

# Accommodating population growth in India

**Dholera Special Investment Region:**  
smart city megaproject

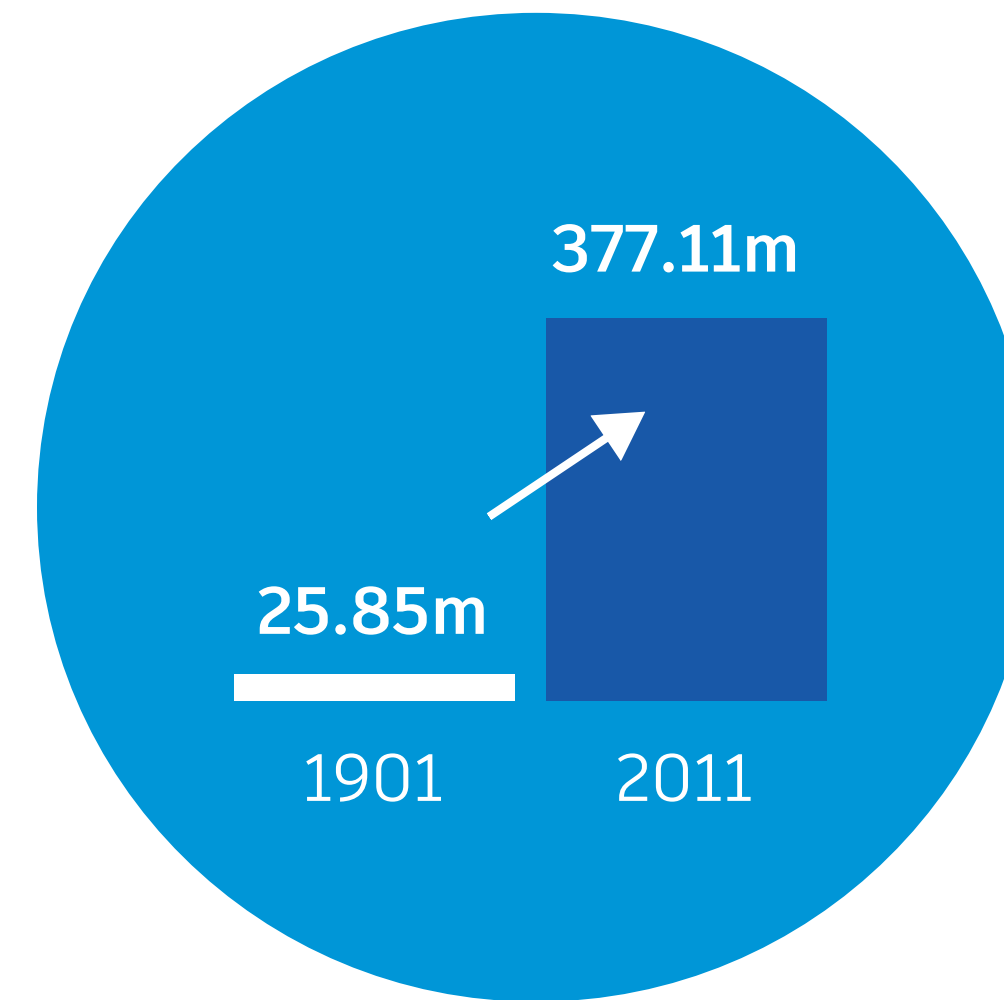


India faces a problem.



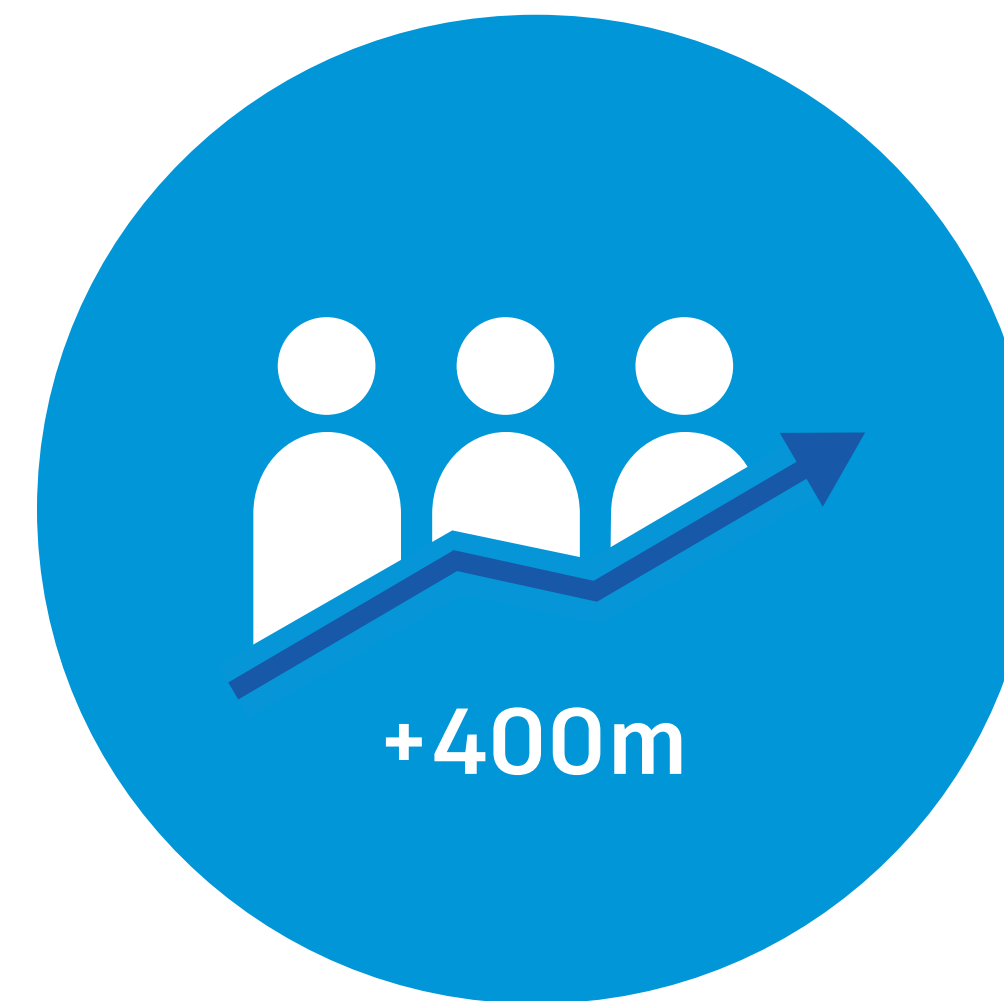


**With an urban population set to rise by more than 400m by 2050...**



### **Population size**

The urban population of India has increased from 25.85 million in 1901 to 377.11 million in 2011<sup>1</sup>



### **Urban population**

Between 2014 and 2050 the urban areas are expected to grow by over 400 million people<sup>2</sup>

<sup>1,2</sup> Nandy, S. N. "Urbanization in India – Past, Present and Future Consequences".



and many of its biggest  
cities already struggling  
with overpopulation...





A photograph of a crowd of people, likely at a religious or cultural event. In the foreground, a young child wearing a yellow crown and a yellow robe is looking down. Behind the child, several people are holding large, colorful paper bags in shades of orange, red, white, and green. The background is filled with more people, some wearing white robes and others in more colorful attire. The overall scene suggests a large gathering or procession.

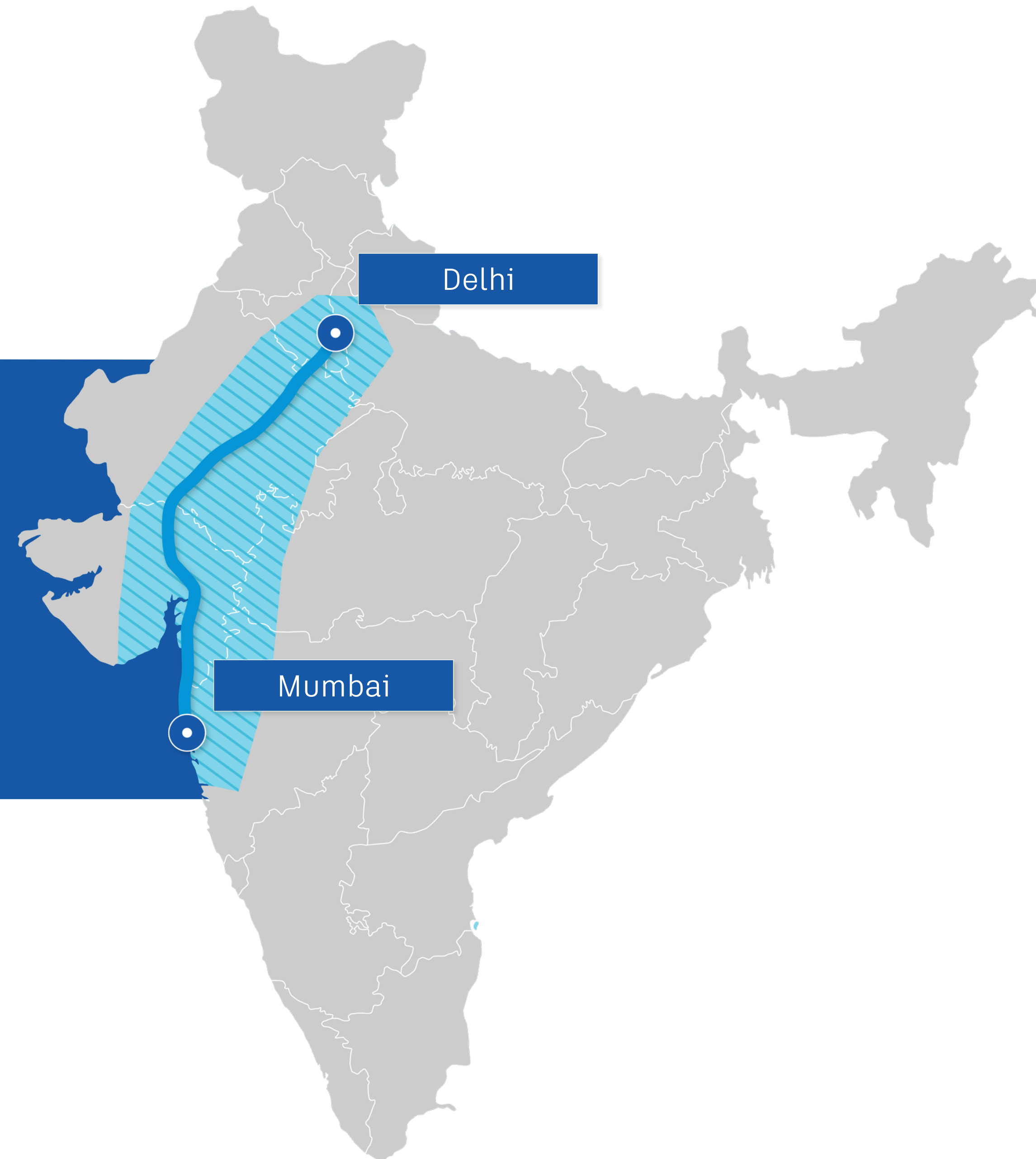
...where will these 400  
million people live?




**India has developed an ambitious plan...**



...the Delhi – Mumbai  
Industrial Corridor (DMIC).





A 3D architectural rendering of a smart city model. The scene features various white, block-like structures representing buildings and infrastructure. Several blue circular icons are placed around the model, connected by dotted lines to specific areas. The icons include: a sun (top center), a thermometer (center, on a tall building), a bus (middle right), a recycling symbol (far right), a group of people (bottom right), a clock (middle right, above the bus), a factory (bottom left), a classical building (bottom left), and a Wi-Fi symbol (top left). Concentric circles around the thermometer icon suggest a sensor or data collection point. The background is a light blue gradient with a faint city skyline.

Spread across **2,700km**, the project will cost **\$100 billion** and includes the construction of a new smart city which will have a footprint of **920km<sup>2</sup>**.

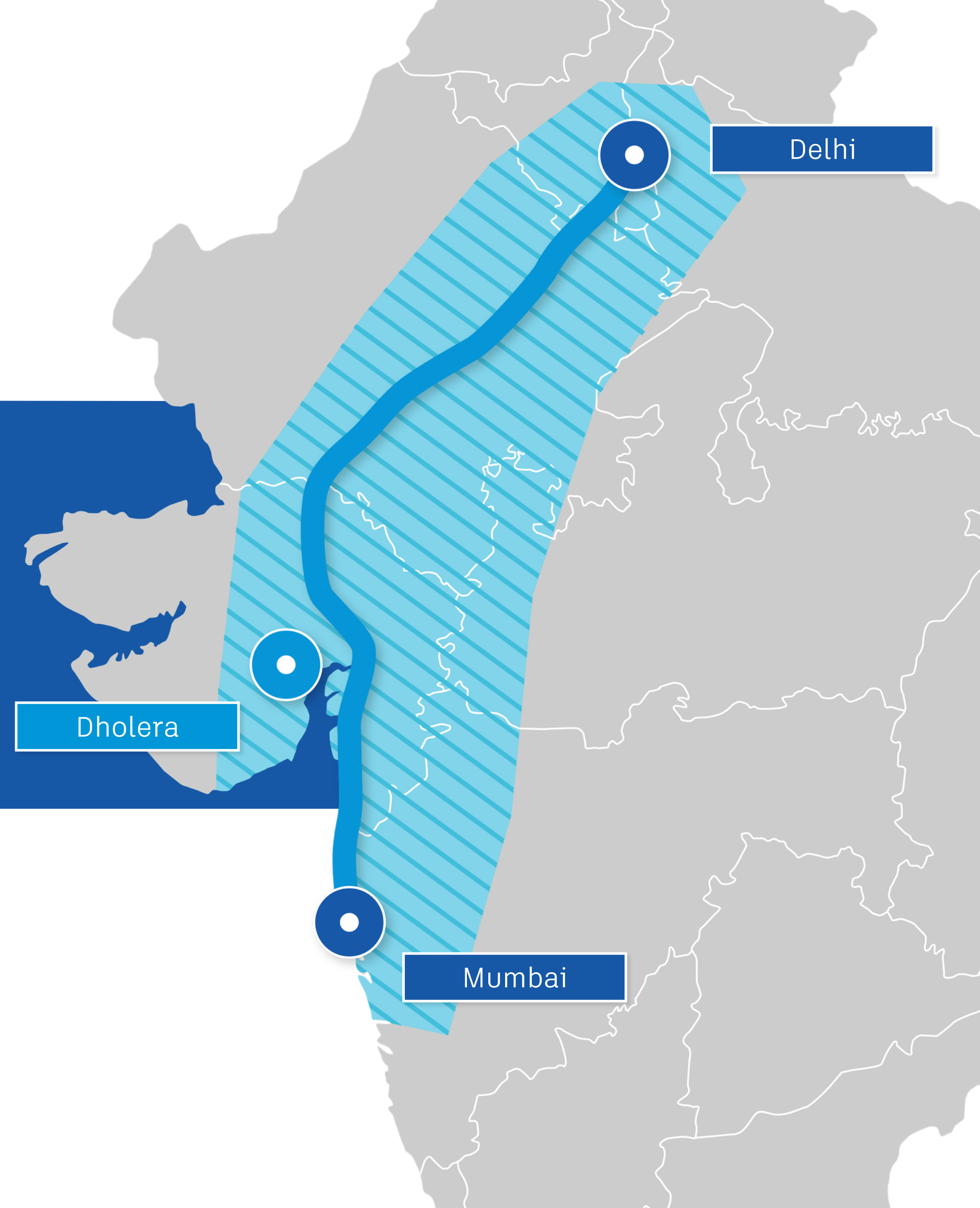




That's twice the  
size of Delhi.

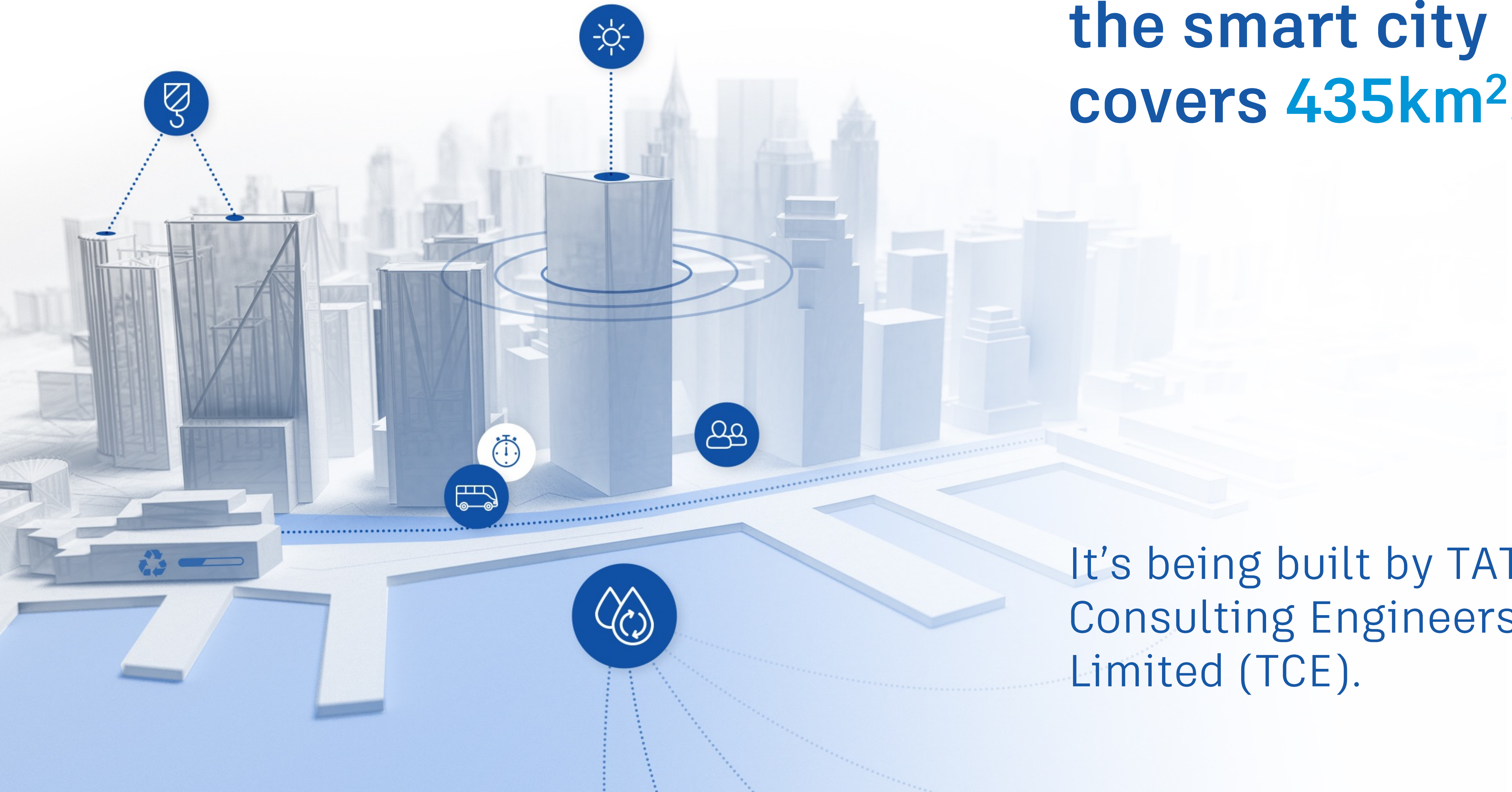


It's known as the Dholera  
Special Investment  
Region (DSIR).





The first phase of  
the smart city  
covers **435km<sup>2</sup>**.

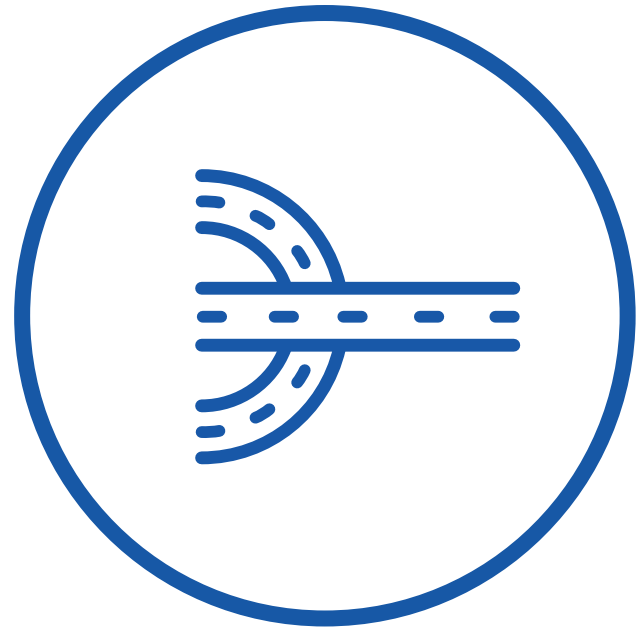


It's being built by TATA  
Consulting Engineers  
Limited (TCE).

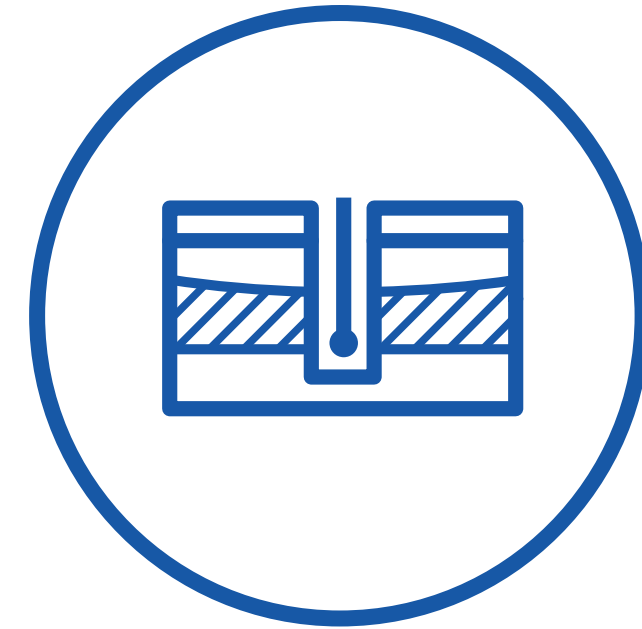


**TCE is responsible for building all of the infrastructure for the city – including...**





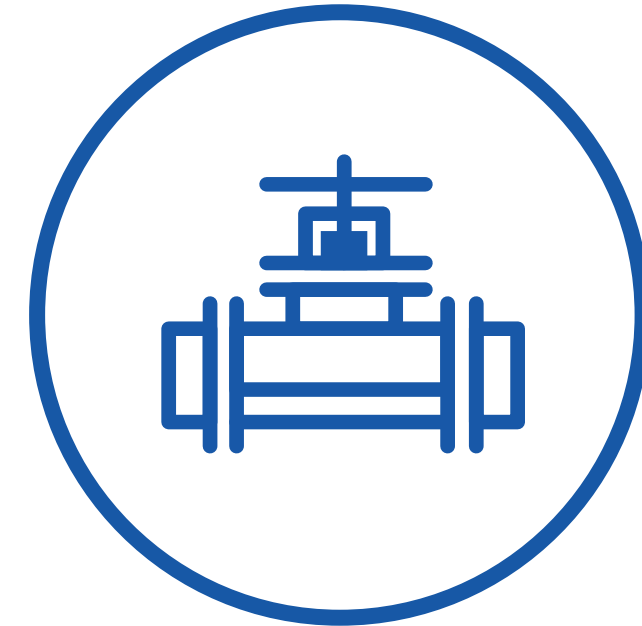
Roads and  
highways



Flood control and  
drainage measures



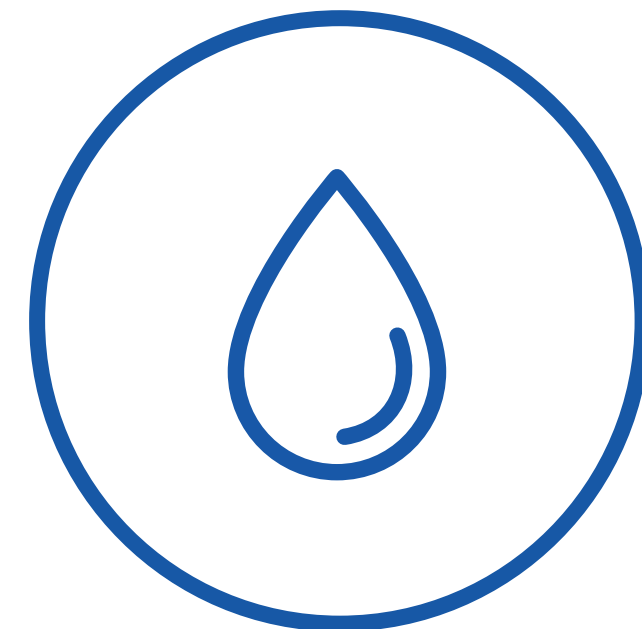
Railways



Sewerage



Power lines



Water supply





Overseeing a project as important and expansive as the development of a whole city is massively complicated.

Every decision will impact the lives of millions.



Let's take roads  
as an example.





# Every change in road layout impacts:


Traffic

Placement  
of utilities

Industry  
supply  
chains







Using Civil 3D, TCE  
engineers have built 3D  
models of **180km** of  
roads and highways.



**Which means they can easily assess  
different design decisions.**



Using Navisworks,  
they've been able  
to detect hundreds  
of different  
problems before  
construction...

...that traditional 2D  
tools would've missed.








**But that's just one  
piece of the puzzle.**

Every aspect of the city  
has been designed to  
promote sustainability and  
efficiency, and improve life  
for inhabitants.



**Let's look at another example.**





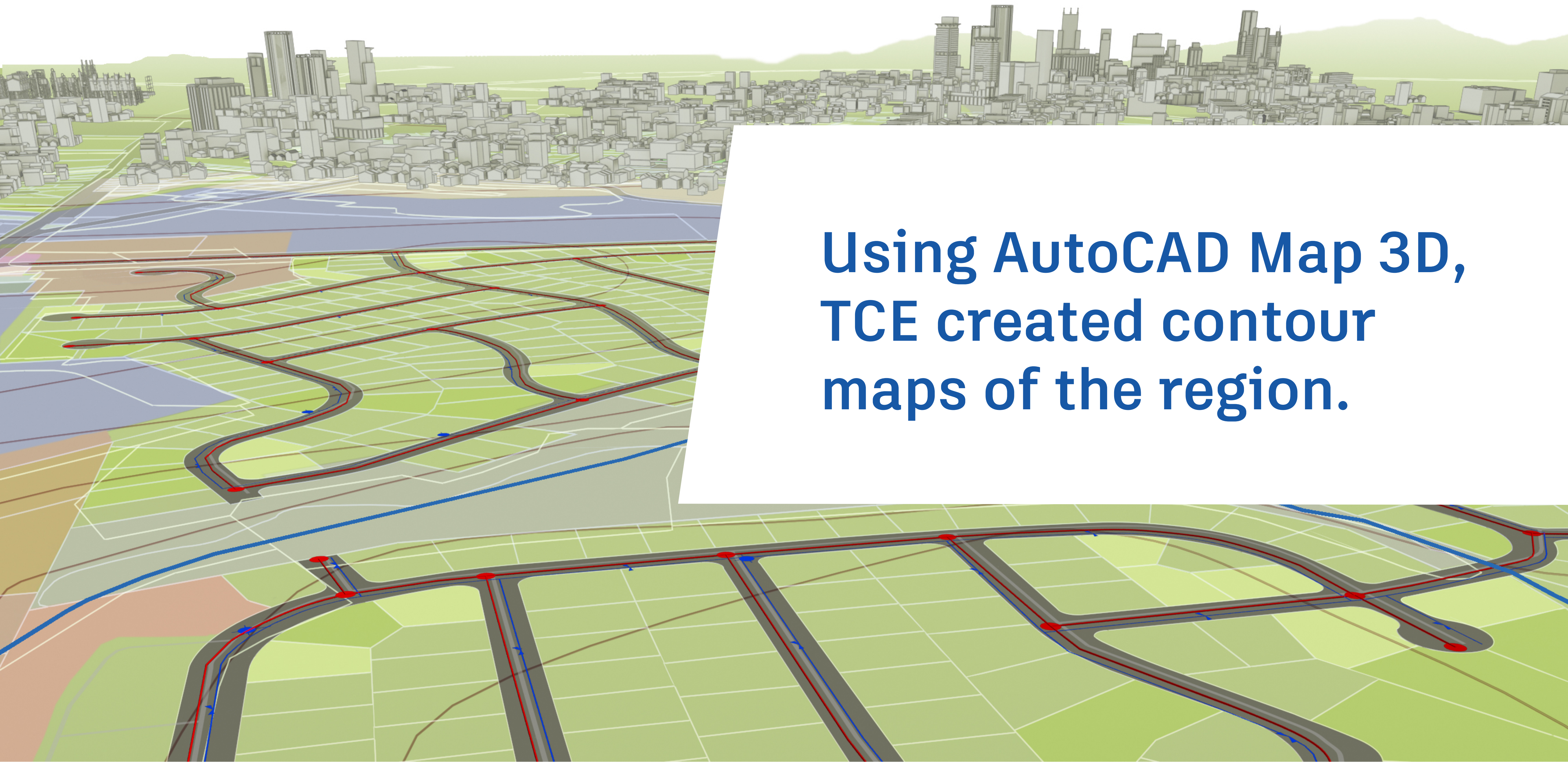
**The DSIR will be built on a flat, low-lying plain.**





Which means water  
has been a huge  
consideration in  
the design stage.





**Using AutoCAD Map 3D,  
TCE created contour  
maps of the region.**



# Using Civil 3D to analyze surface watersheds and map floodplains...

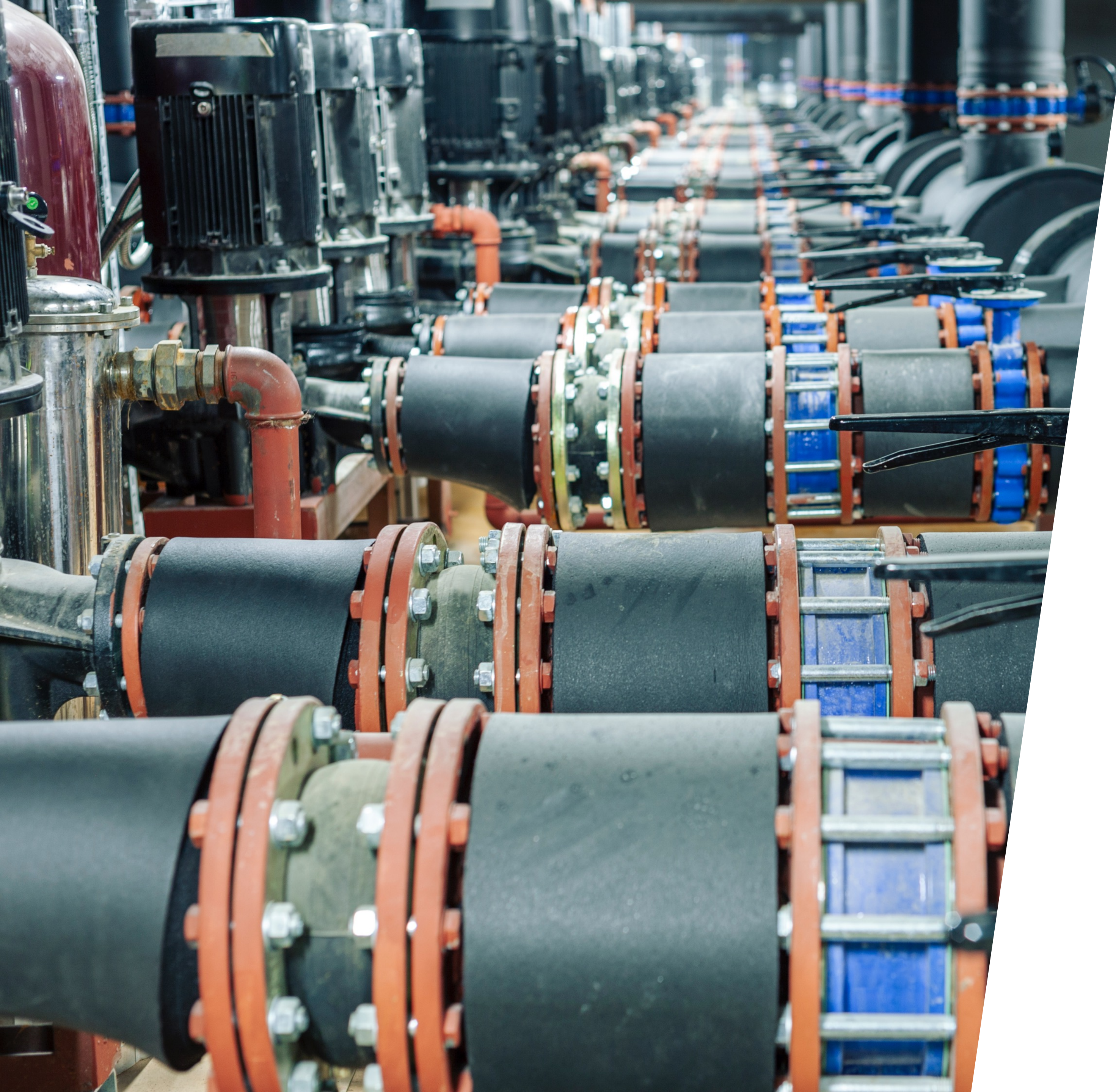
...TCE designed effective  
flood defences.





**But that's not all.**





**DSIR is too large  
for water lift  
stations to provide  
the required output.**



Instead, TCE  
decided relocating  
nearby soil to  
create a slope was  
the best option for  
overcoming  
challenges posed  
by the flat surface.





**With BIM, TCE is making more  
intelligent decisions, faster.**



# Projects of this scale require a suite of software capable of...

1/5

Providing up-to-date and accurate information to everyone involved in the project, across a multitude of AEC disciplines

2/5

Integrating information with geospatial systems (GIS)



# Projects of this scale require a suite of software capable of...

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2/5

Integrating building  
information modelling (BIM)  
with geographic information  
systems (GIS)

3/5

Handling  
sets invol  
of this sco



# Projects of this scale require a suite of software capable of...

ng  
elling (BIM)  
nformation

3/5

Handling the enormous data sets involved with a project of this scope

4/5

Managing budgets to deadlines



# Projects of this scale require a suite of software capable of...

ormous data  
n a project

4/5

Managing timelines and budgets to ensure deadlines are met

5/5

Identifying conflicts and constructing



# Projects of this scale require a suite of software capable of...

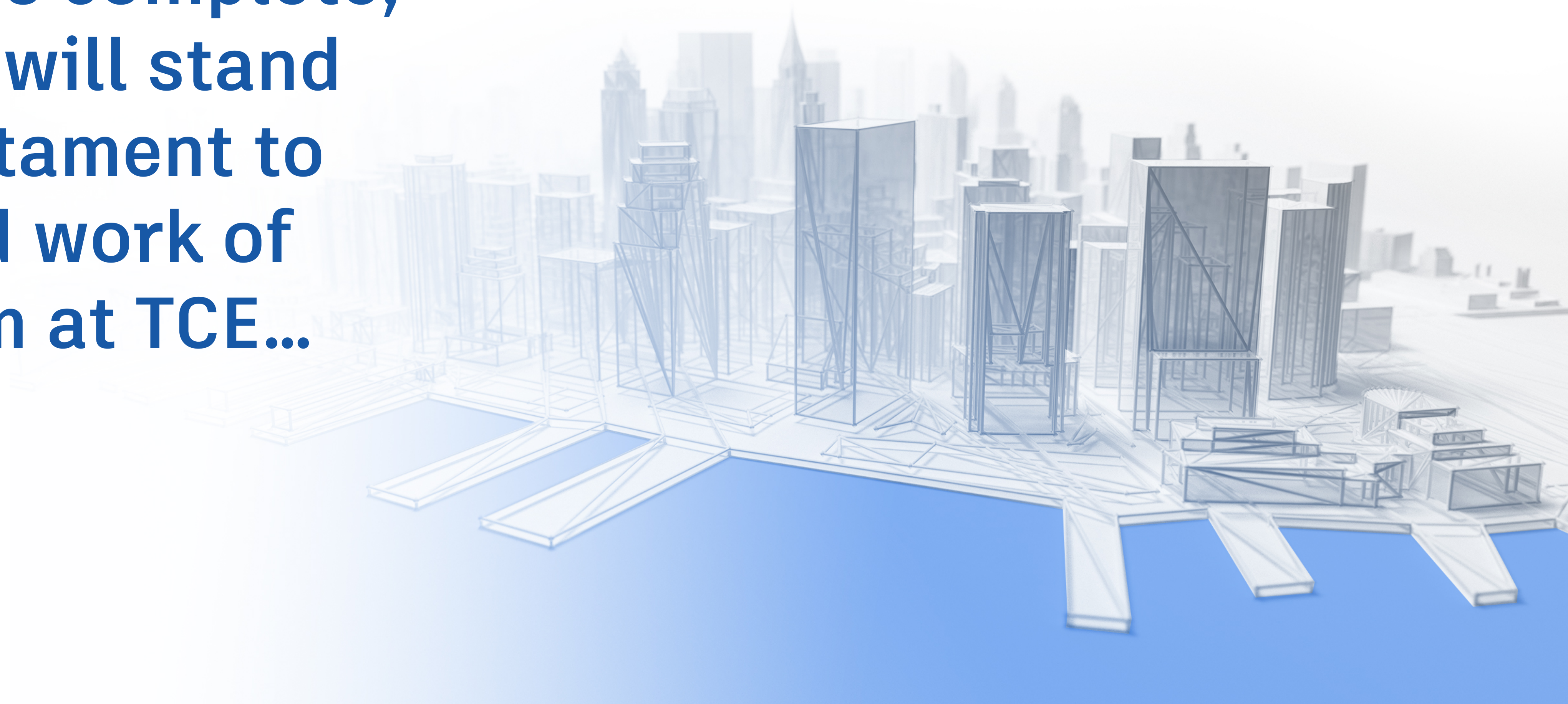
es and  
e deadlines

5/5


Identifying potential  
conflicts and errors before  
construction begins



**When it's complete,  
the city will stand  
as a testament to  
the hard work of  
the team at TCE...**







**...and the importance  
of a single, integrated  
platform that  
provides a holistic  
view of projects.**