

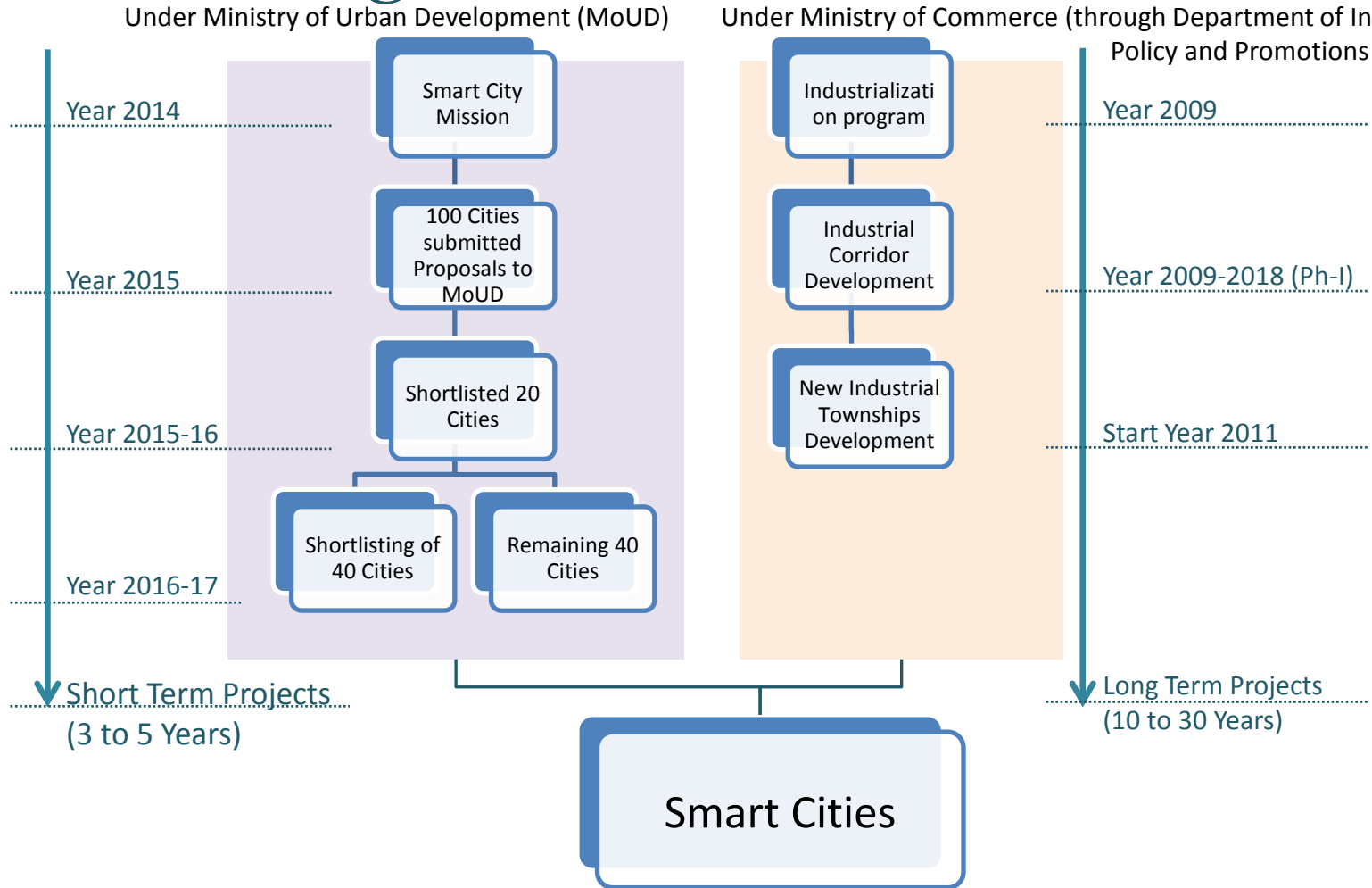
dholera



A "Platinum"
Rated Green City

DHOLERA INDUSTRIAL CITY DEVELOPMENT LIMITED

Smart Cities Programs in India



India's Industrial Corridor Network

Delhi-Mumbai Industrial Corridor (DMIC)

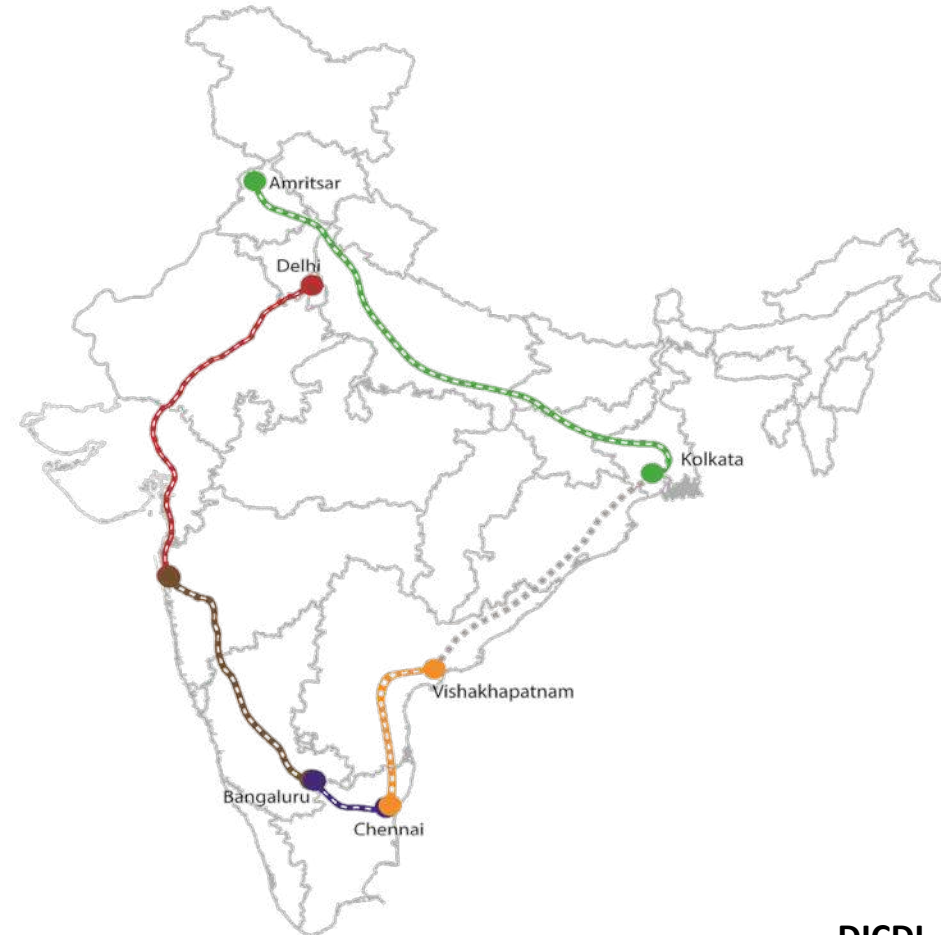
Bangaluru-Mumbai Industrial Corridor (BMIC)

Chennai-Bangaluru Industrial Corridor (CBIC)

Vizag-Chennai Industrial Corridor (VCIC)

Amritsar-Kolkata Industrial Corridor (AKIC)

Vizag-Kolkata Industrial Corridor (VKIC)



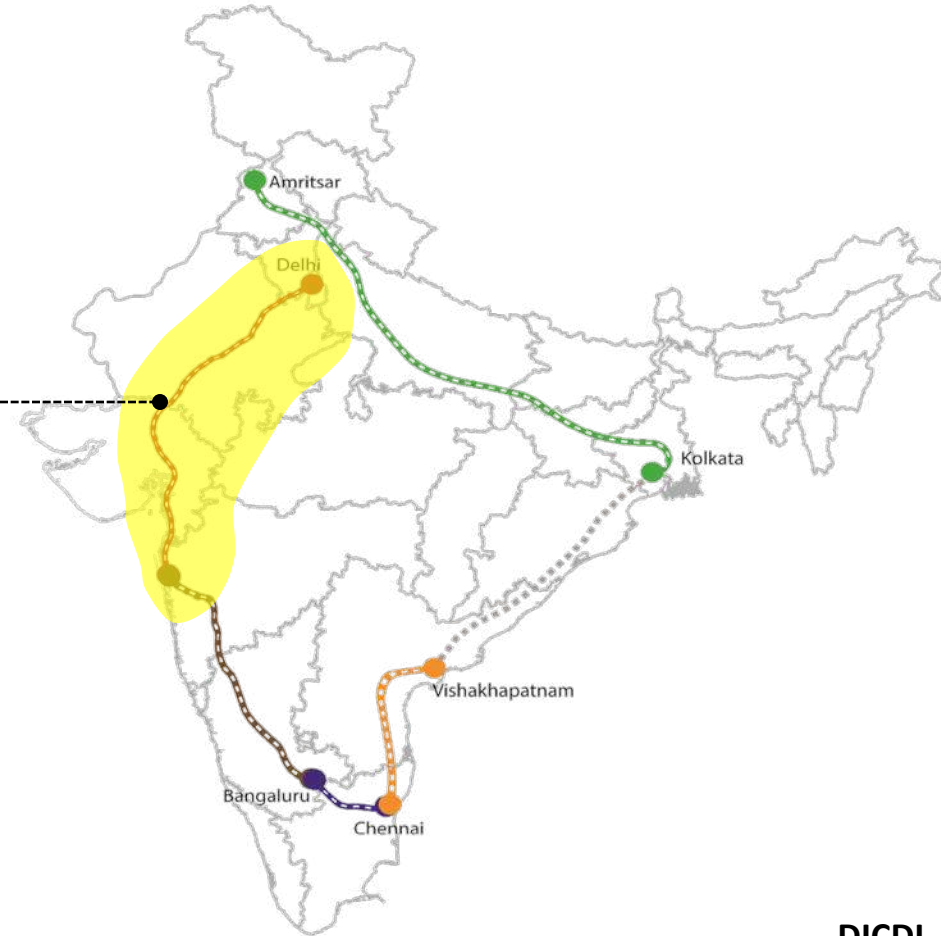
NICDIT and DMICDC

NICDIT

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

DMICDC

Delhi Mumbai Industrial Corridor
Development Corporation
(DMIC Corridor)

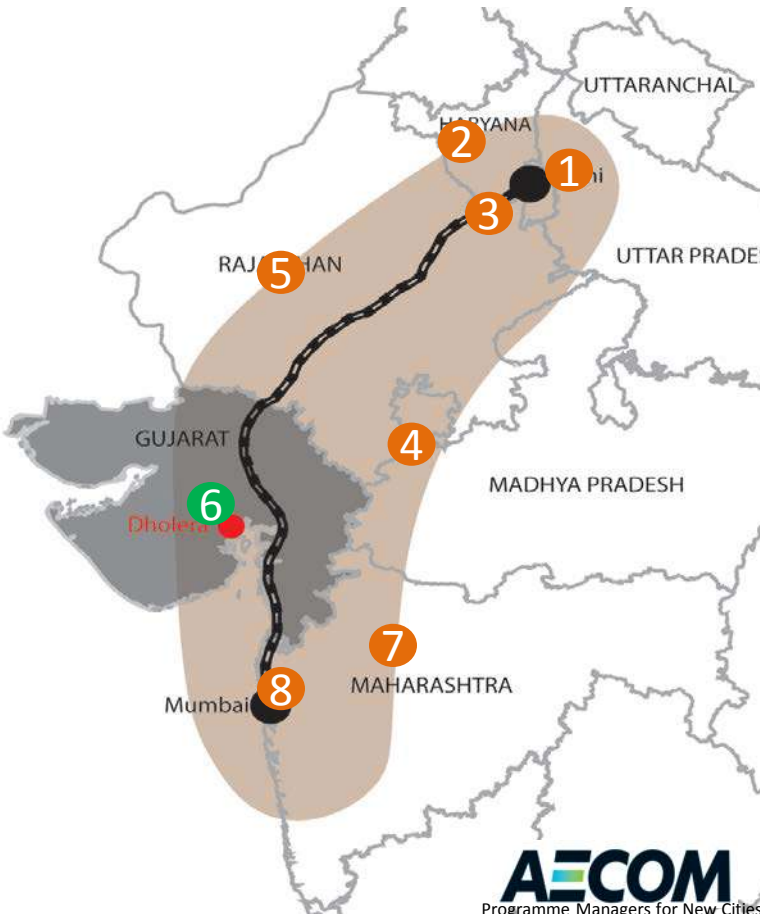


Smart Industrial Townships under DMIC

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, Rajasthan72 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



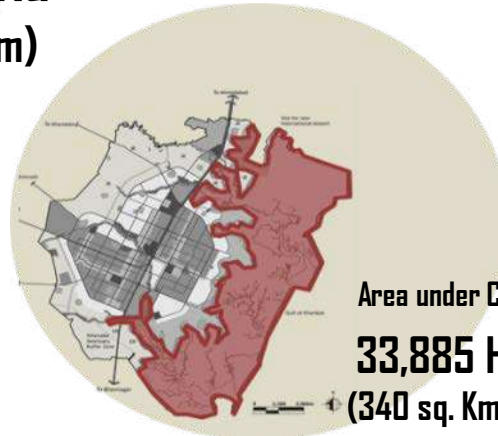
Development Plan Projections



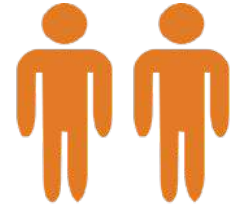
Total Area
91,970 Ha
(920 sq km)



Area outside CRZ
58085 Ha
(580 sq. Kms)



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

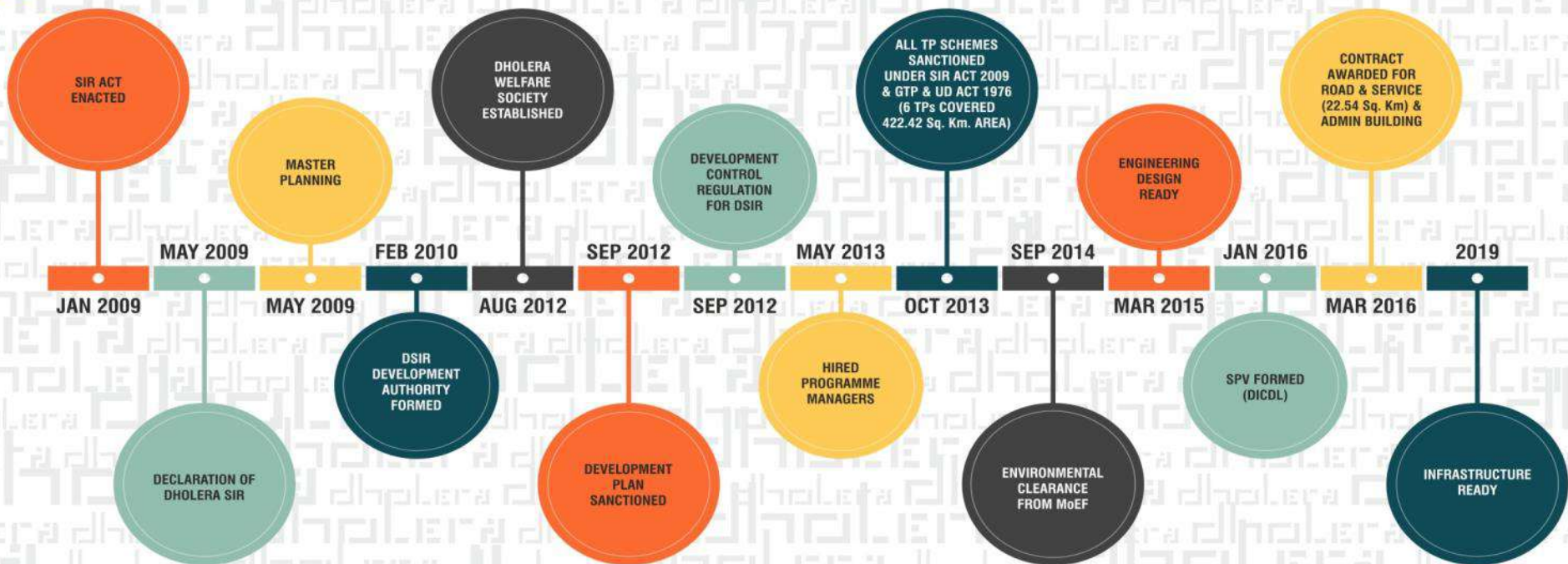


Resident population in DSIR
2.0 million



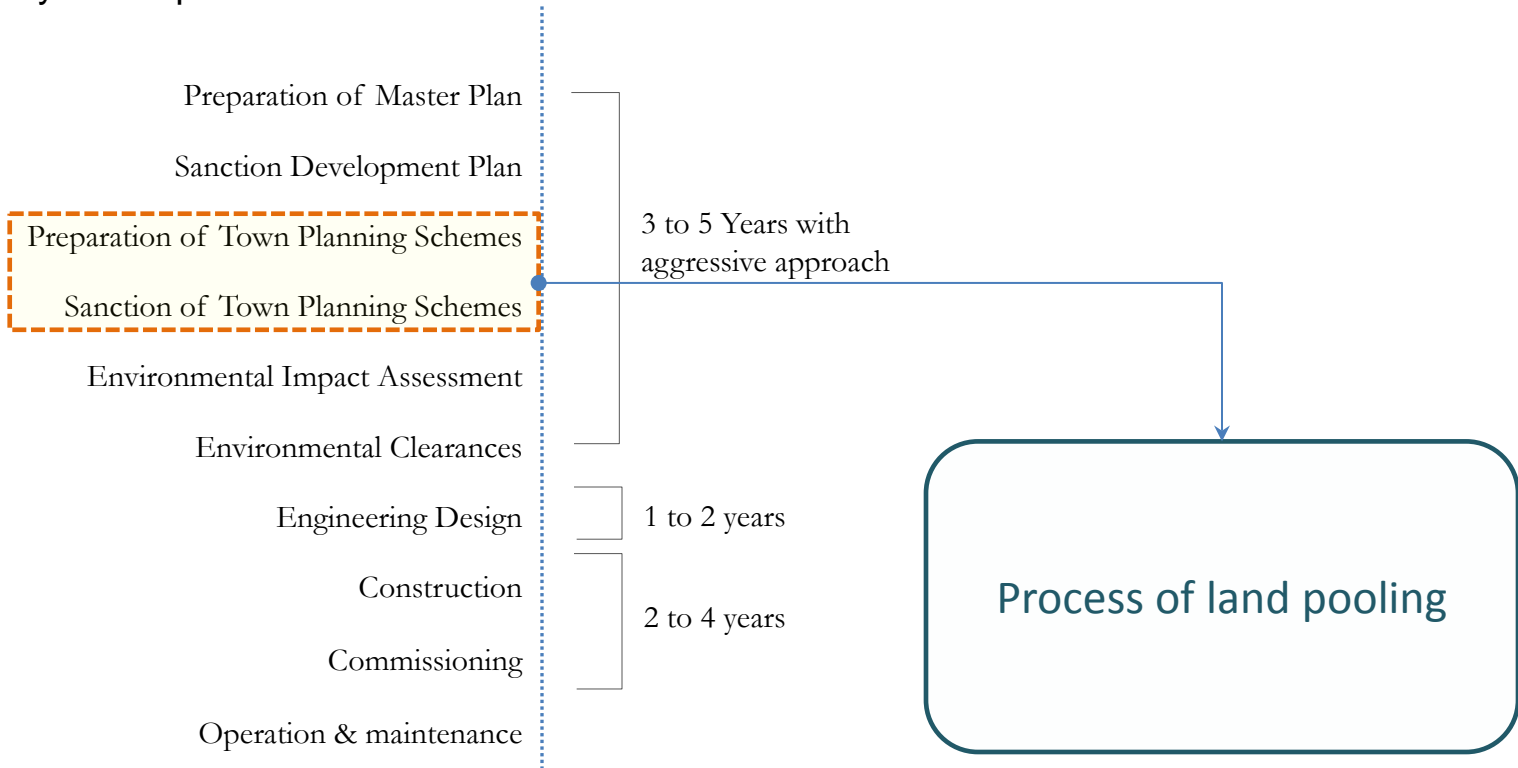
Total Jobs in DSIR
827 Thousand

PROJECT DEVELOPMENT TIMELINE



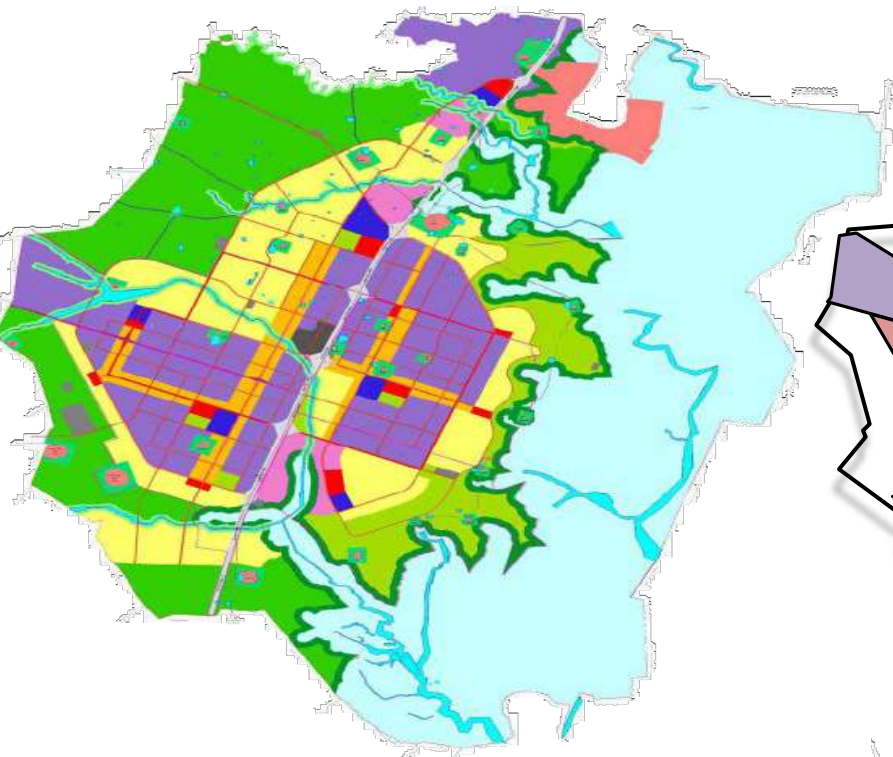
Why does it take 10 years to build a greenfield city

Steps in greenfield city development



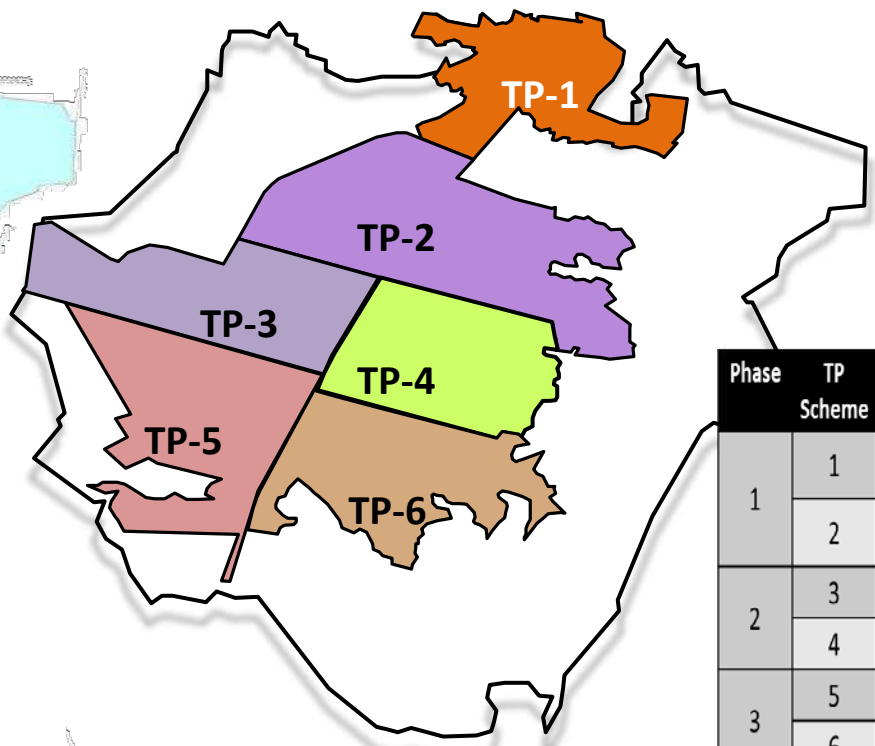
7 to 11 years required to develop a greenfield city

Dholera - Town Planning Scheme Implementation



Development plan

920 Sq. Km.

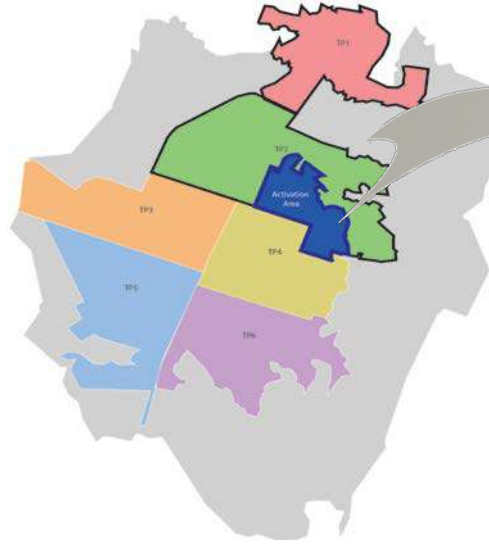


Town Planning Scheme

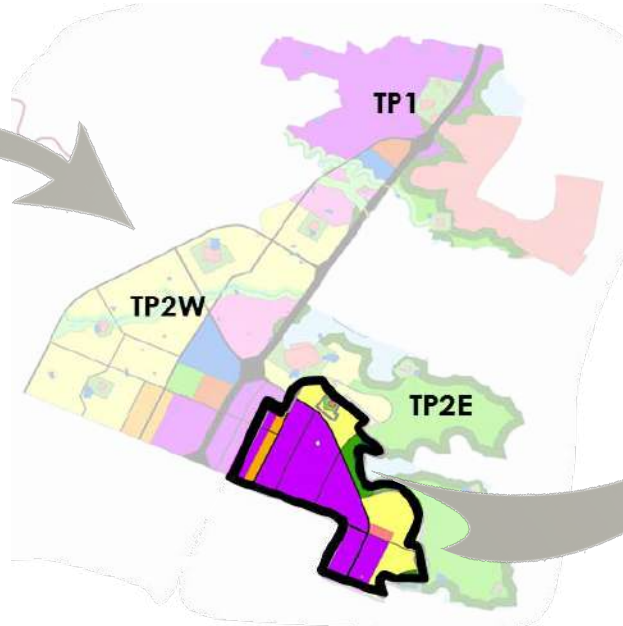
422 Sq. Km.

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



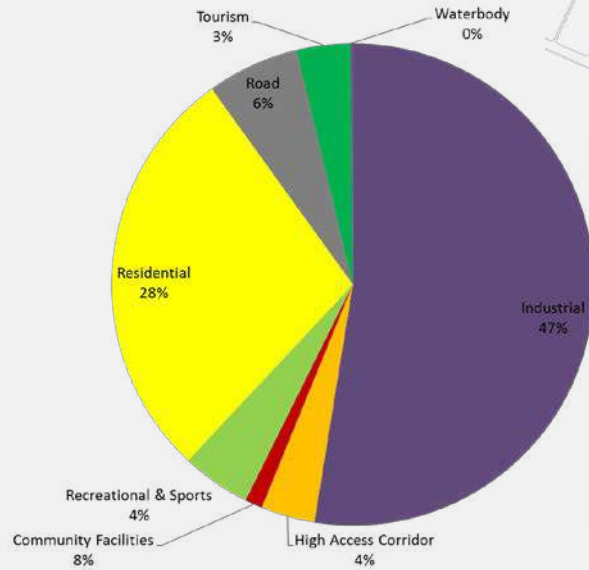
Total Jobs in Dholera
76 thousand

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

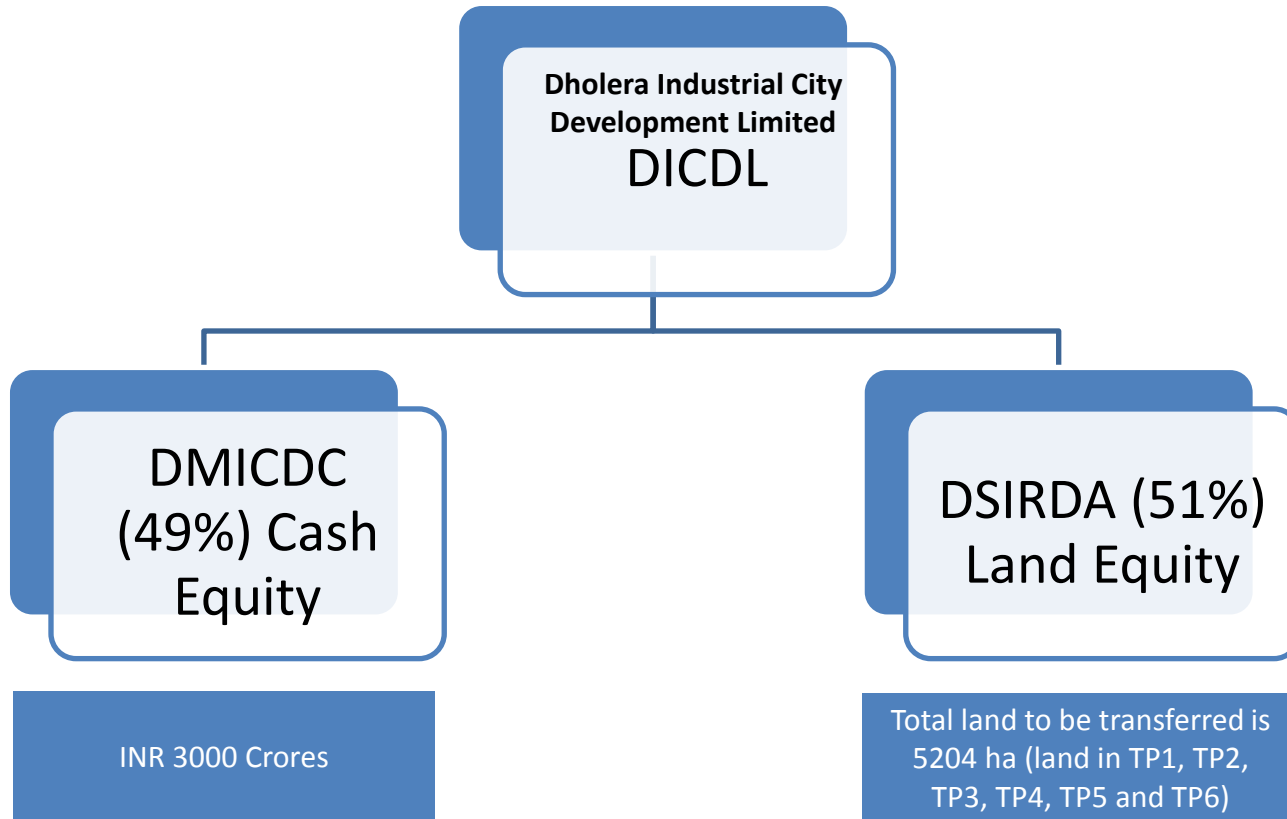
Activation Area Land Use Distribution



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



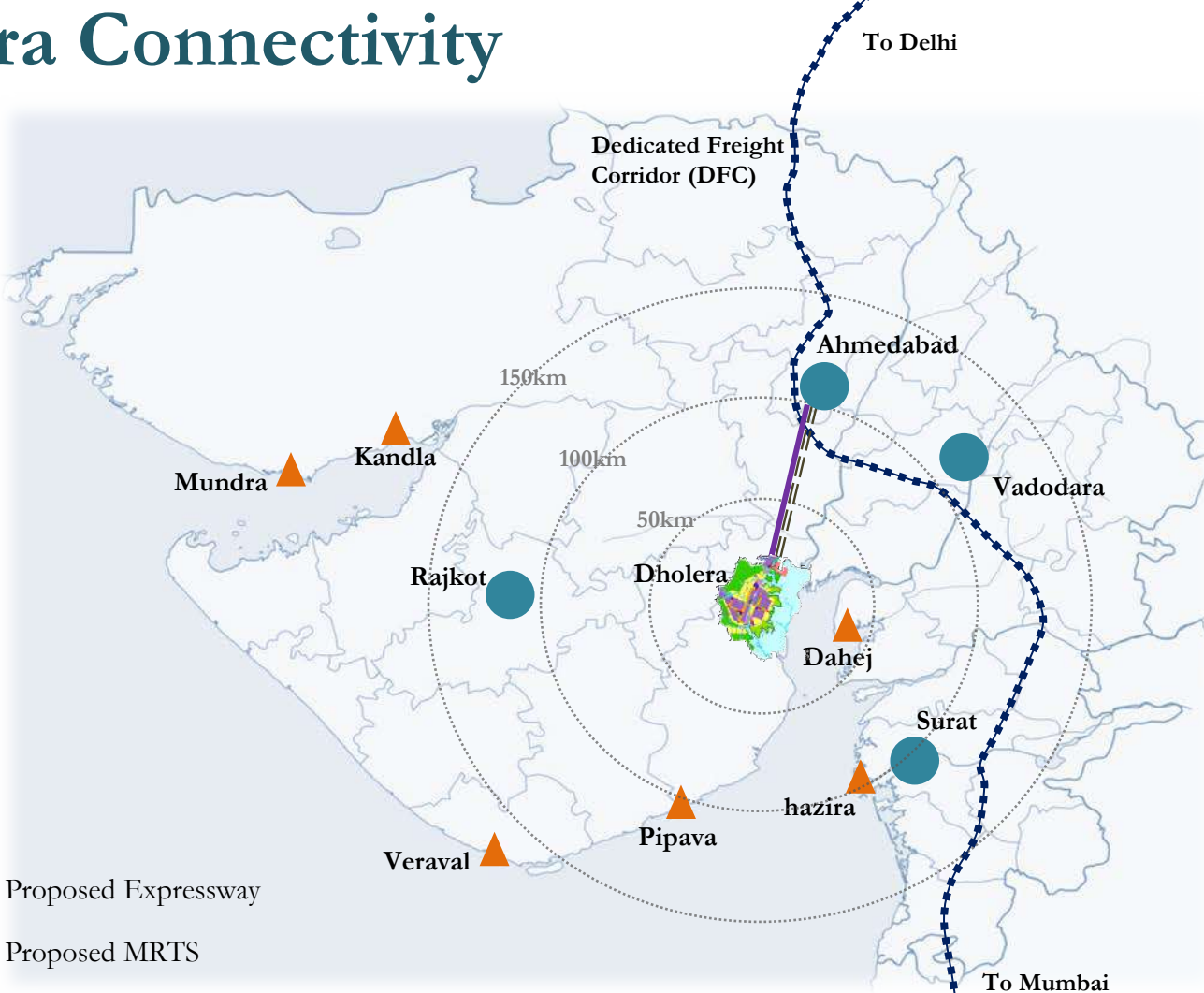
ICT: City wide Information Communication & Technology

Design under Progress

Trust Approved

External Connectivity

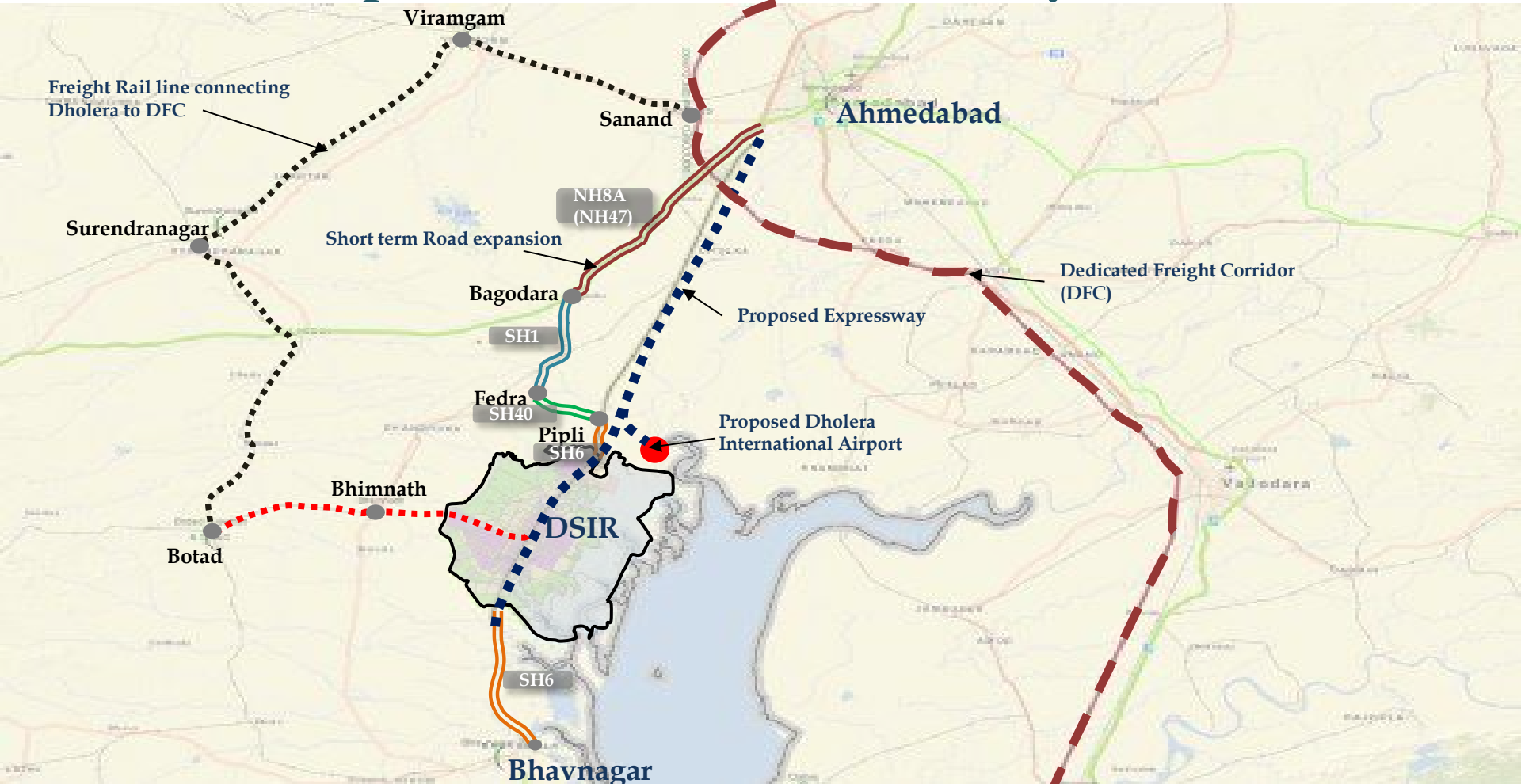
Dholera Connectivity



==== Proposed Expressway

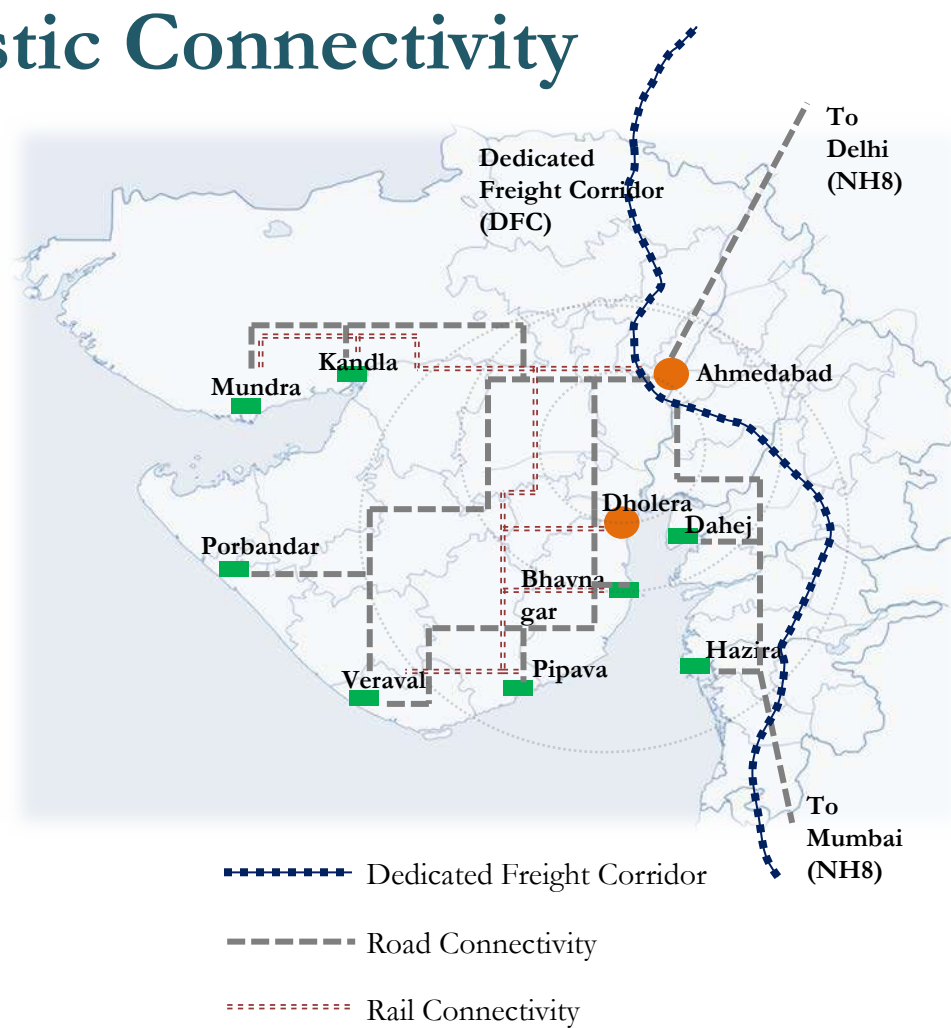
———— Proposed MRTS

Dholera – Proposed External Connectivity with Ahmedabad



Dholera – Out Zone Logistic Connectivity

<p>04HRS Pipava Port (200 Kms)</p>	<p>06HRS Mundra Port (380 Kms)</p>	<p>10HRS JNPT, Mumbai 590 Kms</p>
<p>02HRS Ahmedabad Airport (122 kms)</p>	<p>2.5HRS Vadodara Airport (142 Kms)</p>	<p>15MIN Proposed Dholera Airport</p>
<p>2HRS Bhavnagar Railway Stn. 130 Kms</p>	<p>1.5HRS DFC</p>	



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

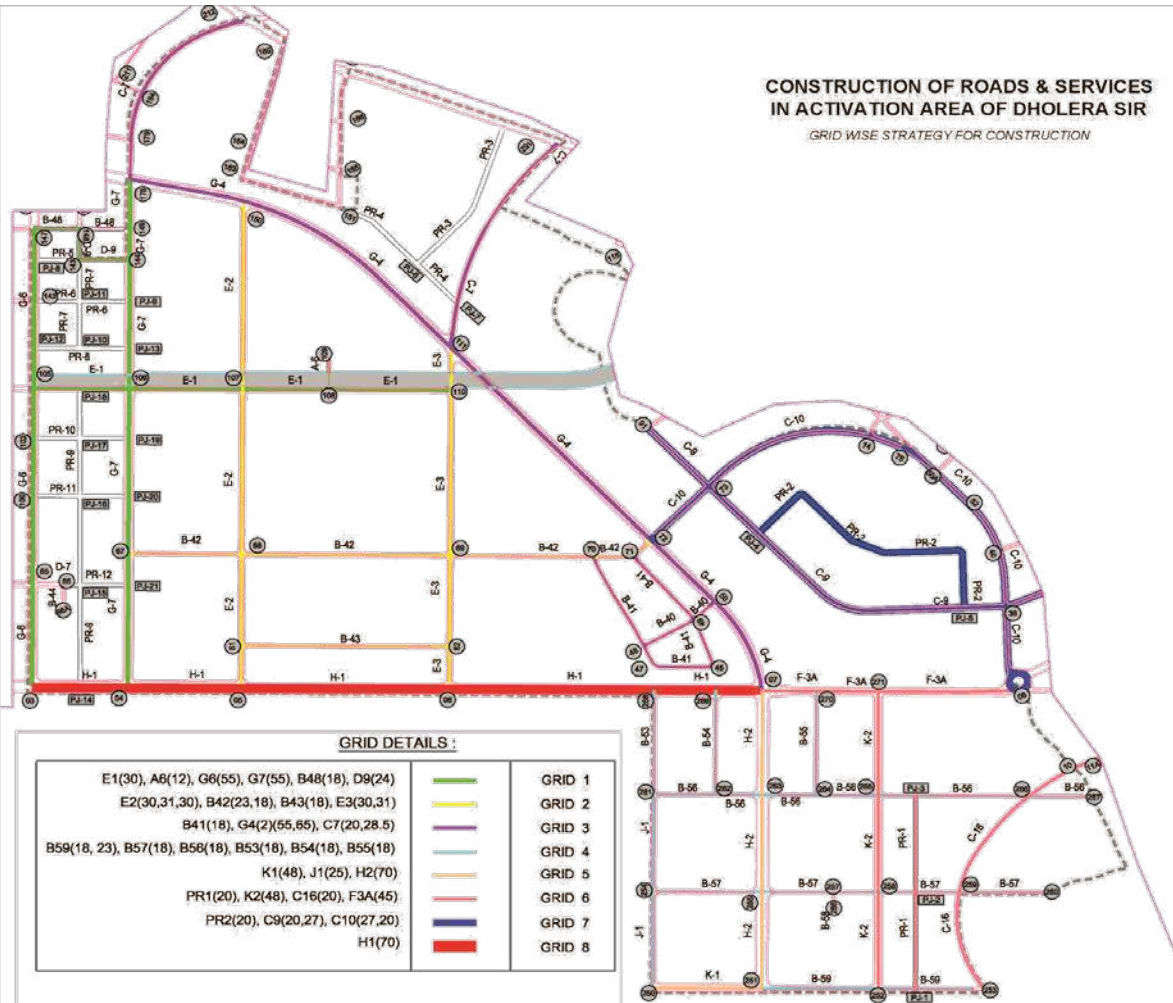
KEY FEATURES

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

CONSTRUCTION OF ROADS & SERVICES IN ACTIVATION AREA OF DHOLERA SIR

GRID WISE STRATEGY FOR CONSTRUCTION



Total Road
Length

72 KM

Construction
Start

Mar

2016

Contractor

L&T

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

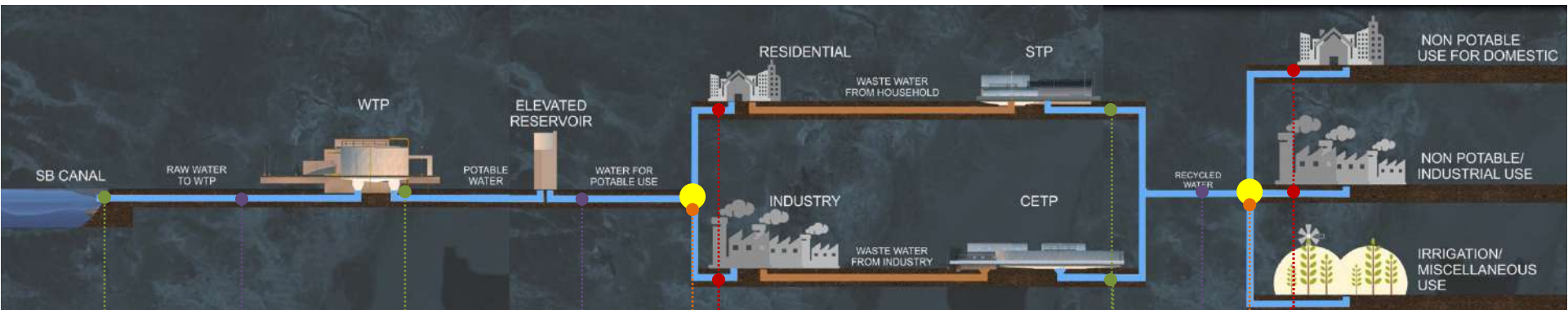
Renewable Energy –
Solar

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

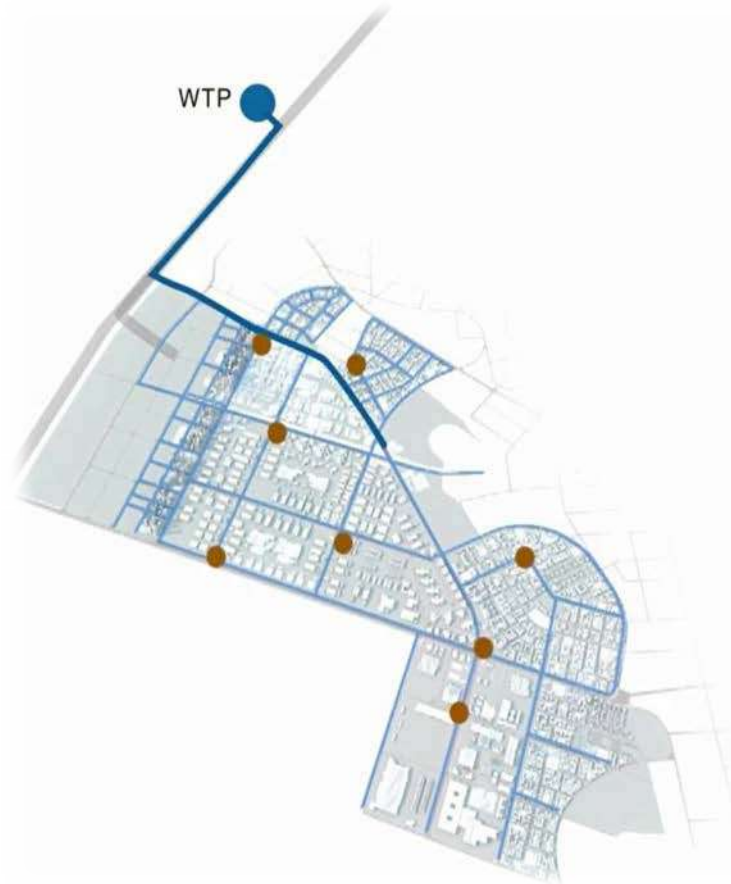
Availability from Sept'19

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

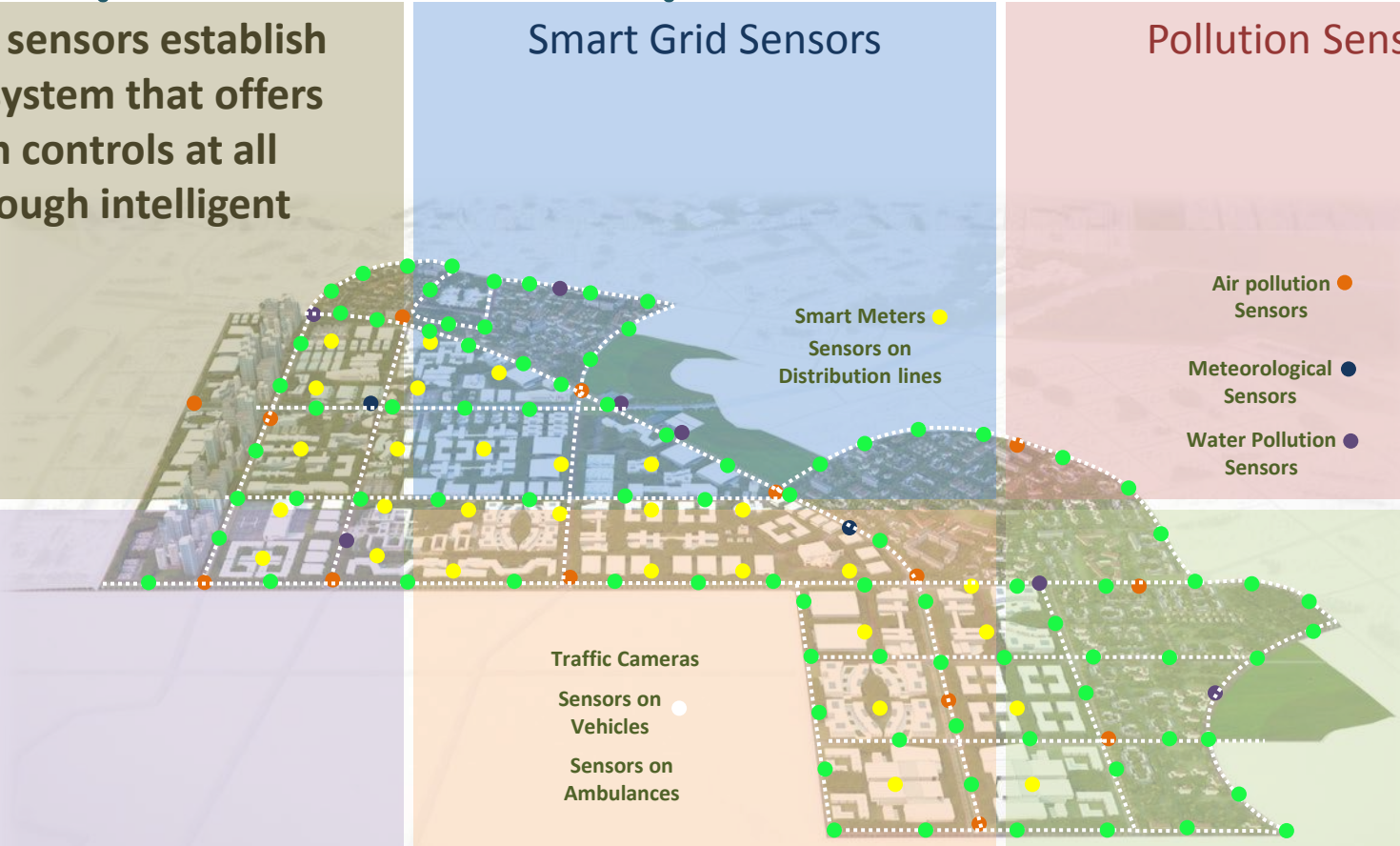
- Facility Area - 28 ha
- 25 TPD Segregation Plant
 - Bio-degradable
 - Recyclable
 - Others (Landfill)
- 30 TPD Bio-Methanation Plant – For Bio-degradable waste
- 250 TPD Industrial (Non-Haz) Waste management Facility – Saleable & Recyclable
- 25 TPD Incinerator – For Hazardous Waste
- 1 TPD E-Waste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

KEY FEATURES



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

Pollution Sensors

Smart Meters
Sensors on Distribution lines

- Air pollution Sensors
- Meteorological Sensors
- Water Pollution Sensors

Traffic Cameras
Sensors on Vehicles
Sensors on Ambulances

- Leak & Theft Detection Sensors
- Waste Water Sensors
- Smart Water Sensors

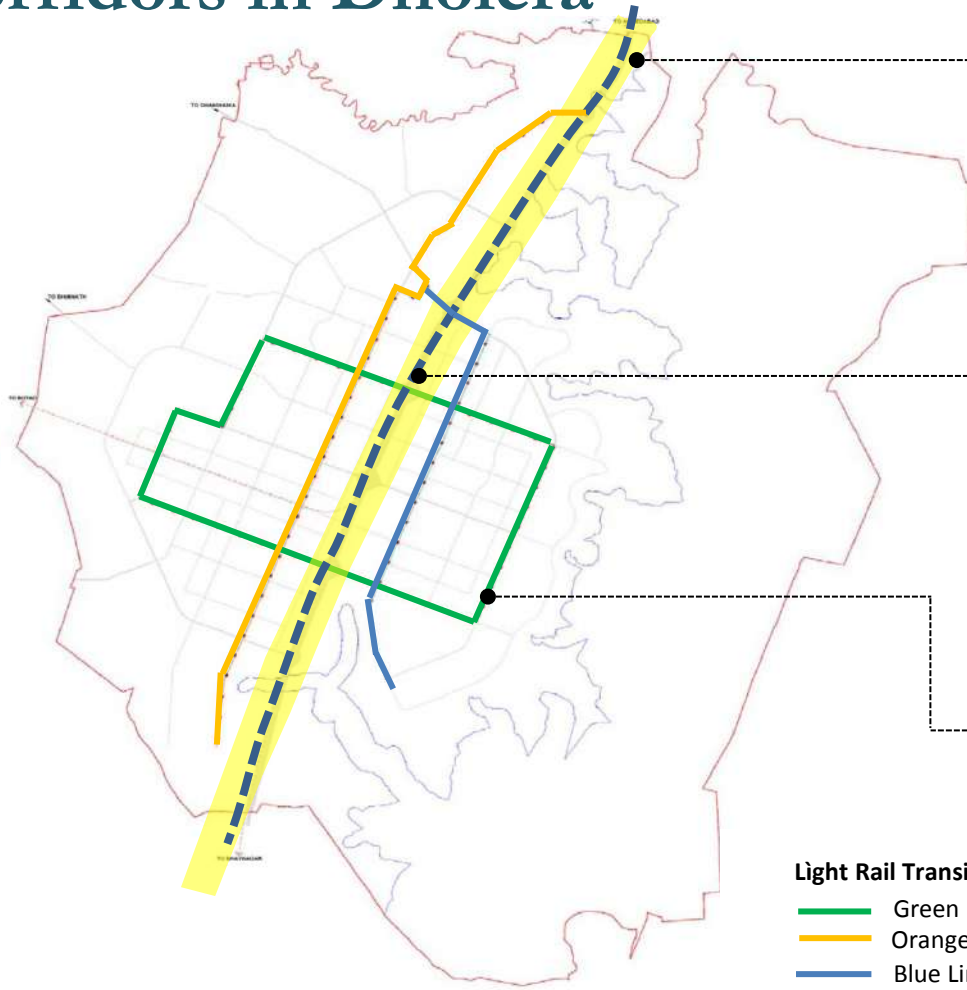
Automation Sensors

Traffic Sensors

Leak Detection Sensors

Urban Transit Corridors

Transit Corridors in Dholera



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



Metro Rail Transit System



Light Rail Transit System



- Light Rail Transit Corridors**
- Green Line
 - Orange Line
 - Blue Line

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** in 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

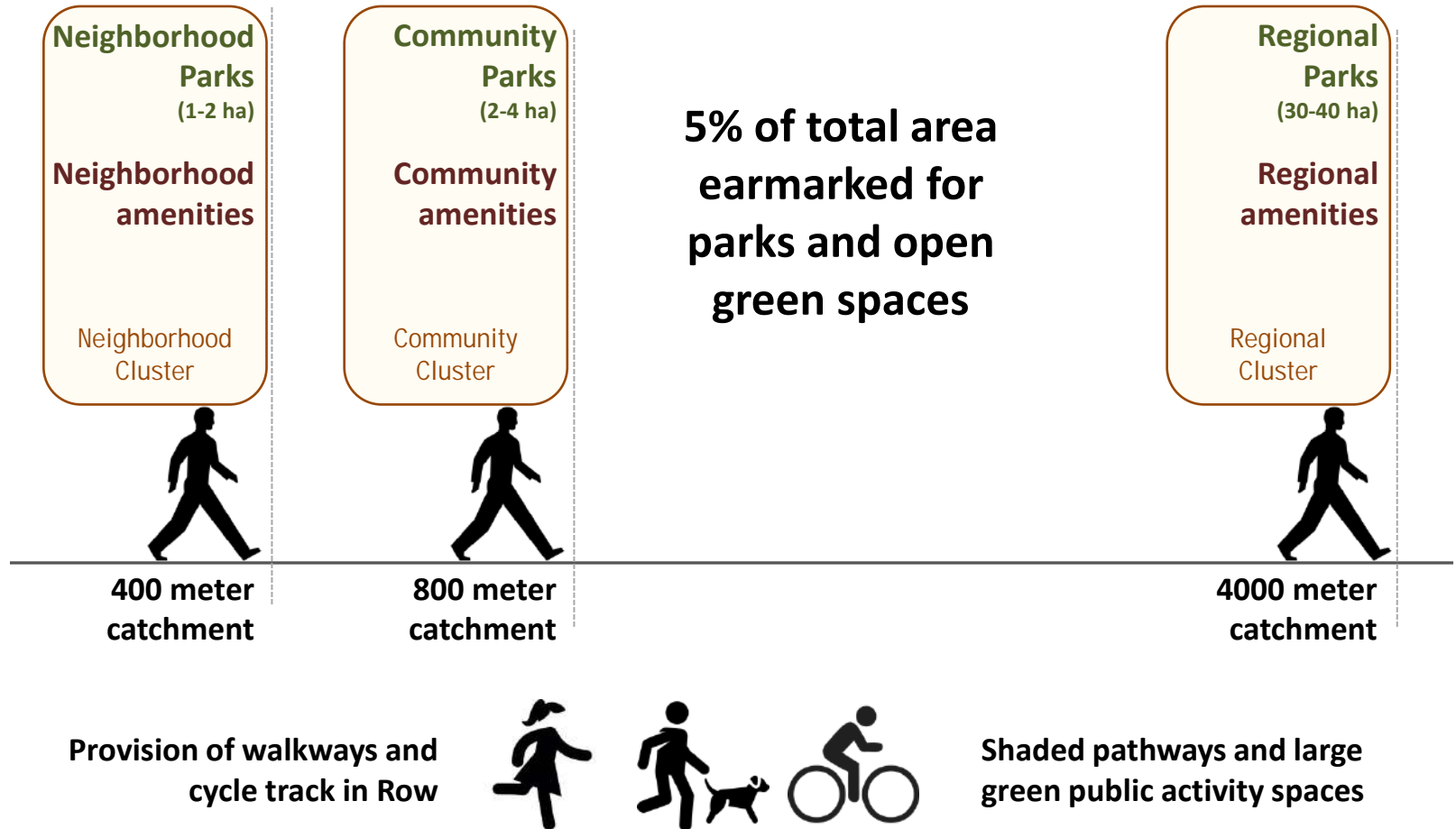
Land Use Zone	Gross Area (Ha) (Includes Roads)	Net Area under Housing (Ha)		
		High Density	Medium Density	Low Density
Residential	9,780	782	3032	1467
High Access Corridor	2,465	345	592	0
City Centre	679	109	102	0
Knowledge and IT	1,230	0	185	172

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

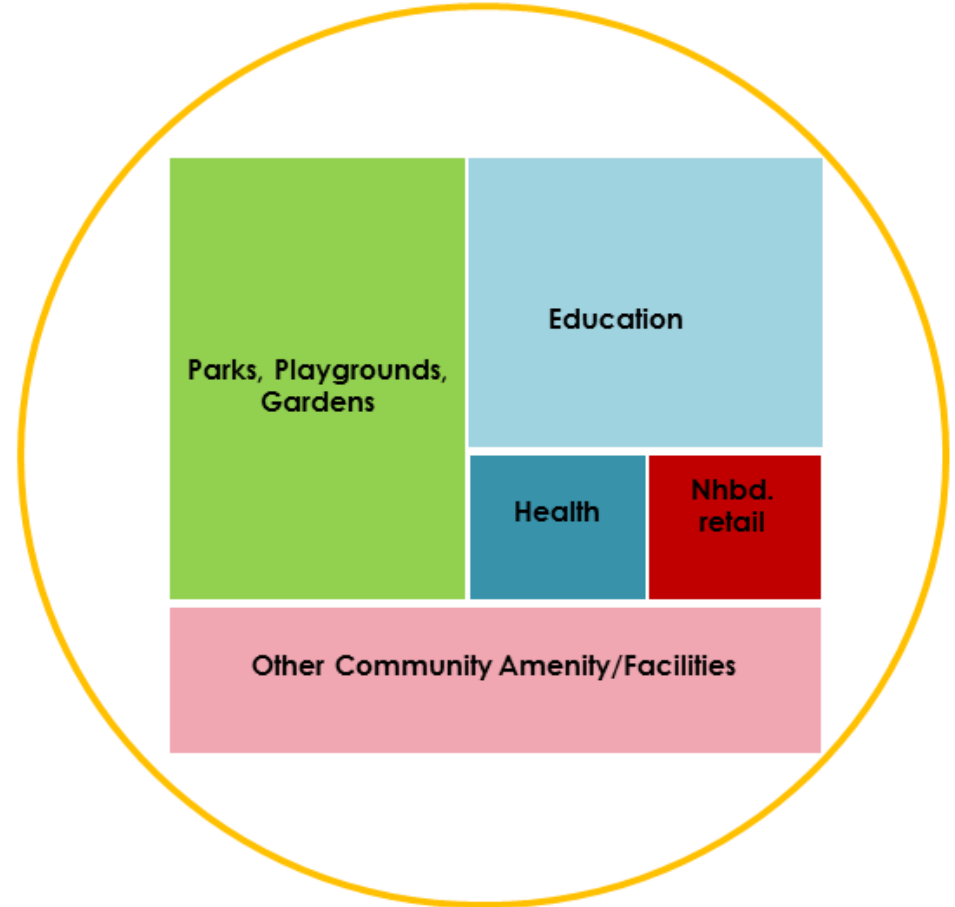


Social Infrastructure - State of Art

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

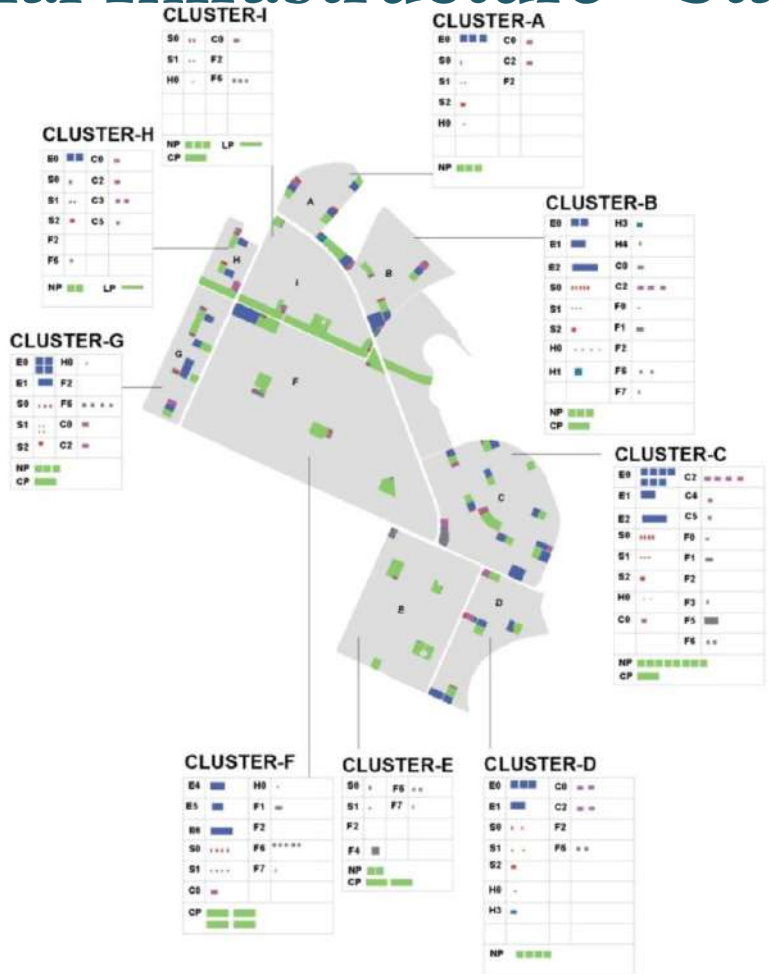
These are planned at the neighbourhood level and are clustered with the neighbourhood level open spaces and parks. These are accessible within a 5 minute walk.

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

LINEAR PARK-BIO SWALE ZONE



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

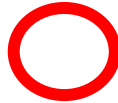
Provision of art and awareness nodes



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



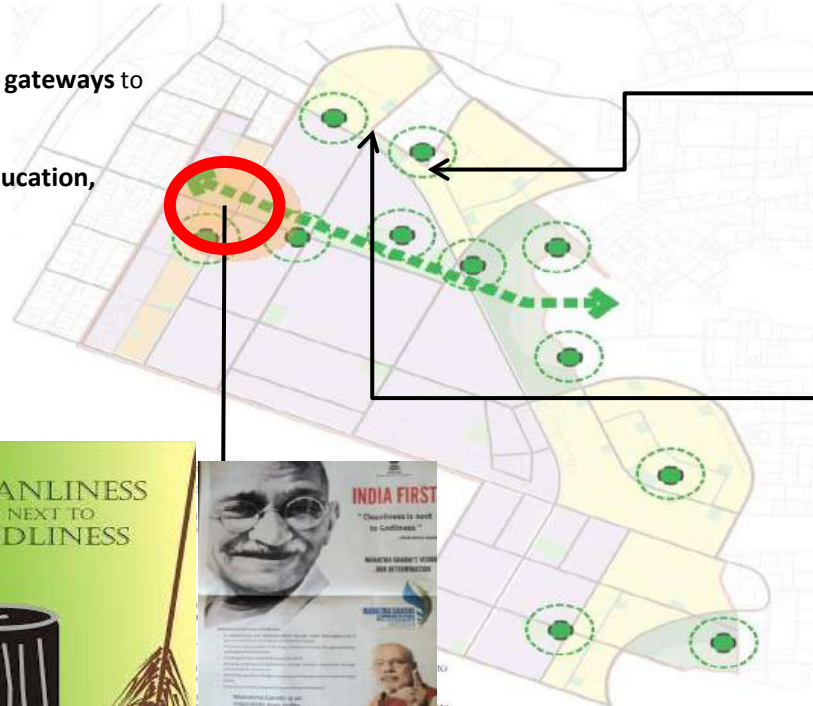
Public Art at Millenium Park Chicago, Chicago, USA



Nodes/Gateways

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

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



rain Barrel auction organized by Elkhart River restoration Association Inc, engaging local artists to create awareness about reducing stormwater run-off. Source: <http://www.elkhartriveralliance.org/wp-content/uploads/Auction-Catalog.pdf>



Transforming Garbage Bins into Works Of Art at Delhi's Lodi Gardens. Source: <http://www.bobsterindia.com/2014/transforming-garbage-bins-works-art-delhi-lodi-gardens/#ethack,jsyxQz2t.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 → SOP Decision Making

Simulation and Modelling → SOP Decision Making



City Services

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

City Infrastructure

- Power
- Sewage
- Water
- Solid Waste
- Transport
- Gas

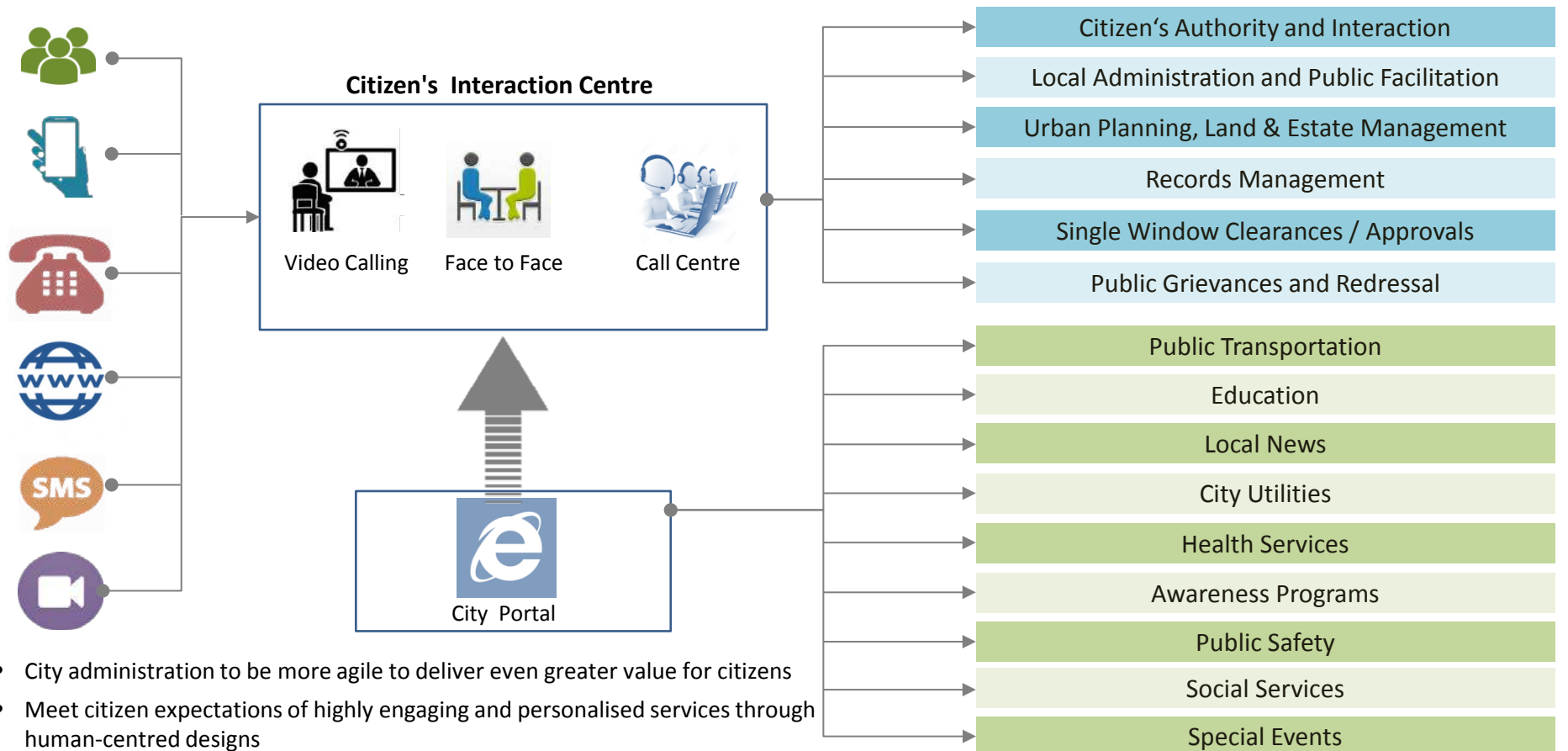


Events / Activities → Semantic Models → City Governance

Other Data Integration

- Crime and Criminal Tracking System (CCTNS)
- Law Enforcement
- Regional Traffic Operations

'ease of living' : 'ease of doing business - Smart Governance



- 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

- 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

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

ABCD Building



Construction progress (as of November 2017)



SPV Building 4th floor column progress



Reinforcement for BEC Slab



Compound Wall



BEC 2nd Slab Shuttering

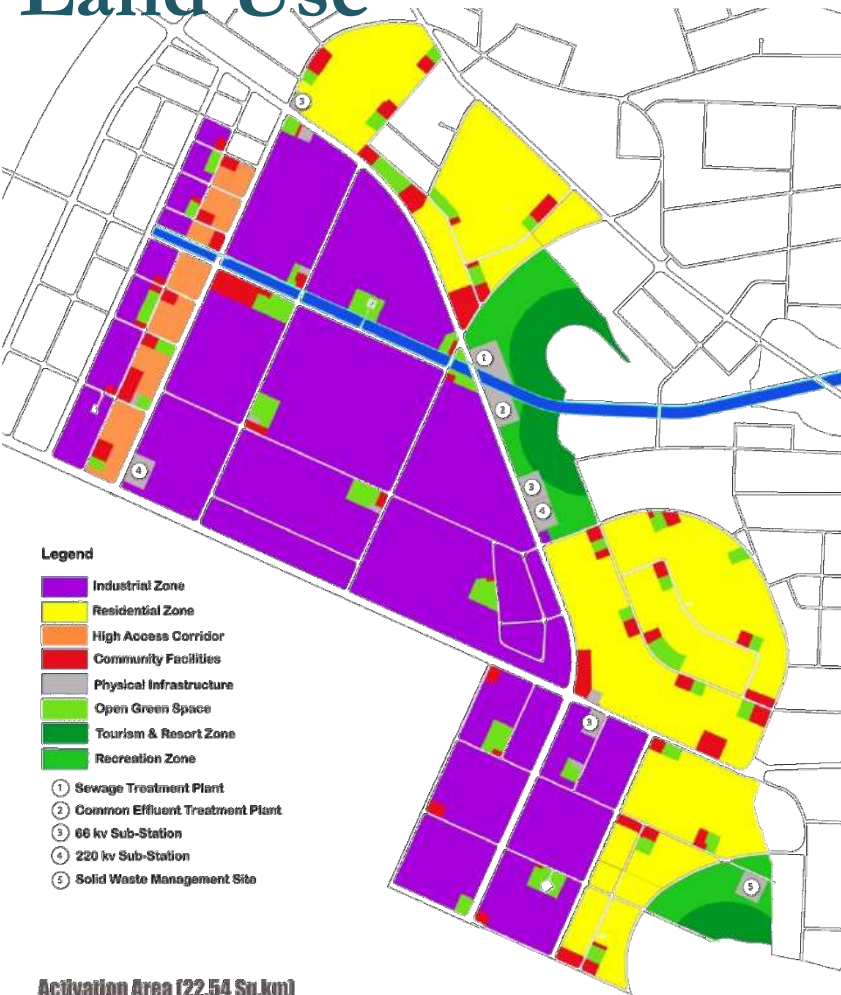


BEC - Auditorium

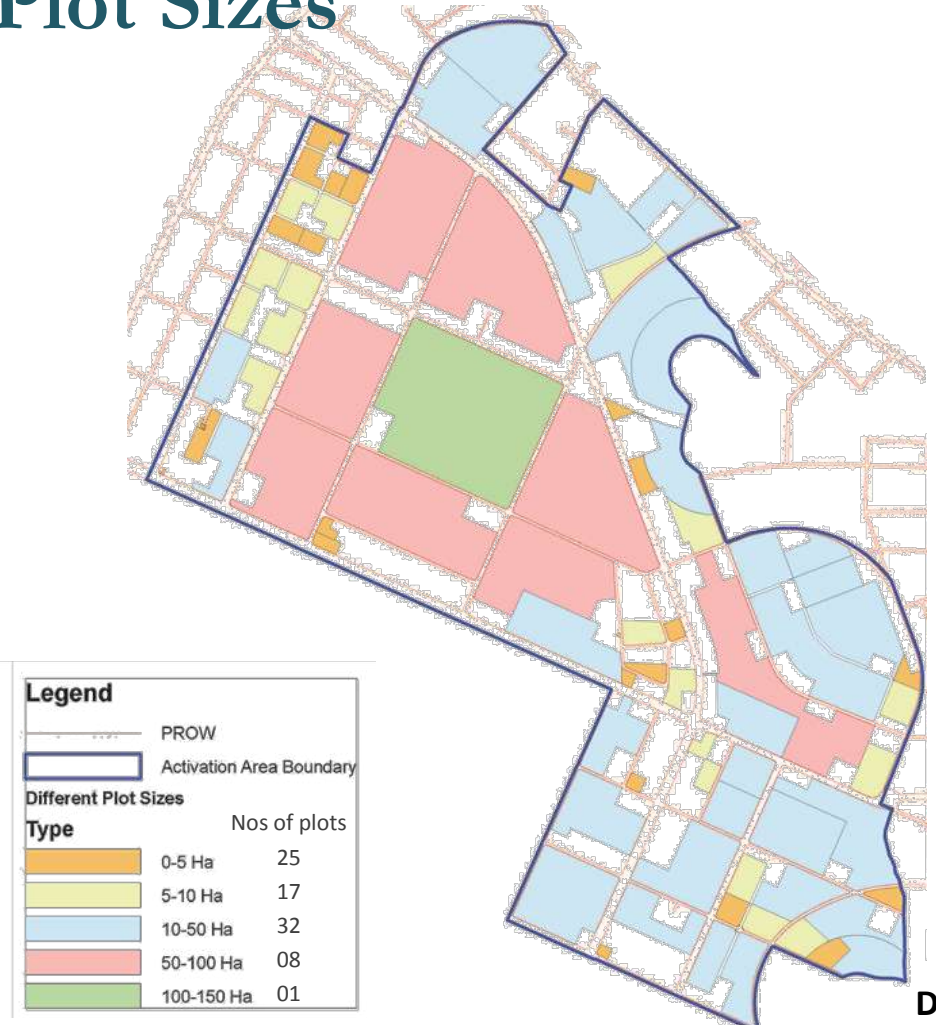


Reflecting pool – Rubble soiling

Land Use



Plot Sizes



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

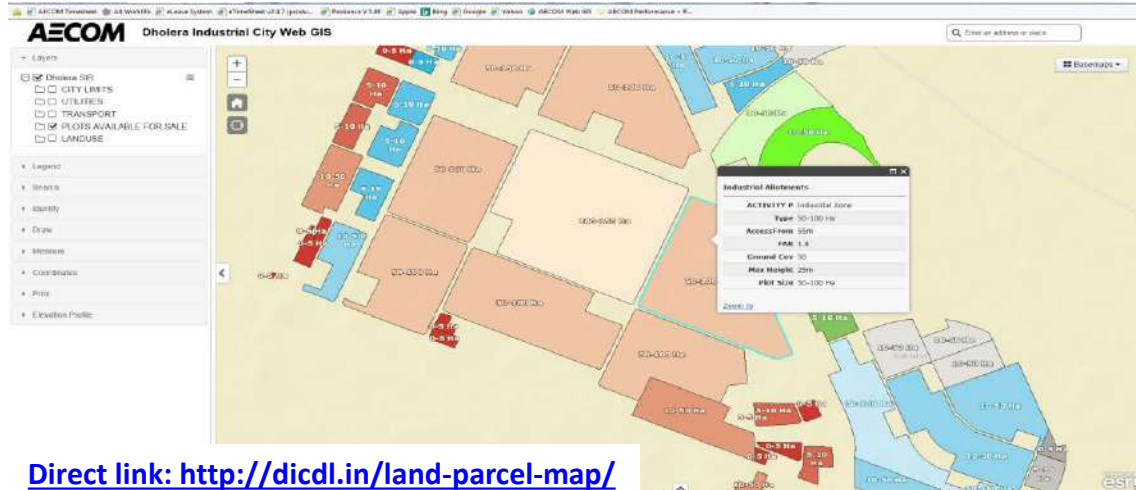
Online GIS mapping and land allotment

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

Ease of doing business (electronic Land Allotment System)



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



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

Land Allotment within

17 Days

Land Possession within

90 Days

Industry Profile of Dholera



Defence



General manufacturing



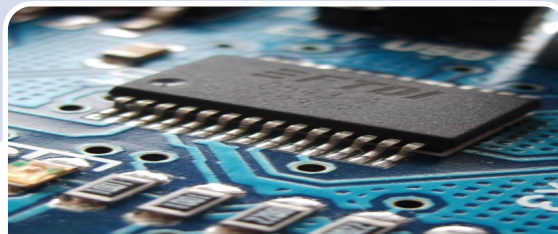
Heavy Engineering



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

ICT enabled infrastructure

Planned Communities

Plug & Play services

Live – Work – Play Environment

Sustainable living

Ease of doing business

Supportive policies



Award– “India Geospatial Award ”



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”

CERTIFICATE OF EXCELLENCE

PRESENTED TO

Dholera SIR



Award date

Mar
2016



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”



Presents



GREEN CITY AWARD

Presented to



Award date

Feb
2017

**Dholera Industrial City
Development Ltd**

Award-World CSR “Best city for integrated planning”



Presents



BEST CITY FOR INTEGRATED PLANNING

Presented to



**Dholera Industrial City
Development Ltd**

Award date

**Feb
2017**

THANK YOU

Most **ambitious**



Dholera

One of a kind

not just a project...

It is **Nation Building**



A "Platinum"
Rated Green City

