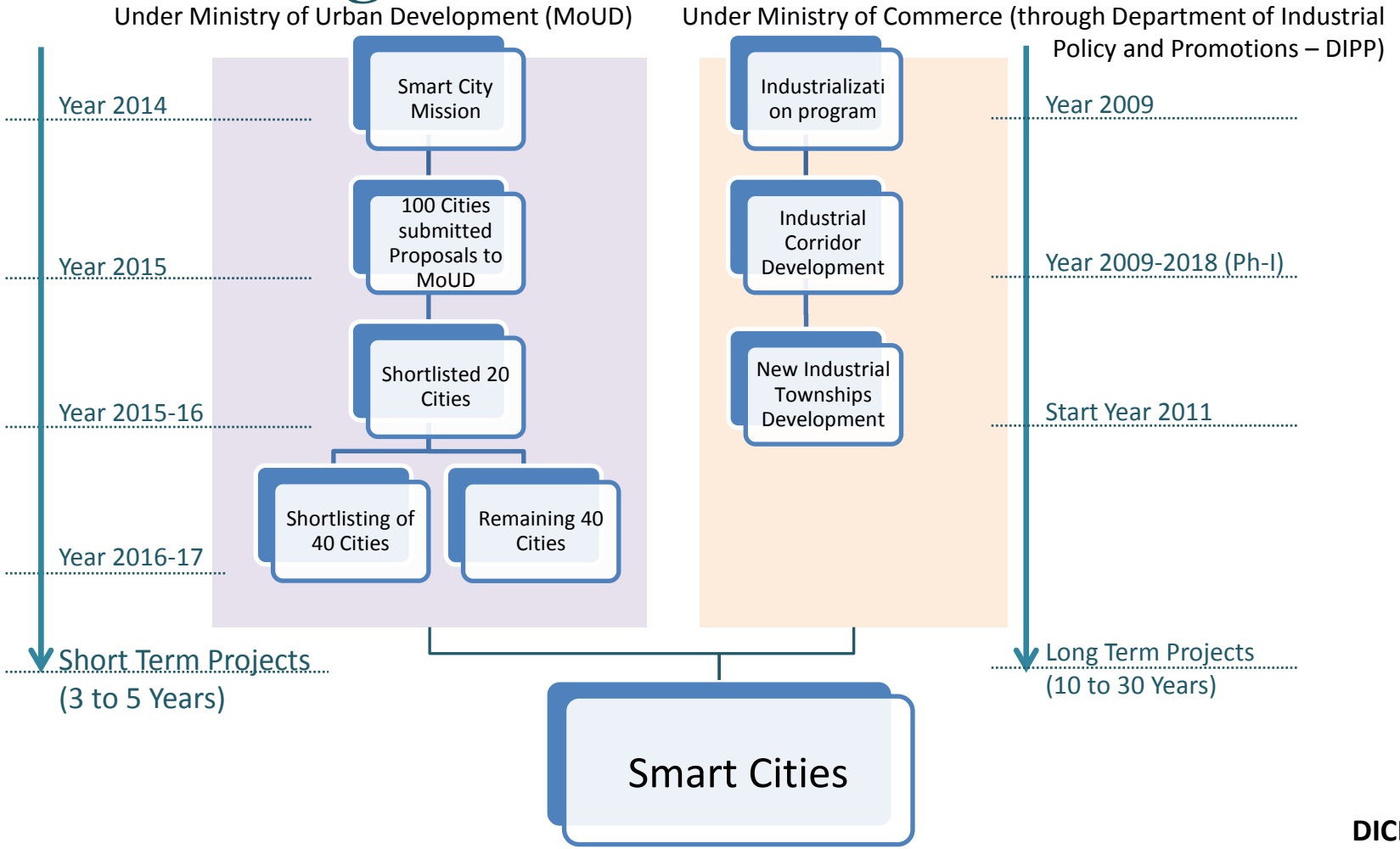
dholera

A **“Platinum”**
Rated Green City

DHOLERA INDUSTRIAL CITY DEVELOPMENT LIMITED

Smart Cities Programs in India



DICDL

India's Industrial Corridor Network

Delhi-Mumbai Industrial Corridor (DMIC)

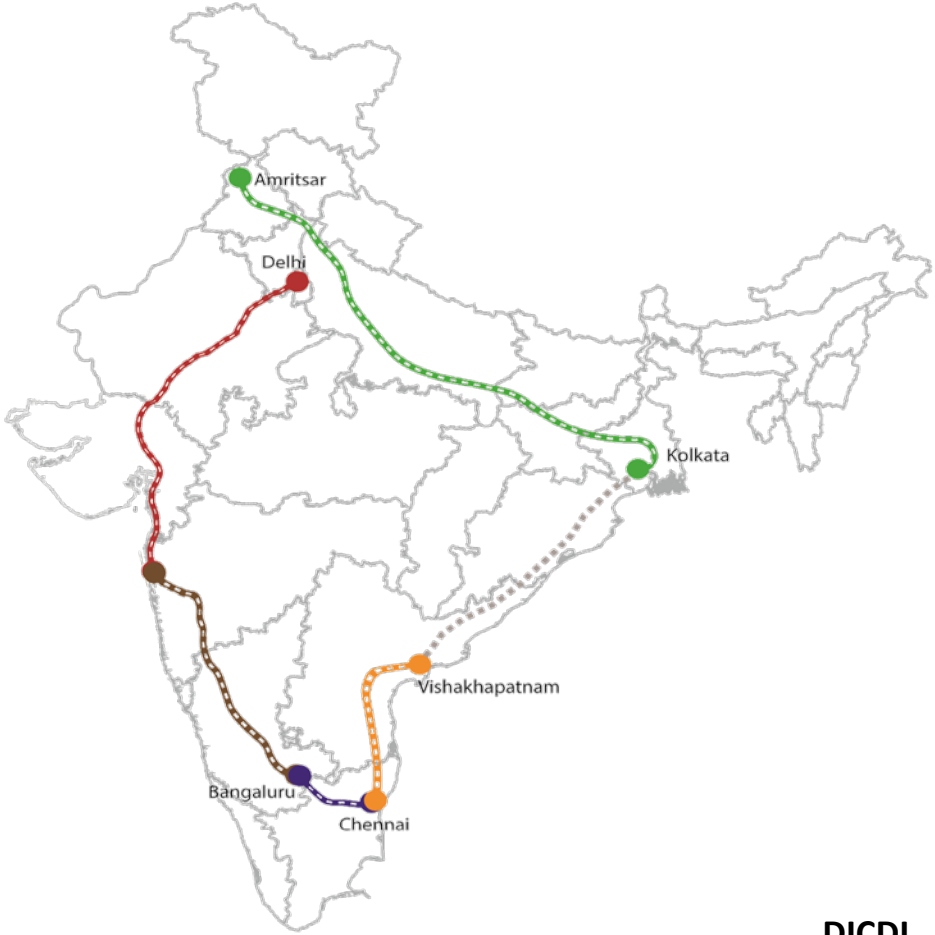
Bangaluru-Mumbai Industrial Corridor (BMIC)

Chennai-Bengaluru Industrial Corridor (CBIC)

Vizag-Chennai Industrial Corridor (VCIC)

Amritsar-Kolkata Industrial Corridor (AKIC)

Vizag-Kolkata Industrial Corridor (VKIC)



DICDL

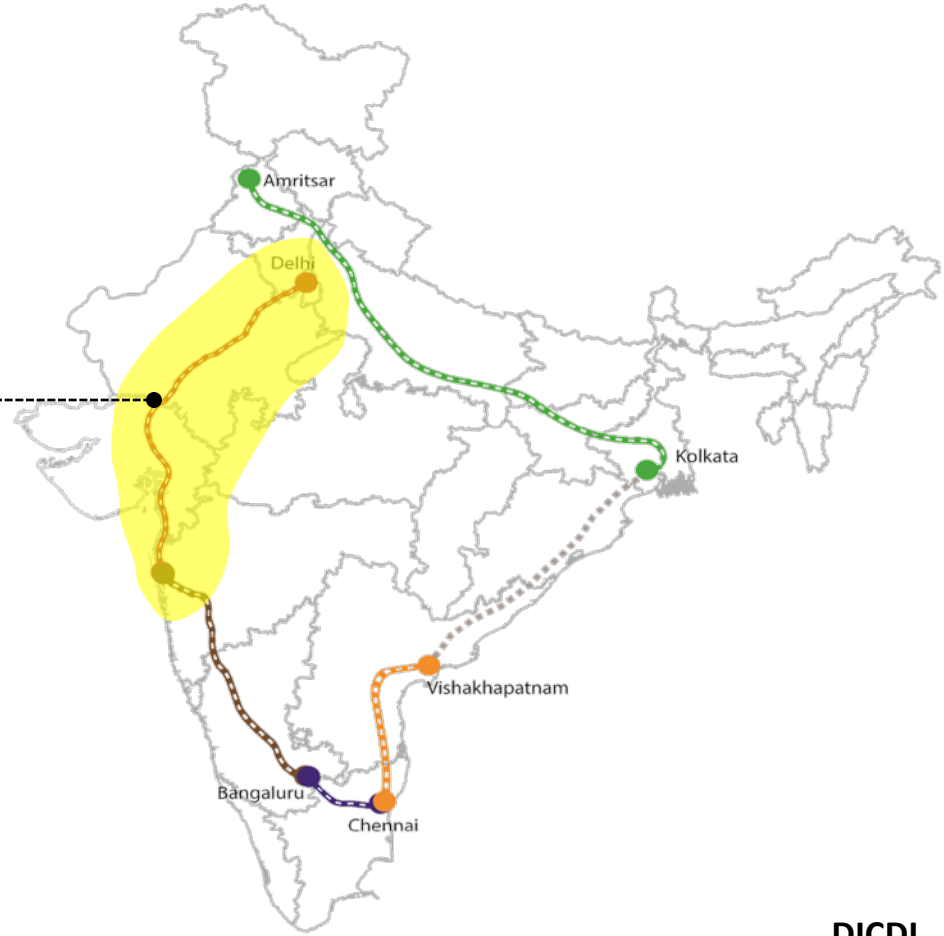
NICDIT and DMICDC

NICDIT

National Industrial Corridor Development & Implementation Trust **(all five corridors)**

DMICDC

Delhi Mumbai Industrial Corridor Development Corporation **(DMIC Corridor)**



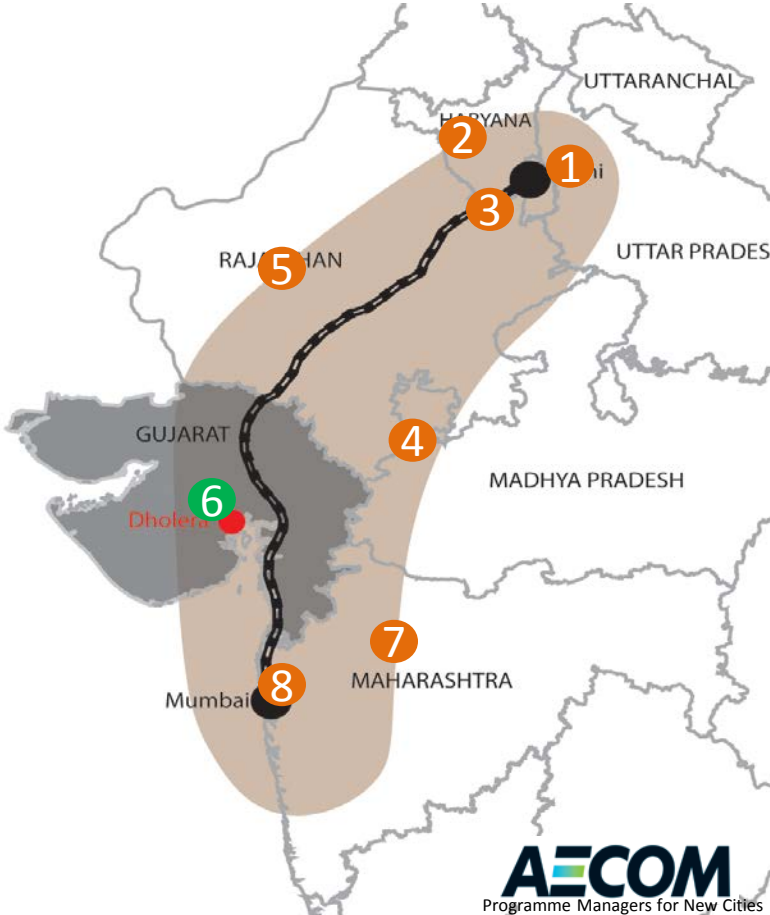
DICDL

Smart Industrial Townships under DMIC

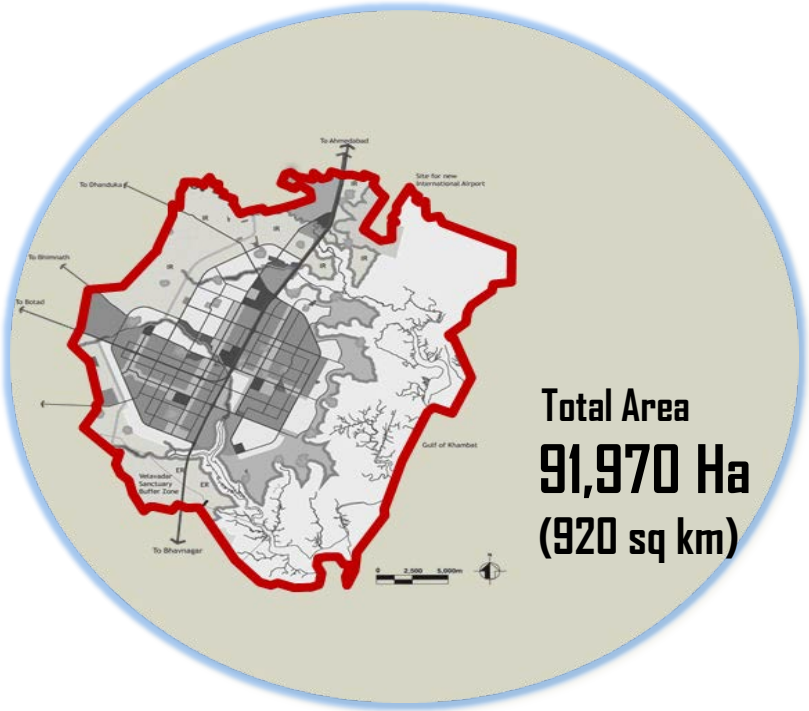
8 Nodes being developed in DMIC Phase I

1. Dadri – Noida Ghaziabad IR, UP …….…… 200 sqkm
2. Manesar – Bawal IR, Haryana ……. 402 sqkm
3. Neemrana – Kushkhera – Bhiwari IR, Rajasthan . 165 sqkm
4. Pitampura – Dhar – Mhow IR, MP ……. 372 sqkm
5. Jodhpur Pali Marwar IR, Rajasthan ……72 sqkm
6. **Ahmedabad – Dholera IR, Gujarat ……. 920 sqkm**
7. Shendra – Bidkin Industrial Park, Maharashtra … 84sqkm
8. Dighi Port IA, Maharashtra …….. 253 sqkm

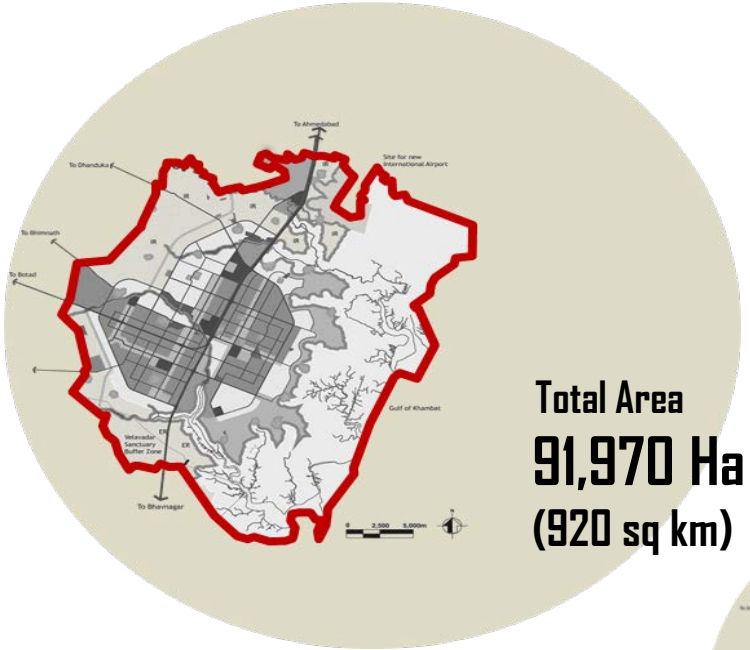
Dholera is the Biggest Node under DMICDC



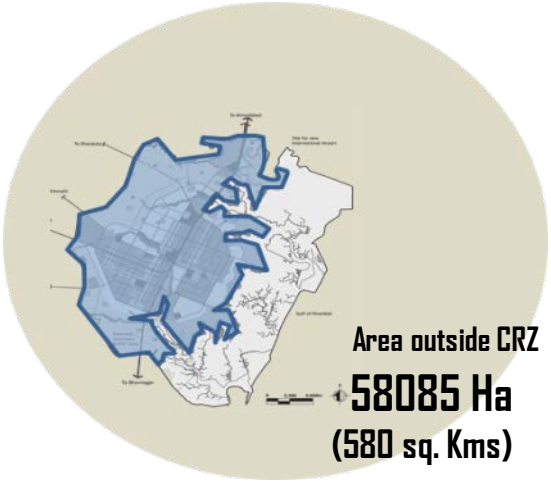
Dholera Industrial City – The Scale – A City-Country



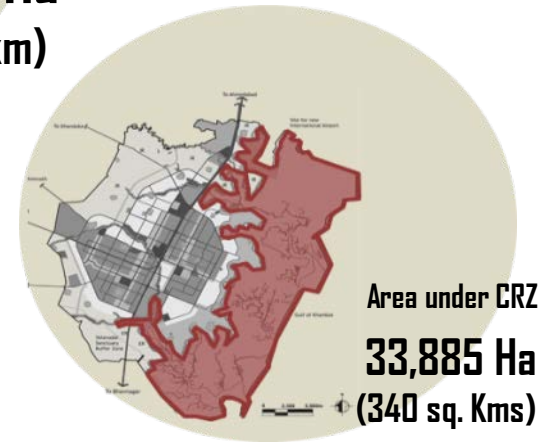
Development Plan Projections



Total Area
91,970 Ha
(920 sq km)



Area outside CRZ
58085 Ha
(580 sq. Kms)



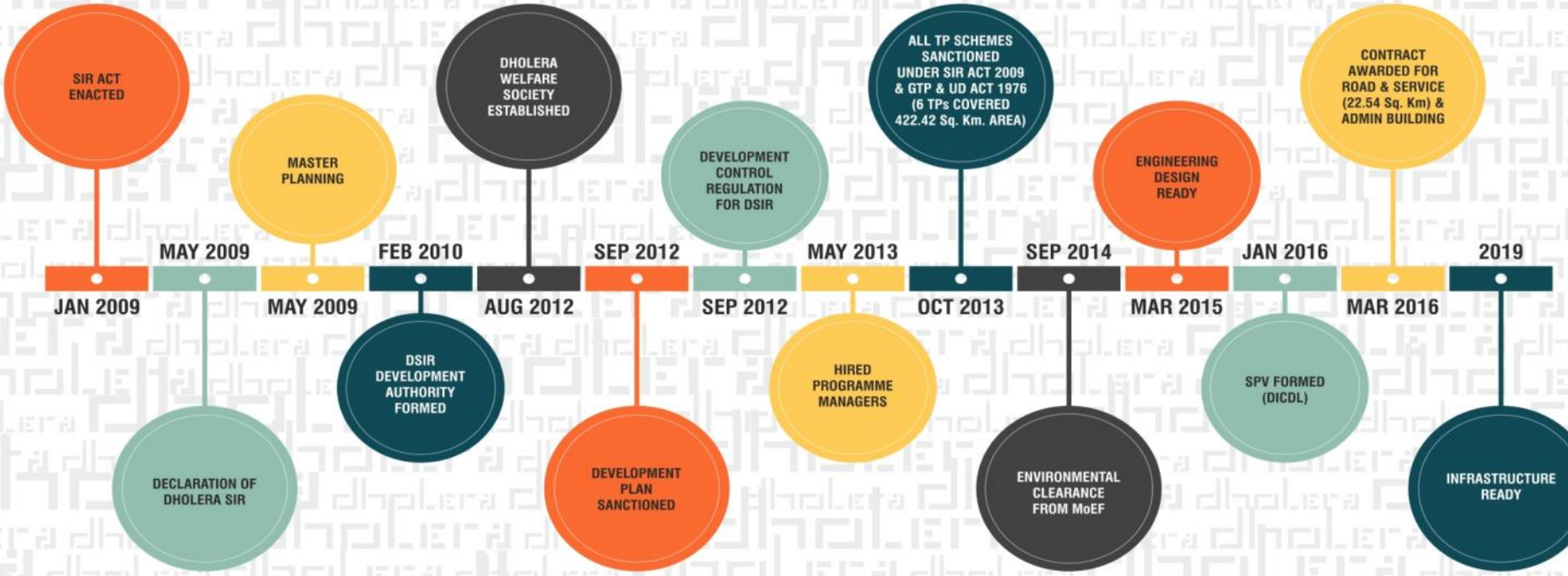
Area under CRZ
33,885 Ha
(340 sq. Kms)

Resident population in DSIR
2.0 million

Total Jobs in DSIR
827 Thousand

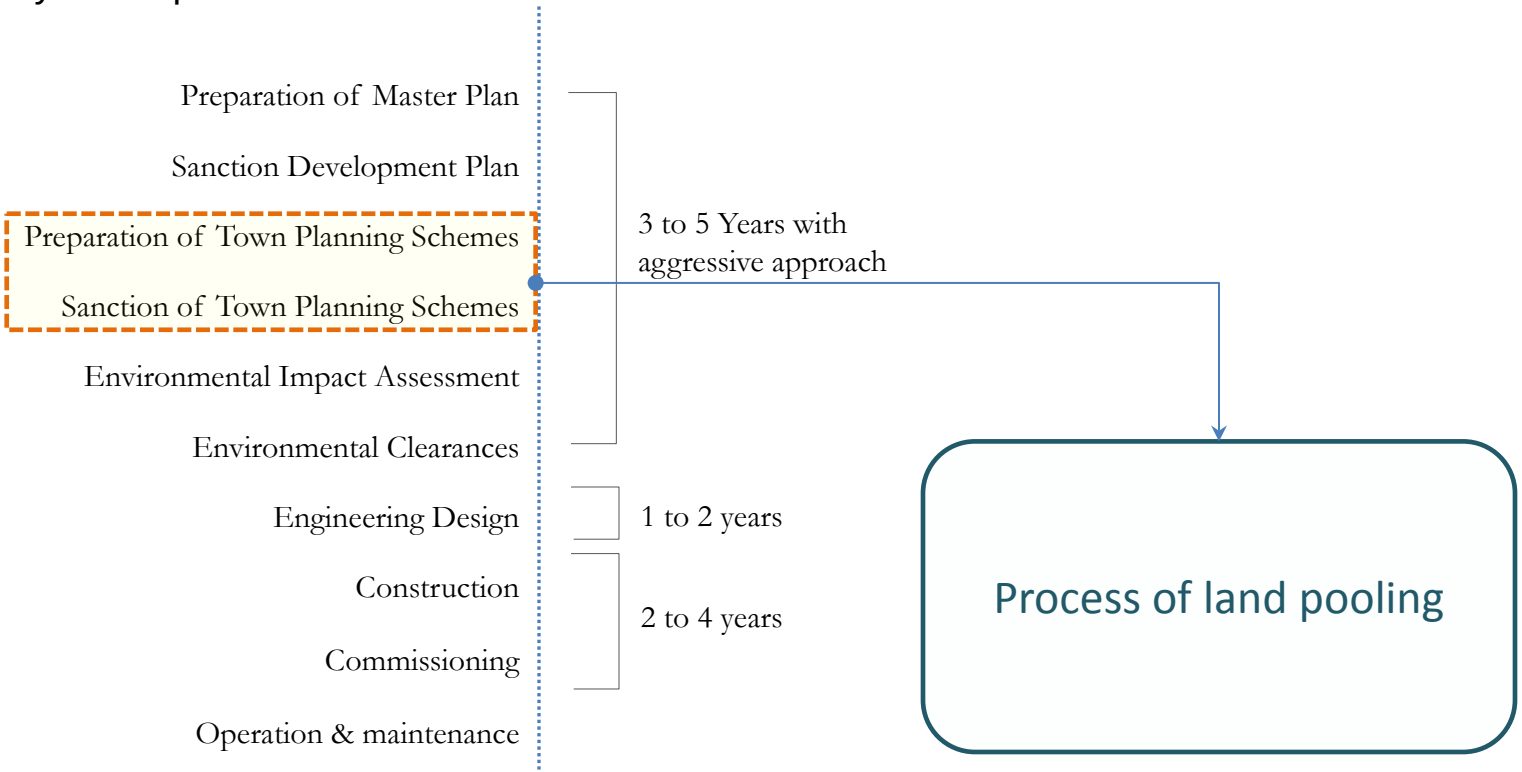
DICDL

PROJECT DEVELOPMENT TIMELINE



Why does it take 10 years to build a greenfield city

Steps in greenfield city development



7 to 11 years required to develop a greenfield city

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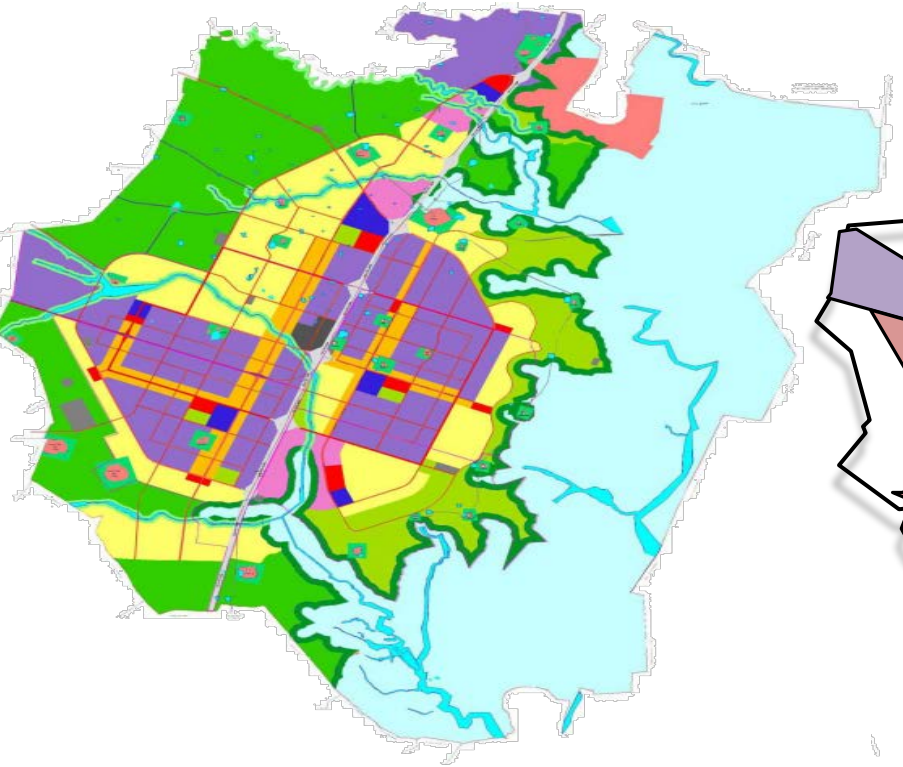
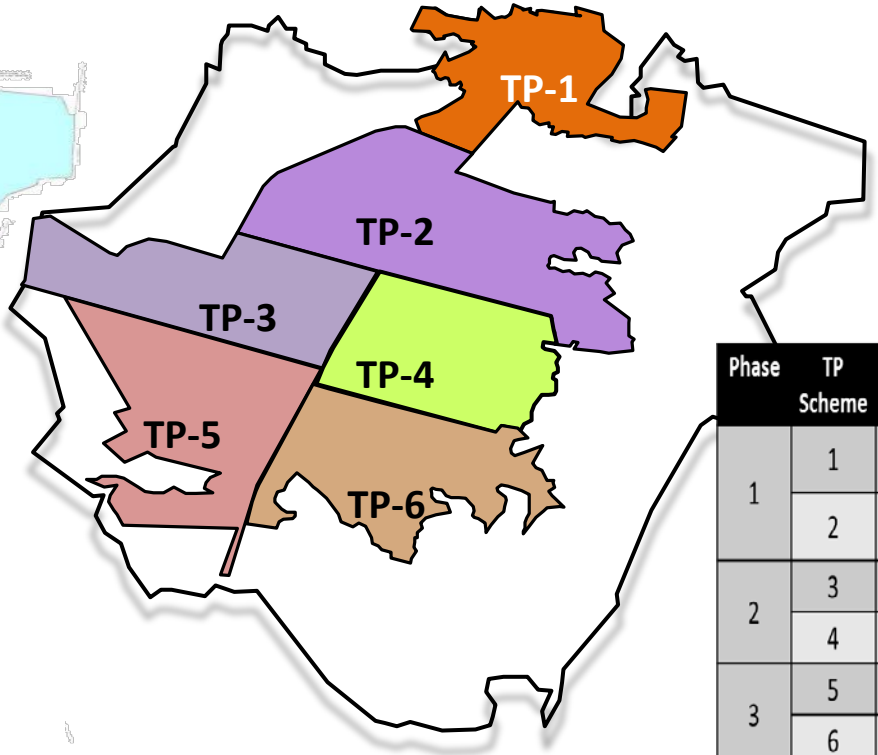
Dholera - Town Planning Scheme Implementation



Development plan

920 Sq. Km.

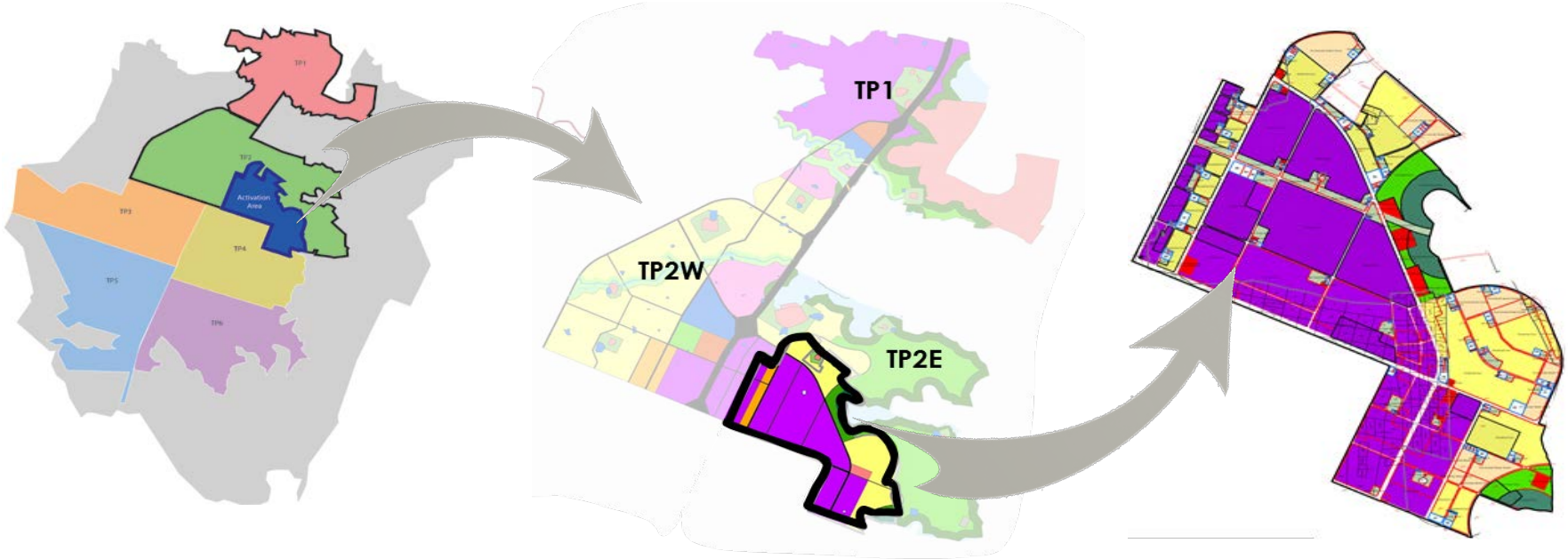


Town Planning Scheme

422 Sq. Km.

Phase	TP Scheme	Area (Sq.km)	Time line
1	1	51.40	2012 – 2022
	2	102.34	
2	3	66.60	2023 – 2032
	4	60.00	
3	5	74.75	2033 – 2042
	6	67.33	
	Total	**422. 42**	30 years

Implementation Strategy



Dholera (TP1 to TP6)

422 Sq Km

Dholera Phase I (TP1 & TP2)

158 Sq Km

Activation Area

22.54 Sq Km

Dholera – The City – Immediate development

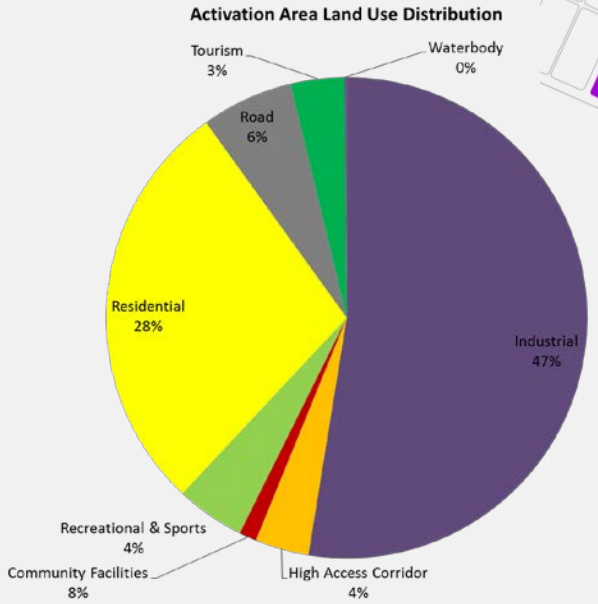
Resident population
96 thousand

Total Jobs in Dholera
76 thousand

Legend

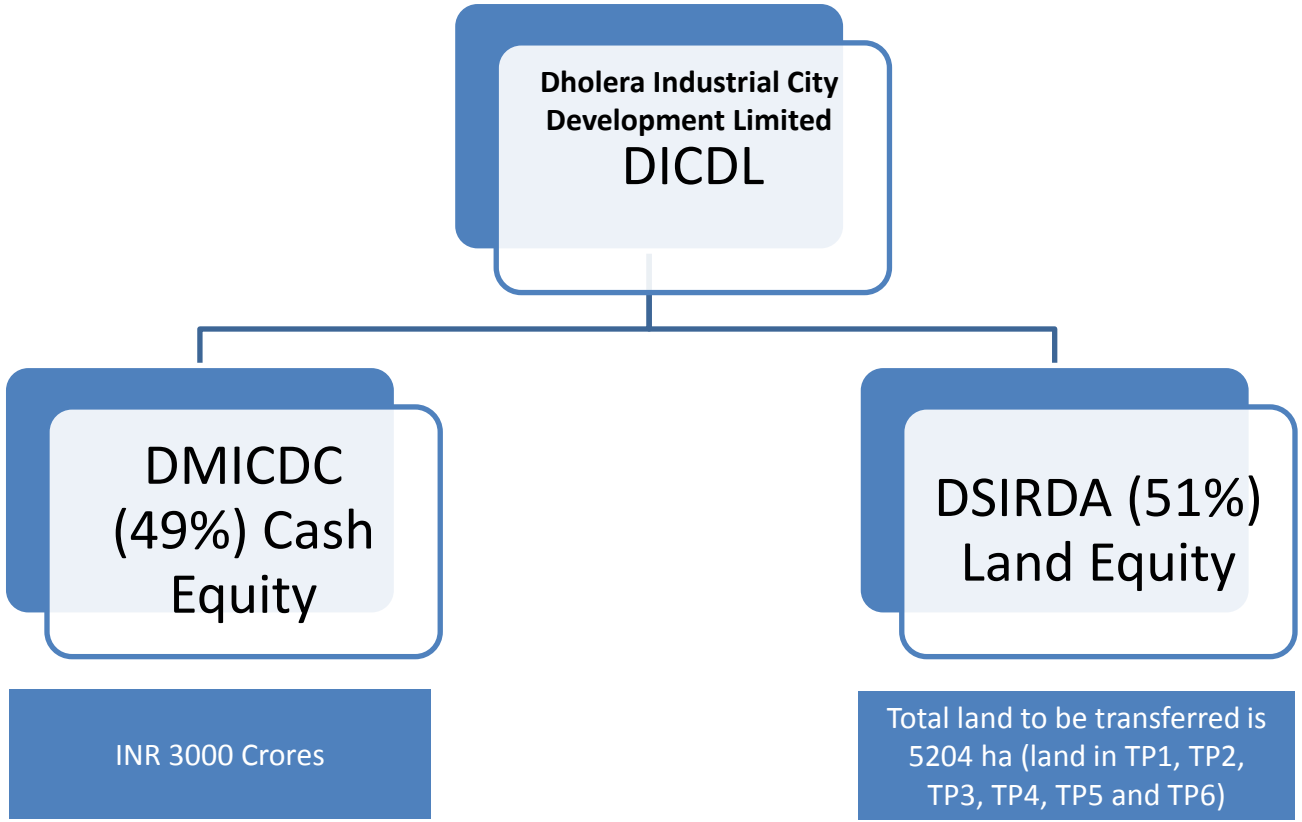
- Industrial Zone
- Residential Zone
- High Access Corridor
- Community Facilities
- Physical Infrastructure
- Open Green Space
- Tourism & Resort Zone
- Recreation Zone

1. Sewage Treatment Plant
2. Common Effluent Treatment Plant
3. 66 kv Sub-Station
4. 220 kv Sub-Station
5. Solid Waste Management Site



Dholera Activation Area - 2020

Special Purpose Vehicle (SPV) - DICDL



About DICDL

- DICDL is a JV of Government of India (DMICDC) + Government of Gujarat (DSIRDA)
- AECOM as Programme Managers for New Cities responsible for programme implementation

- SPV responsible for initial project development and implementation
- Comprehensive, post development, City management structure being evolved
- Facilities being developed enabling ISO 31720 compliance

Single Window Clearance

All city services under one umbrella for co-ordination and smooth operations

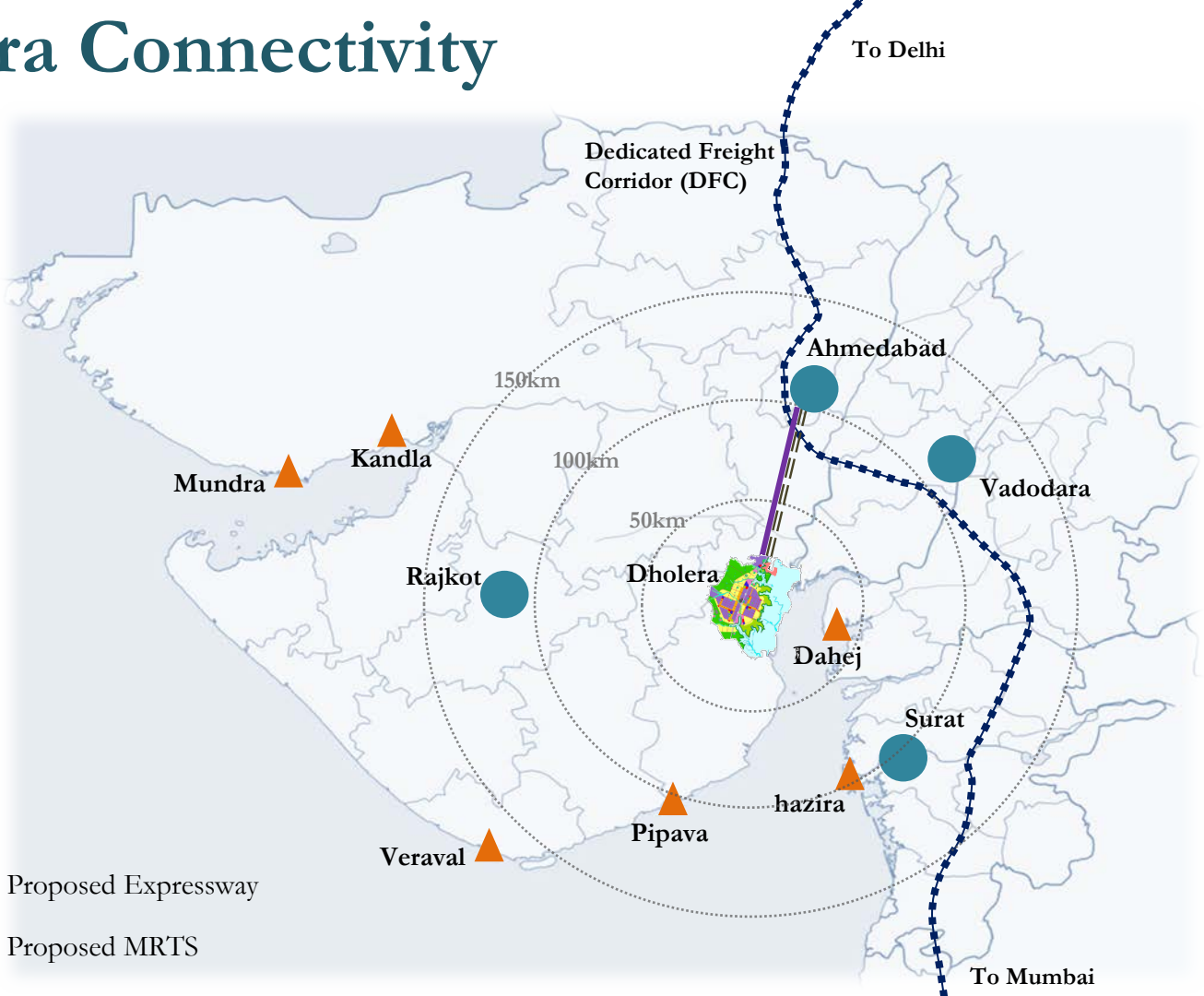
Activation Area projects

Roads and Underground Services including Storm water	**Construction in progress**
Administrative and Business Centre for Dholera (ABCD Building)	**Construction in progress**
Potable Water: WTP	**Construction in progress**
Sewage: STP	**Construction in progress**
Industrial Effluent: CETP	**In Tendering process**
Raw Water: RW Transmission from Periej/Pipli	**In Tendering process**
Flood Control: Adhiya River Training and Bunding	**Construction in progress**
Solid waste: Collection, Transfer, Treatment and Disposal	**In Tendering process**
Power: Power Transmission and Substations	**Design under Progress**
ICT: City wide Information Communication & Technology	**Design under Progress**

Trust Approved

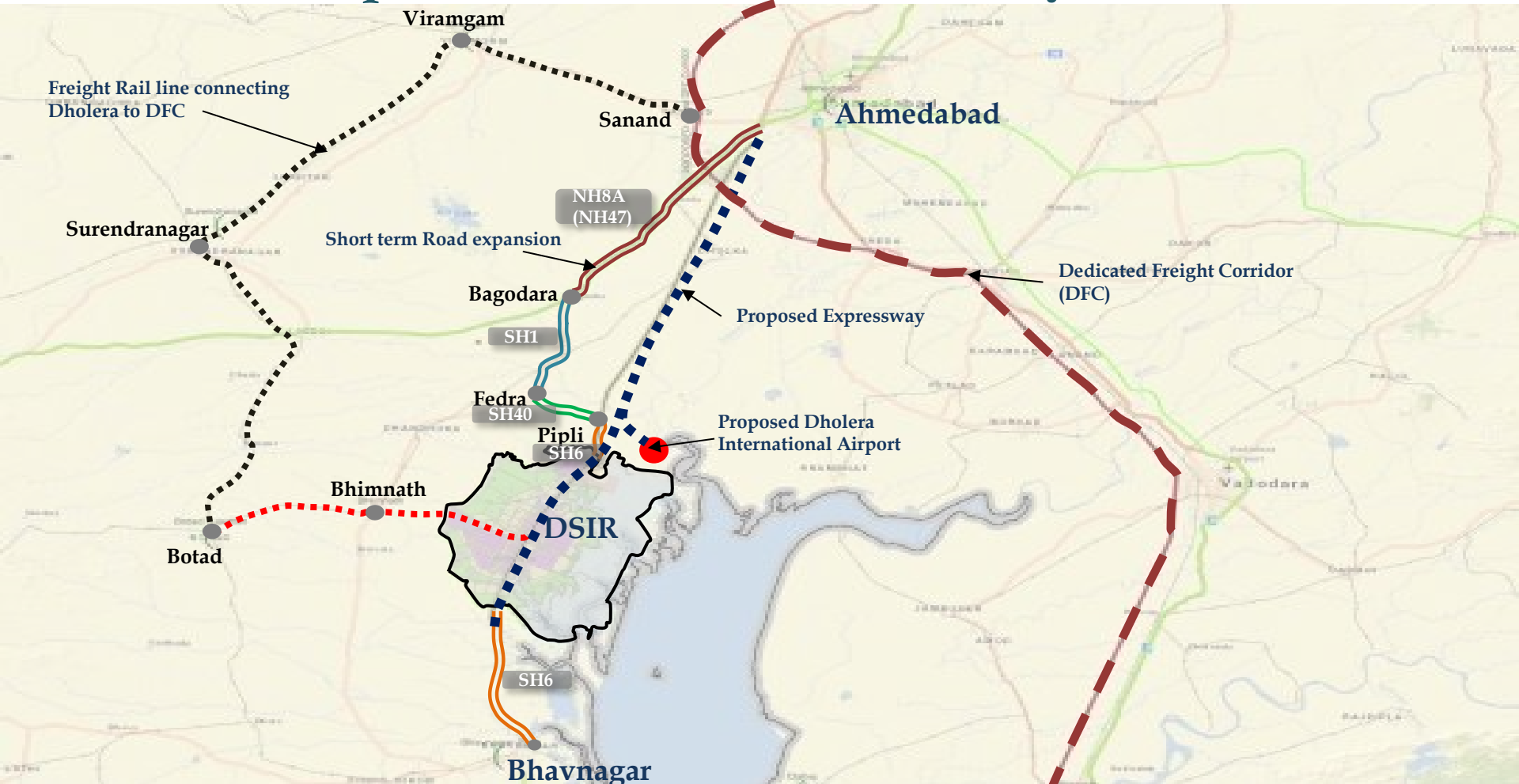
External Connectivity

Dholera Connectivity



DICDL

Dholera – Proposed External Connectivity with Ahmedabad



Dholera – Out Zone Logistic Connectivity

04HRS
Pipava Port (200 Kms)

06HRS
Mundra Port (380 Kms)

10HRS
JNPT, Mumbai 590 Kms

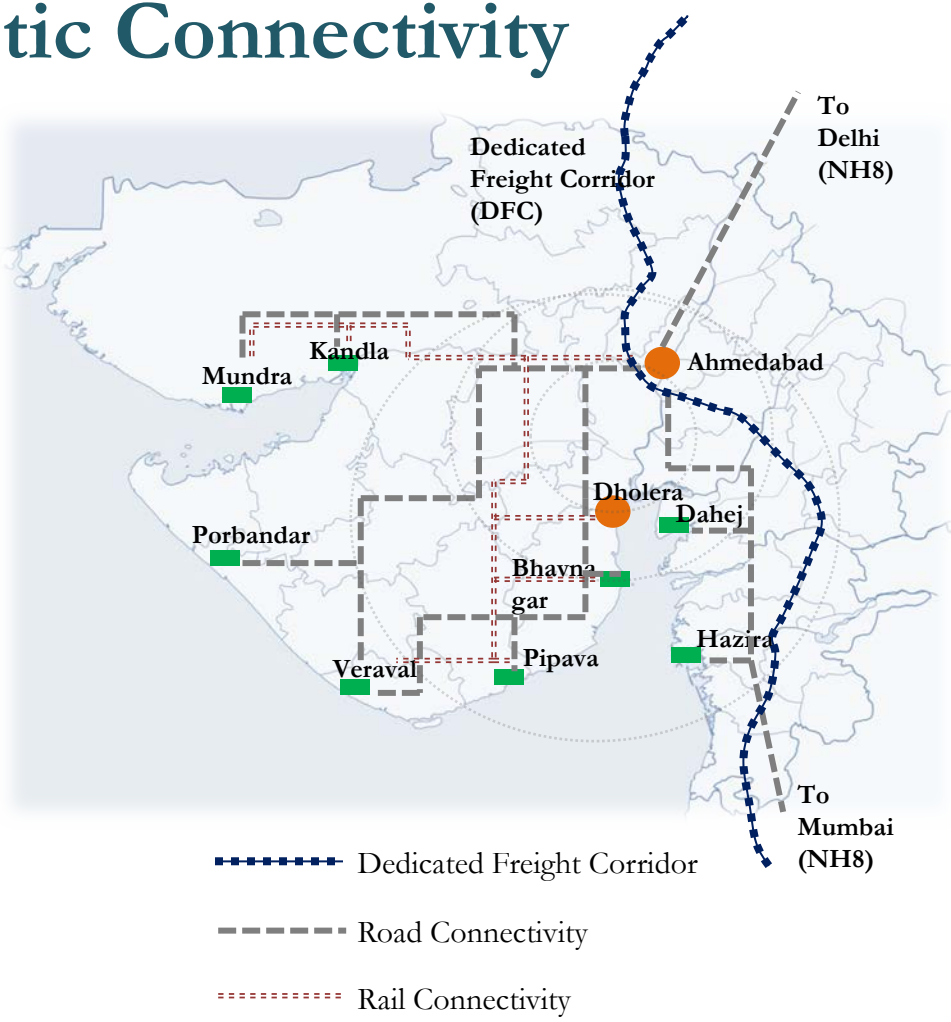
02HRS
Ahmedabad Airport (122 kms)

2.5HRS
Vadodara Airport (142 Kms)

15MIN
Proposed Dholera Airport

2HRS
Bhavnagar Railway Stn. 130 Kms

1.5HRS
DFC



SMART Infrastructure – Best-In-Class

Dholera – *Best-In-Class, Smart Infrastructure*

- Immediate Development – 22.54 Sq. Kms. (Activation Area)
- ROADS – 300 Lane Kms
- POWER availability – 380 MW
- Water Management
- PIPELINES – 400 KMS
- WTP capacity - 50 MLD
- STP capacity – 10 MLD
- CETP Capacity – 20 MLD
- Storm-water - 6 Kms open canal, 140 Kms of underground ducting

What Makes a City Smart?

By Incorporating systems, procedures and devices which collect data and through analytics convert this data to knowledge and information which allows people and businesses to make SMART decisions

Smart Infrastructure (Plug and Play Model)

Road
Cycle tracks
Footpaths
Trees & Plants

Water Management
Smart meters
SCADA

24X7 Power
Smart meters
SCADA

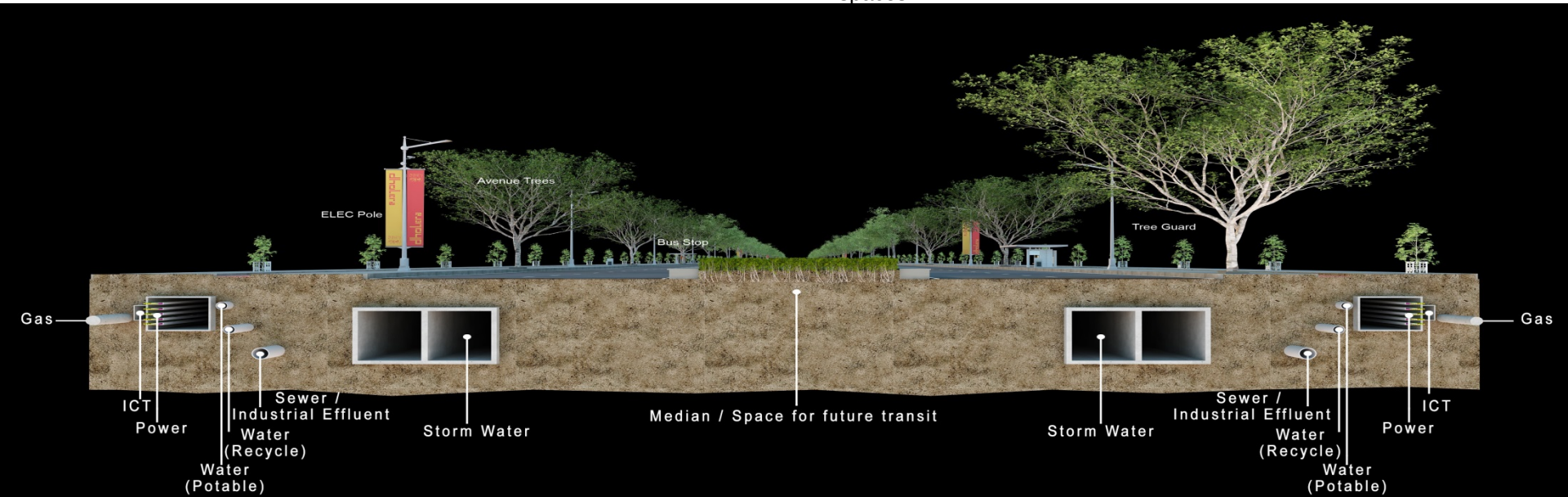
ICT enabled infrastructure
City WiFi
Integrated city management

100% domestic waste collection
100% industrial effluent collection

100% recycle and reuse of waste water

100% rainwater collection
Open storm canal with recreational spaces

100% waste collection
Maximum recycling and reuse
Bio-Methaneation, Incinerator
Waste to energy



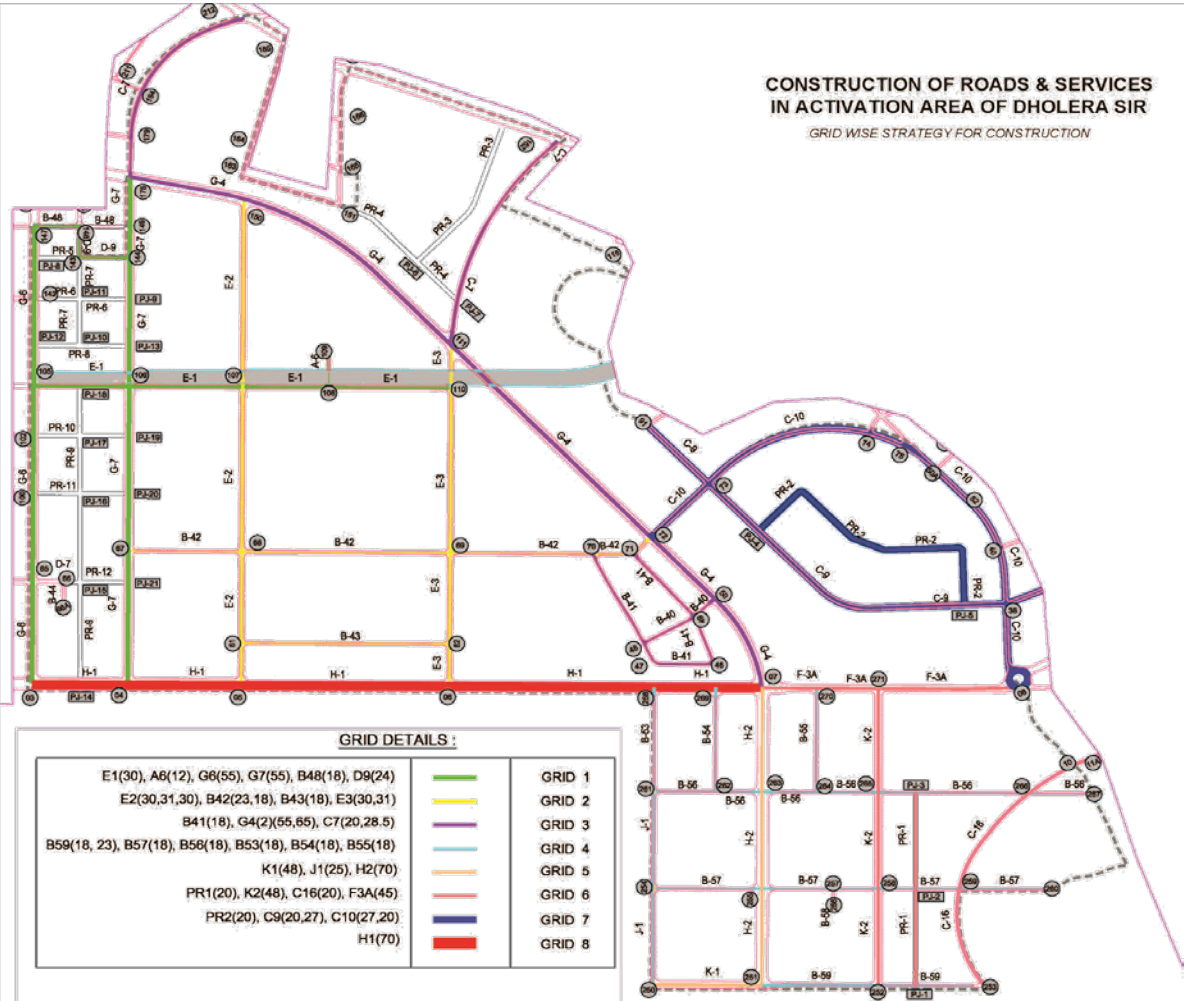
Smart Infrastructure – Roads & Services

- Road design based on IRC
- Future proofed (Dig-Free Development)
- LED street lights
- RoW -18 to 70 m -> 4 & 6 lane roads
- Expected completion Sept'19

KEY FEATURES

Roads - 72 kms	Roads – 300 lane kms	Integrated Signal System
Dedicated Cycle track	Shaded (Green) Pedestrian Pathways	Traffic Management
Emergency Management	Safe City - Security & Surveillance	Real Time Information

Roads & Services Construction



Total Road Length

72 KM

Contractor

L&T

Construction Start

Mar 2016

Construction Completes

Sep 2019

Construction progress (as of November 2017)

Construction progress (as of November 2017)

POWER DUCT

E-3 BRIDGE: SUBSTRUCTURE CONCRETING

Power Duct Laying In Progress. - H-1

Smart Infrastructure – Power

- 3 - 66kV Sub Stations & 2 - 220kV Sub Stations
- 400kV Transmission Line – 100 kms
- 115 km Underground Ducting Network
- Connectivity costs & Power tariff to be charged by Discom, basis GERC norms

KEY FEATURES

Underground Network 11KV to 66KV

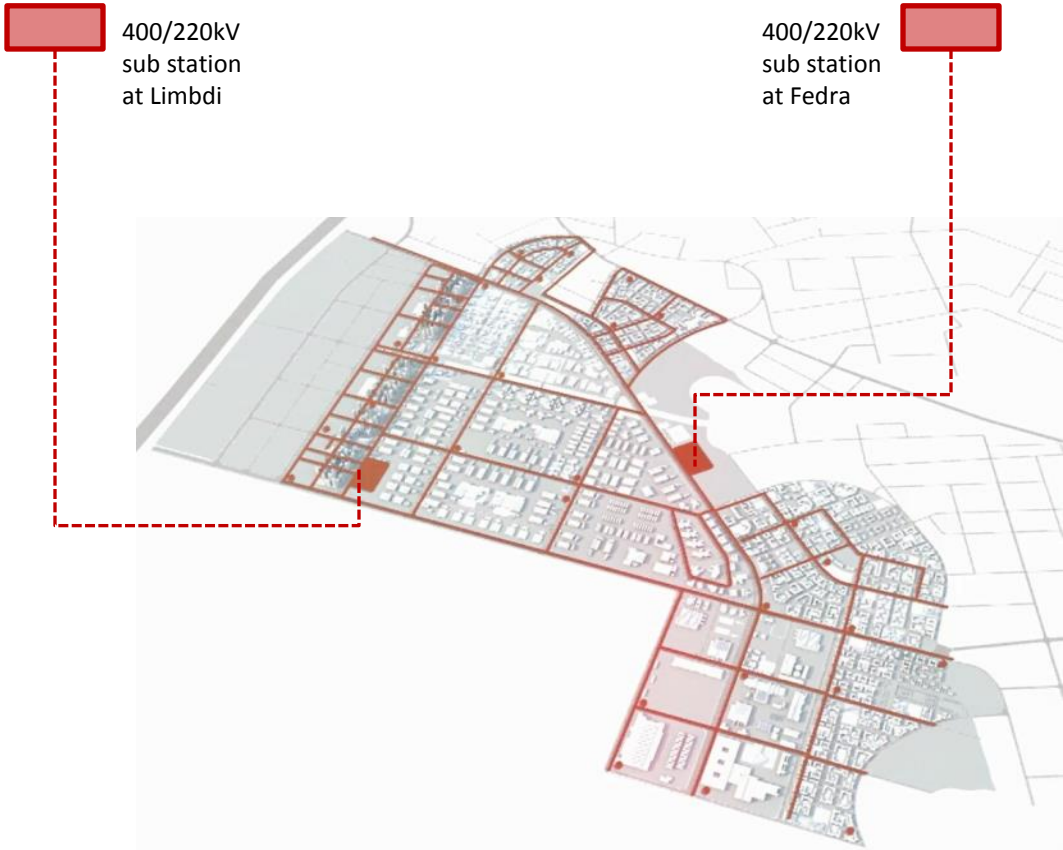
Availability from March'19

Dual Circuit Transmission line

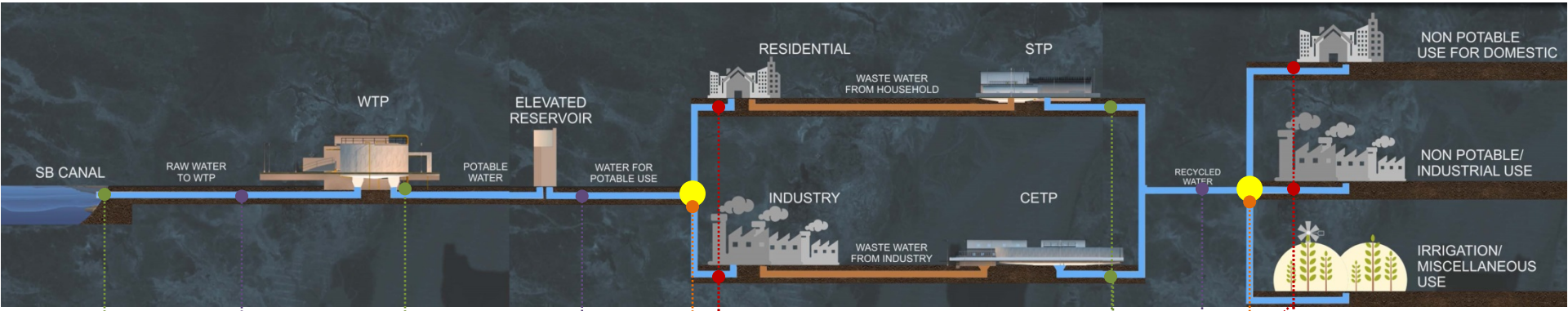
Renewable Energy – Solar

Real Time Information

N+1 Redundancy with Smart Grid (RMUs)



Smart Management - Water and Waste Water



Water quality, pH lvl and input pressure

District Metering area (DMA)

Smart Meters

Leak detection and monitoring (Sensors)

- Reliable quality water
- NRW < 5%
- Real Time Information

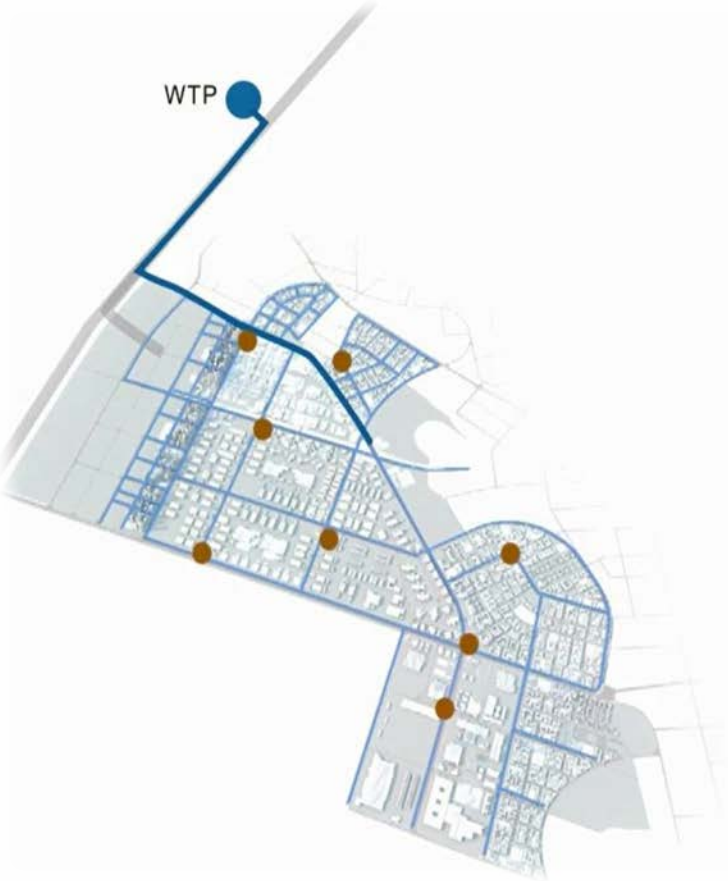
Supervisory Control And Data Acquisition (SCADA) Across Entire Water Infrastructure

Smart Infrastructure – Potable Water

- Raw Water Source (100 MLD from Narmada Saurashtra Branch Canal)
- 50 MLD Pure Water Treatment Plant
- 10 ML Reservoir
- 82 kms of Pipelines
- Network Losses < 5%

KEY FEATURES

Average supply per connection – 10 MLD
Allotment - 150 lpcd for residential use
Availability from Sept'19
Intelligent Network - Smart Metering
Looped Network for uninterrupted supply
Road parallel network within ROW
Part of Plug & Play connectivity (plot)



Smart Sustainable Infrastructure – Recycling of Water

- STP - 10 MLD (Sewage) : Lines - 32 kms
- CETP - 20 MLD (Common Effluent) : Lines - 66 kms
- Recycled water distribution pipeline - 81 kms

KEY FEATURES

- 100% Waste Water Collection
- 100% Recycling of collected waste water
- Treatment upto tertiary level
- Availability – Sept'19
- Zero Discharge
- Intelligent Network - Smart Metering

Smart Infrastructure - Integrated Solid Waste Management

- Facility Area - 28 ha
- 25 TPD Segregation Plant
  - Bio-degradable
  - Recyclable
  - Others (Landfill)
- 30 TPD Bio-Methanation Plant – For Bio-degradable waste
- 250 TPD Industrial (Non-Haz) Waste management Facility – Saleable & Recyclable
- 25 TPD Incinerator – For Hazardous Waste
- 1 TPD E-Waste Facility
- Scientifically planned & managed land-fill
- SCADA Management system

KEY FEATURES

'At Source' Segregation	100% Waste Collection	Twin Bin System	Recycling
Waste to Energy	Street Sweeping	Information, Education and Communication (IEC)	GPS enabled Vehicle tracking System

Smart City – Smart Life : City Wide Sensor Network

City wide sensors establish nervous system that offers maximum controls at all levels through intelligent controls

Smart Grid Sensors

Smart Meters

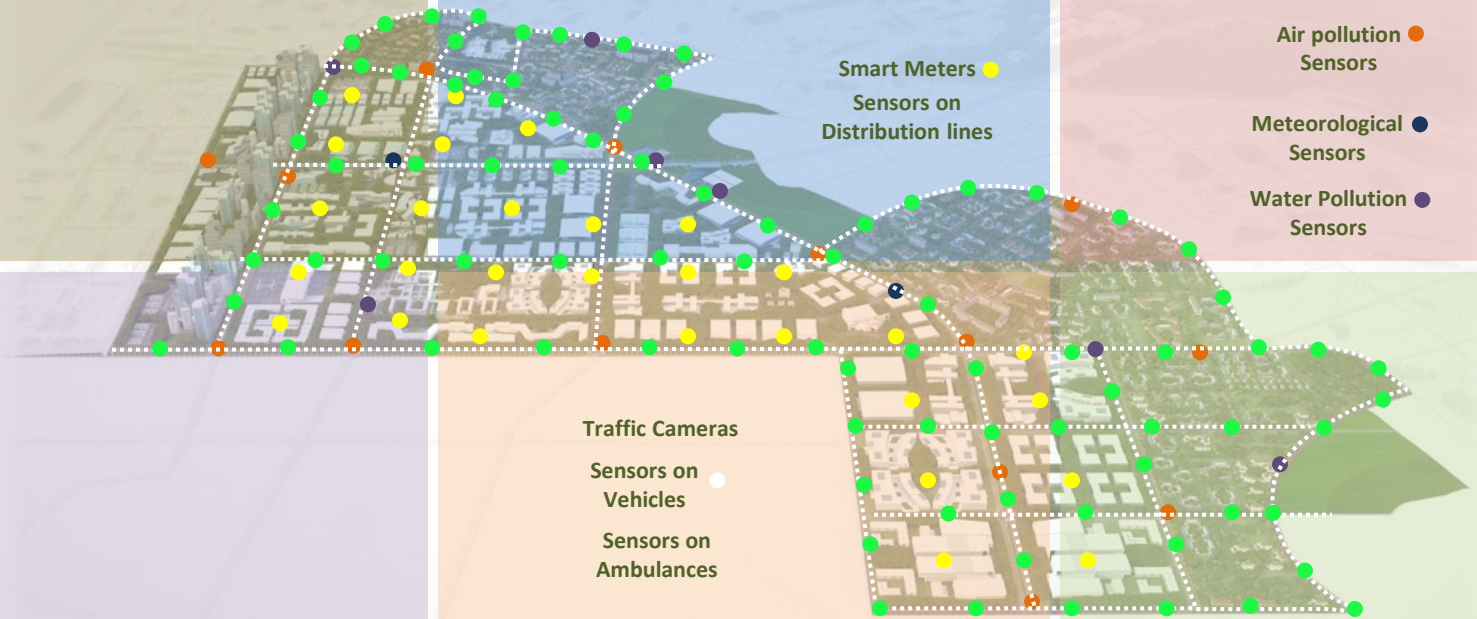
Sensors on Distribution lines

Pollution Sensors

Air pollution Sensors

Meteorological Sensors

Water Pollution Sensors



Automation Sensors

Traffic Sensors

Traffic Cameras

Sensors on Vehicles

Sensors on Ambulances

Leak Detection Sensors

Leak & Theft Detection Sensors

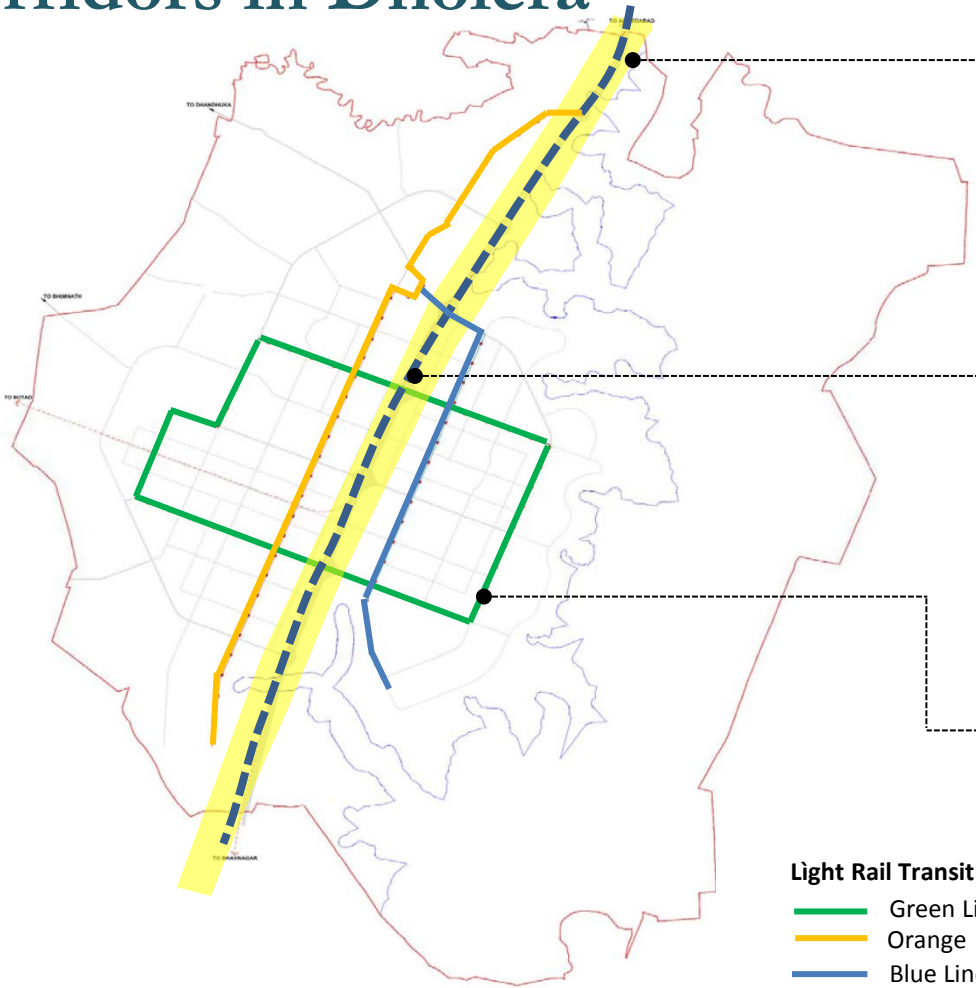
Waste Water Sensors

Smart Water Sensors

DICDL

Urban Transit Corridors

Transit Corridors in Dholera



Light Rail Transit Corridors

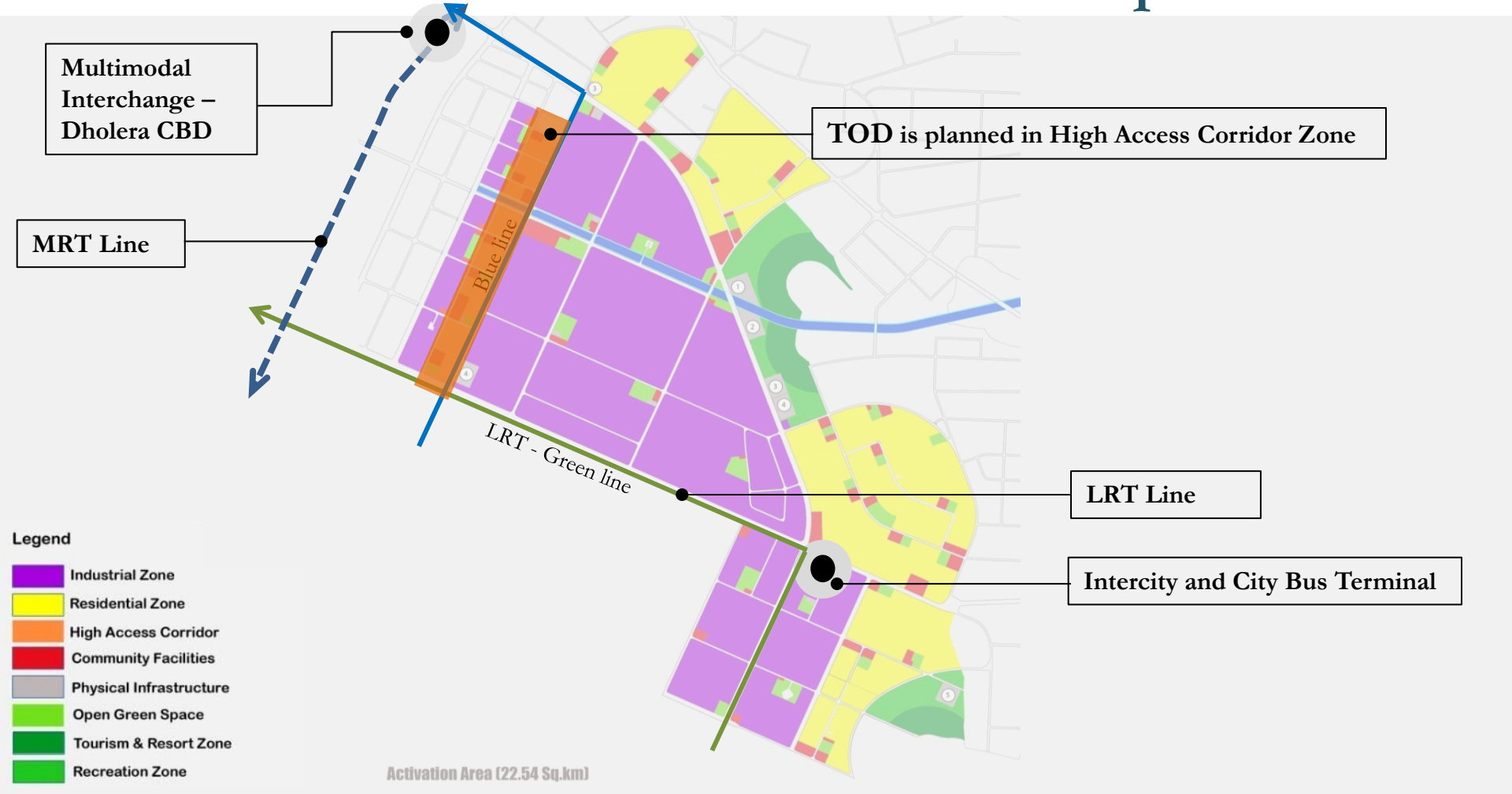
- Green Line
- Orange Line
- Blue Line

Central Spine Rd.– 250m RoW
6 – Lane Expressway

Metro Rail Transit System

Light Rail Transit System

Activation Area – Transit Oriented Development



Social Infrastructure - Inclusive development Neighbourhood and Community Planning

Parks and Social Amenities within Walkable distance,
Live – Work – Play, Sustainable, People Friendly

Dholera footprint 2020

Social Infrastructure - Smart & Sustainable

Social Infrastructure and Open Spaces for:

» Building Successful Places to attract residents, visitors and businesses.

» Building a vibrant and sustainable community.

» Ensuring **‘Ease of doing Business’** and also **‘Ease of Living’**.

» Ensuring day to day requirements of all age groups are provided and are accessible.

Housing in Dholera SIR

Industrial & Economic Development will generate significant demand

- Estimated employment (direct) generated by Industrial development – 3,00,000
  Estimated employment (total including indirect) – 8,00,000
  Estimated resident population – 20,00,000

- **Social Infrastructure i**n Activation Area – 627 Ha

- Dwellings will be matched to the needs of the population in terms of affordability, size and typology
  Three broad income levels and three broad categories of housing matched areas follows:
  HIG - (Annual income > INR500,000) – Low to Medium density housing @ **19 units / Ha**
  MIG (Annual income within INR150,000 to 500,000) – Medium density housing @ **58 units / Ha**
  LIG including EWS (annual income <INR175,000) – High density housing @ **151 units / Ha**

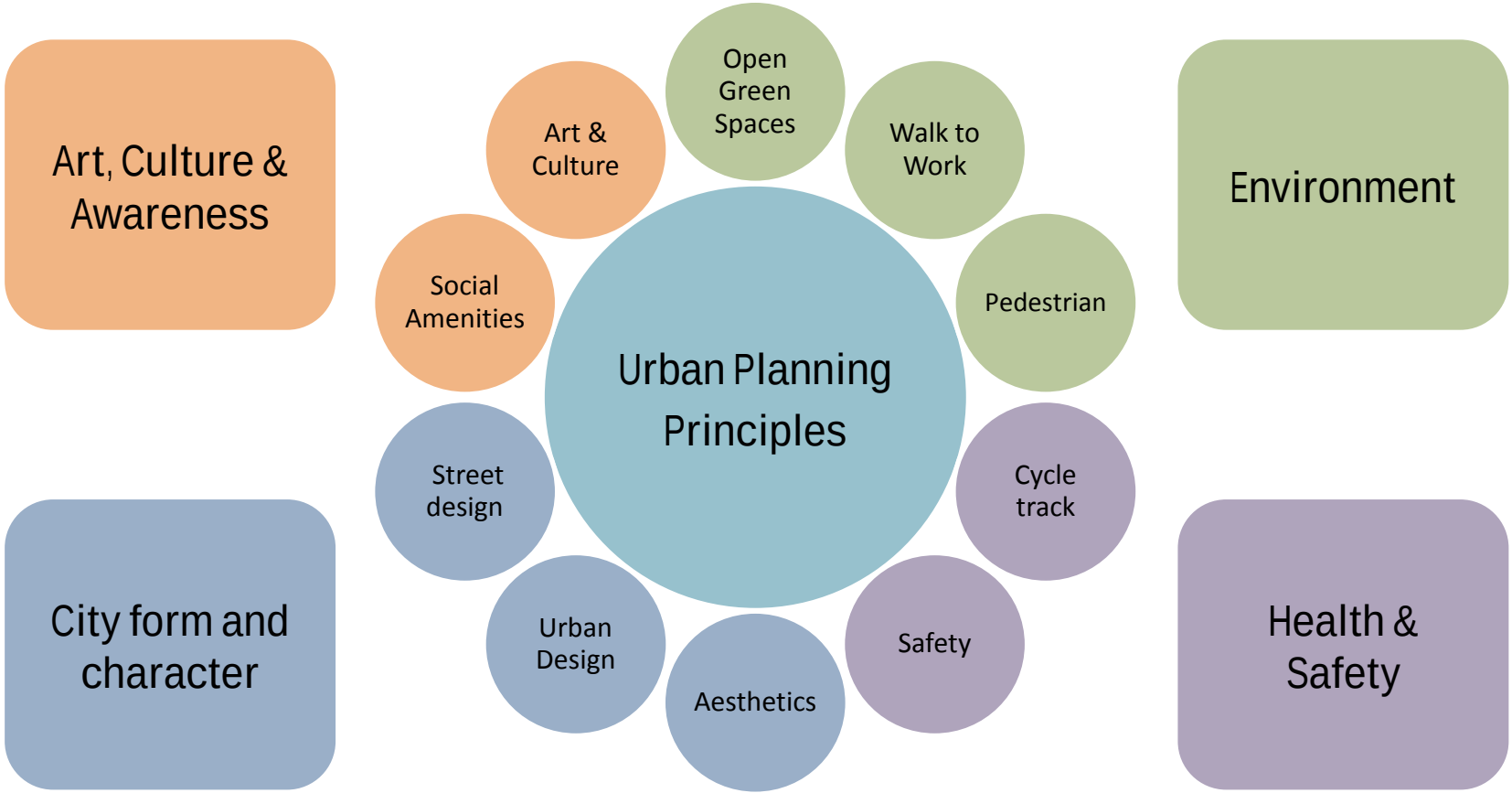
- Particular attention would be paid to adequate housing provision for low income groups (LIG) and economically weaker sections (EWS) in order to prevent formation of slums

Total Residential Development in Dholera SIR

Land Use Zone	Gross Area (Ha) (Includes Roads)	Net Area under Housing (Ha)		
		High Density	Medium Density	Low Density
Residential	9,780	782	3032	1467
High Access Corridor	2,465	345	592	0
City Centre	679	109	102	0
Knowledge and IT	1,230	0	185	172

Non-industrial Category	Dwelling Units (Total Requirement 5,00,000)	% Total Housing Provision
Low Density (detached bungalows and villas above 100sqm in carpet area on large plot areas)	34,000	7%
Medium Density (larger row houses and apartments with carpet area of 50sqm-100sqm)	2,46,000	49%
High Density (apartments, smaller row houses, dormitories etc. with carpet area of >50sqm)	2,20,000	44%

Life in Dholera



Social Infrastructure - Environmental and social planning

Neighborhood Parks (1-2 ha)

Neighborhood amenities

Neighborhood Cluster

Community Parks (2-4 ha)

Community amenities

Community Cluster

Regional Parks (30-40 ha)

Regional amenities

Regional Cluster

5% of total area earmarked for parks and open green spaces

400 meter catchment

800 meter catchment

4000 meter catchment

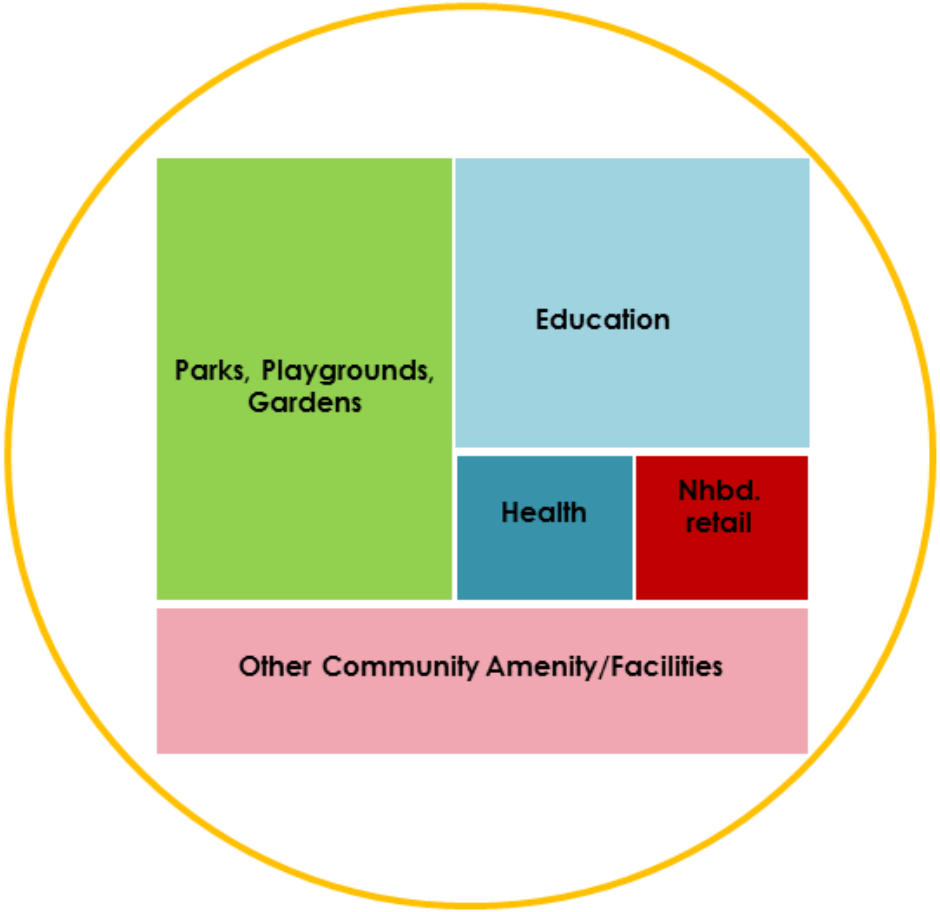
Provision of walkways and cycle track in Row

Shaded pathways and large green public activity spaces

Social Infrastructure - State of Art

Regional Level Social Amenities

- Scientific Research Institute,
- General College + Vocational Training,
- Professional College,
- Hospital,
- Maternity Home,
- Socio-Cultural Centre + Museum
- Multi-Purpose Community Hall,
- Cinema Hall,
- Fire Station,
- Bus and Truck Terminus,
- Police Station, and
- Disaster Management Centre



These are larger level functions and are located along key transportation arteries for easy access and to mitigate traffic and safety issues as seen in our cities today.

Social Infrastructure - State of the Art……

Neighbourhood Social Amenities

- Nursery + Primary Schools,
- local markets,
- convenience shopping,
- Dispensary + Poly Clinic,
- Religious Centres
- Mobile Kiosks/Hawker Zones

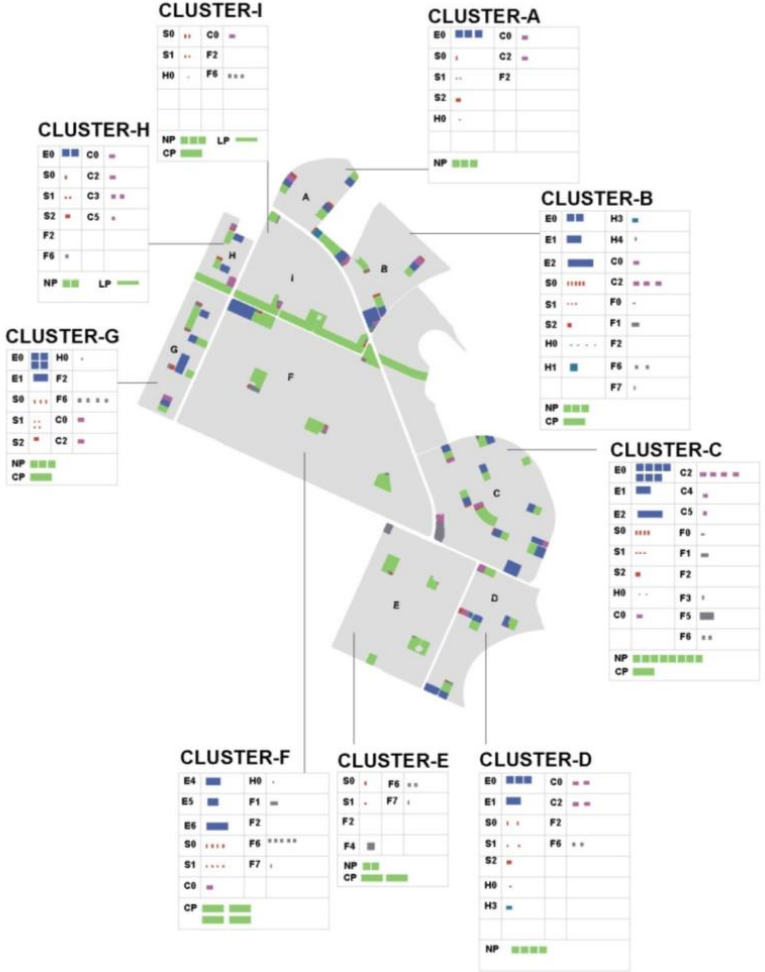
These are planned at the neighbourhood level and are clustered with the neighbourhood level open spaces and parks. These are accessible within a 5 minute walk.

Community Level Social Amenities

- Integrated School,
- Anganwadi and Day Care Facilities,
- Community Market and Informal Bazaar,
- Banquet Hall + Community Centre
- Petrol Pumps + Electric Charging Stations
- Taxi + Three wheeler stands

These have been clustered with Community Open Spaces such that these are accessible within a 10 minute walking distance.

Social Infrastructure - State of the Art……



Categories	FACILITY	NUMBER
Education		
E0	Nursery + Primary	21
E1	Secondary School	4
E2	Integrated School (Without Hostel)	1
E4	Scientific Research Institute	1
E5	General College	1
E6	Professional College	1
Shopping		
S0	Convenience Shopping	23
S1	Aanganwadi & Day care facility	23
S2	Community Market & Informal Bazaar	6
	Community Facility (Healthcare)	
H0	Dispensary / Poly clinic	11
H1	Hospital C (101 beds to 200 beds)	1
H2	Dispensary for pet animals	1
H3	Maternity Home & Nursing Home/Poli clinic	2
H4	Cluster Family welfare, diagnostic, maternity with Nursing Home	1
	Community Facility (Cultural/Entertainment)	
C0	Religious Center	9
C2	Banquet Hall	12
C3	Socio Cultural Centre	1
C4	Multipurpose Community hall	1
C5	Cinema Hall	2
	Community Facility (Others)	
F0	Police Post	1
F1	Fire Station (1-3 km radius)	3
F2	Three wheeler and Taxi Stand	22
F3	Bus Terminus	1
F4	Truck Terminus	1
F5	Disaster Management Centre	1
F6	Petrol Pump	22
F7	LPG Godowns	3
	Sports and Recreation	
NP	Neighborhood Park	27
CP	Community Park	9
LP	Linear Park	1

Social Infrastructure – Quality of Life

Linear Park along Storm Water Drain

Capitalising on Proposed Storm Water Drainage infrastructure to create a water front development within the industrial zone.

Linear park will accommodate Cafes, Recreation, Public art and commercial development for area activation

Public Art as a medium for social and environmental awareness is planned to be an integral part of linear Open Spaces

Provision of art and awareness nodes

Green Spine

Open green spaces for leisure activities

Public art along walking/biking paths as a tool for **Sustainability** & **Civic Sense** **Awareness**

Arts District

Capitalize on **Transit** Connectivity and **Green Spine connectivity** to create an **Anchor District**

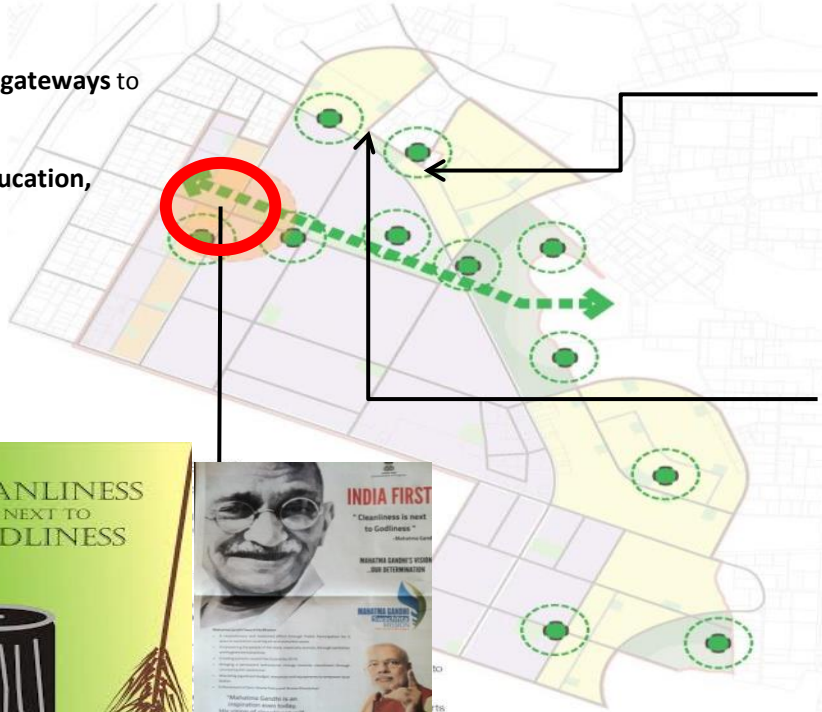
Integrate **Arts** + **Cultural Facilities** (**Museum**) + **Open Space** to create an arts and public education district

Public Art at Millenium Park Chicago, Chicago, USA.

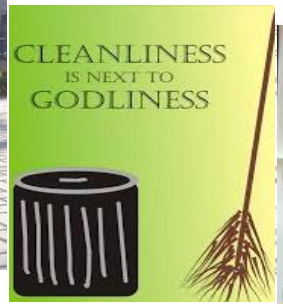
Nodes/Gateways

Utilize Parks at key intersections as **gateways** to AA

Public art along these nodes for **education, civic/sustainability awareness**



lain Barrel auction organized by Elkhart River lestoration Association Inc, engaging local artist create awareness about reducing stormwater un-off. Source: http://www.elkhartriveralliance.org /p-content/uploads/Auction-Catalog.pdf



ransforming Garbage Bins Into Works Of Art t Delhi's Lodi Gardens. Source: http://www. hebetterindia.com/8994/transforming-garbage- bins-works-art-delhis-lodi-gardens/#ethash. JzyxQs2t.dpuf

Municipal Operations - City Integrated Operation Centre (IOC)

City Applications

BIG DATA

City Surveillance
City Wide Sensors
GIS & BIM
IOT
Social Feeds
City Portal
Environment & Weather
City Financials
City Utilities
City Master data

Intelligent Analytics

Predictive
Simulation and Modelling
SOP
Decision Making

OMNI CHANNEL/ DIGITAL SIGNAGES ENABLED

City Services

Safety & Security
Traffic Management
Emergency Response
City Interaction
Environment Monitoring
Police Controls

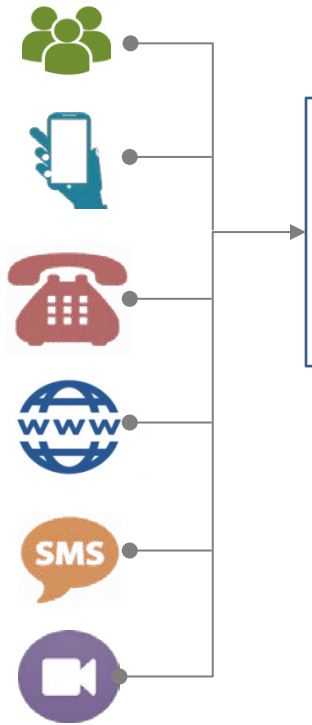
City Infrastructure

Power
Sewage
Water
Solid Waste
Transport
Gas

Semantic Models
City Governance
Events / Activities

Other Data Integration
Crime and Criminal Tracking System (CCTNS)
Law Enforcement
Regional Traffic Operations

‘ease of living’ : ‘ease of doing business - Smart Governance



- Citizen‘s Authority and Interaction
- Local Administration and Public Facilitation
- Urban Planning, Land & Estate Management
- Records Management
- Single Window Clearances / Approvals
- Public Grievances and Redressal
- Public Transportation
- Education
- Local News
- City Utilities
- Health Services
- Awareness Programs
- Public Safety
- Social Services
- Special Events

- City administration to be more agile to deliver even greater value for citizens
- Meet citizen expectations of highly engaging and personalised services through human-centred designs
- Governance will play an active role in opening up city data to foster growth, innovation and improved services

“Host of technological applications for city including citizen relationship management, ERP, SRM, Business intelligence, Analytics etc. being deployed”

DICDL

ABCD Building

DICDL

Construction progress (as of November 2017)

SPV Building 4th floor column progress

Reinforcement for BEC Slab

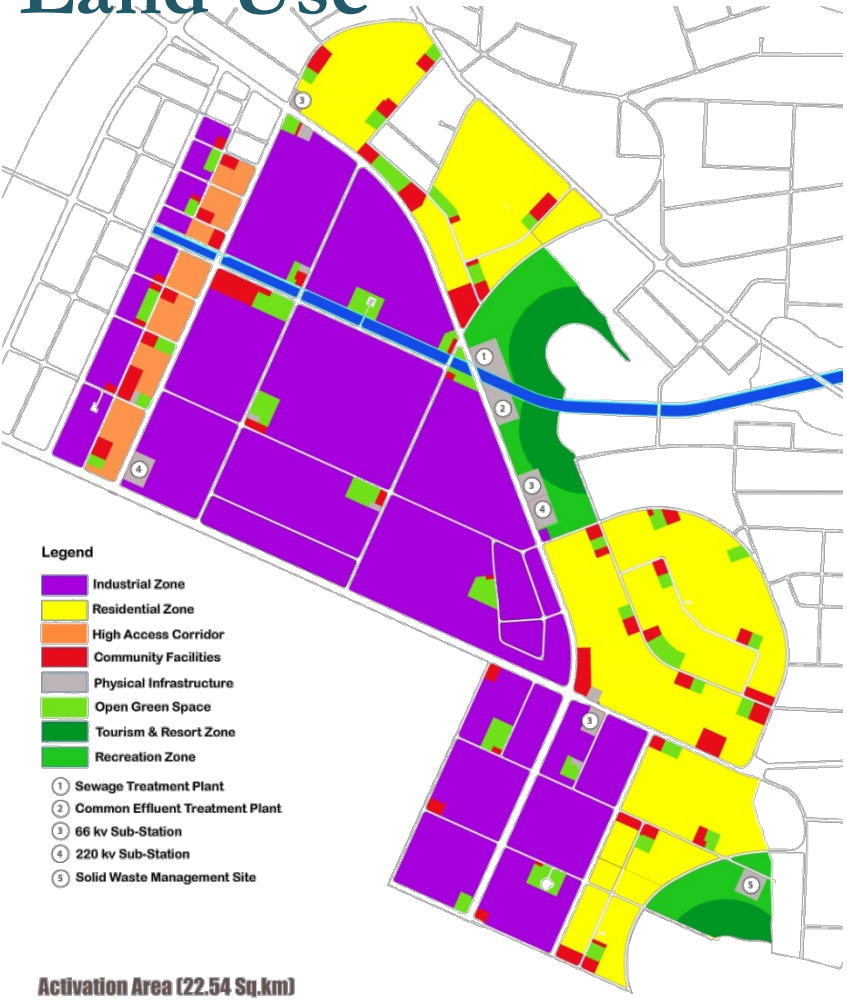
Compound Wall

BEC 2nd Slab Shuttering

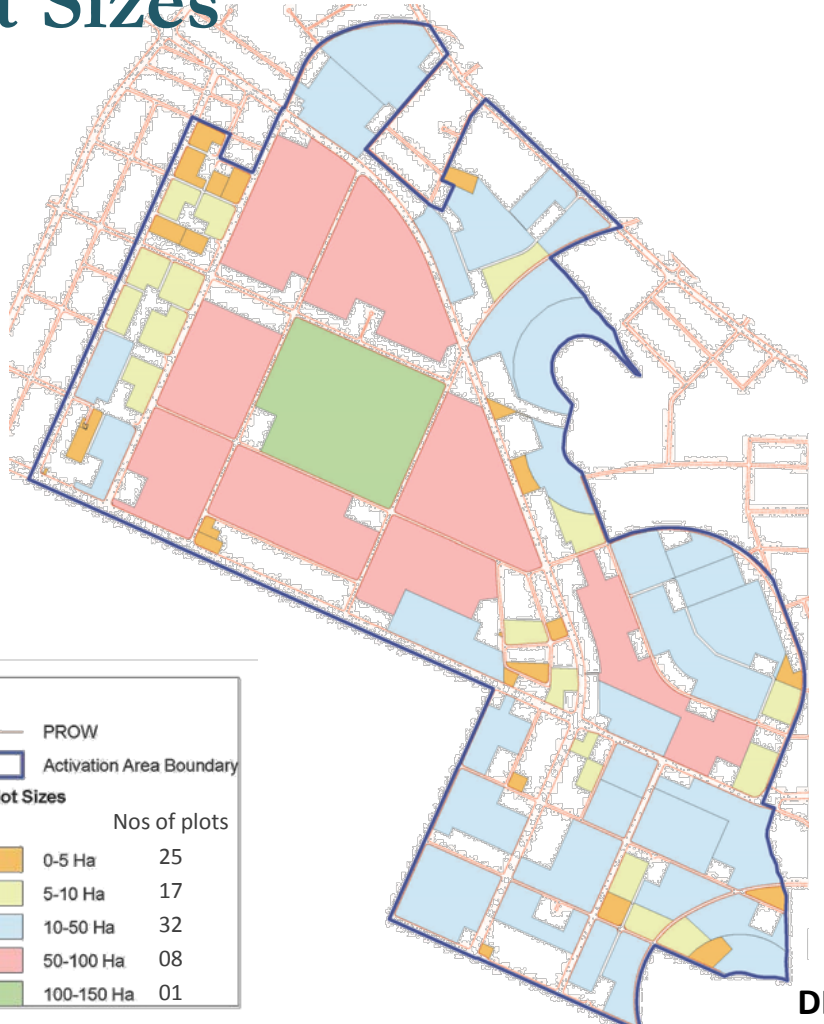
BEC - Auditorium

Reflecting pool – Rubble soiling

Land Use



Plot Sizes



DICDL

Land allotment Mechanism

Allotment
Within 17 days

Possession
Within 90 days

5600
Acre of initial development

Discount
For Anchor tenants

Dynamic
Land prices for different use

Single
window clearances

Online GIS mapping and land allotment

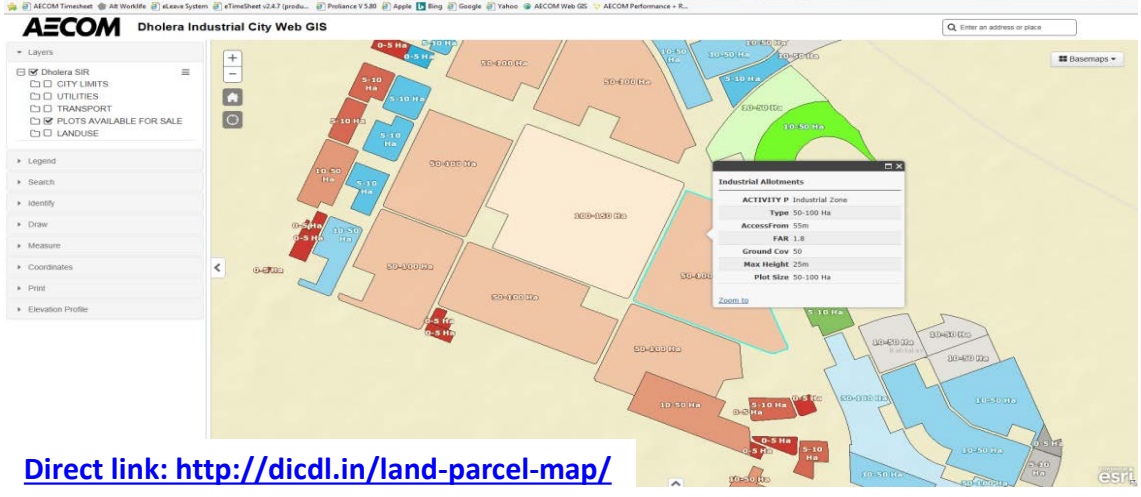
- Identified land bank
- Hassle free online document submission
- Constant updates on applications status
- Transparent system of land allotment

Ease of doing business (**e**lectronic **L**and **A**llotment **S**ystem)

[Direct link: https://elas.dicdl.in](https://elas.dicdl.in)

Land Allotment within

17 Days



[Direct link: http://dicdl.in/land-parcel-map/](http://dicdl.in/land-parcel-map/)

Land Possession within

90 Days

Industry Profile of Dholera

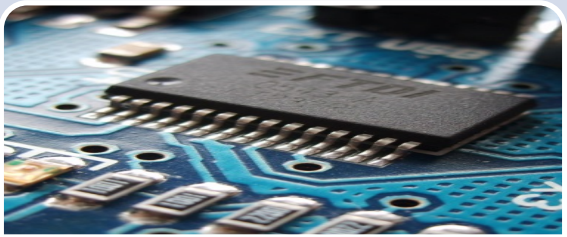
Defence

General manufacturing

Heavy Engineering

Auto & Auto Ancillaries

Pharma & Bio Tech (Formulation)



Electronics Industries

Agro and food processing (Stand alone no farming considered)

Immediate Opportunities for Developers

- Housing – LIG, MIG, HIG
- Commercial – Hotels, Offices etc
- Recreation – Golf Courses / Resort
- Solar Park
- Skill Development
- Education Institutions
- Medical Facilities

Summary Dholera

Large land parcels

Planned Communities

Live – Work – Play Environment

Ease of doing business

ICT enabled infrastructure

Plug & Play services

Sustainable living

Supportive policies

Award– “India Geospatial Award ”

INDIA GEOSPATIAL EXCELLENCE AWARDS

Certificate

For

Application of Geospatial Technology in Urban Planning & Smart Cities

to

Dholera Special Investment Region (DSIR), Gujarat

and

AECOM India Private Limited for their project titled

Award date

Mar 2016

Award–Bentley “Be Inspired”

Award date

Mar 2016

CERTIFICATE OF EXCELLENCE

PRESENTED TO

Dholera SIR

Outstanding achievement as a FINALIST in the 2016 *Be Inspired* Awards

Delhi Mumbai Industrial Corridor Development Corporation

Award–IGBC Green City Rating “Platinum”

Award date

Sep 2016

Award–World CSR “Green City Award”

Award date

Feb

2017

Award–World CSR “Best city for integrated planning”

Award date

Feb 2017

THANK YOU

Most **ambitious**

One of a kind

not just a project…

It is **Nation Building**

A **“Platinum”**
Rated Green City