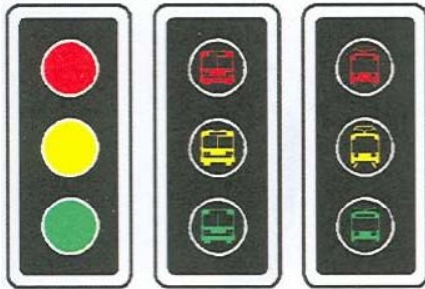


# City of Ekurhuleni

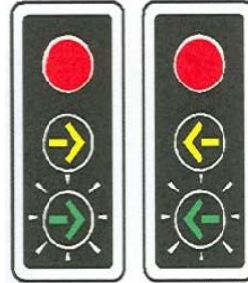
## Traffic Signal Compliancy Audit



S1

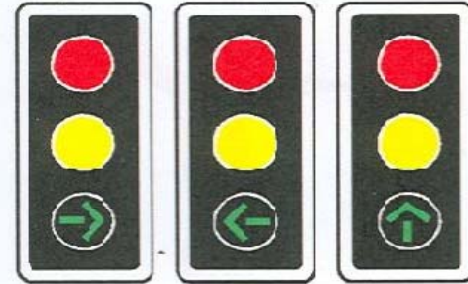
S1B

S1T



S1R

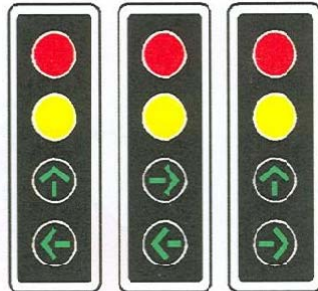
S1L



S2

S3

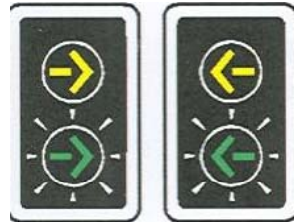
S4



S5

S6

S7



S10R  
(S10)

S10L



S11P  
(S11)



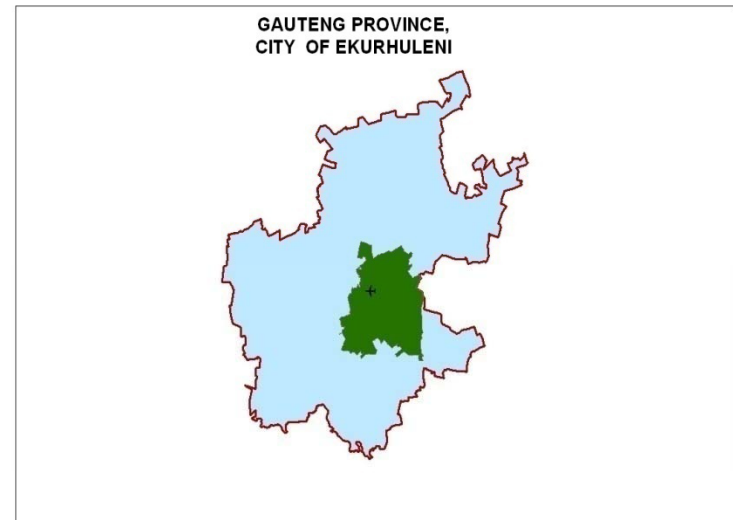
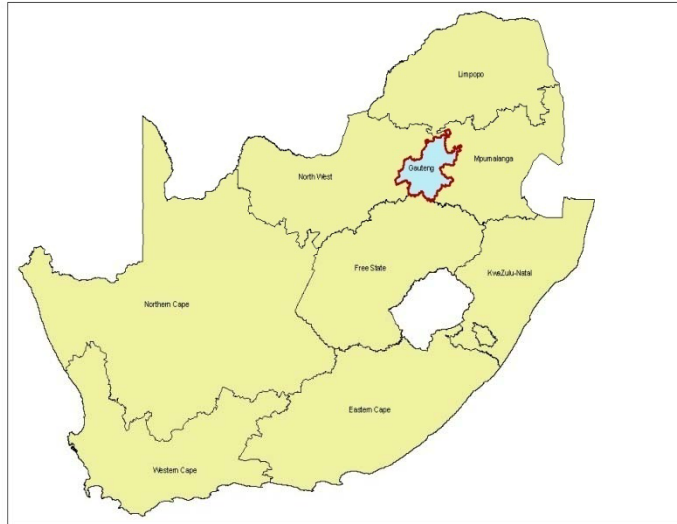
# Background

- The SA Road Traffic Signs Manual Volume 3 (SARTSM) and the regulations that form part of the Road Traffic Act, call for all municipalities to comply with the new requirements for traffic signals as specified in the SARTSM. The Municipalities have been given up to December 2010 to abide by these new requirements.
- The Municipality together with ITS Engineers (Pty) Ltd conducted a traffic signal compliancy audit to determine the extent of changes required to traffic signals to comply.
- The Municipality needed to have complete records of location of traffic signs and their condition. This presentation shows the supporting role provided by GIS in tracking the position and status of all traffic signs within the jurisdiction of the Municipality.



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# Location



- Area approx 2000 sqkm



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# Acts

- National Road Traffic Act, 1996 (Act No 93 of 1996)
- National Road Traffic Regulations, 2000
- South African Road Traffic Signs Manual (Vol. 3)

# User Roles

- View, Query (Arc Globe, Arc GIS Explorer)
- View, Query, Edit (Arc Map, Administrator)



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# Road networks

- Total = 91 924 road links covering +-9 000km
- Roads = +-6 800km Tarred  
+- 1 900km Gravel
- Traffic Signals = 1007



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# Highway links = 2404



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**Street links = 89520**



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# Project Methodology

1. List of signalised intersections
2. Map indicating location of signalised intersections
3. Field Surveys
4. Layout drawings
5. Signal timings
6. Spatial data (lat/long)
7. Database of street furniture per intersection - Oracle 10g
8. South African Road Traffic Signs Manual (SARTSM) Compliance



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# Existing Intersections and Assets

| <b>Intersections</b> | <b>Nr</b>          | <b>%</b>          |
|----------------------|--------------------|-------------------|
| 4 Way                | 759                | 72                |
| T-junction           | 255                | 24                |
| Midblock             | 42                 | 4                 |
| <b><i>Total</i></b>  | <b><i>1056</i></b> | <b><i>100</i></b> |

| <b>Poles</b>        | <b>Nr</b>          | <b>%</b>          |
|---------------------|--------------------|-------------------|
| Standard            | 6853               | 88.0              |
| High                | 27                 | 0.3               |
| Cantilever          | 919                | 11.7              |
| <b><i>Total</i></b> | <b><i>7799</i></b> | <b><i>100</i></b> |



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# Existing Intersections and Assets (cont)



| <u>Lamps</u>         | <u>Nr</u>            | <u>%</u>          |
|----------------------|----------------------|-------------------|
| LED                  | 6 396                | 14                |
| Halogen/Incandescent | 39 284               | 86                |
| <b><i>Total</i></b>  | <b><i>45 680</i></b> | <b><i>100</i></b> |

| <b>Signal Head Type</b> | <b>Nr with Backboard</b> | <b>Nr Without Backboard</b> |
|-------------------------|--------------------------|-----------------------------|
| S1-S11                  | 13 037                   | 2 578                       |



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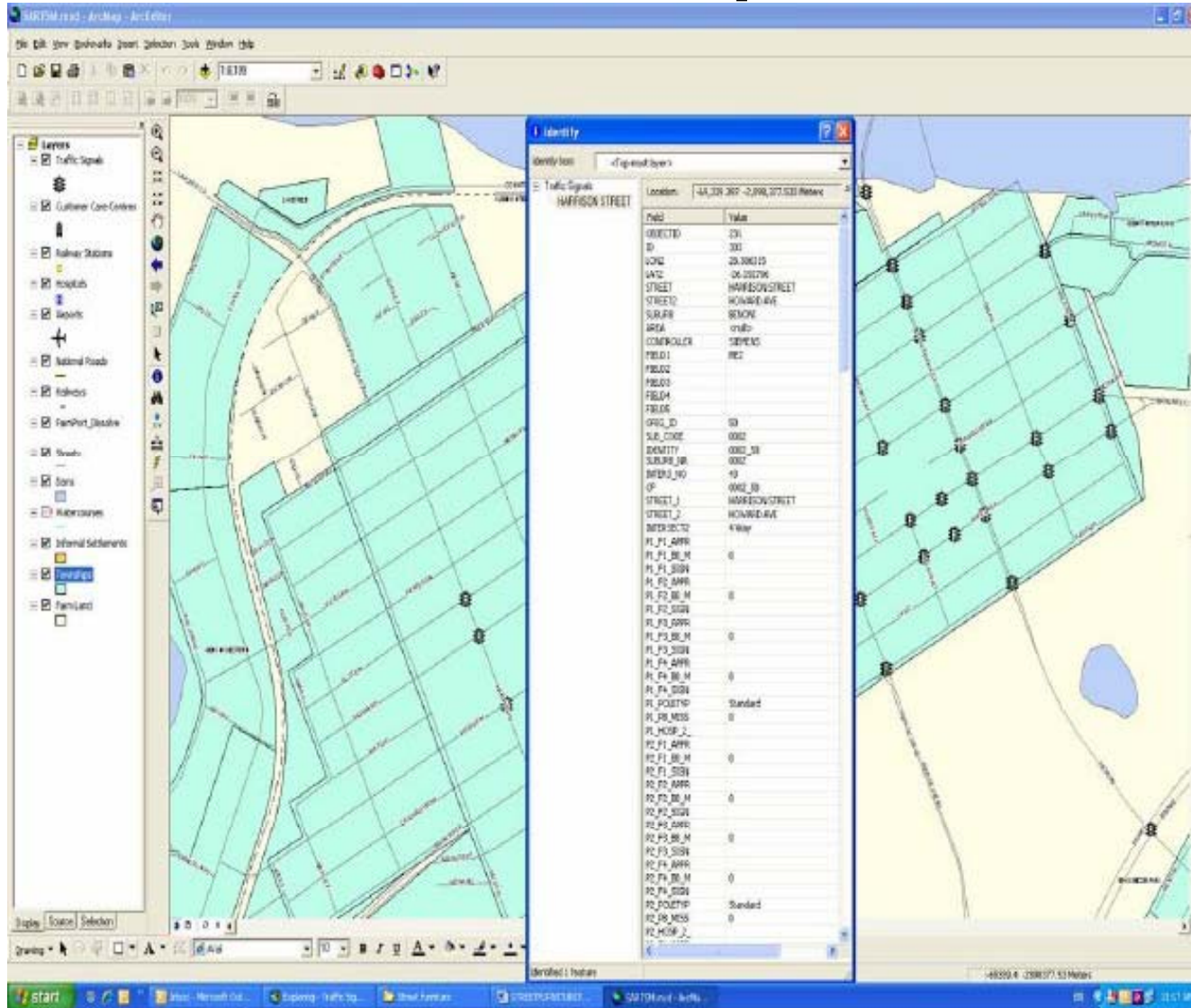
# Data Presentation

- Arc Map   
Arcmap.Ink
- Arc Globe  (Executives and other users)  
Arcglobe.Ink
- Arc GIS Explorer (Executives)



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# ArcMap



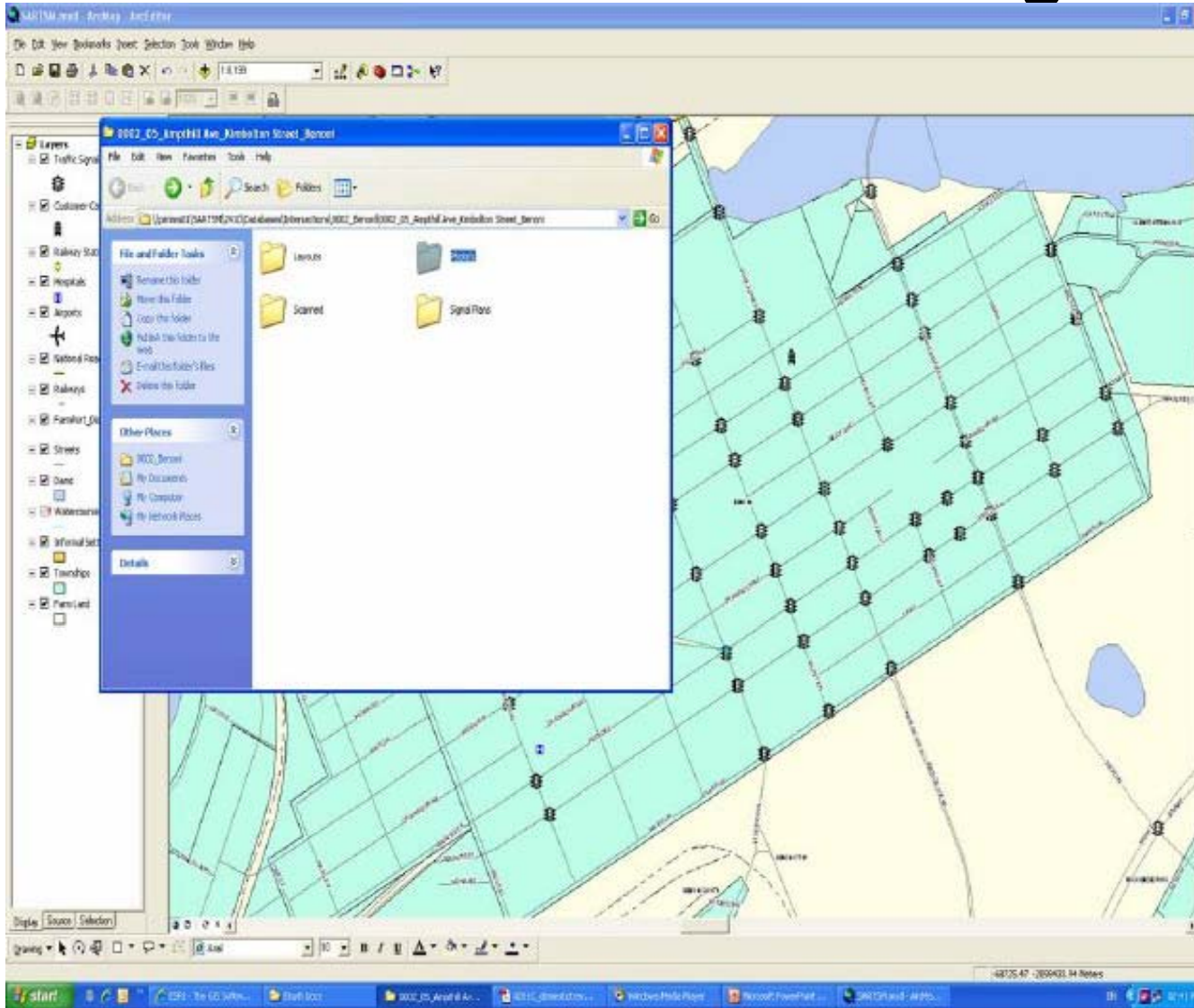
## Arc Map (Admin)

- View
- Query
- Analyse
- Edit



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# Info linked to traffic signal



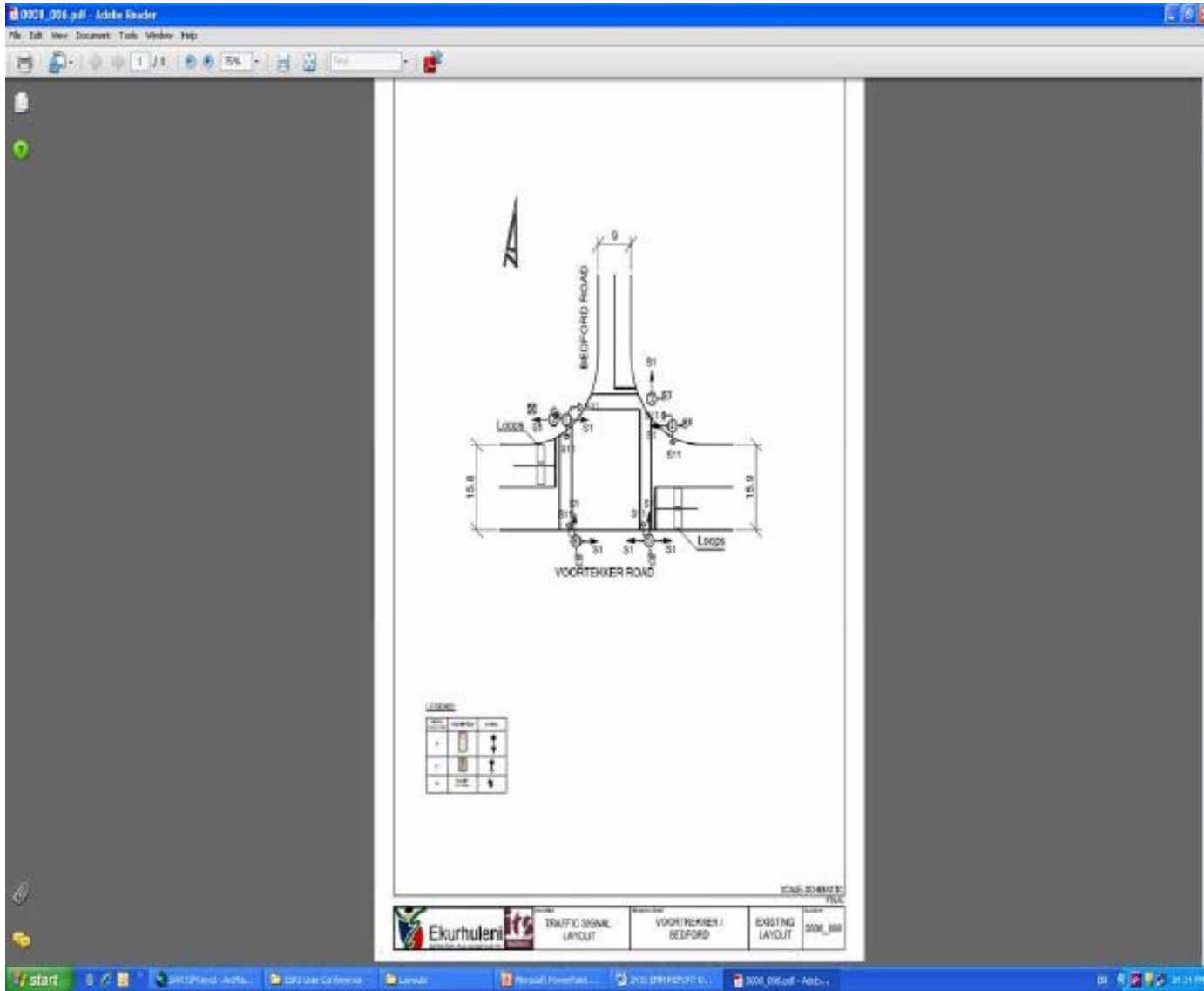
Hyperlinked info:

- Layout plans
- Photos
- Scanned hand drawn intersection sketches
- Signal (timing plans)



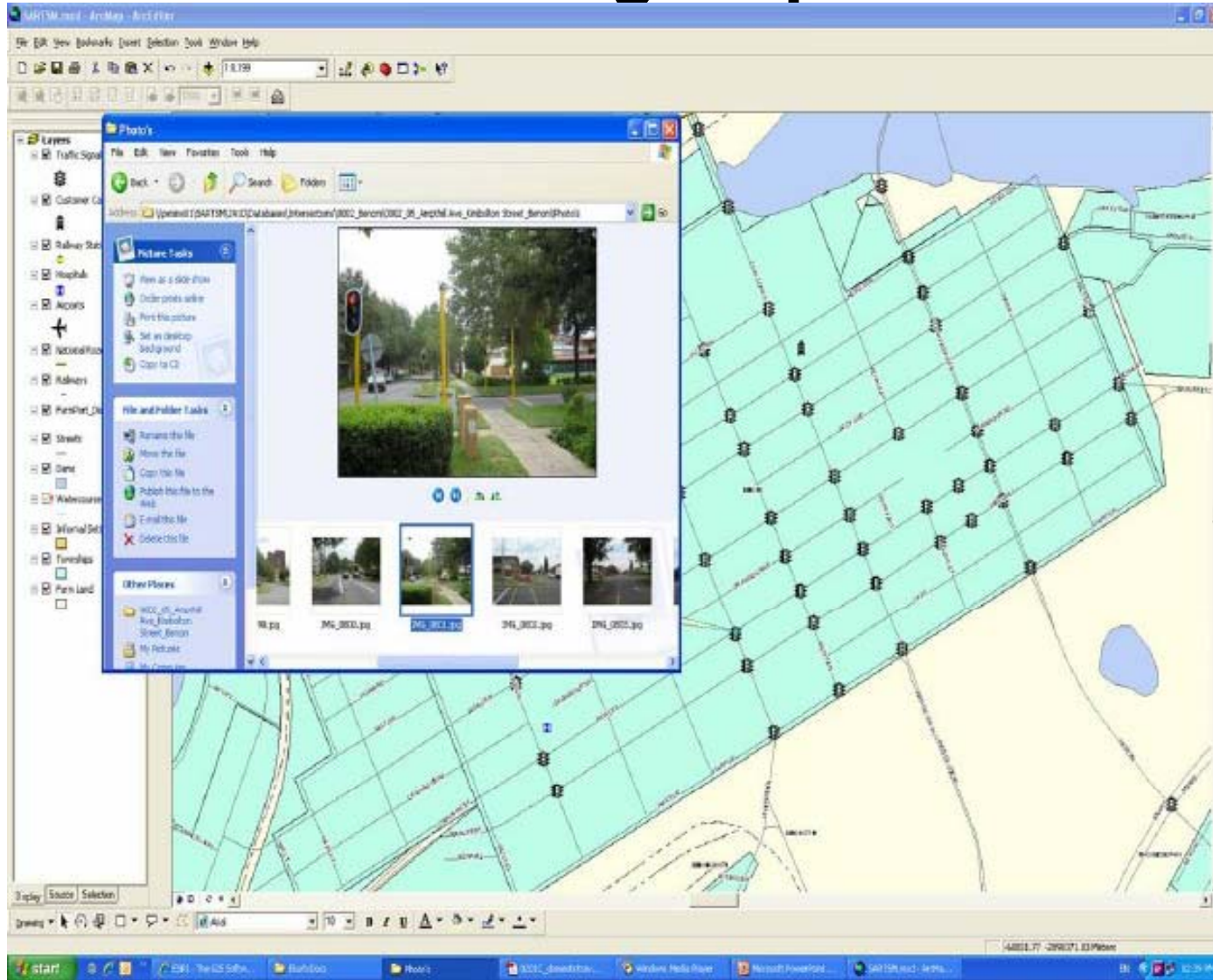
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# Traffic signal layout plan



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# Traffic signal photo



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# Traffic signal timing plan

The screenshot displays the SARTM software interface with a traffic signal timing plan for the intersection of Anphill and West Appr. The plan is organized into several sections:

- Intersection Details:**
  - 1. Intersection: NS Primary Dir
  - 2. Anphill West Appr
  - 3. South Appr West Appr MS EW
  - 4. Ped Crossing location
  - 5. Crossing type
  - 6. Signal groups
  - 7. Pedestrian signal
  - 8. Pedestrian
  - 9. Green pedestrian
  - 10. Flashing red pedestrian
- Signal Stages:**
  - 17. Signal Stages
  - 18. Anal Cities
  - 19. Time periods in form of ddddss:hh:mm - hh:mm
  - 20. Type Time Type Time Type Time Type Sec
  - 21. 12345 00:00 6 08 00:08 07 00:09:24 0
  - 22. 12345 08:30 6 12 00:24 0
  - 23. 12345 14:30

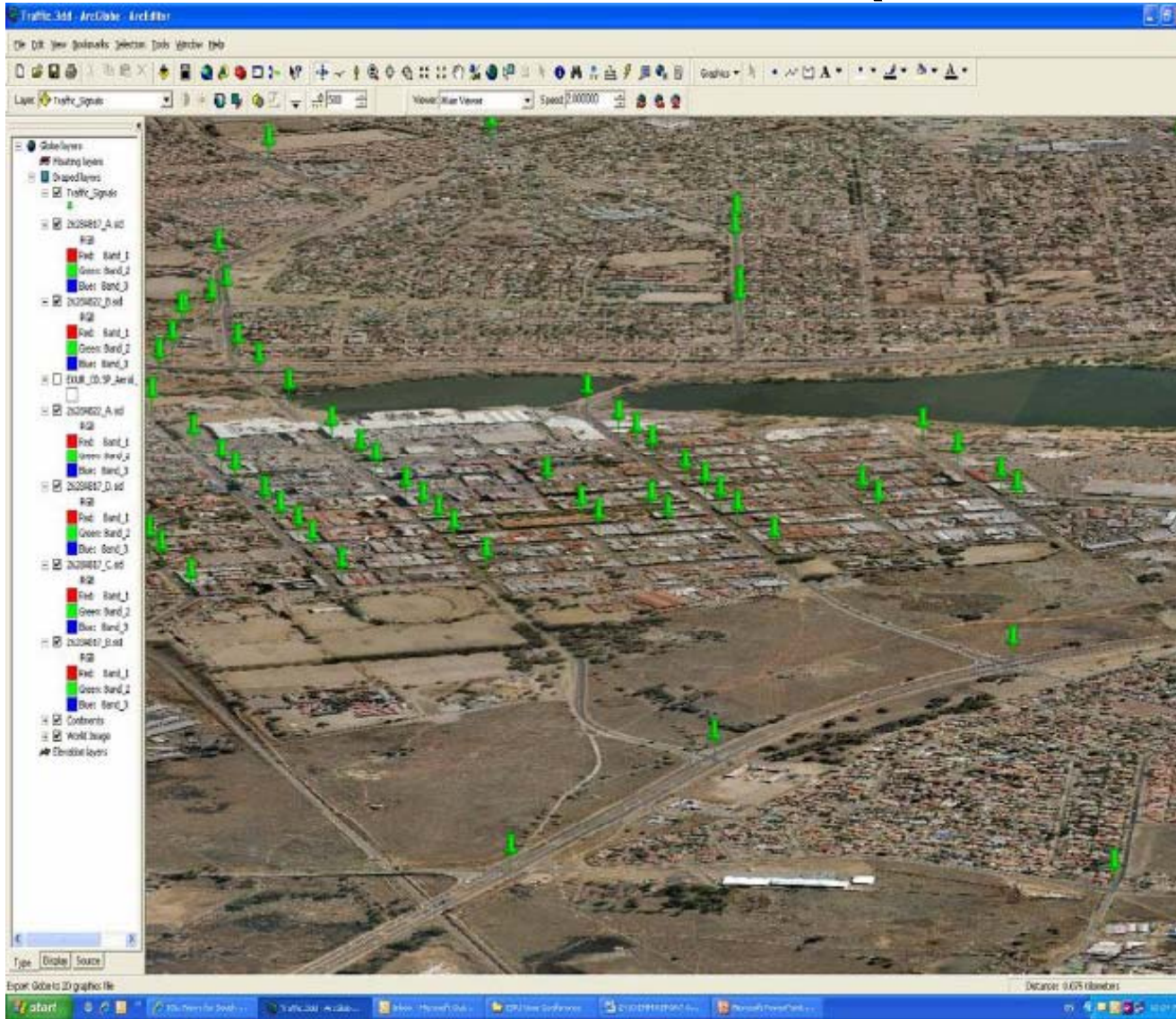
The background shows a map of the intersection area with signal locations marked.



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# Executives (ArcGlobe)



- Fly (area of interest)
- Traffic signals in 3D
- View & Query
- No editing



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# Benefits of the project

- The Municipality has an accurate record of geographic positions of existing traffic signals and their conditions for tracking and maintenance purposes (Traffic signal layer)
- The information that used to be in hardcopy files can now be viewed and interrogated in digital format
- Data is in one GIS database, readily available to other users as well (no more silos)
- Inventory of existing traffic signals makes it easy to budget for traffic signals and identification of areas where signs need to be installed in future



City of  
Ekurhuleni

More information can be obtained from  
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Infrastructure Services: Roads, Transport & Civil Works  
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[MariusH@ekurhuleni.gov.za](mailto:MariusH@ekurhuleni.gov.za)



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**THANK YOU**



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City of Ekurhuleni

City Development Department

Corporate Geo-informatics Division

[SilindileM@ekurhuleni.gov.za](mailto:SilindileM@ekurhuleni.gov.za)

T:+2711-999 4023



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