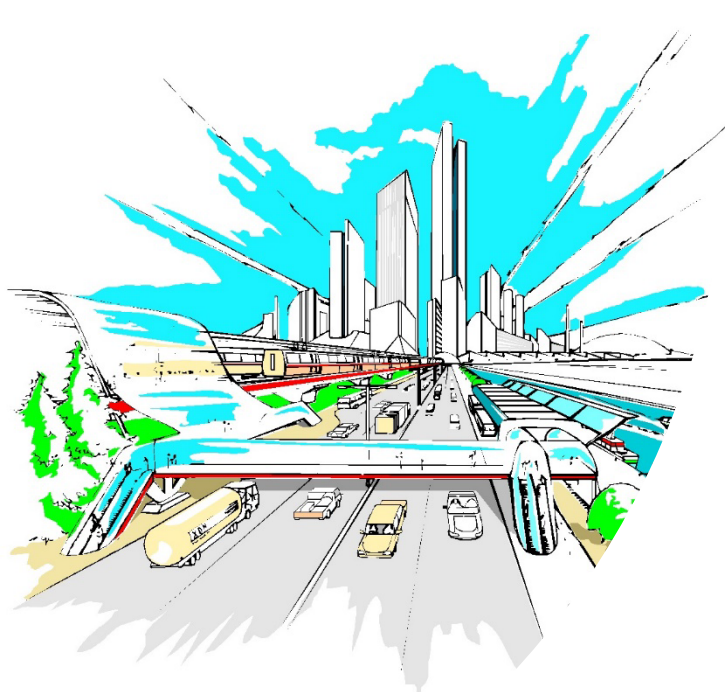


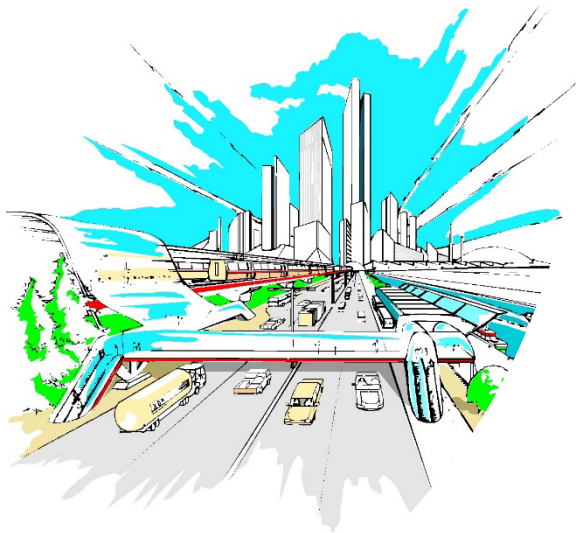
# *Tracks - SIDRA Link*

Grant Smith

*Presentation at the SIDRA User Group Meeting  
Sydney, 30 August 2019*



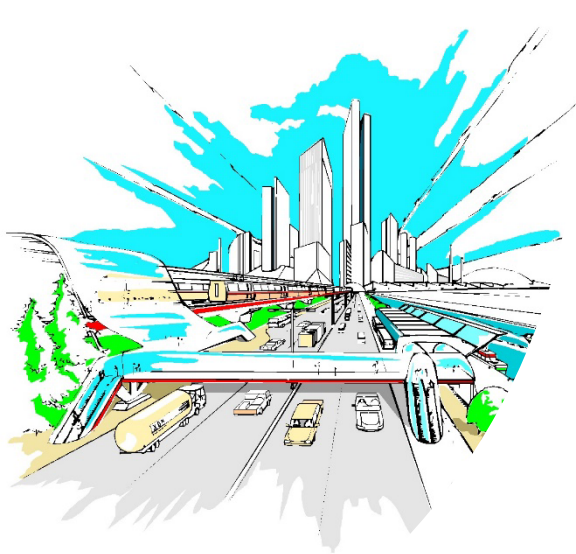
# *Tracks Applications*



# Full four step land use based transport model

Trip generation





# Full four step land use based transport model

Trip generation

Trip distribution

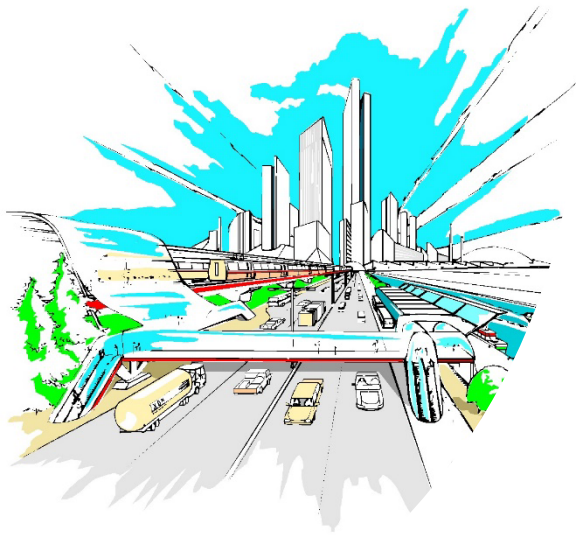
MXUTIL - TRACKS Matrix Editor - [C:\Projects\Macro\AMP\CW16EXAALD.MTX]

File Edit Matrix Window Help

Matrix Title: AM A8 8-9am

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
15883.0																
	253061.3	14.5	3.8	34.0	18.2	2.4	39.5	18.3	25.5	17.6	59.6	76.5	33.5	11.6	55.2	1
1	7.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
2	3.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3	15.8	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.1	0.0	0.0	0.3
4	22.7	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.2	5.9	0.3	0.6	11.2	0.1	0.5	0.1
5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.1
6	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	18.6	0.0	0.0	0.1	0.0	0.0	14.4	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.2
8	9.5	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.1
9	10.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	3.5	0.0	0.1	0.1	0.0	0.0	0.0	0.1
10	23.3	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.0	0.3
11	31.7	0.0	0.0	0.4	0.1	0.0	0.0	0.2	0.2	0.1	0.3	0.9	0.2	0.1	0.5	0.1
12	14.5	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.2
13	9.8	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.1	0.1	0.3	0.1
14	46.4	0.1	0.1	0.5	0.3	0.0	0.0	0.3	0.3	0.2	23.0	1.1	0.4	0.2	1.2	0.1
15	7.8	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.3	0.1	0.1	0.3	0.1
16	18.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.1
17	21.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.1	0.0	0.3	0.1
18	17.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.2	0.1

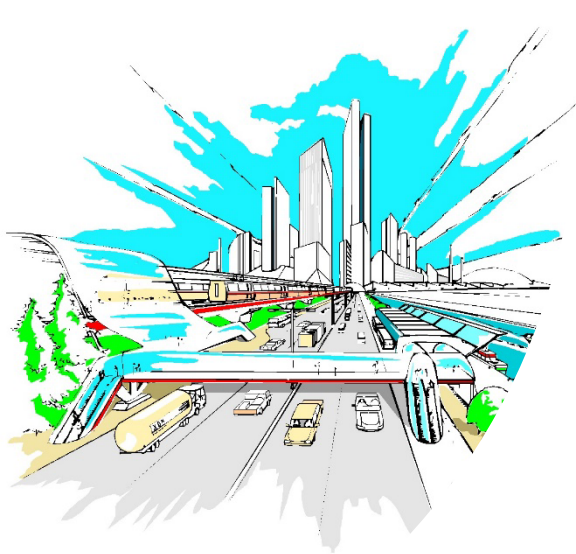
Edit On Total: 253061.3 Diagonal: 15883.0 Size: 1250 X 1250



## Full four step land use based transport model

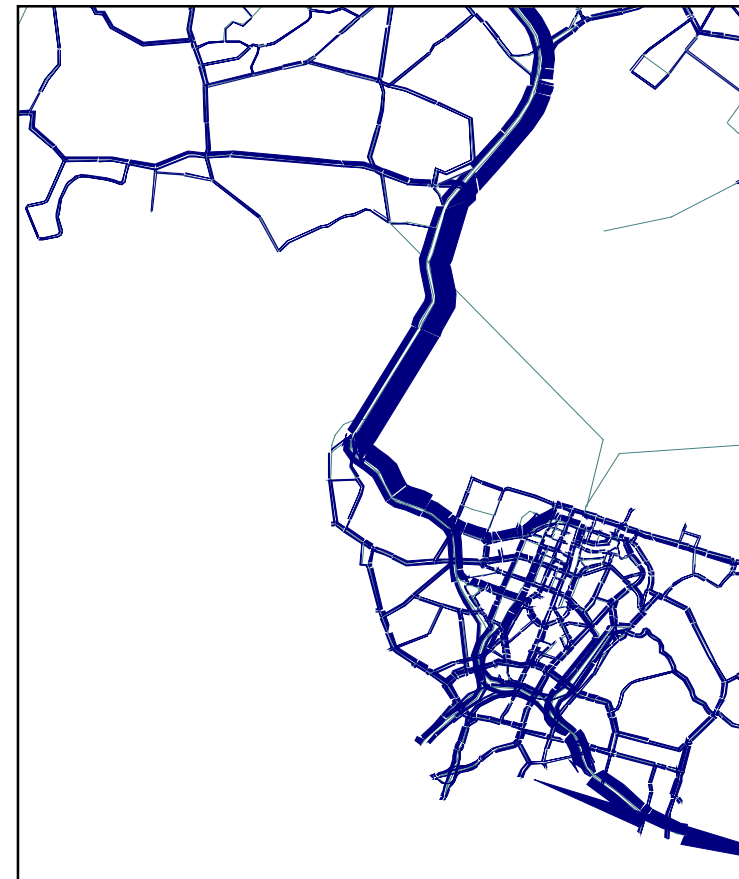
Trip generation  
Trip distribution  
**Mode Split**

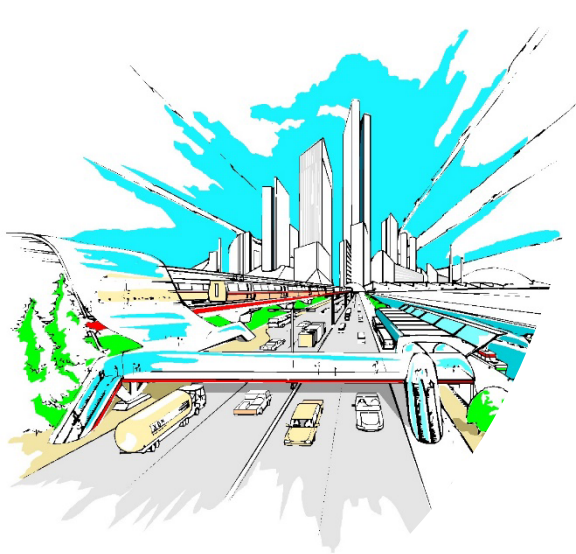




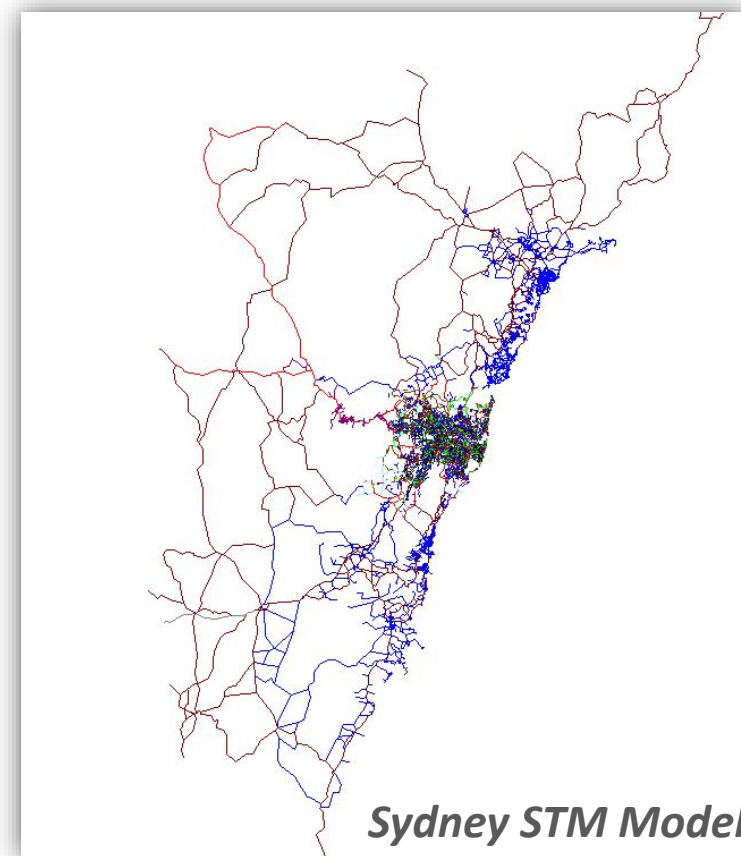
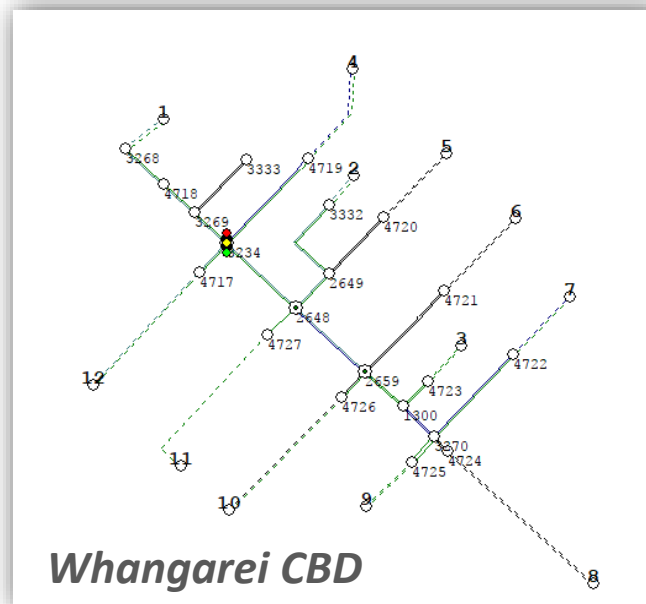
## Full four step land use based transport model

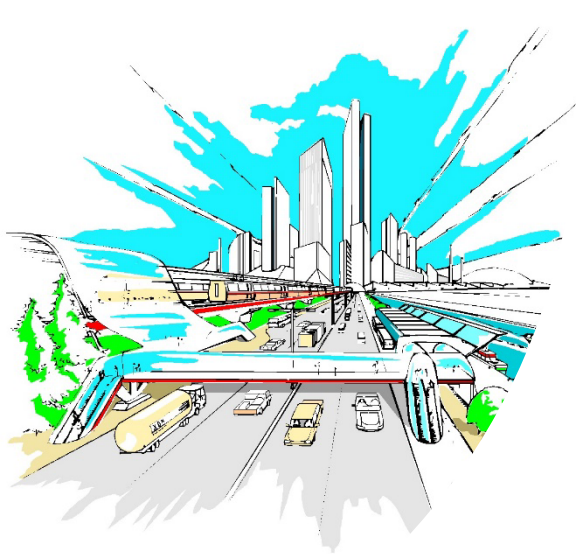
Trip generation  
Trip distribution  
Mode Split  
**Assignment**



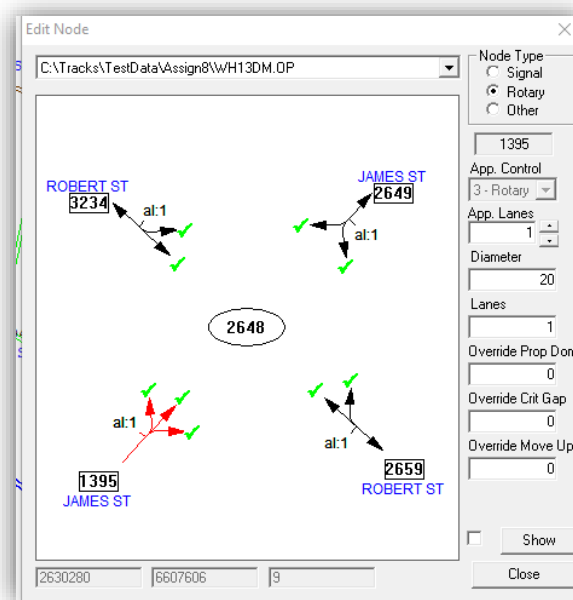


## Very large or very small networks

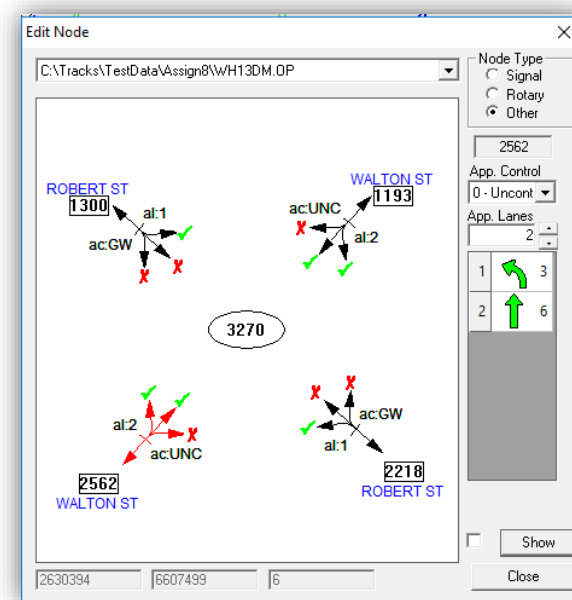




## Intersections are explicitly modelled during the assignment



*Roundabouts*



*Priority Intersections*



## Before linking to SIDRA Roundabouts

- Formulae simplified from SIDRA 5.1



## Before linking to SIDRA Roundabouts

- Formulae simplified from SIDRA 5.1

## Priority (Sign Controlled) Intersections

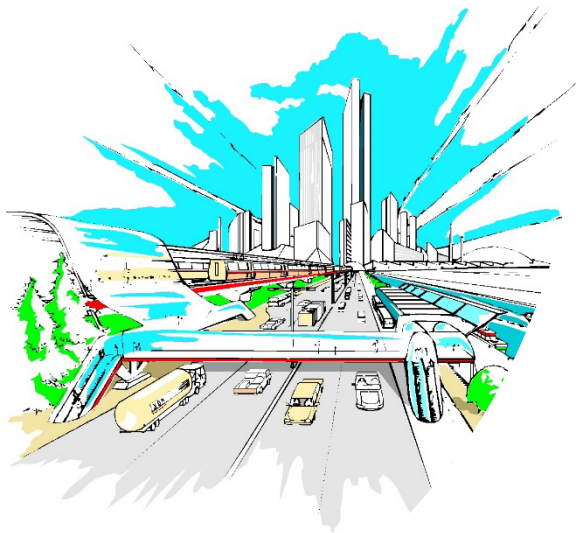
- Formulae developed by Kimber and Hollis (1979), modified by Fisk and Tan (1989) and extended by Gabites Porter in 1991

PERFORMANCE ANALYSIS OF  
PRIORITY INTERSECTIONS  
- A PRACTITIONER'S GUIDE

September 1991

Prepared for: Transit New Zealand

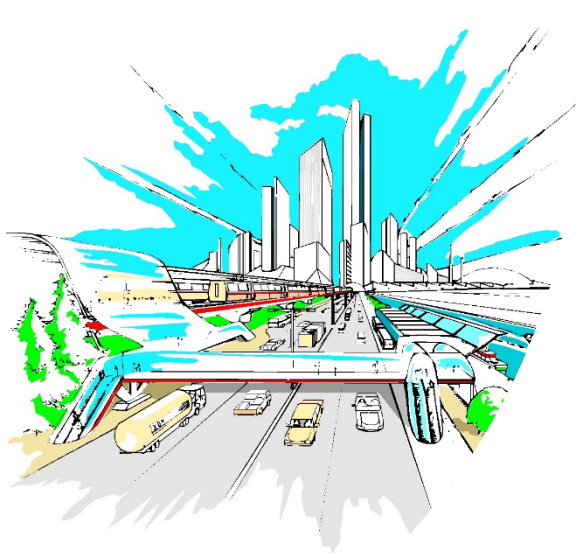
By: Gabites Porter



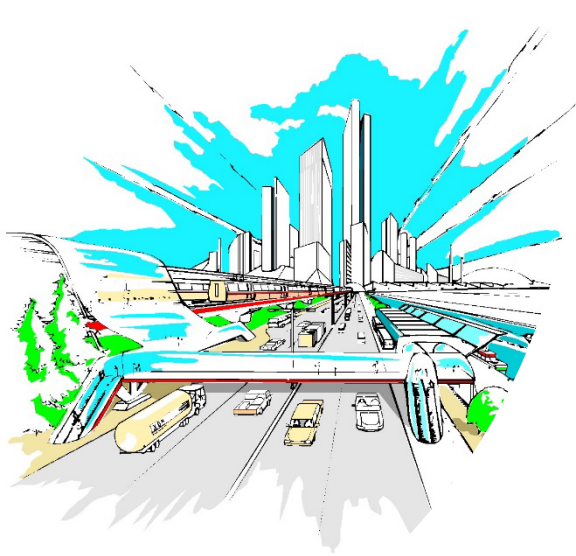
## Intersection Coding

- TRACKS network editor used to code priorities and roundabouts
- SIDRA V2.11 used to code signals but SIDRA moved to database format in V5.1
- As V2.11 no longer supported, signal files had to be manually edited.

**Therefore the need to link with  
SIDRA INTERSECTION ...**

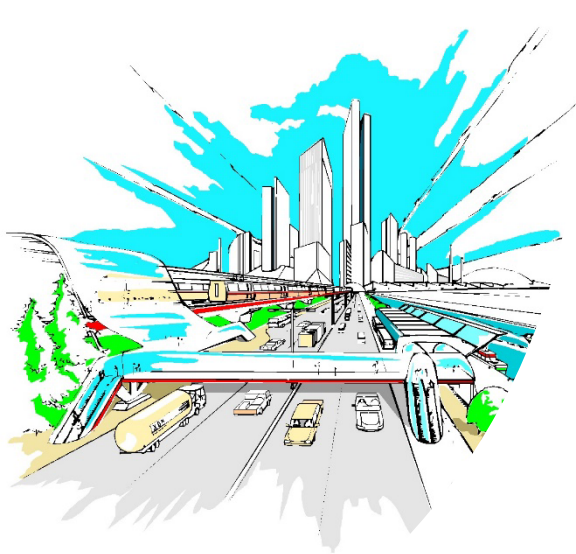


## *Tracks using SIDRA*



## Features and issues

**V2.11 signal data files** have to be converted into sip8 format externally using SIDRA V5.1

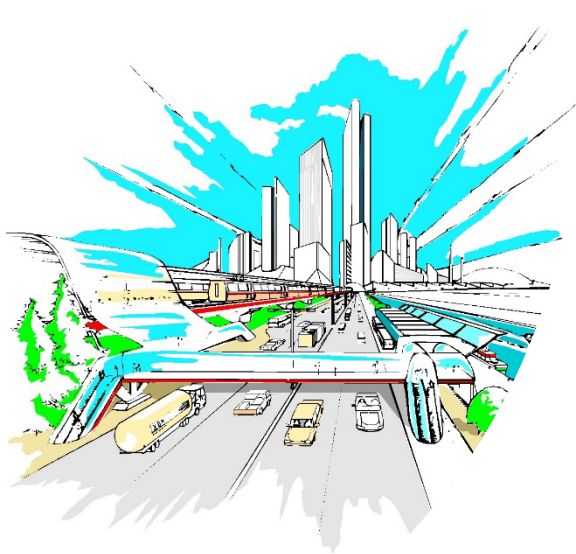


## Features and issues

**V2.11 signal data files** have to be converted into sip8 format externally using SIDRA V5.1

**Roundabouts and Priority intersections** can be

- a) coded into a sip8 file manually or
- b) written electronically during the assignment

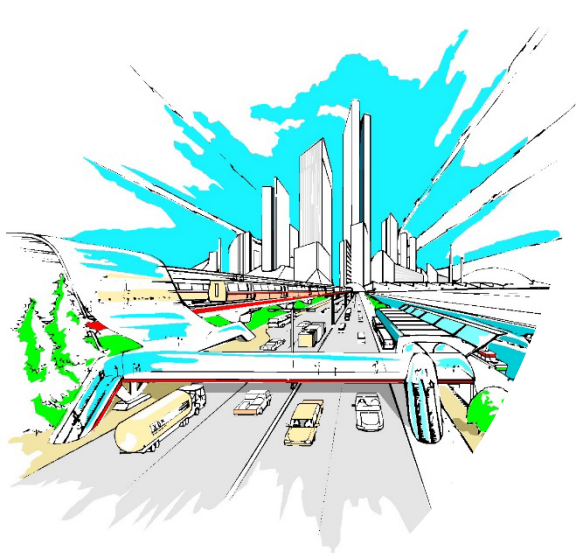


## Features and issues

V2.11 signal data files have to be converted into sip8 format externally using SIDRA V5.1

Roundabouts and Priority intersections can be

- a) coded into a sip8 file manually or
- b) written electronically during the assignment
- **But** operation is slow in large networks

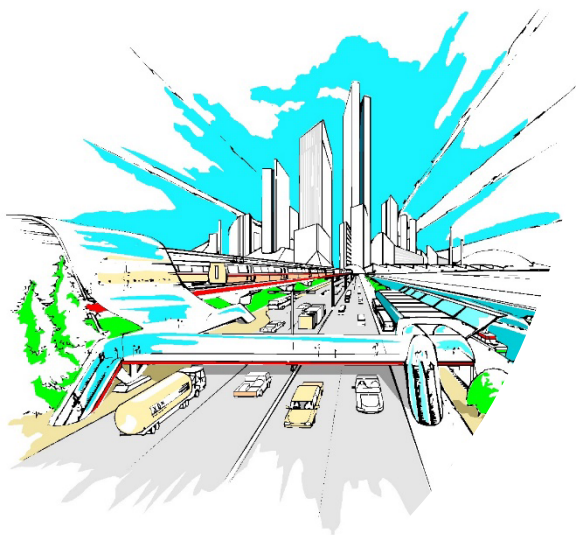


## Features

**Seamless interface between SIDRA and TRACKS**

**Run TRACKS, alter design in SIDRA and re-run TRACKS**

**Use either TRACKS or SIDRA graphics outputs for reporting – the numbers are almost identical**

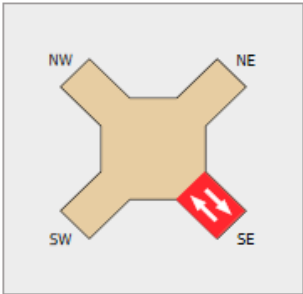


## Flows are the same...

VOLUMES - 3234X

Vehicle Volumes **Volume Factors**

Approach Selector



2648 Robert Street

Specify the Volume Data Settings before entering Movement Volumes.

The Unit Time for Volumes and Peak Flow Period apply to both Vehicle and Pedestrian movements.

Volume Data Settings for Site

Unit Time for Volumes: 60 minutes

Peak Flow Period: 30 minutes

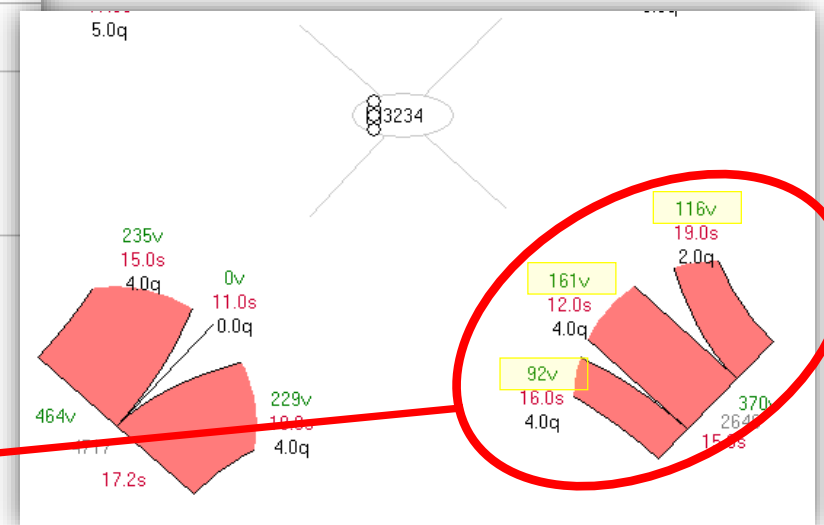
Volume Data Method: Separate

Movement Volumes for Selected Approach (Per 60 Minutes)

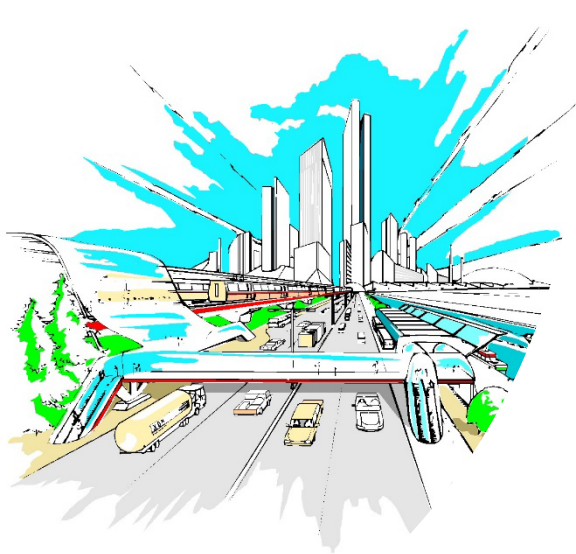
From SouthEast to Exit:	SW	NW	NE
	L2	T1	R2
Total (veh) *	92.25	161.32	116.43
Light Vehicles (veh)	92.25	161.32	116.43
Heavy Vehicles (veh)	0	0	0
Input Check	OK	OK	OK

\* Total (veh) values are calculated from other volumes specified

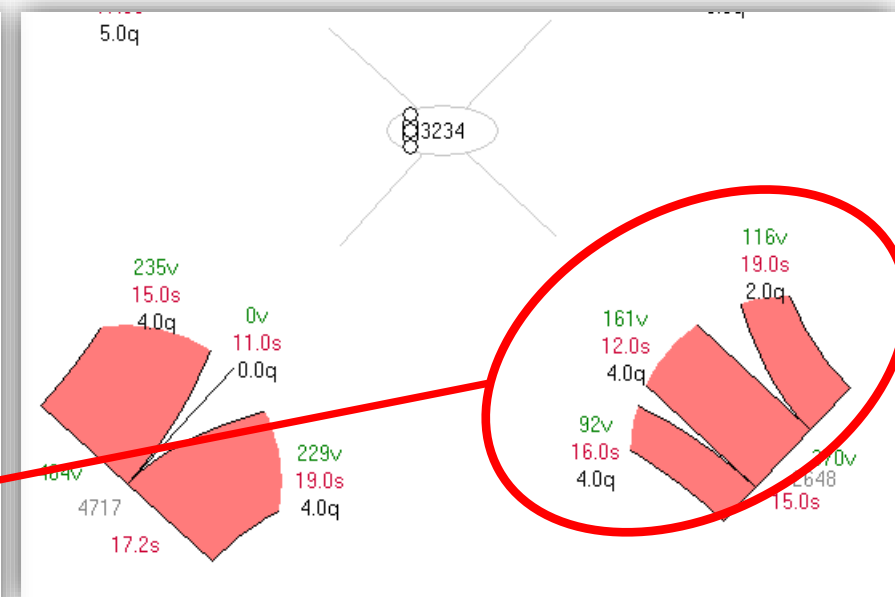
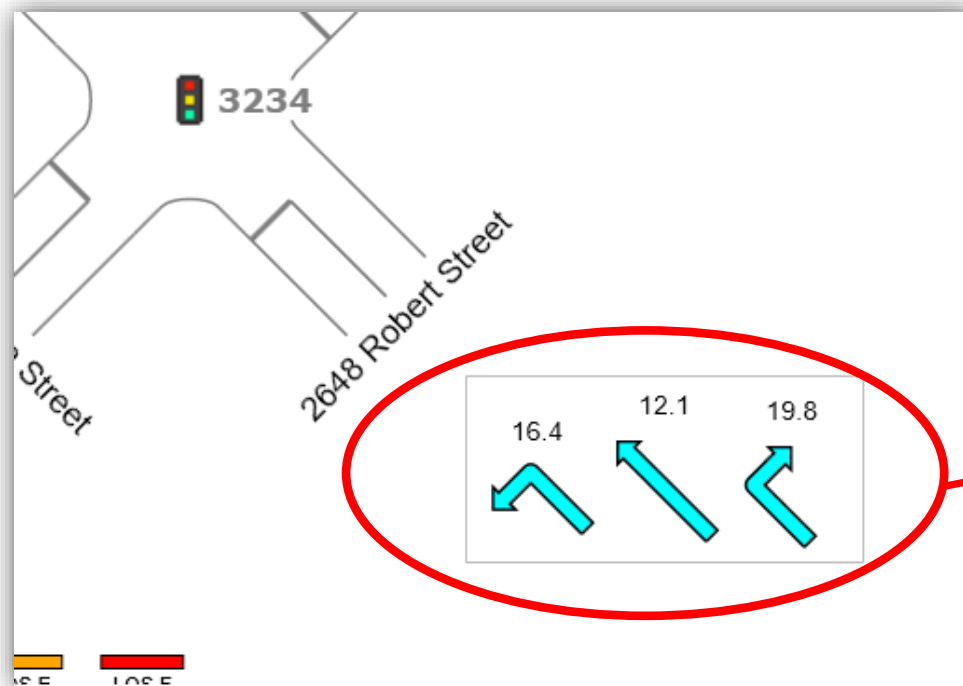
**SIDRA Volumes**

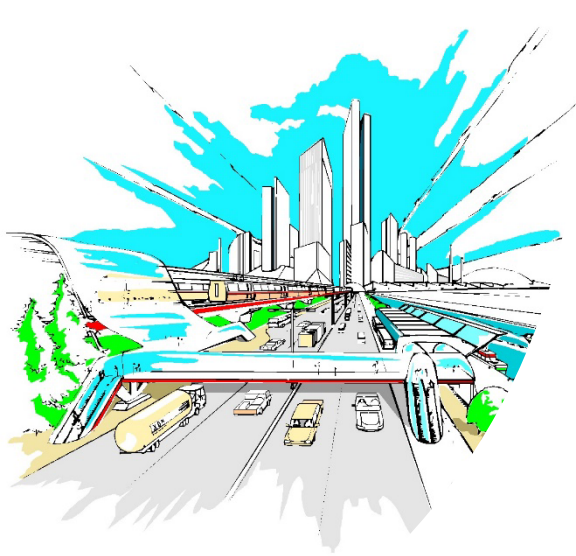


**TRACKS Volumes**

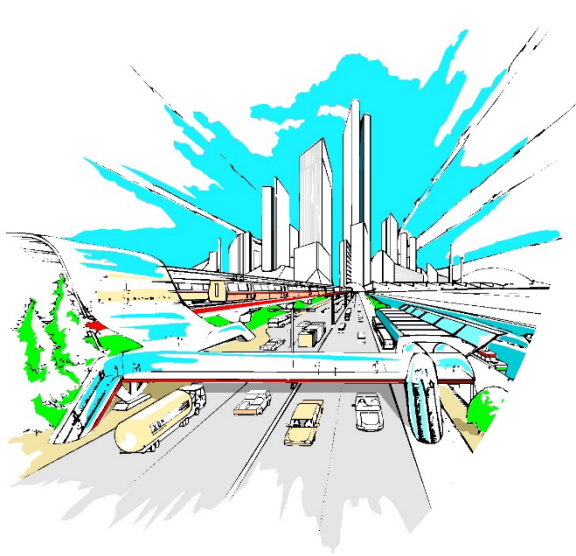


...as are the delays.

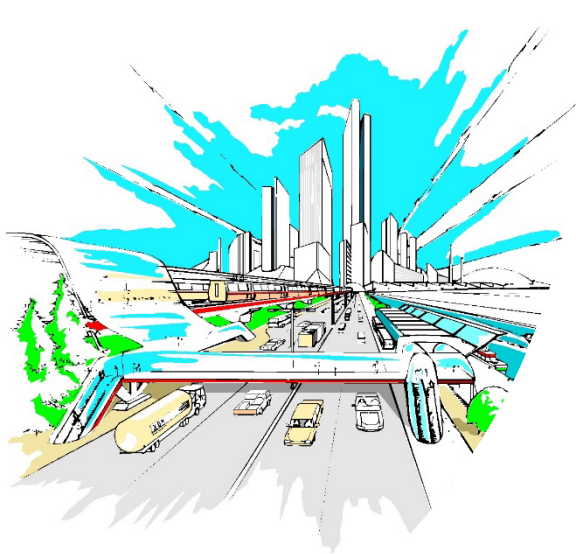




Intersection Type		Data from	Model & Processing
SIGNALS	1	Read data from <b>SIDRA v2.11 file</b>	<b>ARR 123 equations in TRACKS</b>
	2	Read data from <b>SIDRA sip8 file</b>	<b>ARR 123 equations in TRACKS</b>
	3	<b>TRACKS flows</b> written in SIDRA INTERSECTION data file (sip8)	<b>Process SIDRA INTERSECTION using SIDRA equations</b> and write delays and queues back to TRACKS network
ROUNDBABOUTS	1	Data from <b>TRACKS network</b>	SIDRA 5.1 equations in TRACKS
	2	<b>TRACKS flows</b> written in SIDRA INTERSECTION data file (sip8)	<b>Process SIDRA INTERSECTION using SIDRA equations</b> and write delays and queues back to TRACKS network
PRIORITY (Sign Controlled) INTERSECTIONS	1	Data from <b>TRACKS network</b>	<b>Fisk and Tan equations in TRACKS</b>
	2	<b>TRACKS flows</b> written in SIDRA INTERSECTION data file (sip8)	<b>Process SIDRA INTERSECTION using SIDRA equations</b> and write delays and queues back to TRACKS network

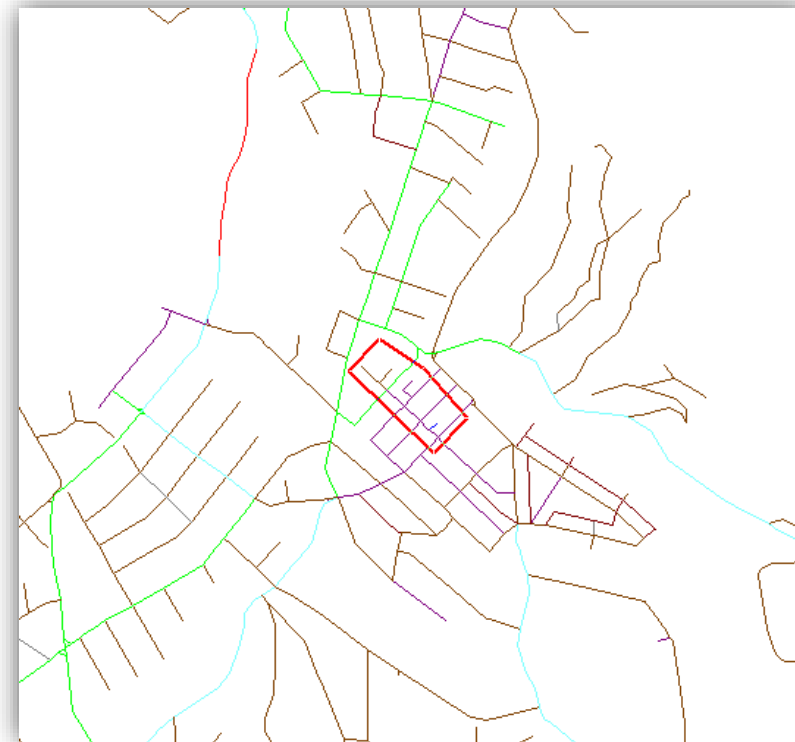


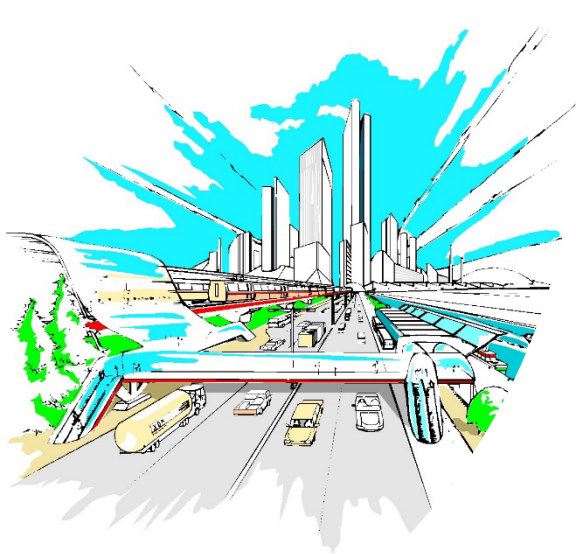
## ***Making a SIDRA Network***



## Use TRACKS to set up a SIDRA Network

First cut a sub-area in TRACKS

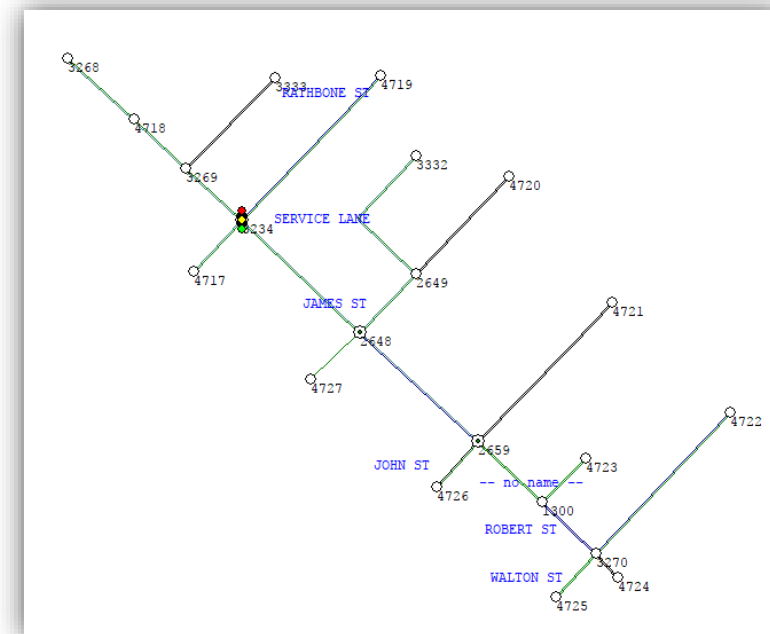


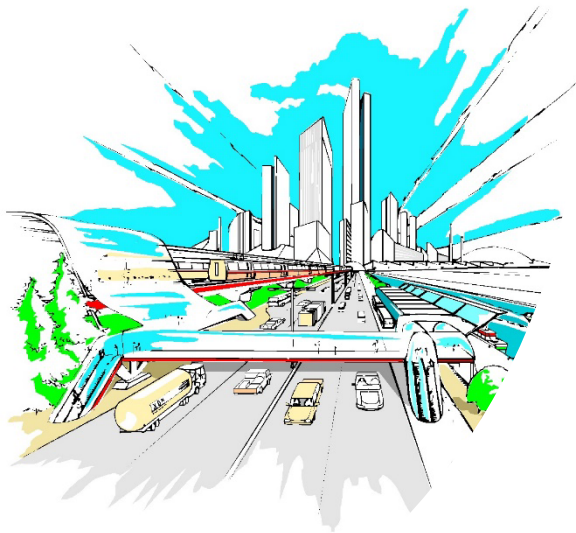


## Use TRACKS to set up a SIDRA Network

First cut a sub-area in TRACKS

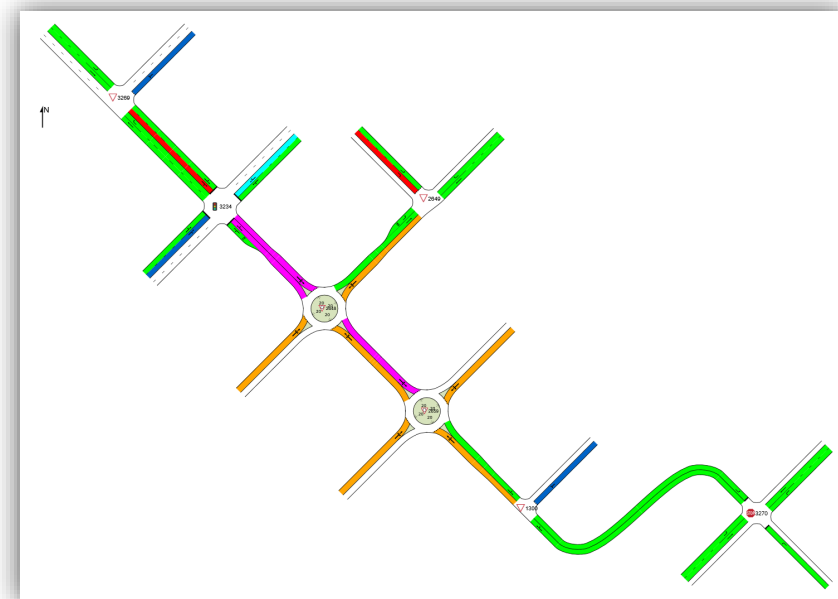
Then TRACKS writes the Site files and flows into a SIDRA Project file from the sub-area network and forms a SIDRA network

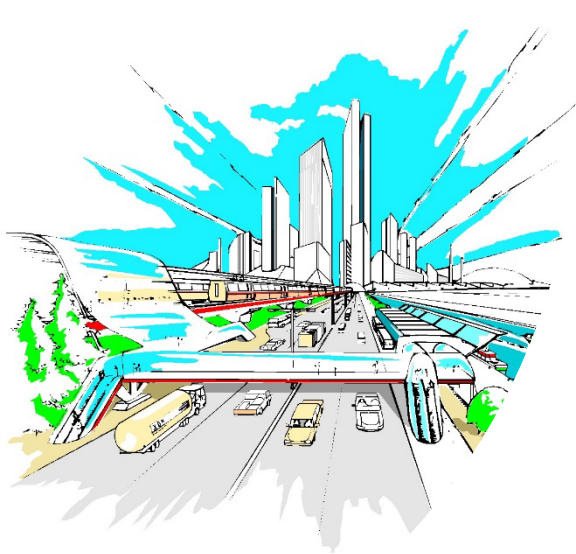




## Use TRACKS to set up a SIDRA Network (continued)

Then process the Network in  
SIDRA

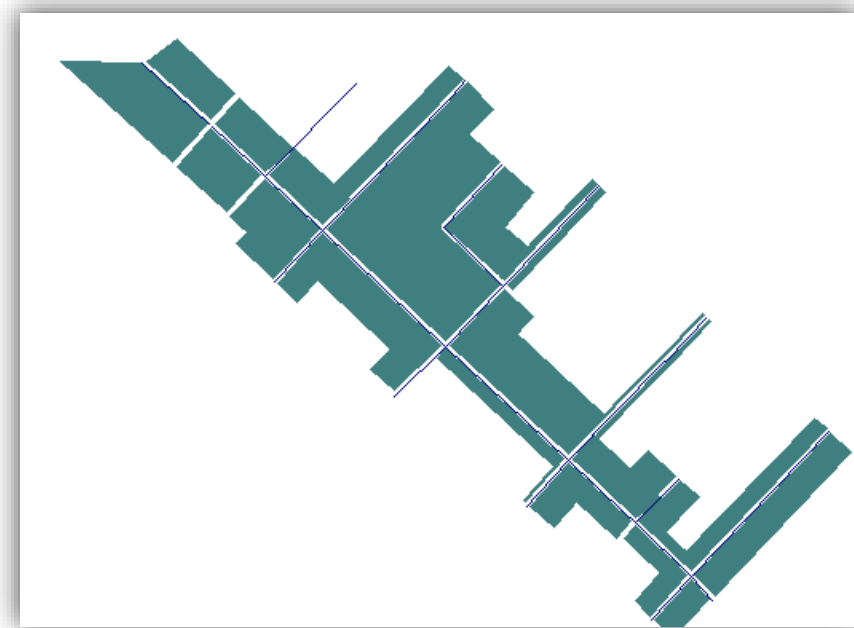


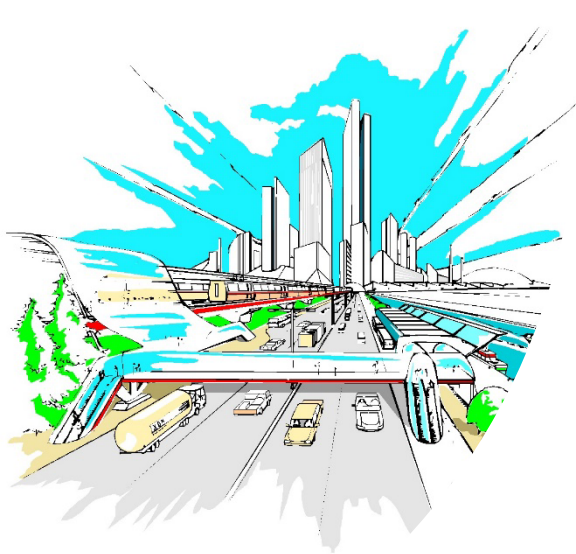


## Use TRACKS to set up a SIDRA Network (continued)

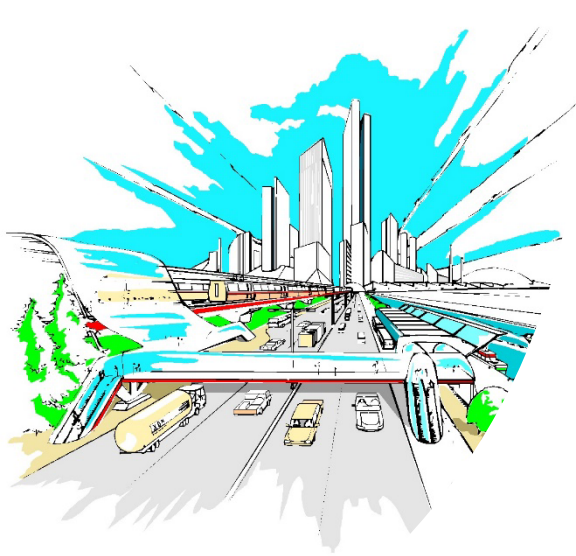
Then process the Network in  
SIDRA

And use TRACKS to display flows



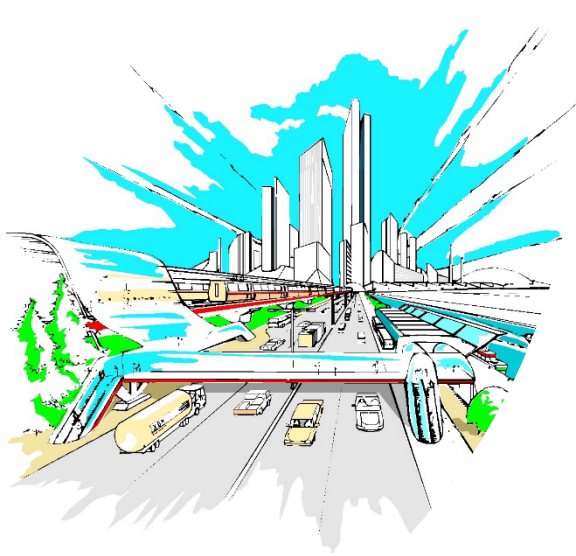


## *Estimating Flows for SIDRA*



**Either**

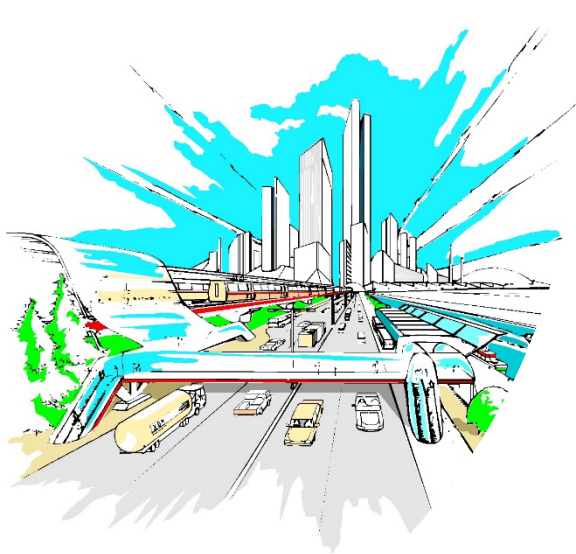
**Use a TRACKS model to provide  
the flows; **OR****



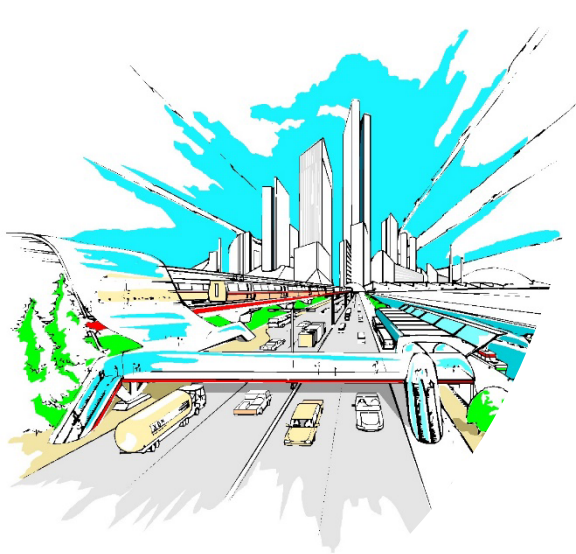
## Either

Use a TRACKS model to provide the flows; **OR**

**Use the matrix estimation ability of TRACKS to fill in flows from a partial set of traffic counts**

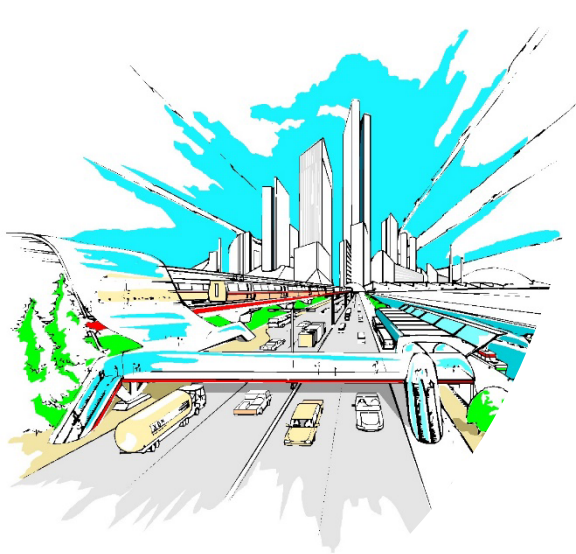


## *Introducing Tracks\_Lite*



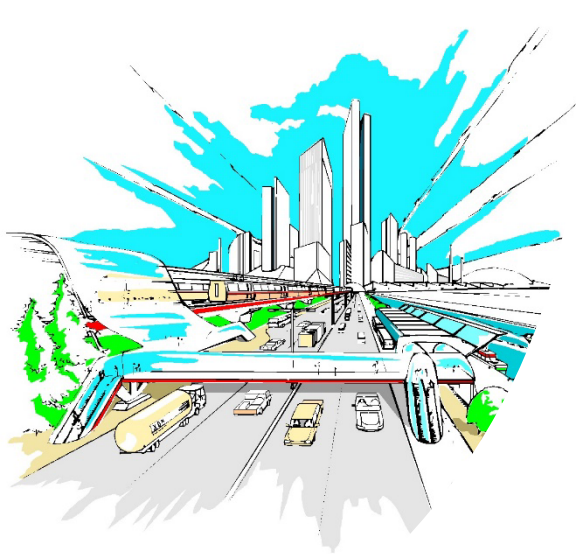
# Introducing Tracks\_Lite

1. Fully functional three step modelling software



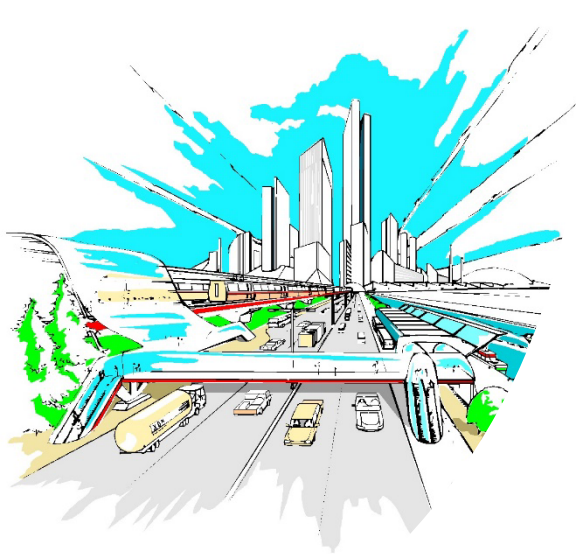
## Introducing Tracks\_Lite

1. Fully functional three step modelling software
2. **Simplified for small networks**



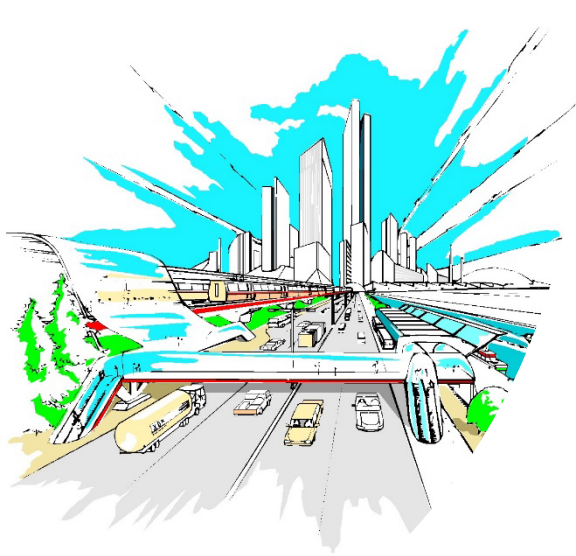
## Introducing Tracks\_Lite

1. Fully functional three step modelling software
2. Simplified for small networks
3. **Designed for use by traffic engineers with limited modelling experience**



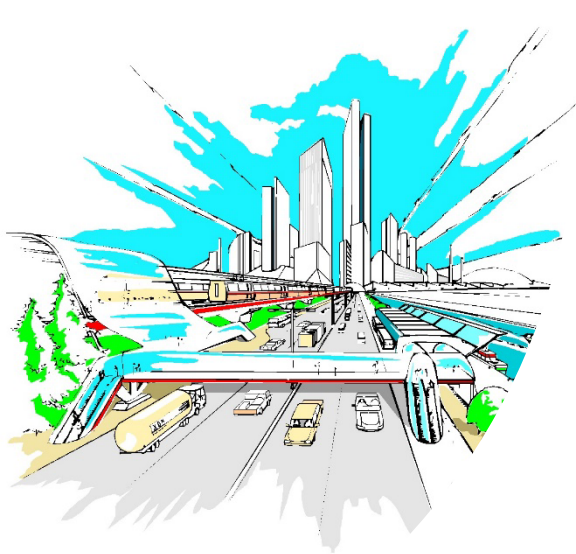
## Introducing Tracks\_Lite

1. Fully functional three step modelling software
2. Simplified for small networks
3. Designed for use by traffic engineers with limited modelling experience
4. **Intended to complement SIDRA**



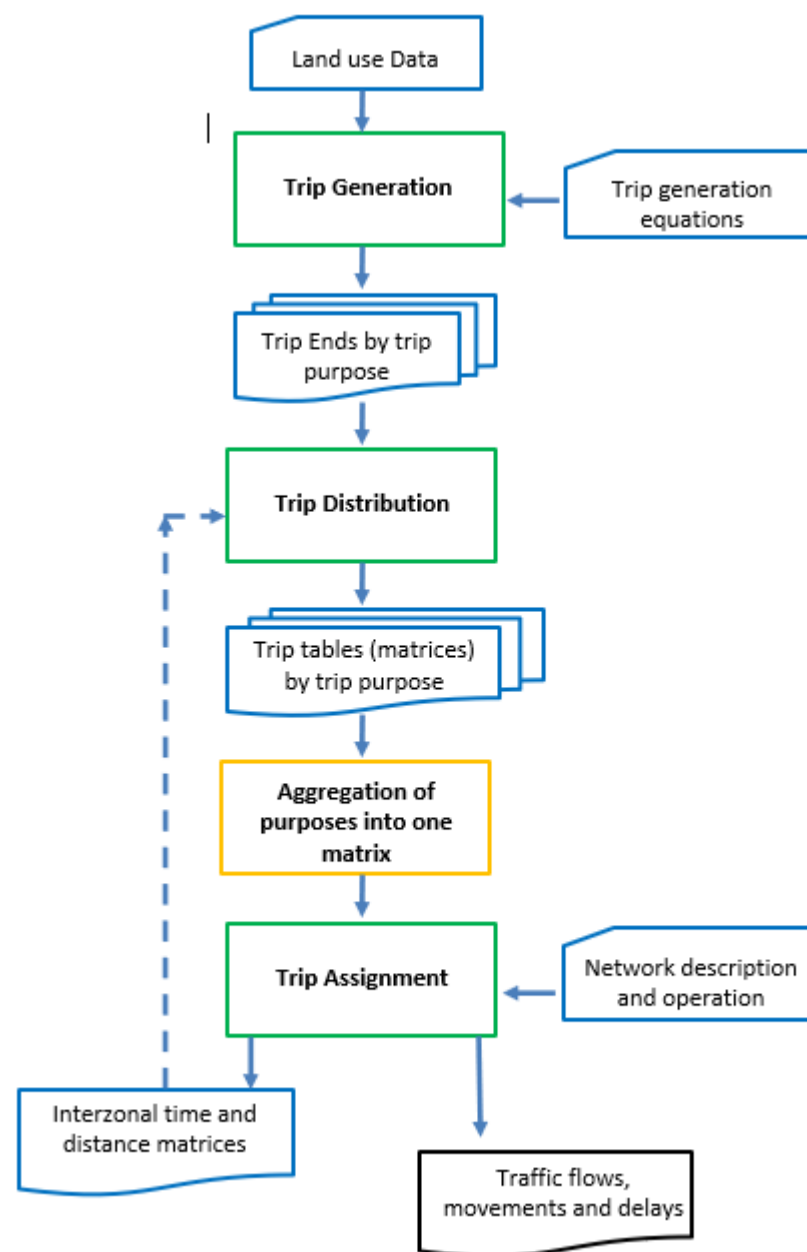
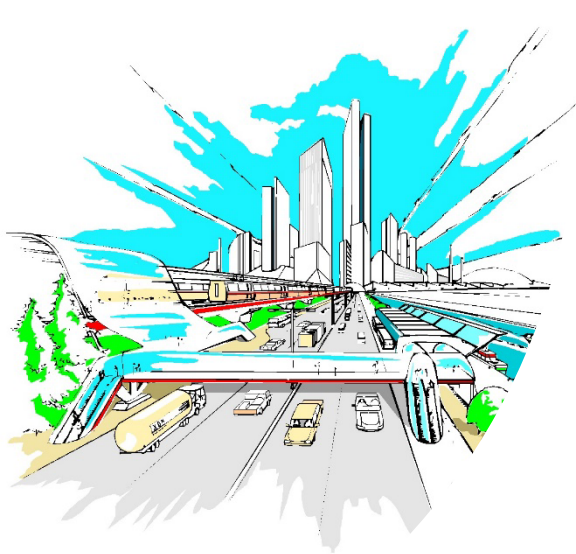
## Introducing Tracks\_Lite

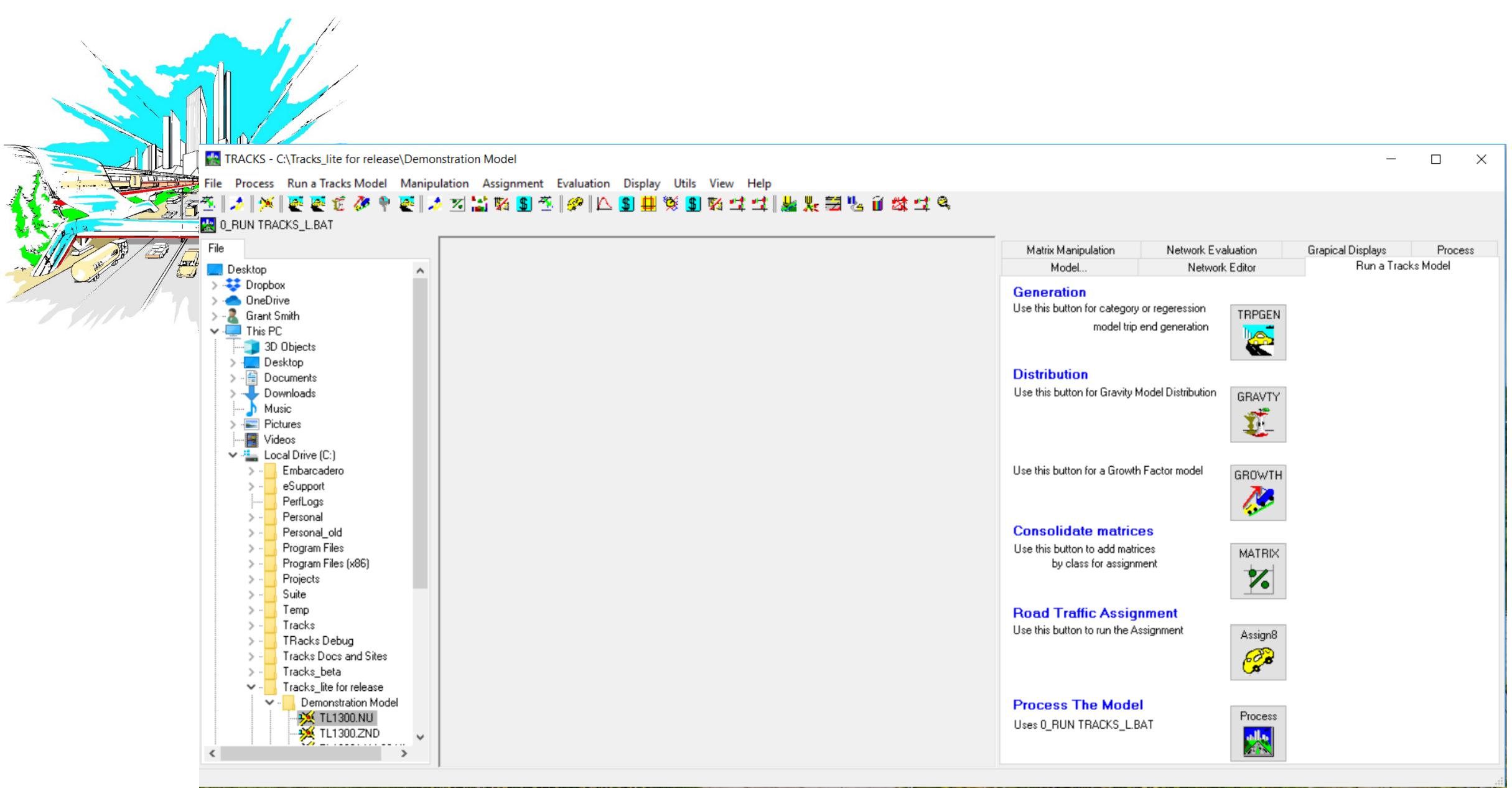
1. Fully functional three step modelling software
2. Simplified for small networks
3. Designed for use by traffic engineers with limited modelling experience
4. Intended to complement SIDRA
5. **Inexpensive – similar to SIDRA NETWORK**

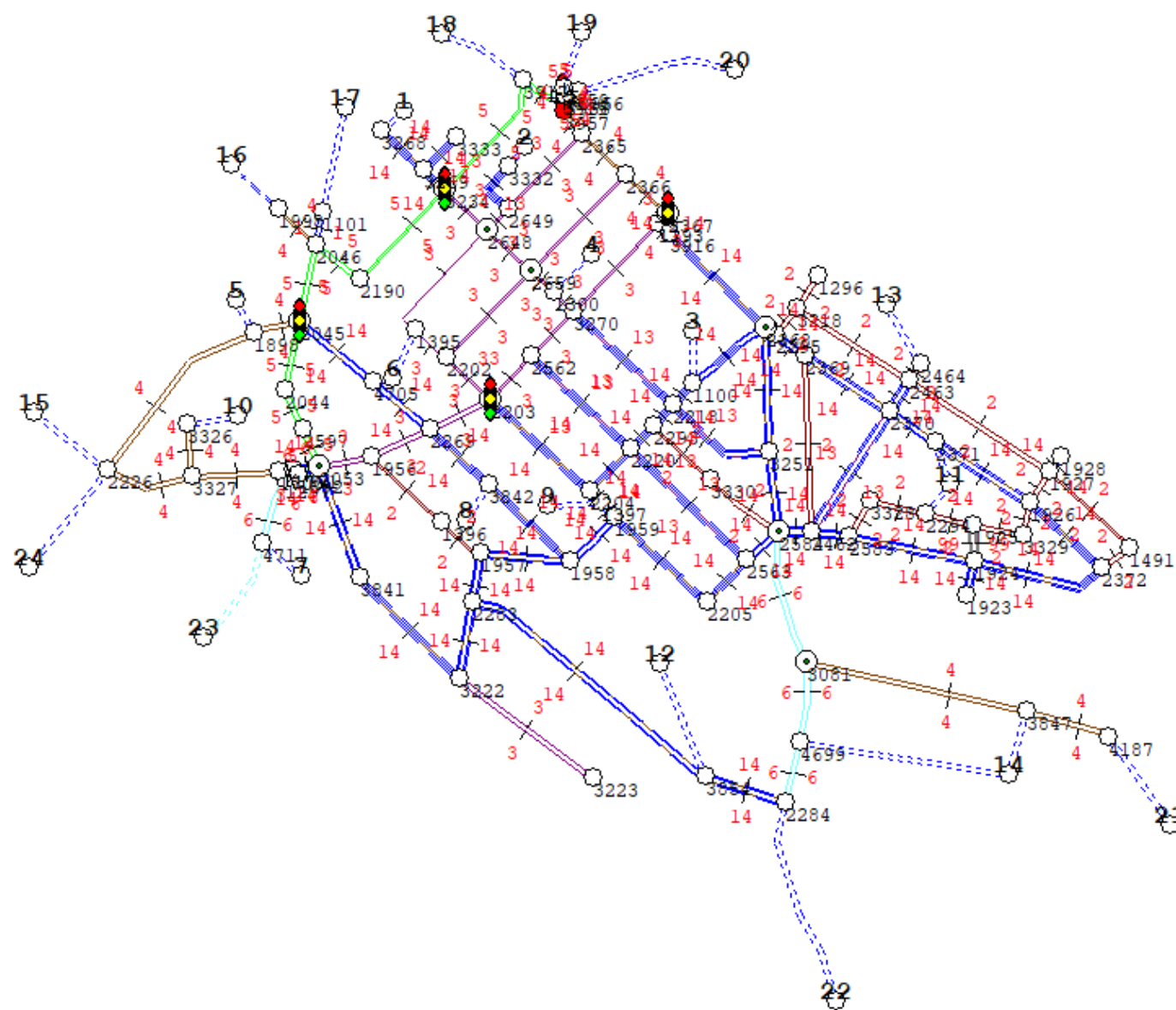
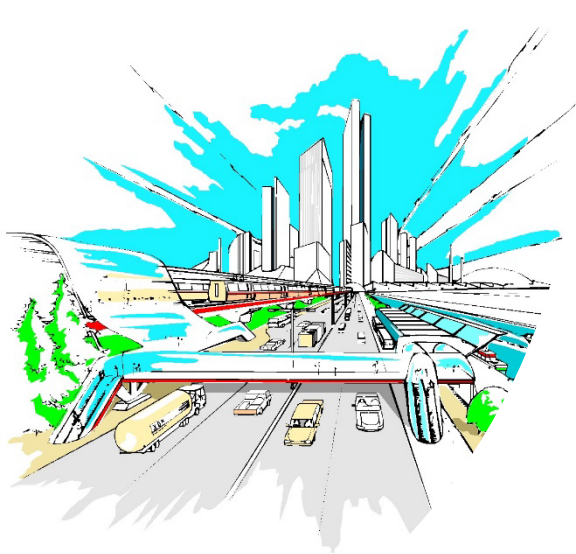


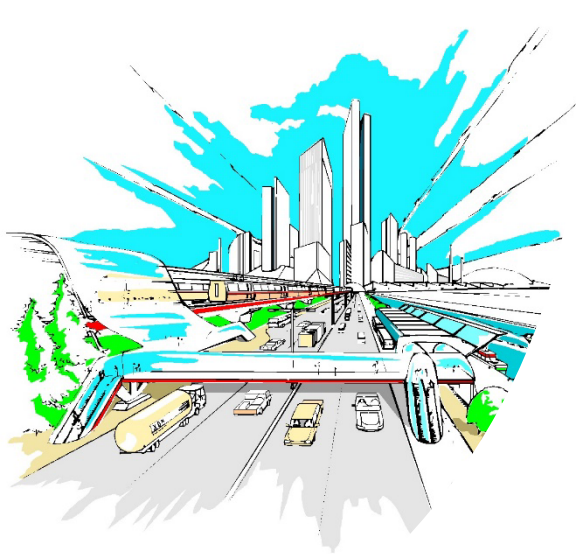
## Introducing Tracks\_Lite

1. Comes with
  - a) a working example model









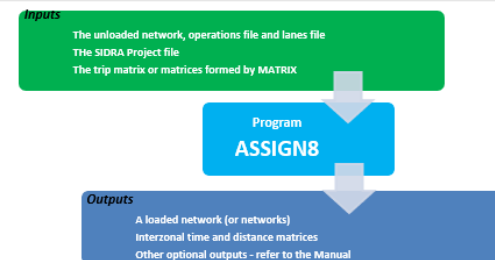
## Introducing Tracks\_Lite

1. Comes with
  - a) a working example model
  - b) **Step by step model user manual**



## Table of Contents

1. Introduction .....	1
1.1 Background .....	1
1.2 Report Structure .....	1
2. Technical Information .....	3
2.1 The Network Folder .....	3
2.2 The Land Use Folder .....	3
2.3 Naming Conventions .....	3
2.4 File Types .....	4
2.5 Script files .....	5
3. Three-Stage Modelling .....	
3.1 Overview .....	
3.2 Four-Stage Modelling .....	
4. Model Structure .....	
5. Trip End Generation .....	
5.1 Description .....	
5.2 TRPGEN Process .....	
5.3 TRPGEN – Operation (Internal Trips) .....	
5.4 TRPGEN – Operation (External Trips) .....	
5.5 The TRPGEN Parameter file .....	
5.6 Outputs .....	
6. Distribution .....	
6.1 Description .....	
6.2 GRAVITY Process .....	
6.3 GRAVITY - Operation .....	
6.4 The GRAVITY Parameter File .....	
6.5 Outputs .....	
7. Assignment .....	
7.1 Description .....	
7.2 MATRIX Process .....	
7.3 MATRIX – Operation .....	
7.4 The MATRIX Parameter File .....	
7.5 MATRIX Outputs .....	
7.6 ASSIGN8 Process .....	
7.7 ASSSIGN8 – Operation .....	20
7.8 The ASSIGN8 Parameter file .....	21
7.9 ASSIGN8 Outputs .....	24
8. Setting Up A New Model Run .....	
8.1 First Steps .....	
8.2 Clone .....	
8.3 Other files .....	
9. Altering a network .....	
9.1 Components of a network .....	
9.2 Link data .....	
9.3 Intersection data .....	
9.4 Link Shape data .....	
9.5 The Operation File Data .....	
9.6 The lanes File data .....	
10. Altering Land Use .....	
10.1 The Zone File .....	
10.2 Household data .....	
10.3 Changing Land Use .....	
11. Displaying Results .....	
11.1 Overview .....	
11.2 Programs .....	
12. The Tracks User Interface .....	
12.1 Overview .....	
12.2 The Process Tab .....	



## 7.7 ASSSIGN8 – Operation

There is a single call to **ASSIGN8** from O\_RUN.BAT. The relevant part is:

```

REM Assignment
COPY ASSIGN.LST *.PRV
COPY TL1300AALL00.NL TL1300AALL00PRV.NL
COPY TL1300AALL00.MT TL1300AALL00PRV.MT
COPY TL1300AALL00.KT TL1300AALL00PRV.KT

DEL TL1300AALL00.*
DEL TL1300AALL00.*
DEL TL1300AALL00.*
DEL TL1357.000
DEL TL1357.NC
CLS

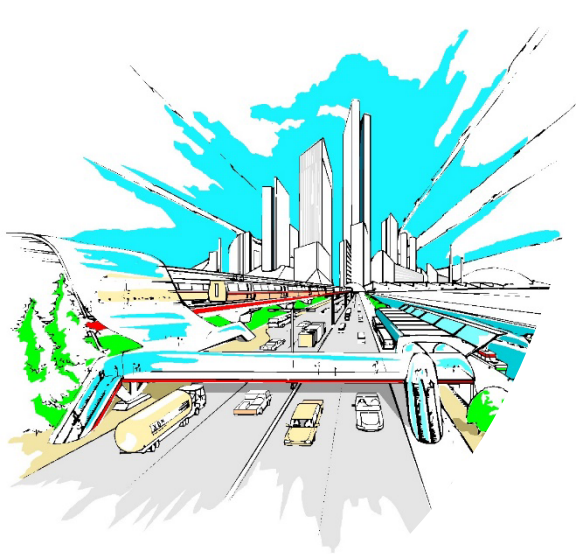
COPY ASSIGN.MUL *.PAR
ASSIGN8
IF ERRORLEVEL 1 GOTO END
  
```

The next group of **COPY** commands are simply saving the results from the previous run of **ASSIGN8** for comparison purposes after this run. Note that the naming convention is that **PRV** is added just before the file extension.

```

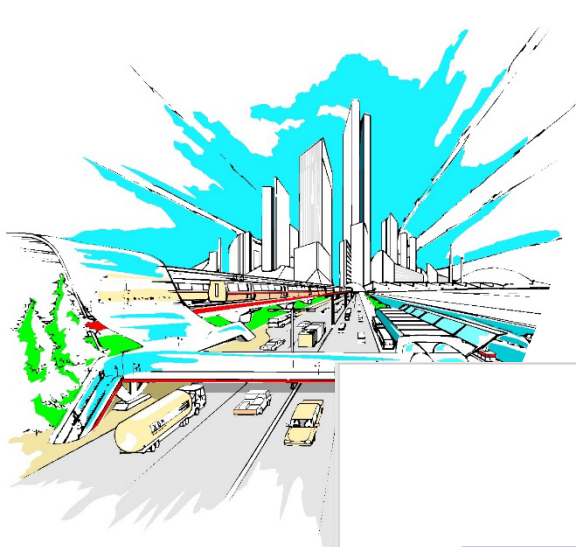
COPY ASSIGN.LST *.PRV
COPY TL1300AALL00.NL TL1300AALL00PRV.NL
COPY TL1300AALL00.MT TL1300AALL00PRV.MT
COPY TL1300AALL00.KT TL1300AALL00PRV.KT
  
```

All vehicle loaded network, time  
and distance matrices



## Introducing Tracks\_Lite

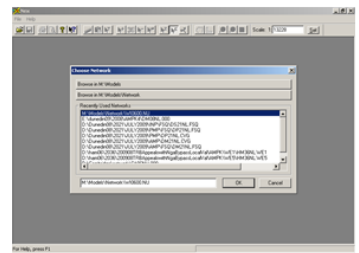
1. Comes with
  - a) a working example model
  - b) Step by step model user manual
  - c) **Software user manual**



## NEX – The graphical network and landuse activity editor

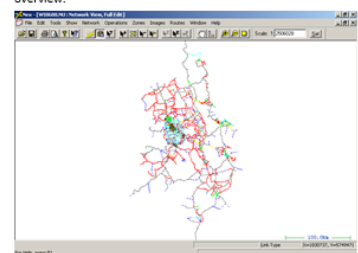
**Function** NEX is the central program in the Graphical User interface. It performs a myriad of functions as described below, but effectively enables set up and editing of any of the spatial information needed by the modelling programs.

**Opening Screen** When NEX is started, the first screen that appears is as follows



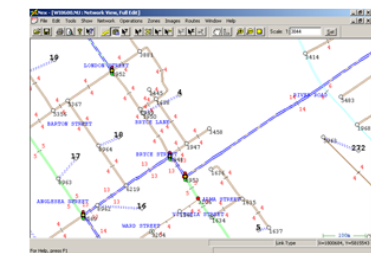
You can choose to browse in the folder that Nex was started from or the last folder used, or you can select a network from any of the last 10 that were opened.

Once the network is selected, it is displayed on the screen as an overview.

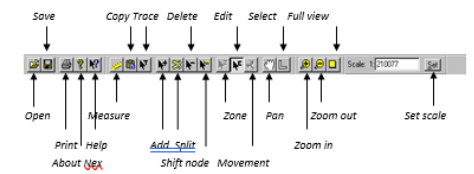


You are then able to begin editing. The first step is to zoom in on the part of the network that you wish to edit – for this choose the **select** button, or the **zoom** button described in the Toolbar section below. The zoom function brings up more detail keeping the centre of the screen constant. The select function allows you to locate a specific area. Simply hold the left mouse button down and size the box that you want by moving the mouse.

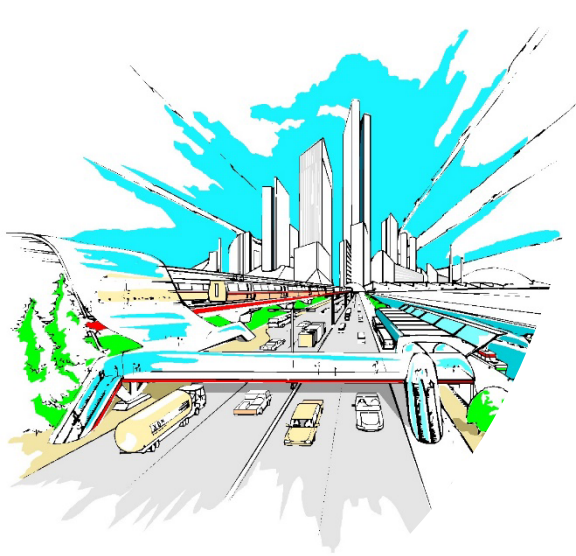
This can be repeated as many times as required until the nodes are displayed, and the familiar network configuration of nodes and links is displayed.



**The Toolbar** Functions in NEX can be activated either through the drop-down menu system, or by clicking on the buttons on the tool bar which contains the most commonly used functions. Once a button is selected, the function remains active until another is selected.



**Open:** Open another network  
**Save:** Save the current network with the same name  
**Print:** Print or plot the current network  
**About Nex:** Gives version and build dates for the program



## *Discussion*