

# **Leveraging Geospatial Tech for Defence Estates**

**Geointelligence Asia 2018 seminar**

**June 4, 2018**

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**Sr. Addl DGDE**



रक्षा सम्पदा संगठन  
Defence Estates Organisation

# Defence Estates

- Total Defence land: 17.57 lakh acres
- 62 Cantonments (Boards) with 21 lakhs population
- 42 DE field offices, 6 PDs and DGDE
- DE orgn maintains all Def land records
- Introduced GST for re-verification of Def land and transforming Cantonments into “smart”

# GIS of our land

- We have inherited considerable high value urban land from British, Portuguese, ex-State Forces
- Need to physically verify the land and strengthen our land records
- Survey of entire Def land
- Digitization of land records & maps by scanning
- “Raksha Bhoomi”, electronic version of land records

# GIS FOR SECURING LAND

- Compilation of maps, acquisition records. Restoration where required done
- Digitized over one crore pages of land records, & converted to searchable PDF with tag words. Digitally signed.
- FMS for scanned data created in Alfresco. Parallel set made and preserved in AU&RC

# GEOSPATIAL ELEMENTS

- ETS/GPS/DGPS, hardware and software procured (Auto CAD, QGIS)
- Remote sensing. High Resolution Satellite Imagery from ISRO (NRSC)'s 'Bhuvan' application being sourced
- Skilling of staff

# Geo-Spatial Tech in Land Survey

- DEOs through trained Technical Officers in collaboration with users surveyed Defence Land Nation wide first time
- Cantt Boards too surveyed the Cantts
- Objective: to ascertain the extent of Def land and encroachments if any
- Survey along periphery of defence land sites carried out by either ETS or DGPS. No inputs on Non spatial data for Mily Stns
- Maps with boundary Coordinates using AutoCAD generated. Comprehensive Survey reports prepared
- Land reconciliation and analysis made identifying the discrepancies, encroachments, surplus, deficiency if any
- Survey reports shared with users

**11.1.b Based on Survey carried out the following Coordinates were arrived at - Based on UTM Coordinate System, Middle Ground Battery:**

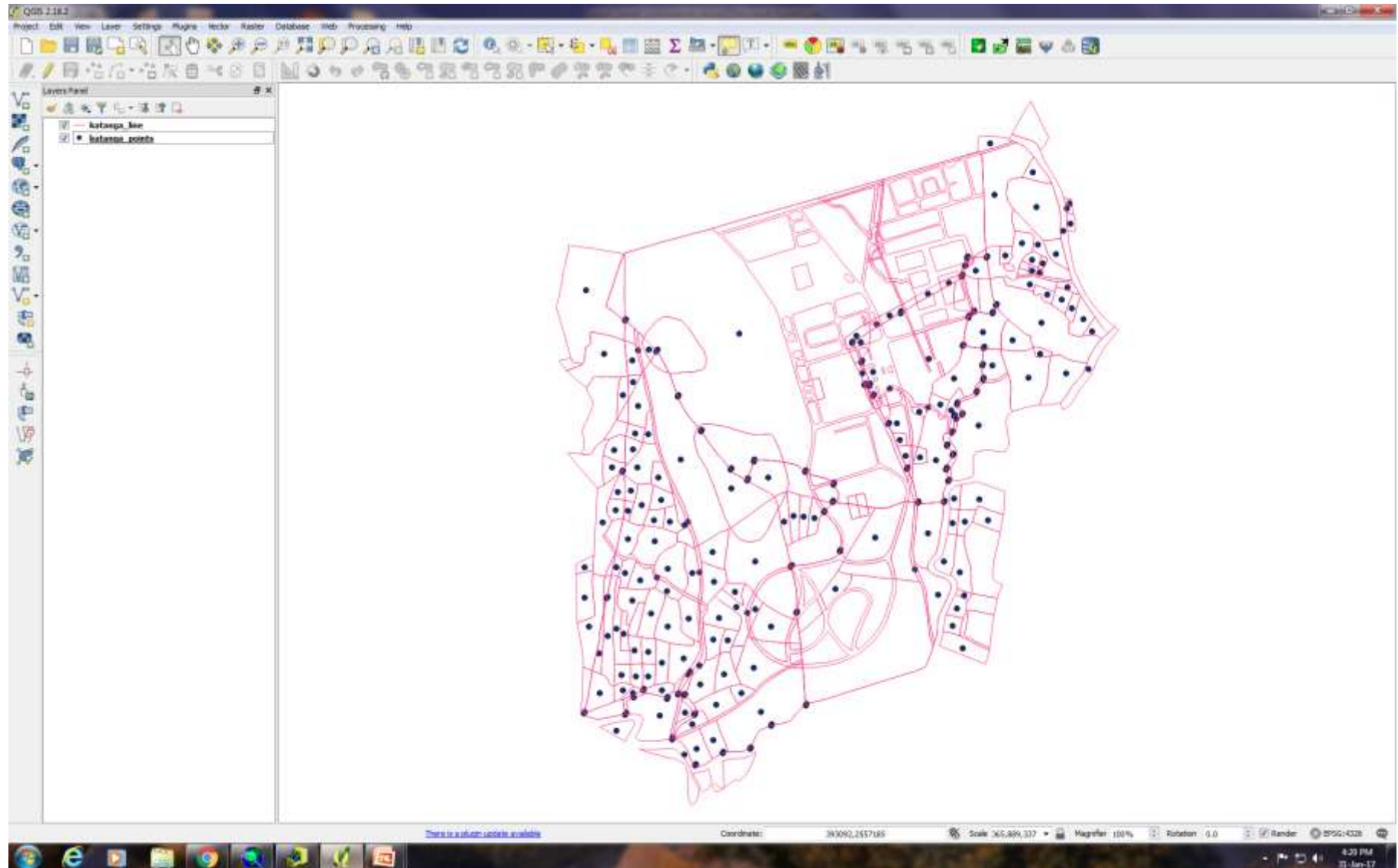
DETAILS OF BEARING & CO-ORDINATES					
PIL LA R NO.	LENG TH	CO-ORDINATES		BEARING	
		EASTING	NORTHIN G	F.B	B.B
P-01	0	281165.077	2117422.91	0	0
P-02	85.718	281250.48	2117415.571	274°54'43"	94°54'43"
P-03	136.16 9	281386.094	2117427.853	264°49'30"	84°49'30"
P-04	98.080	281482.881	2117443.724	260°41'16"	80°41'16"
P-05	98.080	281579.668	2117459.595	260°41'16"	80°41'16"
P-06	106.19 5	281684.835	2117444.856	277°58'40"	97°58'40"
P-07	98.457	281782.385	2117431.519	277°47'7"	97°47'7"
P-08	99.742	281880.446	2117413.282	280°32'8"	100°32'8"
P-09	33.406	281911.634	2117401.313	290°43'7"	110°43'7"
P-10	12.509	281909.479	2117388.991	9°55'10"	189°55'10"
P-11	24.487	281928.193	2117373.198	310°9'42"	130°9'42"
P-12	9.010	281935.924	2117377.826	239°5'35"	59°5'35"
P-13	38.136	281946.166	2117341.091	344°25'14"	164°25'14"
P-14	50.444	281996.012	2117333.35	278°49'39"	98°49'39"
P-15	22.284	281989.073	2117312.174	18°8'30"	198°8'30"
P-16	37.582	282021.43	2117293.058	300°34'24"	120°34'24"
P-17	7.717	282018.435	2117285.946	22°50'29"	202°50'29"
P-18	10.888	282029.322	2117286.051	269°26'55"	89°26'55"
P-19	22.484	282045.209	2117301.961	224°57'28"	44°57'28"
P-20	33.562	282049.894	2117335.194	188°1'27"	8°1'27"
P-21	10.338	282057.628	2117342.054	228°25'38"	48°25'38"
P-22	33.904	282089.277	2117354.213	248°59'2"	68°59'2"
P-23	23.763	282112.802	2117357.57	261°52'49"	81°52'49"
P-24	64.867	282177.423	2117351.921	274°59'46"	94°59'46"
P-25	10.115	282186.238	2117346.961	303°33'28"	123°33'28"
P-26	5.888	282189.703	2117342.2	323°57'20"	143°57'20"

# Bhuvan app in Phase II Sy

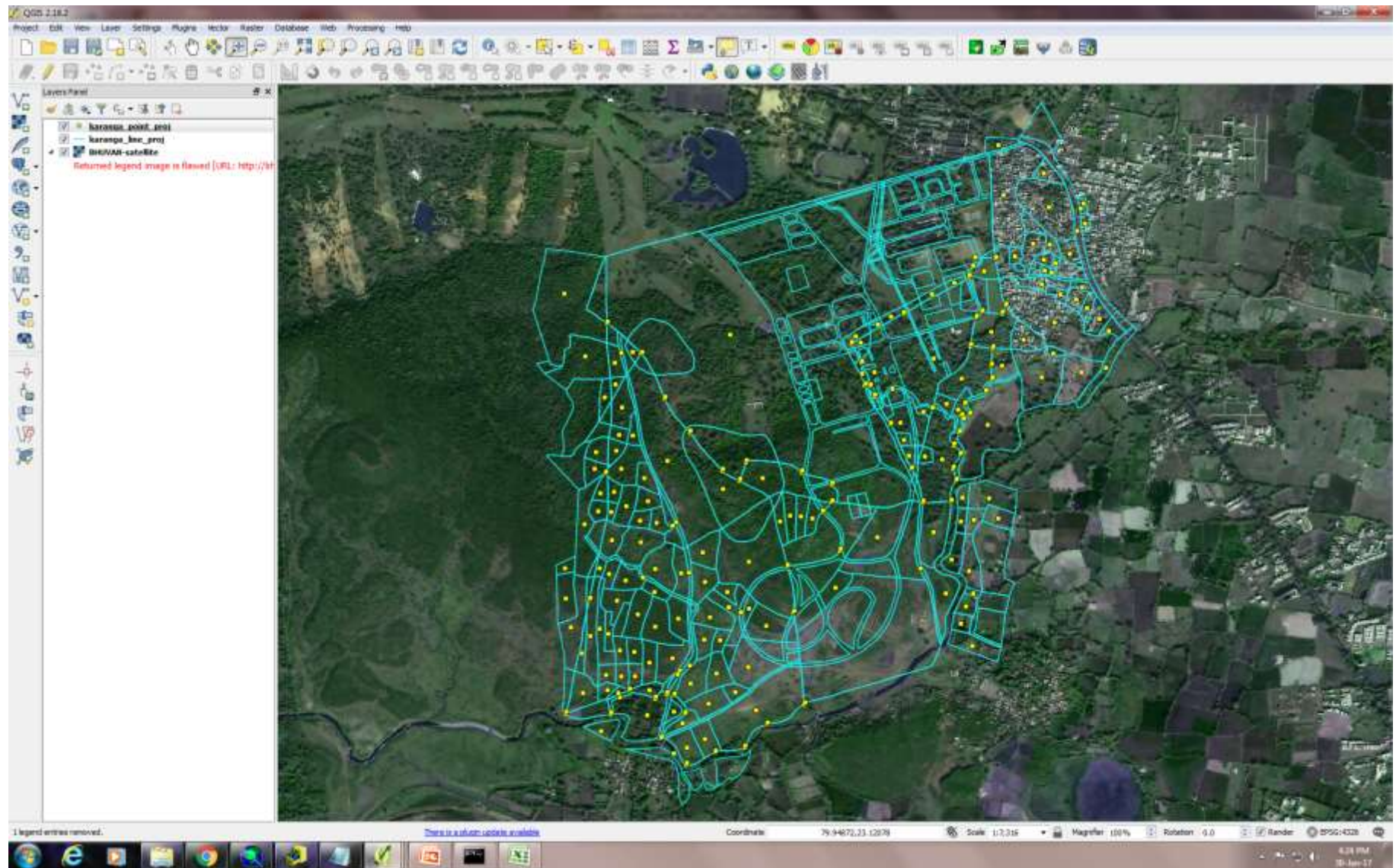
- In Phase II survey of 30 % of Def land each year, sites with discrepancies chosen
- Simultaneously database is being upgraded
- After authenticated Survey Map is generated, it is integrated with Satellite Maps by using BHUVAN Application of NRSC(ISRO) & Latitudes - Longitudes are generated
- RB 5.0 software being made one touch point for entire data set on a piece of Def land by integration of Geo-Coordinates, maps, land records



# Displays the Output in the Map Window after Converting Auto CAD Map into GIS Based Map



# Verification on BHUVAN by Superimposing on Satellite Map





## Verification on BHUVAN












# INS Satvahana – Extract of MLR Entry maintained by DEO Vizag

 <b>सत्यमेव जयते</b>		<b>EXTRACT FROM THE MILITARY LAND REGISTER, VISAKHAPATNAM CIRCLE</b>																										
<b>RECORD ID:DVIZG10014</b>																												
<b>(I) LAND UNDER THE MANAGEMENT OF : Navy</b>																												
1	Volume / Page No	01 / 5																										
2	Serial No / Case No / Scheme No	11/N/472/																										
3	Situation of Holding	<table border="1"> <thead> <tr> <th>State</th> <th>ANDHRA PRADESH</th> <th>District</th> <th>Visakhapatnam</th> <th>Taluk / Mandal / Visakhapatnam (Mauza area (in Acres)</th> </tr> </thead> <tbody> <tr> <td>Village</td> <td>Survey no</td> <td>Area</td> <td>Unit</td> <td></td> </tr> <tr> <td>Visakhapatnam Port Trust Area</td> <td>Zone Nos.IIA, IIB, IX</td> <td>426.587</td> <td>Acres</td> <td>426.587</td> </tr> <tr> <td></td> <td>Sub Total</td> <td>426.587</td> <td></td> <td>426.587</td> </tr> <tr> <td></td> <td>Grand Total</td> <td>426.587</td> <td>(pencil entry)</td> <td>426.587</td> </tr> </tbody> </table>		State	ANDHRA PRADESH	District	Visakhapatnam	Taluk / Mandal / Visakhapatnam (Mauza area (in Acres)	Village	Survey no	Area	Unit		Visakhapatnam Port Trust Area	Zone Nos.IIA, IIB, IX	426.587	Acres	426.587		Sub Total	426.587		426.587		Grand Total	426.587	(pencil entry)	426.587
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4	Purpose for which used at present	Others / Naval Base and Naval Dockyard																										
5	Area	426.587 acres Private:0.0000 State:0.00																										
6	Date and other particulars of acquisition including cost if known	Visakhapatnam Port Trust land purchased at a cost of Rs.97,67,743.74 paise and possession taken over on 21-3-1967. Authority: Govt of India, Ministry of Defence letter No.DW/2026/II/NHQ/263-S/D(N-II) dated 2-3-1964 and Corrigendum No.DW/2026/II/NHQ/297-S/D(N-II) dated 6-3-1964.																										
7	Remarks including present value per Acre, if known etc.	--																										
8	Changes ( 1 to 10 )	--																										

**Station:** Visakhapatnam

**Date:** 04 Jun 2018

**Defence Estates officer  
Visakhapatnam Circle**



# Ex: INS Satvahana – Integration of GIS based MAP with MLR Records

RAKSHA BHOOMI 5.0

DIRECTORATE GENERAL OF DEFENCE ESTATES, CIRCLE

Welcome,admin@01011800

Basic Data

Admin

GLR Entries

GLR Reports

MLR Reports

GIS

Logout

MLR::Geographic Information Systems

Office Name \*

Select Office

Select Record Id \*

Search for a Record Id

Select Imagery \*

Select

VIEW

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# Output of RB 5.0 for MLR Entry of INS Satvahana – DEO Vizag



**After integration with Lat-Long, the Geo-Coordinates details have been entered in Computerised Defence Land Records i.e Raksha Bhoomi 5.0**



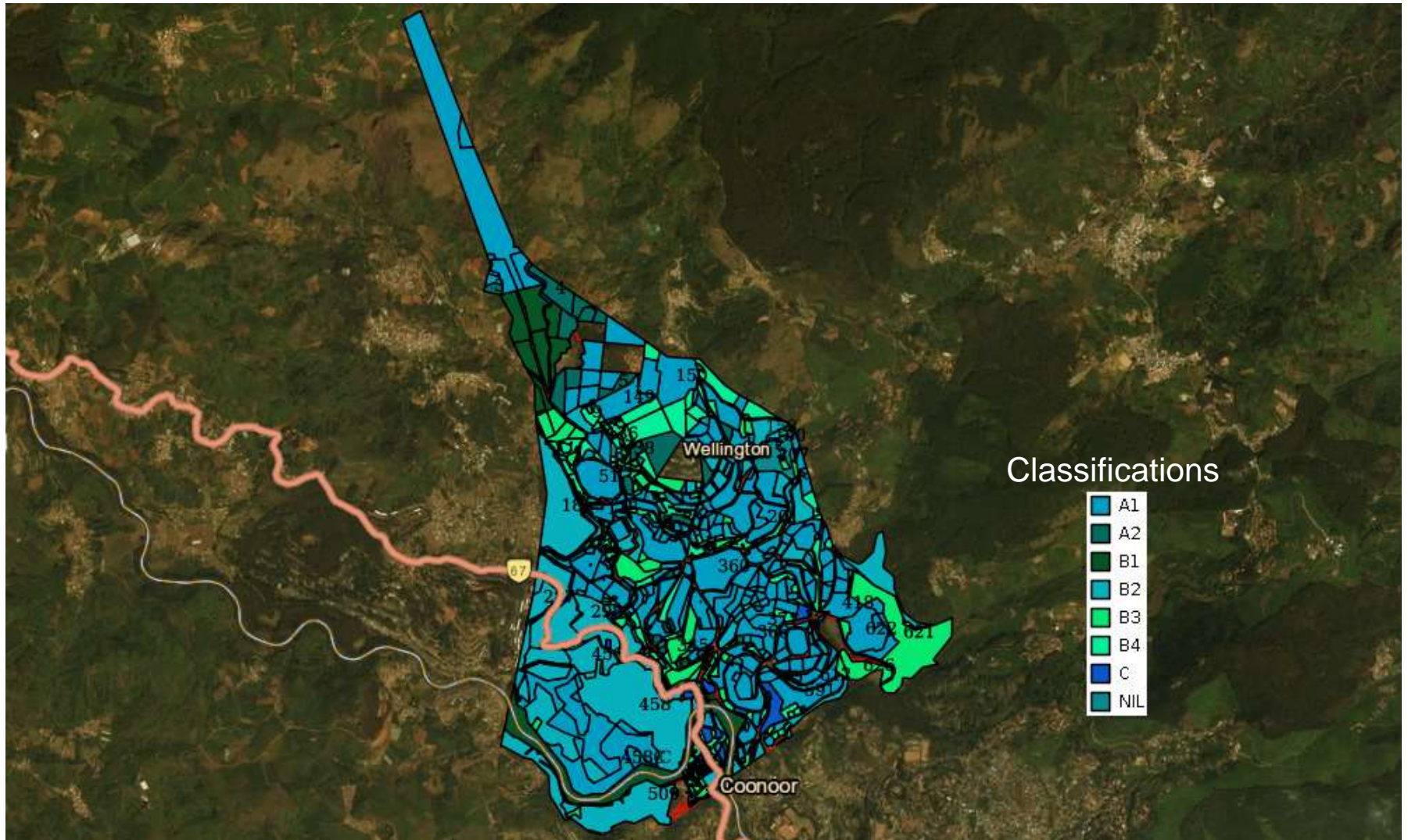
# GST for 'smart' Cantts

Components	Smart solutions
Adequate water supply	Smart meters, leakage detection,
Sanitation, SWM, underground sewerage	GPS on vehicles, reducing generated waste
Urban mobility	Traffic monitoring
Sustainable environment	Rooftop solar power, LED , water harvesting
Good governance	Public info, grievance redress, digital payments,
Better land use	Town planning, regulating constructions
Education	Smart classes

# Application of GST in Survey & 'smart' Cantts

- It allows to tag Places of Interest (POI) of various category along with the description
- User can contribute in creating rich maps by adding Point, Line, Area information for ex: Boundary Pillar, Survey No periphery, Land Polygon
- Extensive capture of non-spatial data in cantonments. Search Facility for any Places of Interest (POI)
- POI added by selecting Categories like Drainage,
- Water pipelines, Roads & Street lights
- Filtering based on requirements like date, geographical features, man-made features
- Facilitates users to download the interpreted/delineated drawings along with customised attributes

# Ex: Map of Wellington Cantonment – Classification of Land as per Management



Thank You