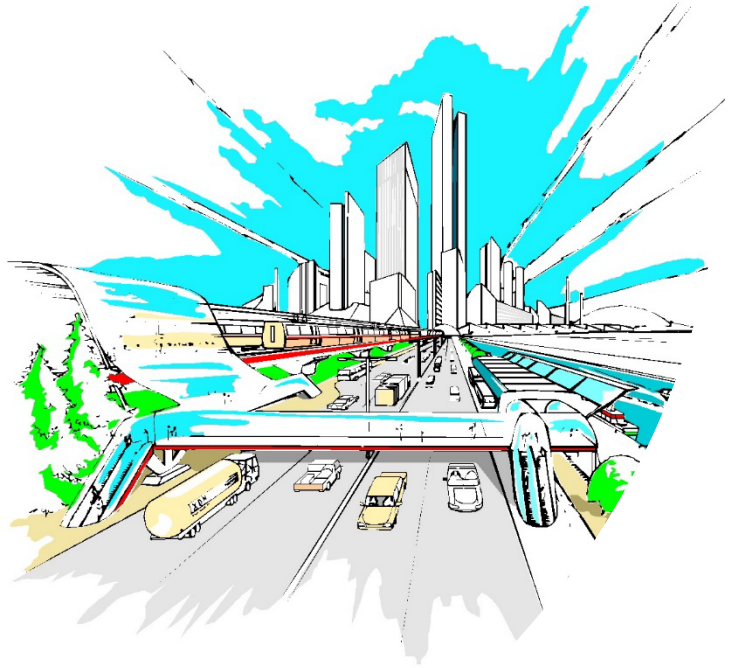
Tracks - SIDRA Link

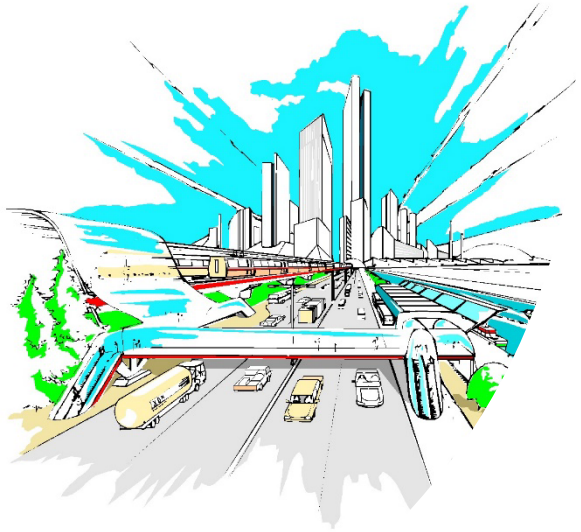
Grant Smith

Presentation at the SIDRA API Workshop
Melbourne, November 2018

Updated: 2 May 2019

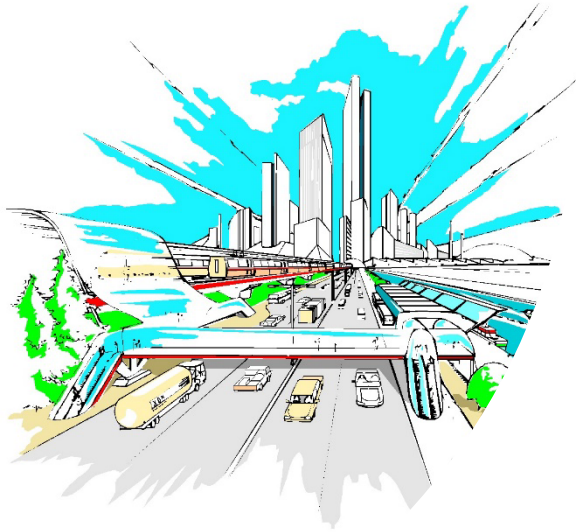


Tracks Applications



Full four step land use based transport model

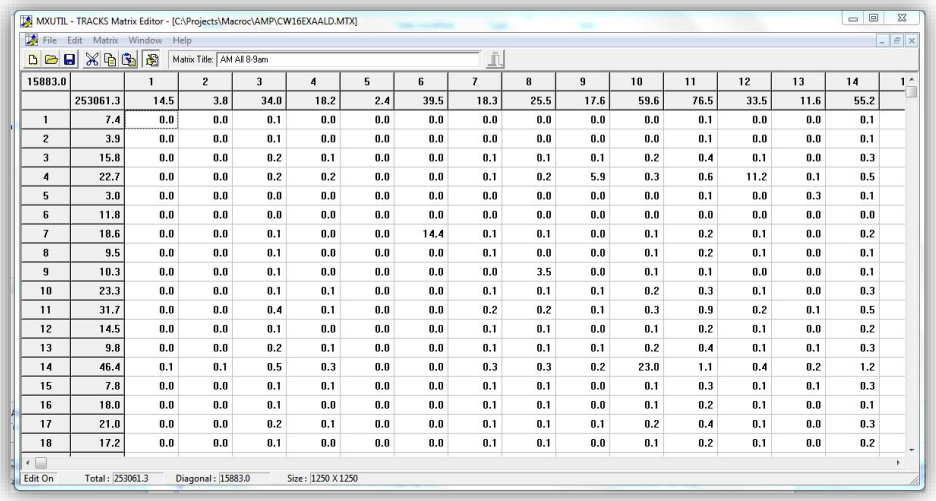
Trip generation



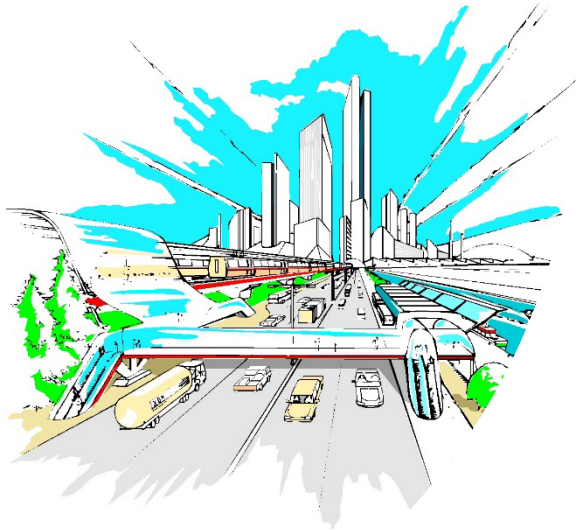
Full four step land use based transport model

Trip generation

Trip distribution



15883.0		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	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	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	0.1
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	0.1
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	0.3
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
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
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
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	0.2
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	0.1
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	0.1
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	0.3
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
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	0.2
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
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
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
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
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
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

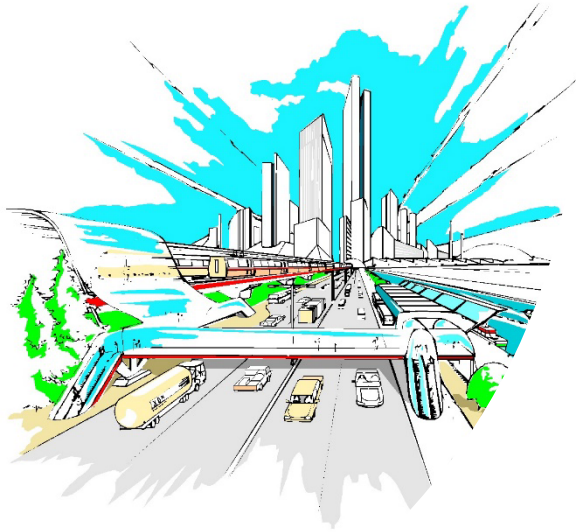


Full four step land use based transport model

Trip generation

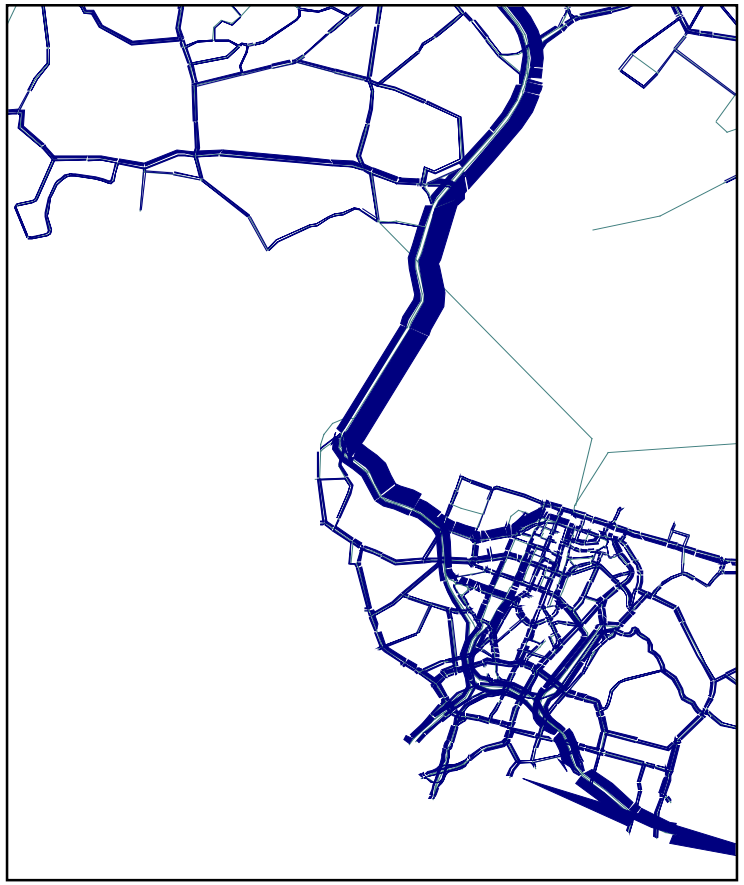
Trip distribution

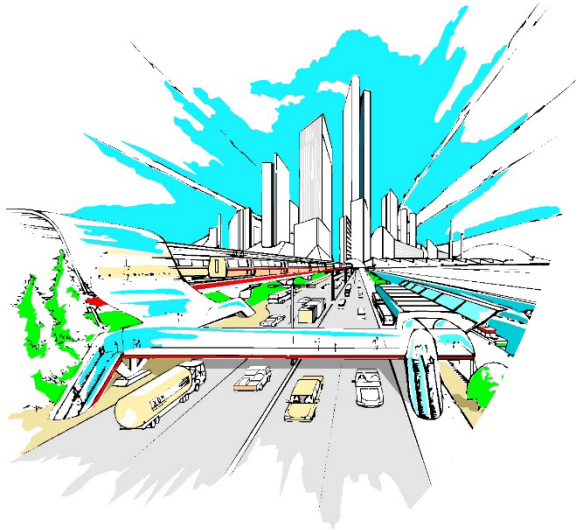
Mode Split



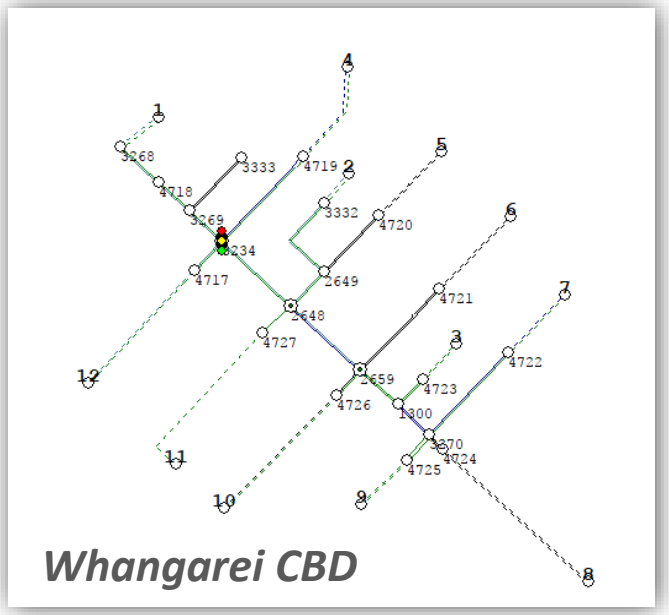
Full four step land use based transport model

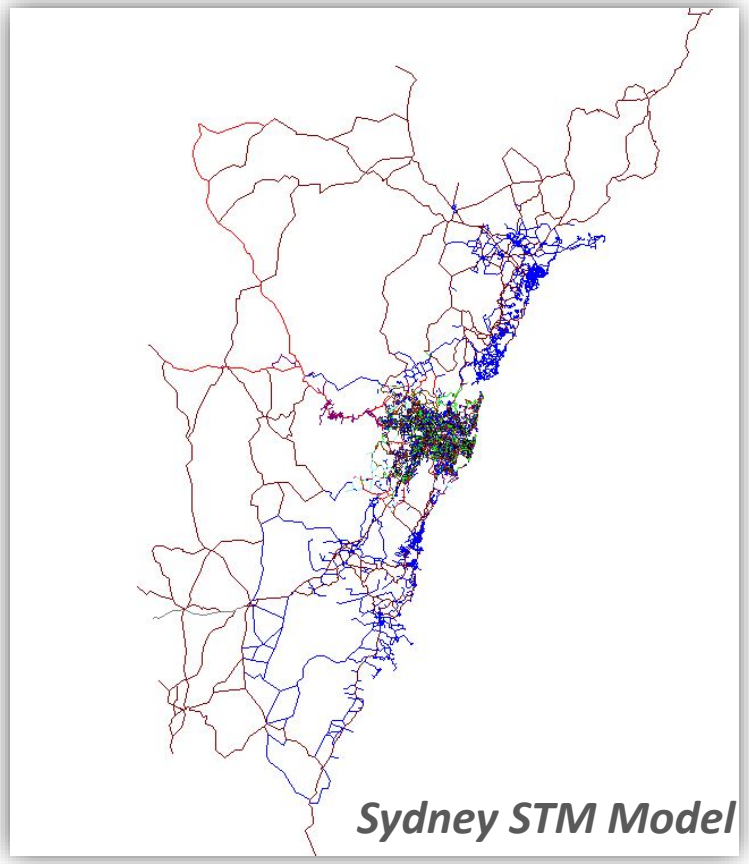
Trip generation
Trip distribution
Mode Split
Assignment

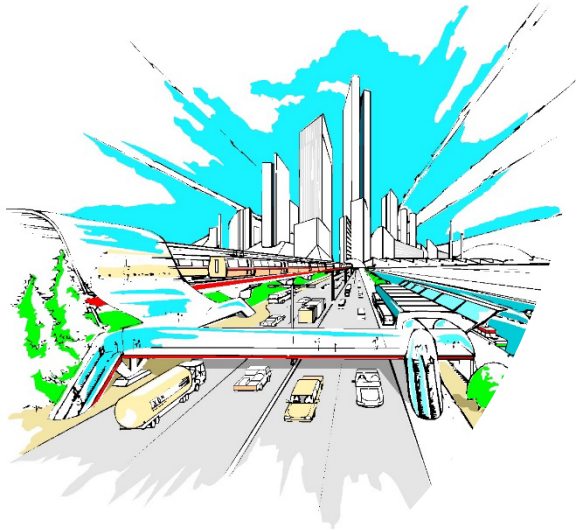




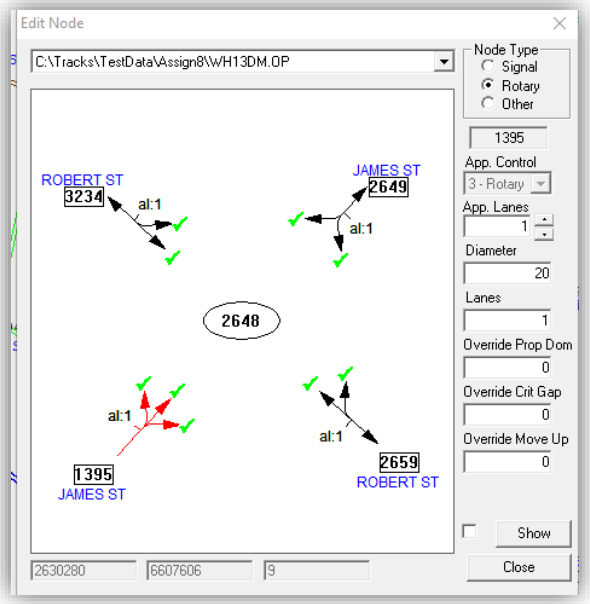
Very large or very small networks



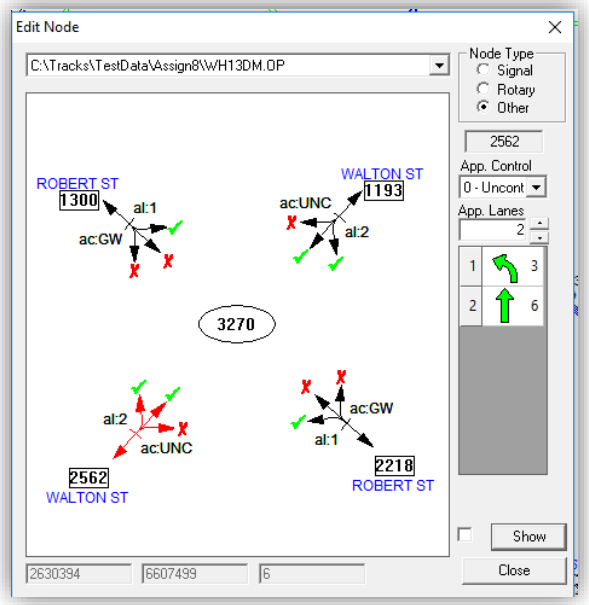




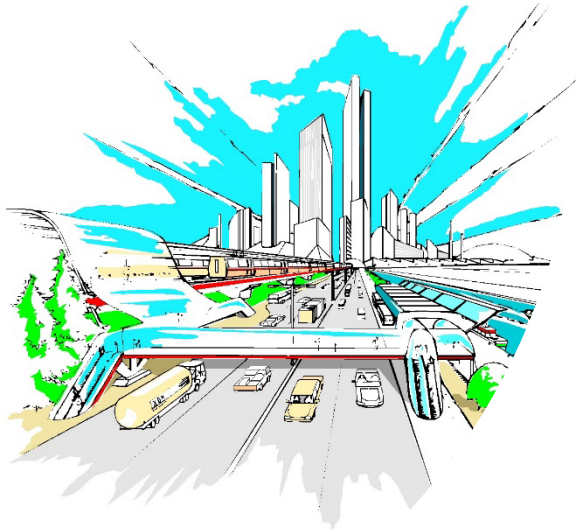
Intersections are explicitly modelled during the assignment



Roundabouts



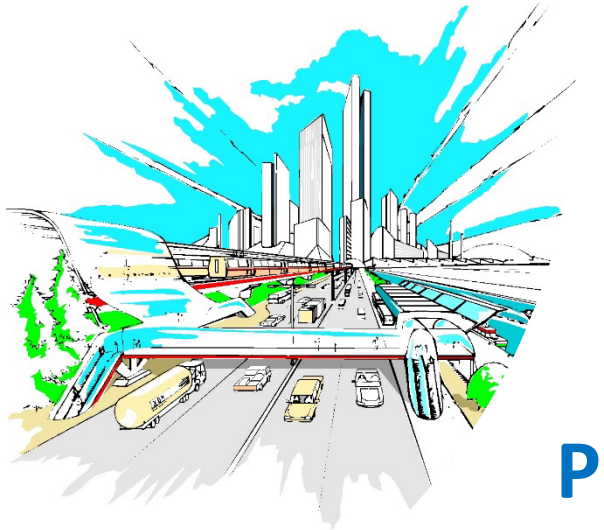
Priority Intersections



Pre-linking to SIDRA

Roundabouts

- Formulae simplified from SIDRA 5.1



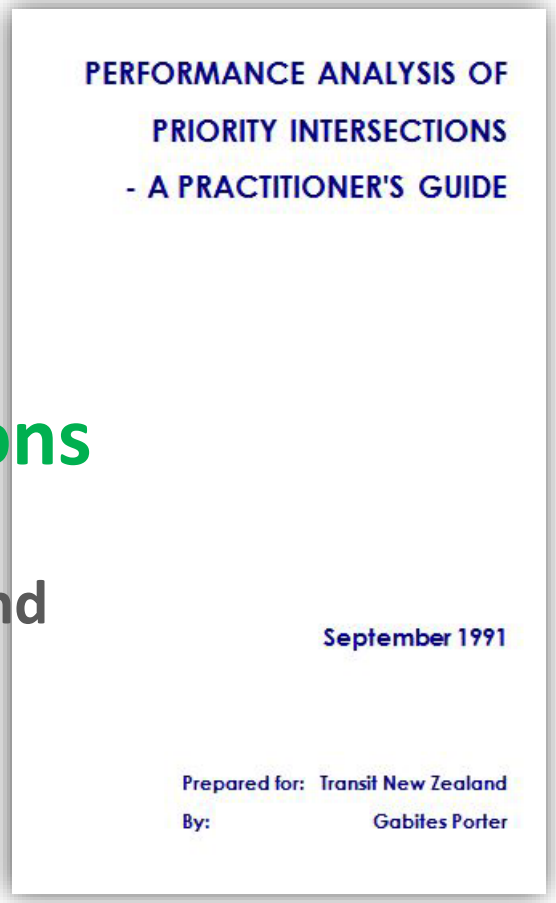
Pre-linking to SIDRA

Roundabouts

- Formulae simplified from SIDRA 5.1

Priority (Sign Controlled) Intersections

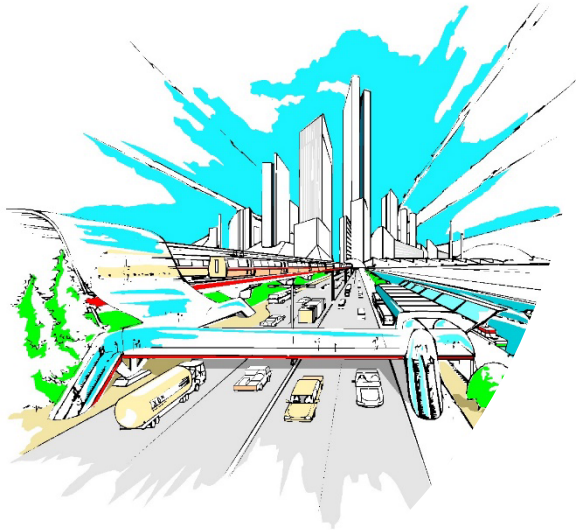
- **Formulae developed by Kimber and Hollis (1979), modified by Fisk and Tan (1989) and extended by Gabites Porter in 1991**



PERFORMANCE ANALYSIS OF
PRIORITY INTERSECTIONS
- A PRACTITIONER'S GUIDE

September 1991

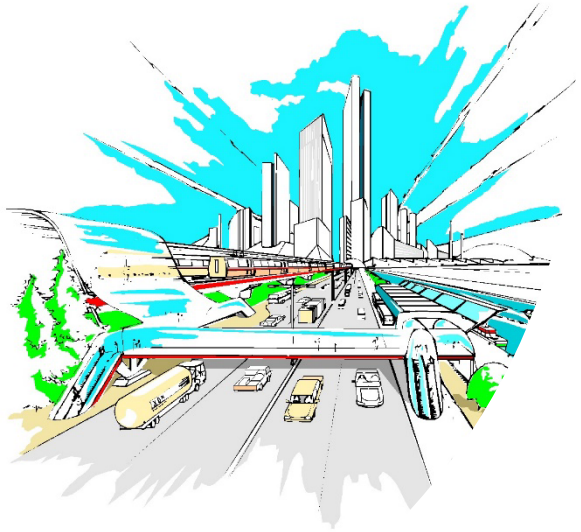
Prepared for: Transit New Zealand
By: Gabites Porter



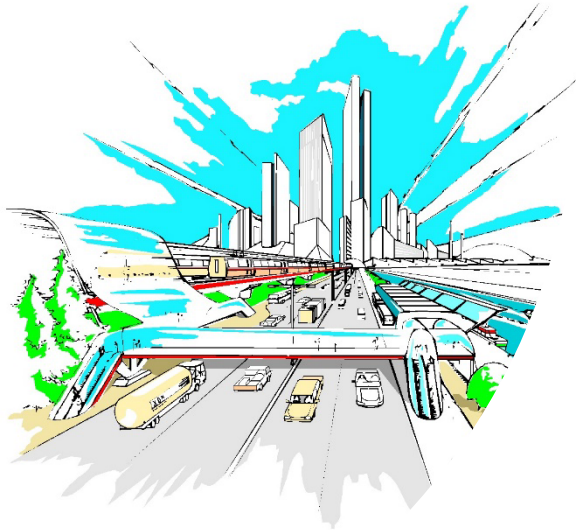
Intersection Coding

- 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, linking to SIDRA INTERSECTION …

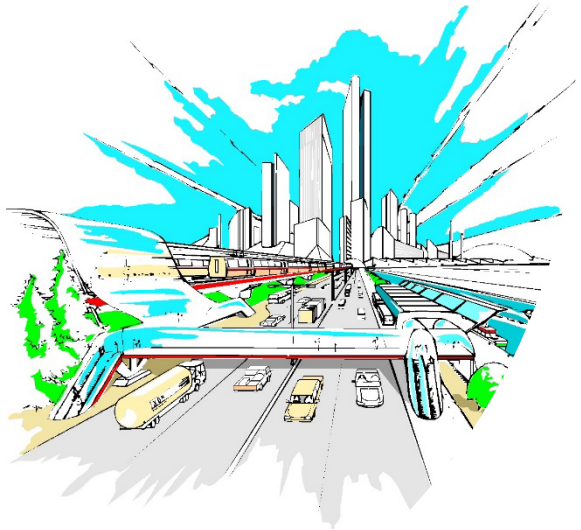


Tracks using SIDRA



Features and issues

V2.11 signal data files have to be converted into sip7 format externally using SIDRA V5.1



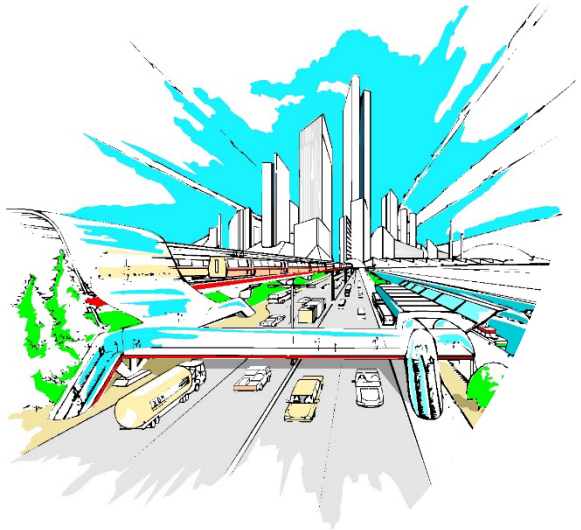
Features and issues

V2.11 signal data files have to be converted into sip7 format externally using SIDRA V5.1

Roundabouts and Priority intersections can be

a) coded into a sip7 file manually or

b) written electronically during the assignment



Features and issues

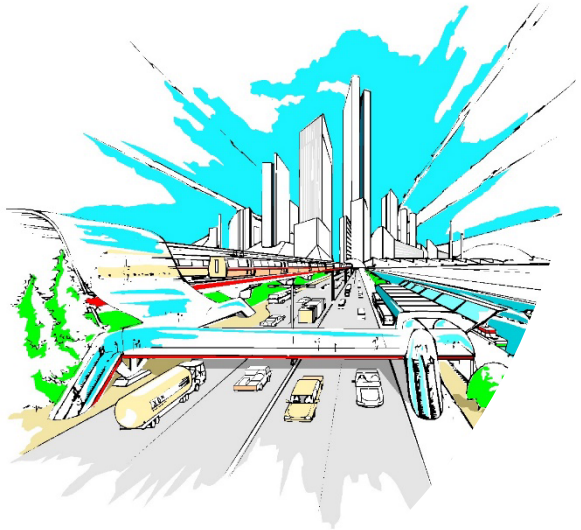
V2.11 signal data files have to be converted into sip7 format externally using SIDRA V5.1

Roundabouts and Priority intersections can be

a) **coded into a sip7 file manually or**

b) **written electronically during the assignment**

- **But** operation is slow in large networks

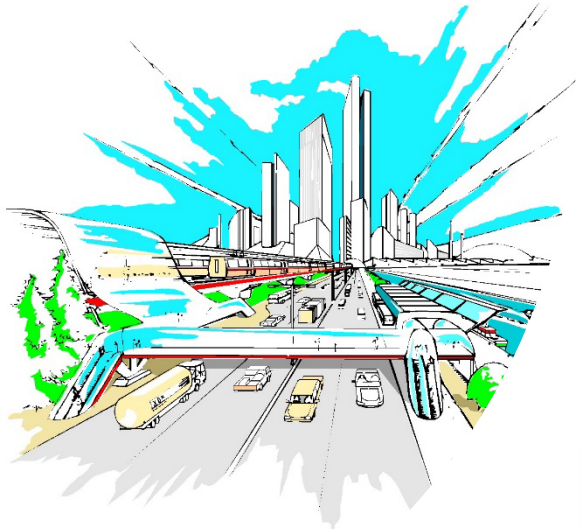


Features

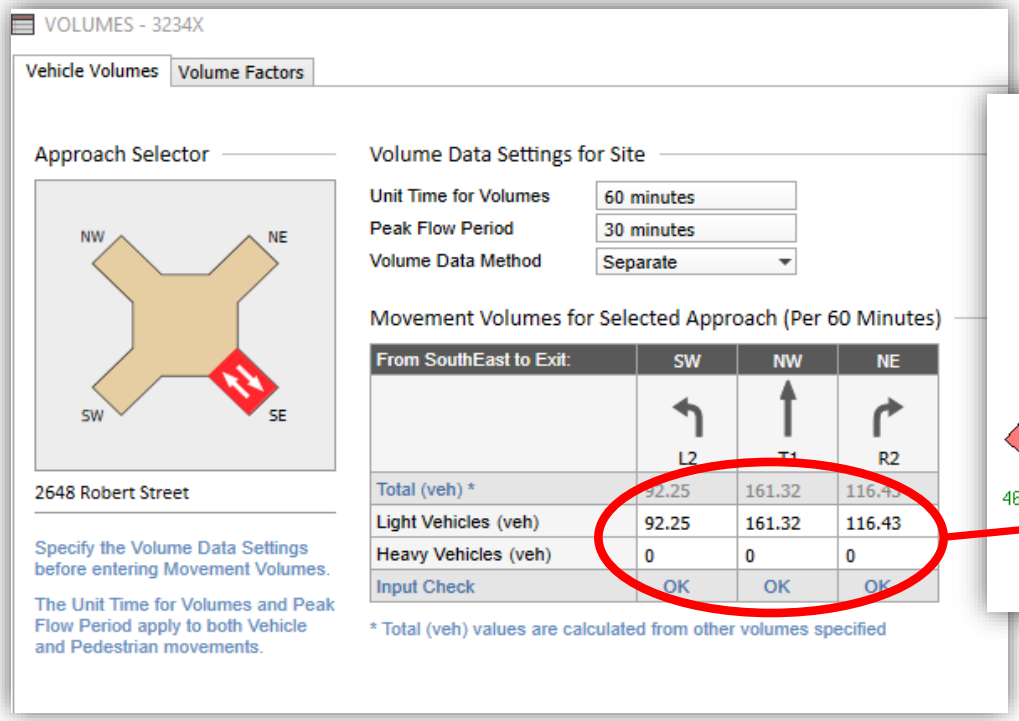
Seamless interface between SIDRA and TRACKS

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

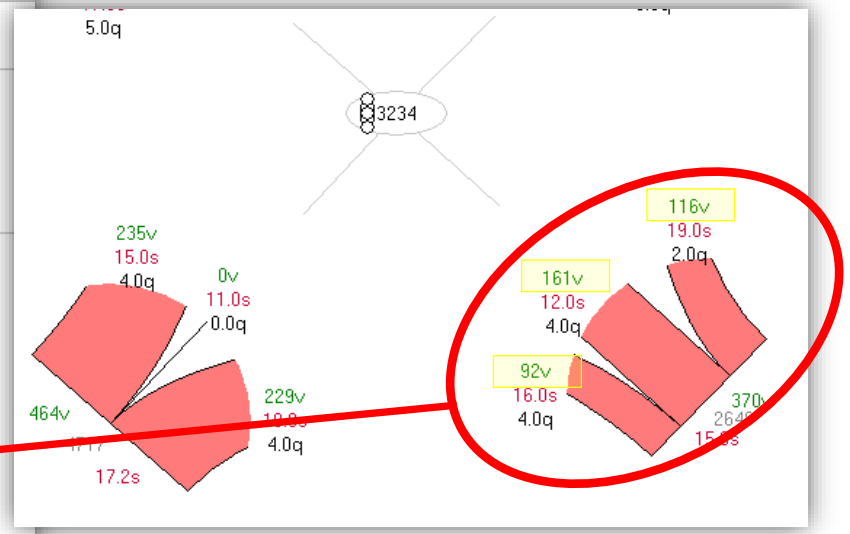
Use either TRACKS or SIDRA graphics outputs for reporting – the numbers are almost identical



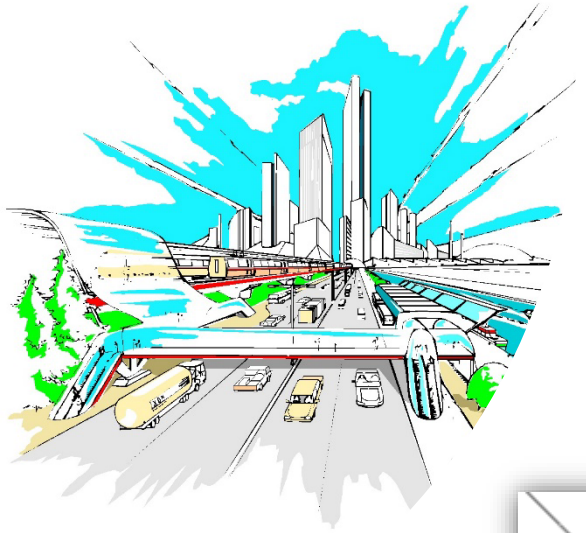
Flows are the same…



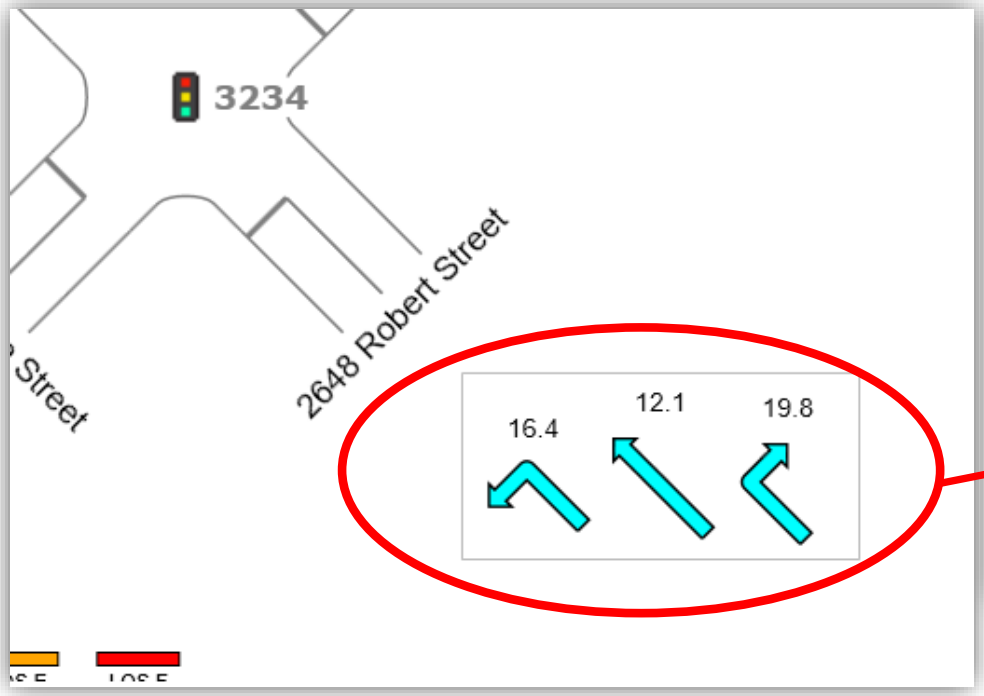
SIDRA Volumes

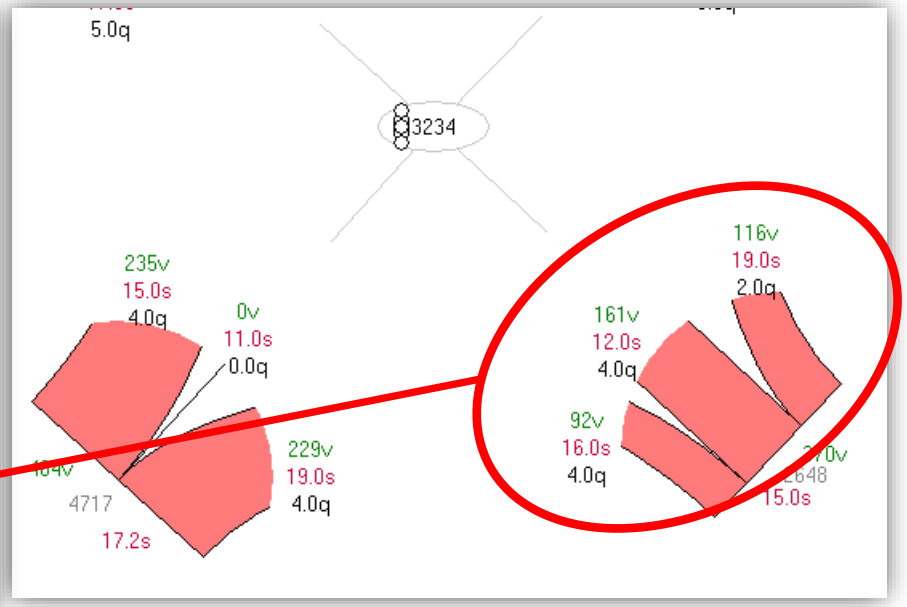


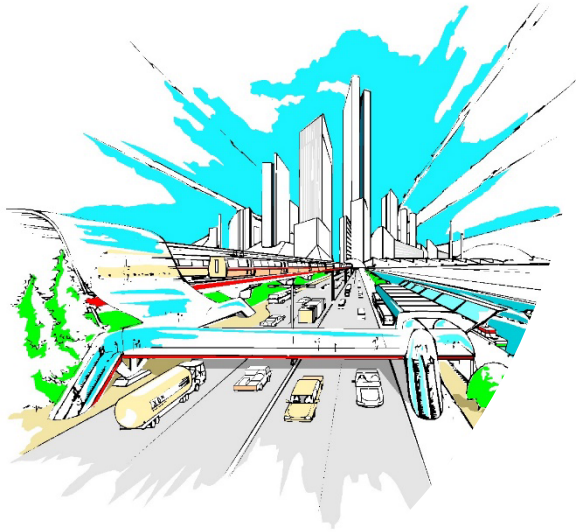
TRACKS Volumes



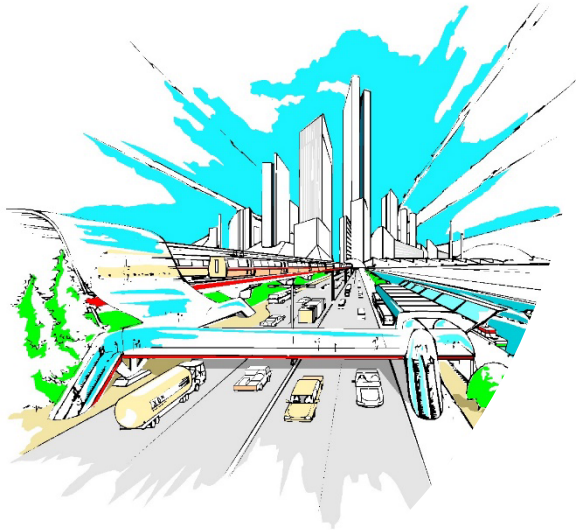
…as are the delays.



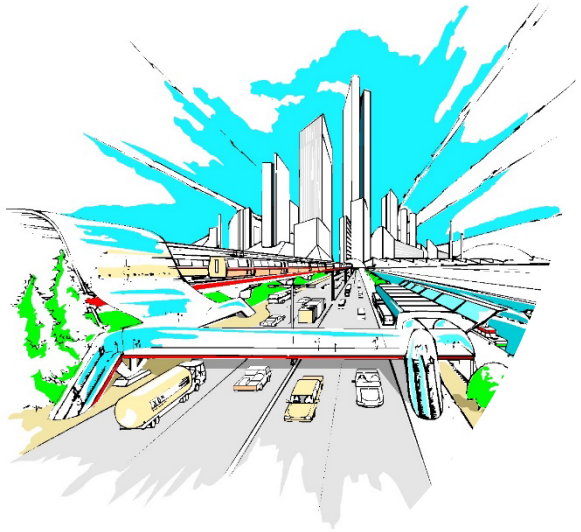




Intersection Type		Data from	Model & Processing
SIGNALS	1	Read data from SIDRA v2.11 file	ARR 123 equations in TRACKS
	2	Read data from SIDRA sip7 file	ARR 123 equations in TRACKS
	3	TRACKS flows written in SIDRA INTERSECTION data file (sip7)	Process SIDRA INTERSECTION using SIDRA equations and write delays and queues back to TRACKS network
ROUNDABOUTS	1	Data from TRACKS network	SIDRA 5.1 equations in TRACKS
	2	TRACKS flows written in SIDRA INTERSECTION data file (sip7)	Process SIDRA INTERSECTION using SIDRA equations and write delays and queues back to TRACKS network
PRIORITY (Sign Controlled) INTERSECTIONS	1	Data from TRACKS network	Fisk and Tan equations in TRACKS
	2	TRACKS flows written in SIDRA INTERSECTION data file (sip7)	Process SIDRA INTERSECTION using SIDRA equations and write delays and queues back to TRACKS network

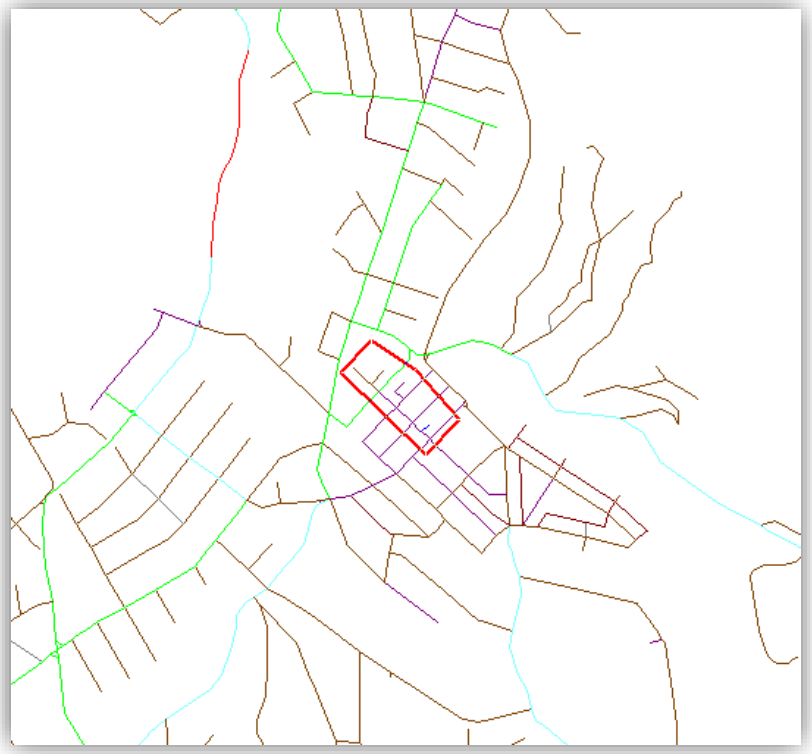


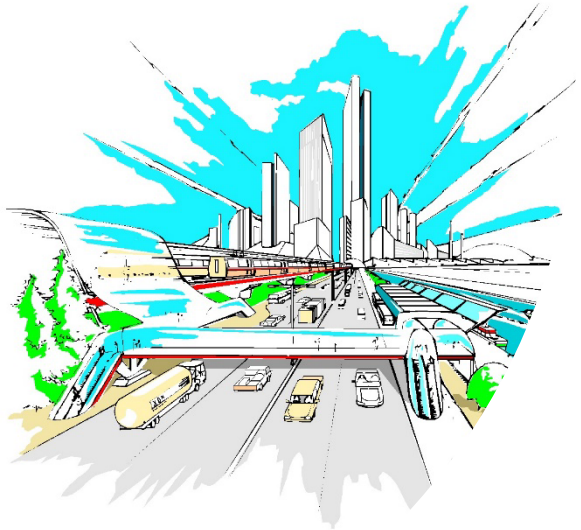
Making a SIDRA Network



Use TRACKS to set up a SIDRA Network

First cut a sub-area in TRACKS

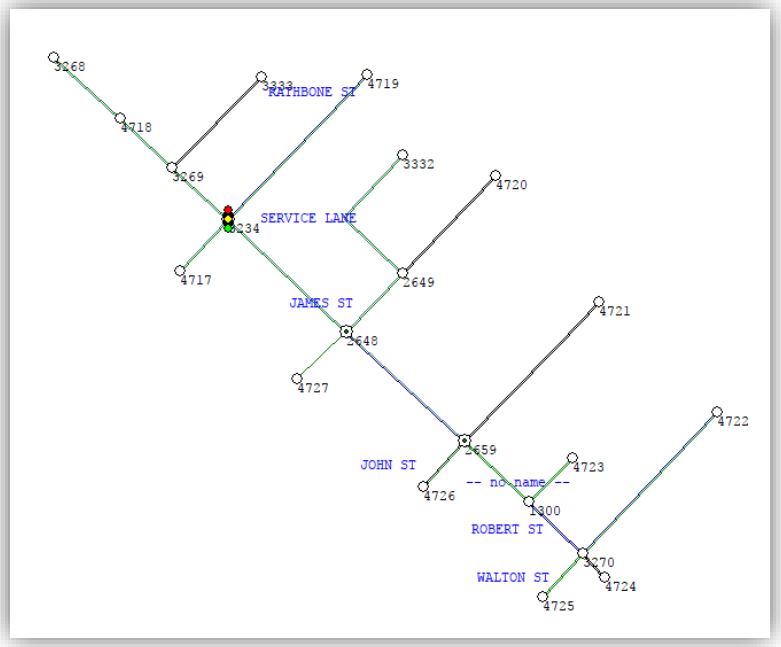


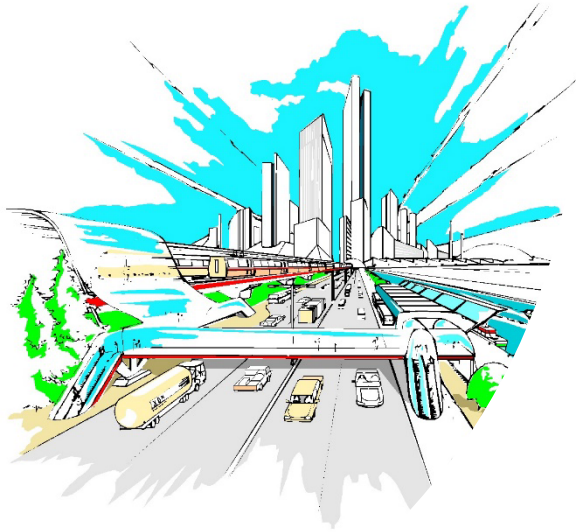


Use TRACKS to set up a SIDRA Network

First cut a sub-area in TRACKS

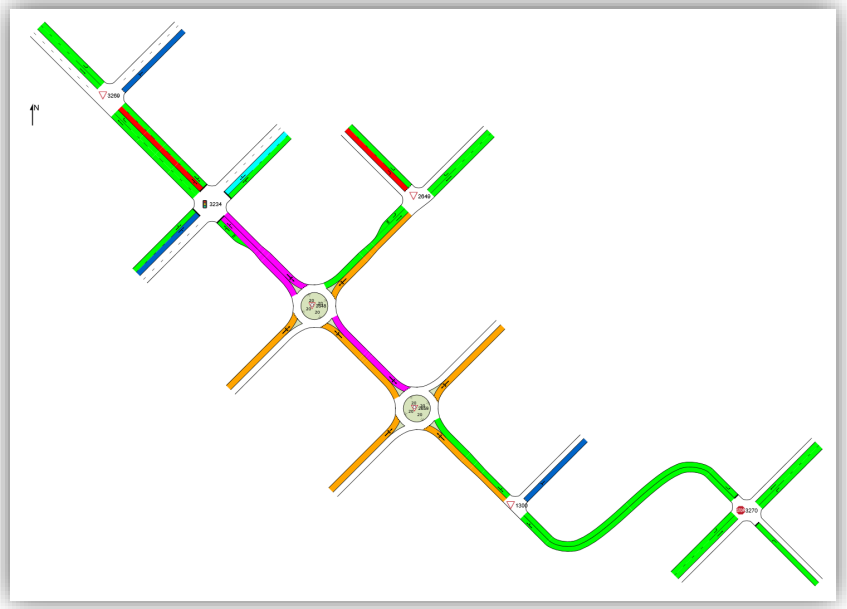
Then TRACKS writes the Site files and flows into a SIDRA INTERSECTION Project file from the sub-area network and forms a SIDRA network

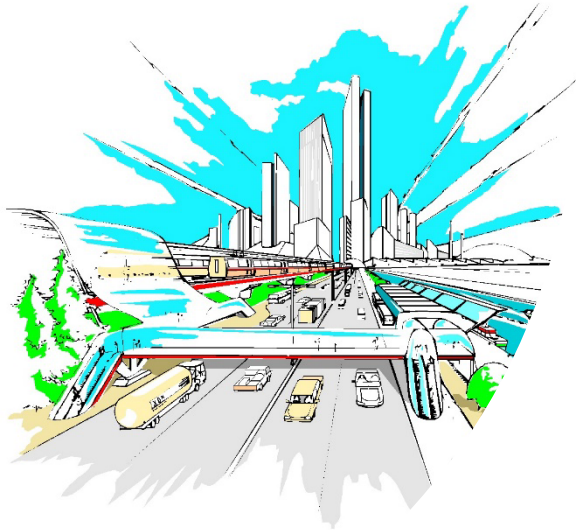




Use TRACKS to set up a SIDRA Network (continued)

Then process the Network in SIDRA INTERSECTION

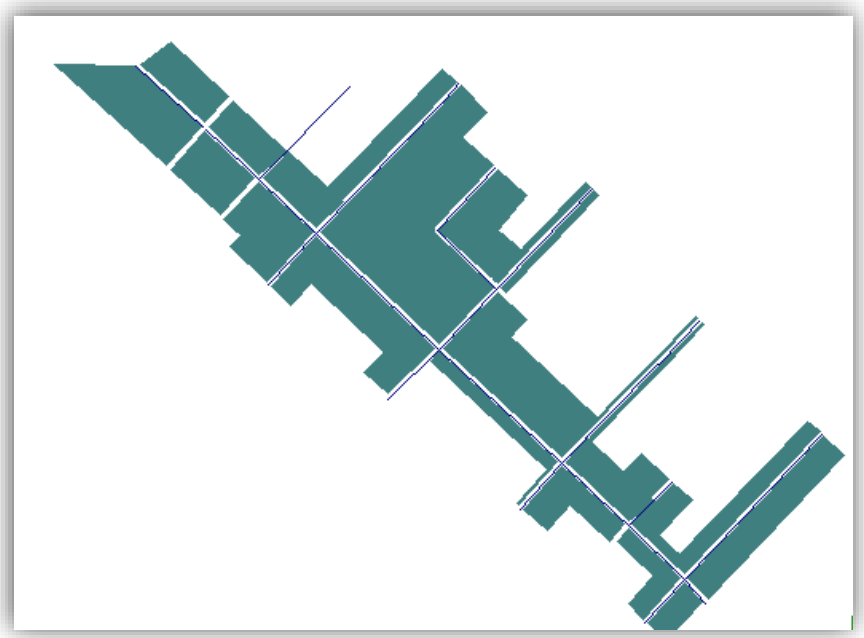


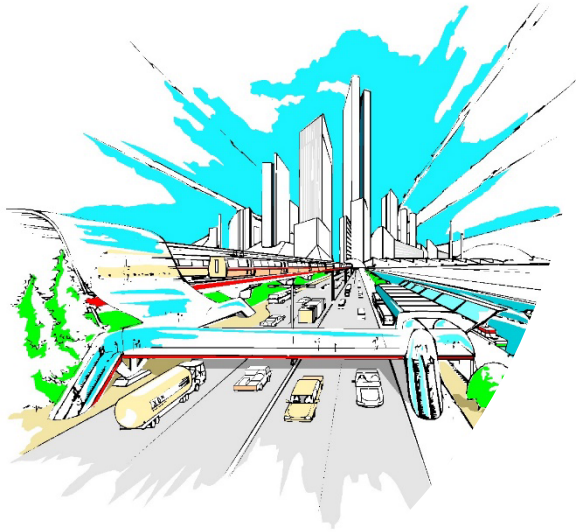


Use TRACKS to set up a SIDRA Network (continued)

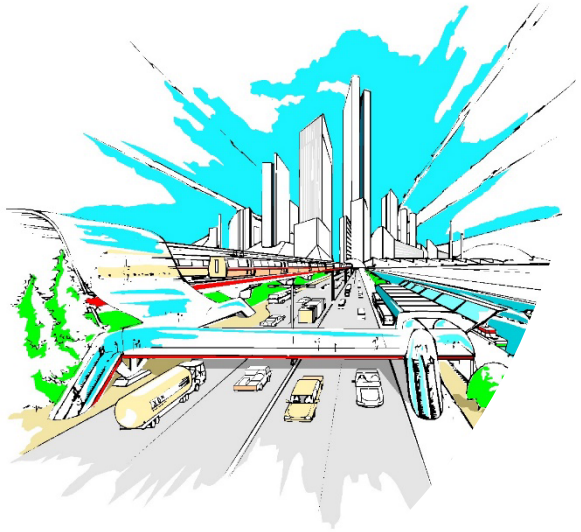
Then process the Network in SIDRA INTERSECTION

And use TRACKS to display flows



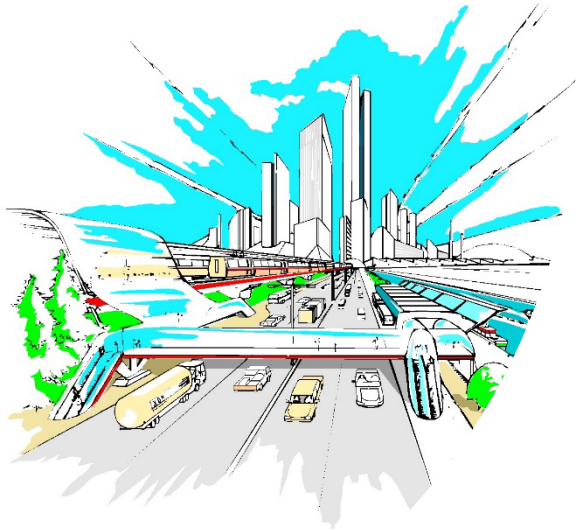


Estimating Flows for SIDRA



Either

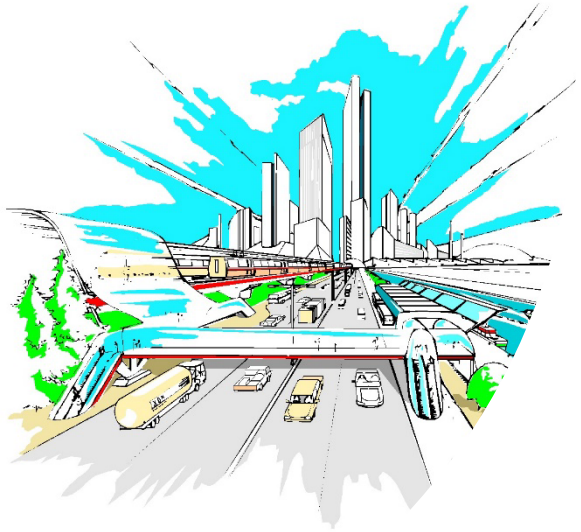
Use a TRACKS model to provide the flows; OR



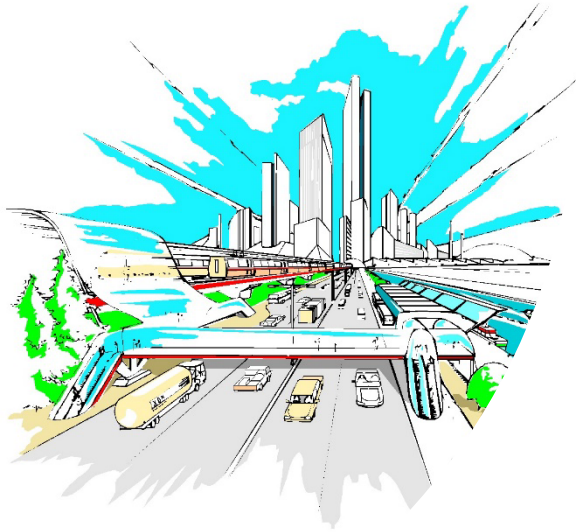
Either

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

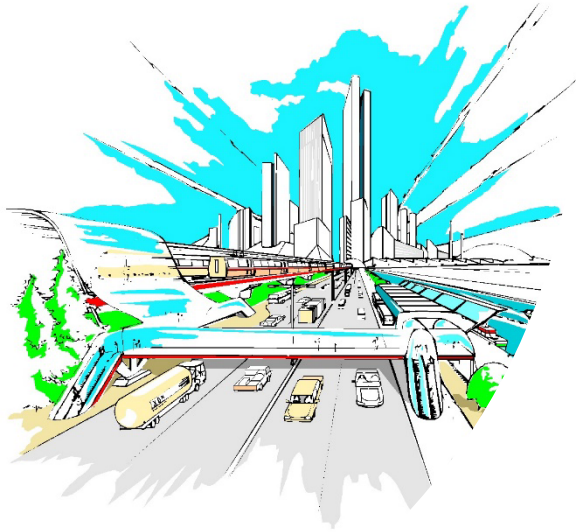


Introducing Tracks_Lite



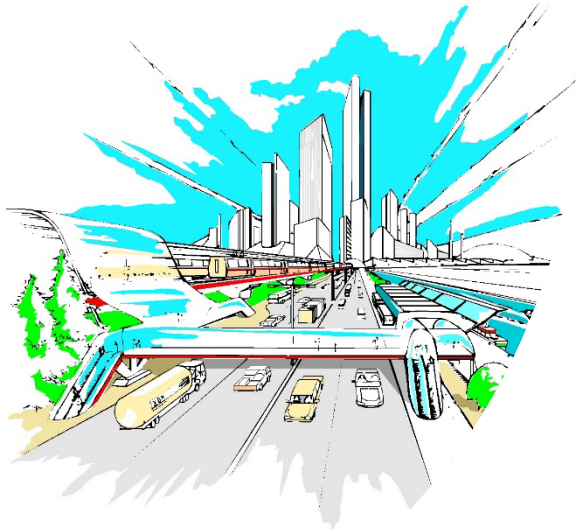
Introducing Tracks_Lite

1. Fully functional three step modelling software



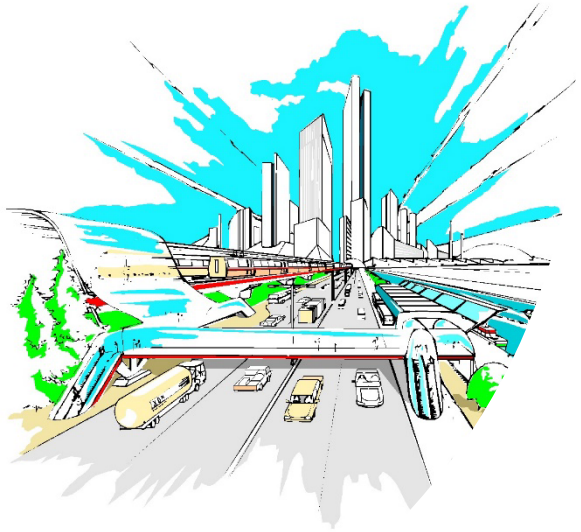
Introducing Tracks_Lite

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**



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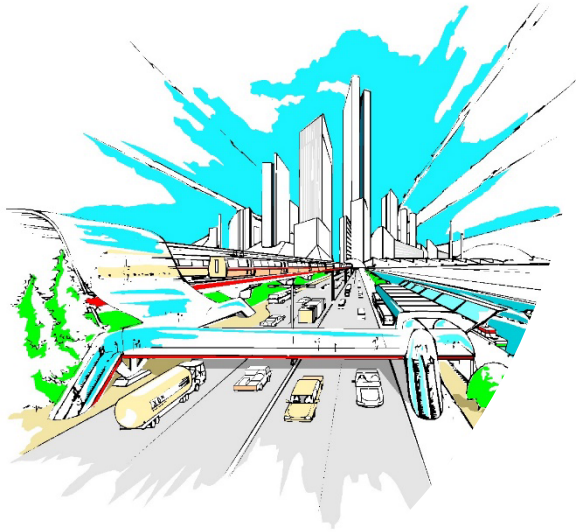

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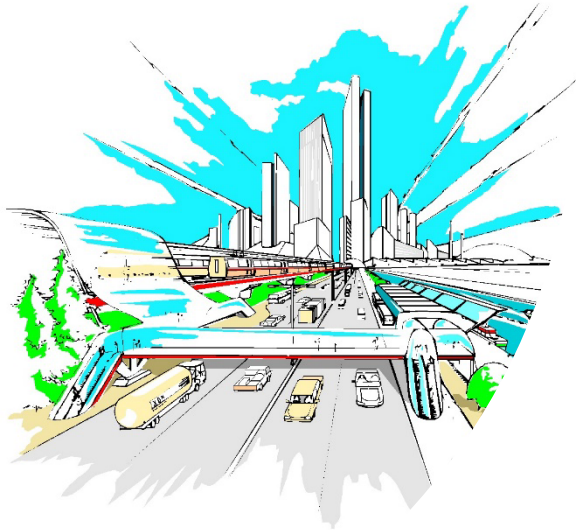
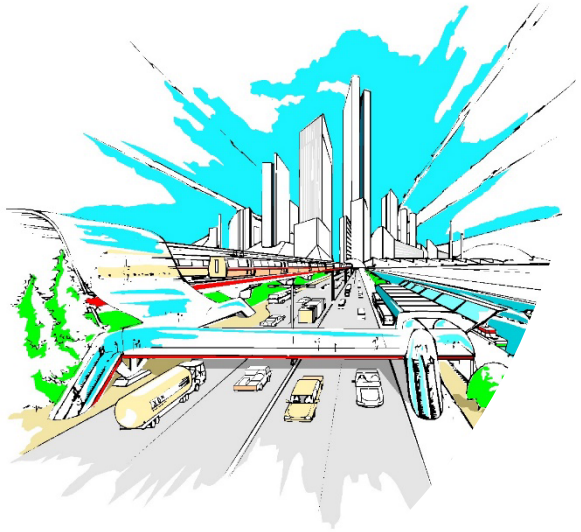


Introducing Tracks_Lite

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



Discussion