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.
Location

- Area approx 2000 sqkm
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)
Road networks

- Total = 91 924 road links covering +-9 000km
- Roads = +-6 800km Tarred
  +- 1 900km Gravel
- Traffic Signals = 1007
Highway links = 2404
Street links = 89520
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
existing intersections and assets

<table>
<thead>
<tr>
<th>Intersections</th>
<th>Nr</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Way</td>
<td>759</td>
<td>72</td>
</tr>
<tr>
<td>T-junction</td>
<td>255</td>
<td>24</td>
</tr>
<tr>
<td>Midblock</td>
<td>42</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1056</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poles</th>
<th>Nr</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>6853</td>
<td>88.0</td>
</tr>
<tr>
<td>High</td>
<td>27</td>
<td>0.3</td>
</tr>
<tr>
<td>Cantilever</td>
<td>919</td>
<td>11.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7799</td>
<td>100</td>
</tr>
</tbody>
</table>
## Existing Intersections and Assets (cont)

<table>
<thead>
<tr>
<th>Lamps</th>
<th>Nr</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED</td>
<td>6 396</td>
<td>14</td>
</tr>
<tr>
<td>Halogen/Incandescent</td>
<td>39 284</td>
<td>86</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>45 680</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal Head Type</th>
<th>Nr with Backboard</th>
<th>Nr Without Backboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1-S11</td>
<td>13 037</td>
<td>2 578</td>
</tr>
</tbody>
</table>
Data Presentation

- Arc Map
- Arc Globe (Executives and other users)
- Arc GIS Explorer (Executives)
ArcMap

Arc Map (Admin)
- View
- Query
- Analyse
- Edit

City of Ekurhuleni
Info linked to traffic signal

Hyperlinked info:
- Layout plans
- Photos
- Scanned hand drawn intersection sketches
- Signal (timing plans)
Traffic signal layout plan
Traffic signal photo
Traffic signal timing plan
Executives (ArcGlobe)

- Fly (area of interest)
- Traffic signals in 3D
- View & Query
- No editing
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
More information can be obtained from
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