

TITLE	Integrated Public Transport Network (IPTN) – Maximum Build Out Land Use Model
CLIENT	City of Cape Town (sub-consultant to RHDHV)
DATE	2013
AREA/EXTENT	City of Cape Town
LOCALITY	Cape Town

The Project Challenge

The IPTN project was a response to the mobility and access challenges of the City of Cape Town and their aim to create a more inclusive city for all by 2032. The project's objective was to create a public transport network to serve the residents of Cape Town now and into the future. Because transport is a derived demand that is co-determined by land use, a land use model was required to forecast transport demand into the future. This project formed the basis of the Land Use Model created by the City of Cape Town to forecast urban growth and inform the future public transport network.

Approach

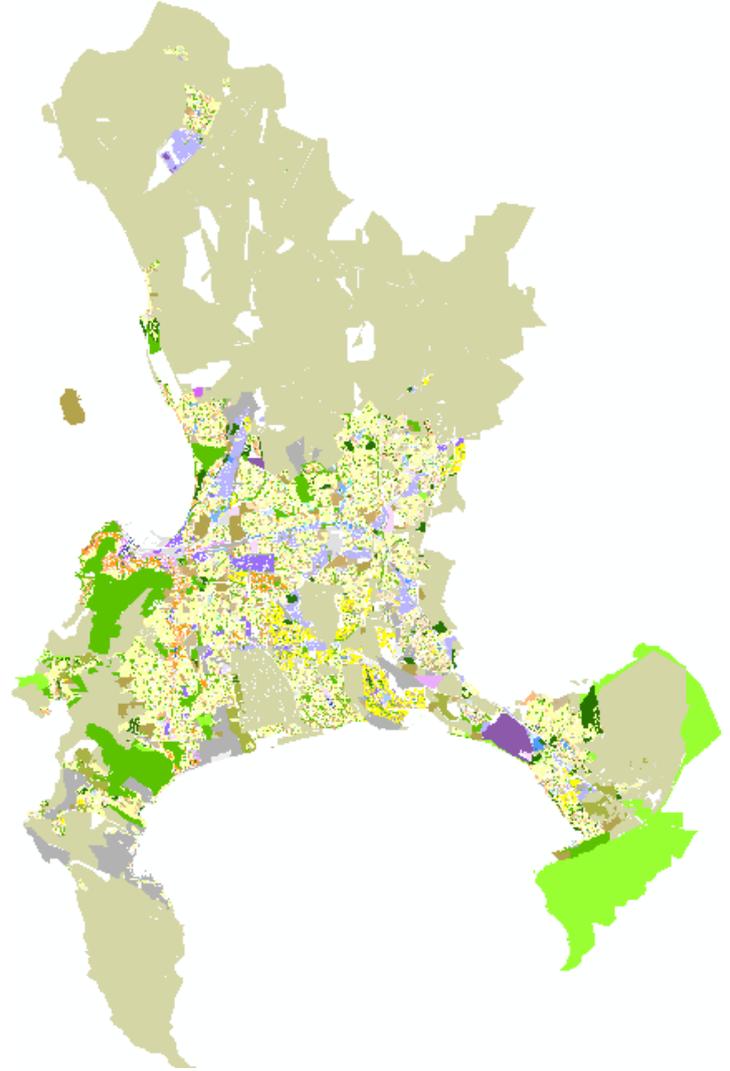
The objective of the model was to provide a gross leasable area (GLA) and parking figures for the "maximum build out" scenario for Cape Town on an erf-by-erf basis under the current zoning regulations. This required working with multiple stakeholders at the City of Cape Town to ensure that appropriate assumptions were being built into the model. The model was a GeoDatabase constructed in ArcGIS and linked to an MS-ACCESS database to access City of Cape Town land use data. The simulation tools were built and consolidated in the ArcGIS Model Builder tool. Building the model involved analysing the quantitative relationships between various zoning development rules and regulations. This was required to incorporate the right conditions and choices into the model.

The Model

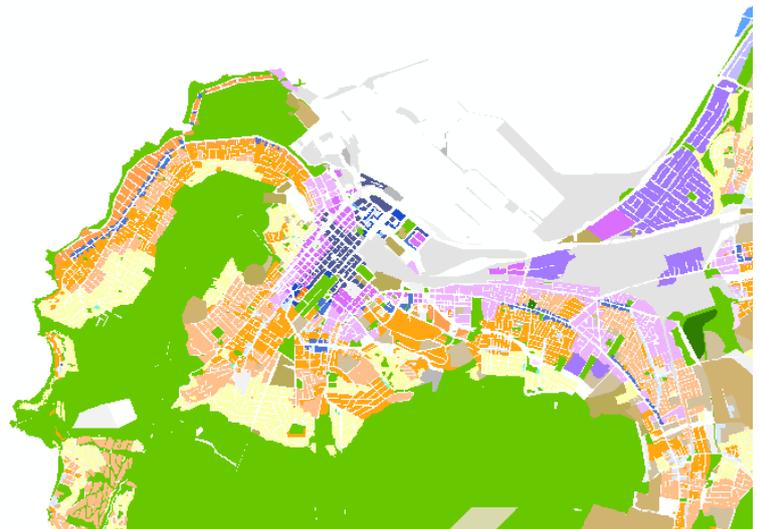
The "maximum build out" model contained over 1 million records for each erf in the City of Cape Town and about 150 fields describing the properties of each erf in the database. The model provided a powerful tool as it described the zoning, area, transport zone, allowable building cover, maximum height, coverage, GLA of land uses, area dedicated to parking, and number of parking bays. The model also required the team to consider the following :

- Clustering of land uses into groups to allow simplified parking bay allocation
- Assigning of an average dwelling unit size to calculate parking bay requirements for erven with multiple residential units
- A tool for assigning zoning to erven missing zoning in the input dataset
- Incorporating the Cape Town Zoning Scheme development rules for each zone
- Dealing with parking as a constraint
- Calculating the highest and best land use mix
- Assigning a typical land use mix to mixed-use erven

The final product was used in the production of the urban growth modelling land use model produced by the City of Cape Town to project future transport demand for IPTN planning.



City-wide output of the maximum build out land use model



Cape Town CBD output of the maximum build out land use model

STEP 1: MAXIMUM BUILD OUT

