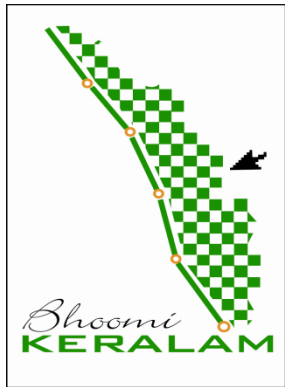


Bhoomi Keralam

– The Land Reforms/ records digitisation Project



***Kerala Land
Information Mission***



National E-Governance Award Winner -2005 Project





Kerala Land Information Mission

● **Bhoomi Keralam Project**

- SPV to complete the resurvey of the State in 3 years
- To digitize all the existing textual and spatial records and their updation
- To prepare accurate, transparent and continuously updated land records conforming to WGS-84 datum
- To provide spatial database/GIS for other depts for planning and other applications
- And finally, on-line registration and on-line mutation and delivery of host of services over the web to meet objectives of NLRMP (Land Titling System)



Bhoomi Keralam

- The basic concepts

- Govts' interest to protect public land first; ayacut fixing by department; quality of survey of registered land ensured by the land holder
- Survey stones to be planted in reg'd land holding by the land owner; stones in all Government land.
- Department staff to supervise and ensure quality of work and redress complaints; Survey to be done by the survey assistants (Contractual employees) mainly
- Open areas by aerial photogrammetry; Tree covered areas to be completed through ETS (Ground) survey
- Complete transparency, 'right to be heard' enshrined



Kerala

- Total Area -38863 sq.km
- Revenue area – 28317 sq.km
- Forest Area -10546 sq.km
- Survey Villages – 1604
- Resurveyed (not updated)- 140
- Under resurvey – 140
- To be resurveyed – 719
- Resurvey (area wise)
 - Field work in 18700 sq.km completed
 - 9617 sq.km still remaining untouched

Resurvey Started in 1966:
continuing for 45 years –
making life of common
man miserable



3500 sq km area paddy fields, about 25 % urbanised area; about 10 % water bodies; roads, rails, open grounds are also there



The System existed

- **Using Chains and theodolite**

- Original survey in 1900's by British Survey of India & provincial kingdoms
- Resurvey partly using conventional process and few villages using total stations
- Records available but they are not into any Co-ordinate system

- **Using Total Stations**

- No field records except the eye sketch.
- Again no co-ordinate system or standards
- Just replacement of Chain/cross staff by ETS

- **Slow process**
- **Erroneous records**
- **non-transparent methods**



Equipments & Facilities.....

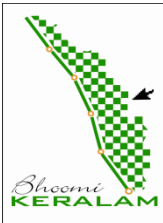


**Electronic
Total Station**



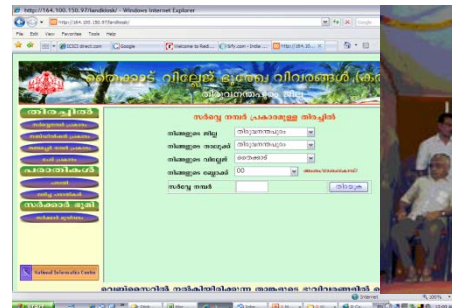
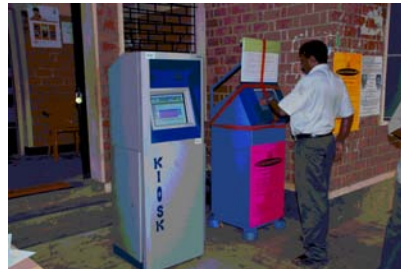
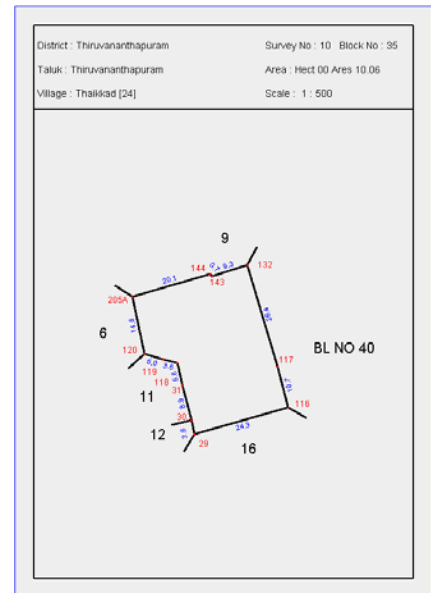
Diff.GPS

Equipment*	Stock (Units)
GPS Sets	8
ETS	121
Computers	348
Printers	62
A0 Plotter	14
A0 Scanner	1



Thycaud Pilot Project...

- A feasibility project started in May 2007
- Field work completed in 3 months
- Office work completed in 4 months
- Complete Digital -First to use GPS, ETS & computerised data
- Implemented with very few complaints
- Peoples' participation
- Multimode dissemination



Hybrid Survey Methodology

being adopted by the Mission



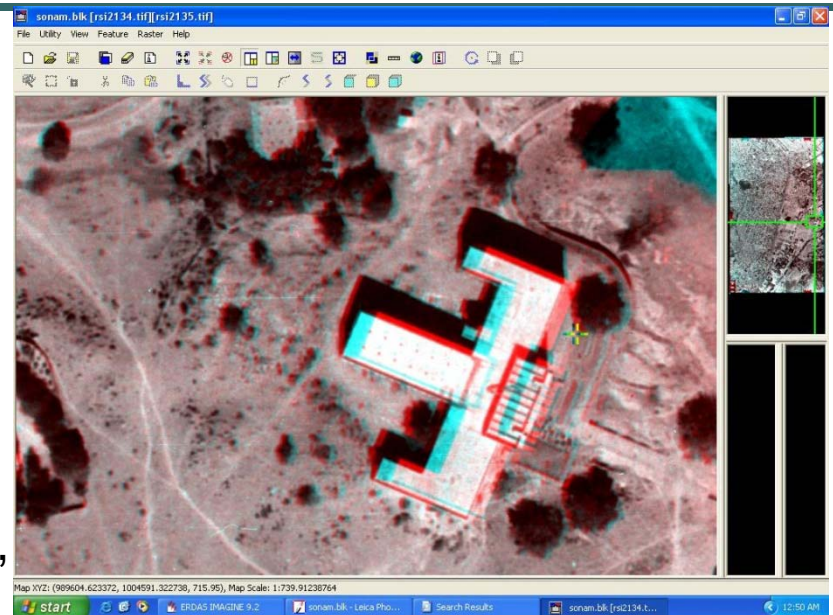
Hypothesis, Technology....

● Hypothesis

- 20-30% sketches of the State to be generated from Photogrammetry
- Less than 15 % revenue land with Government, to be surveyed & verified by department staff
- Majority land as private holdings, the accuracy to be verified by owners

● Hybrid survey

- Photogrammetry +
- Ground survey



**Pilot Project To be undertaken
in Palakkad in assn. with SOI**



Aerial Photo

- taken under NUIS (Survey of India)



21 October 2
AM



Feature extraction

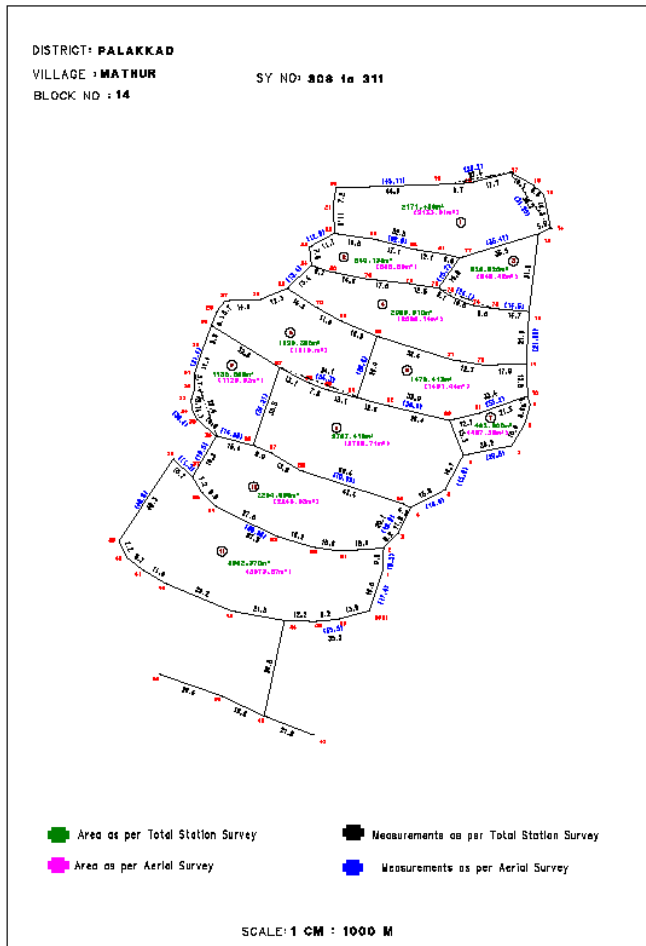
- on basis of land management boundaries



Comparison Sketch generated through aerial survey & ETS

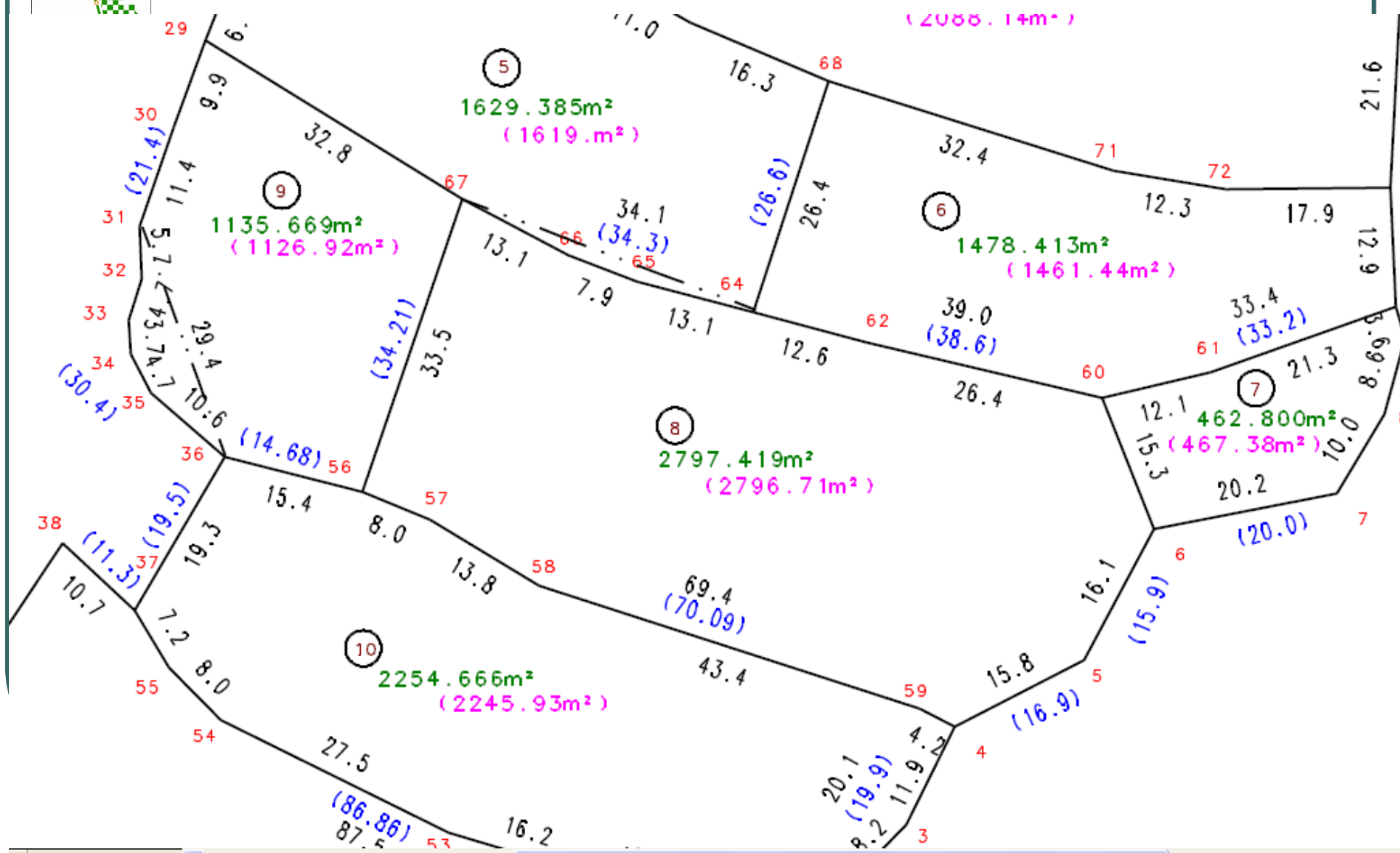


Please purchase PDFcamp Printer on <http://www.verypdf.com/> to remove this watermark.



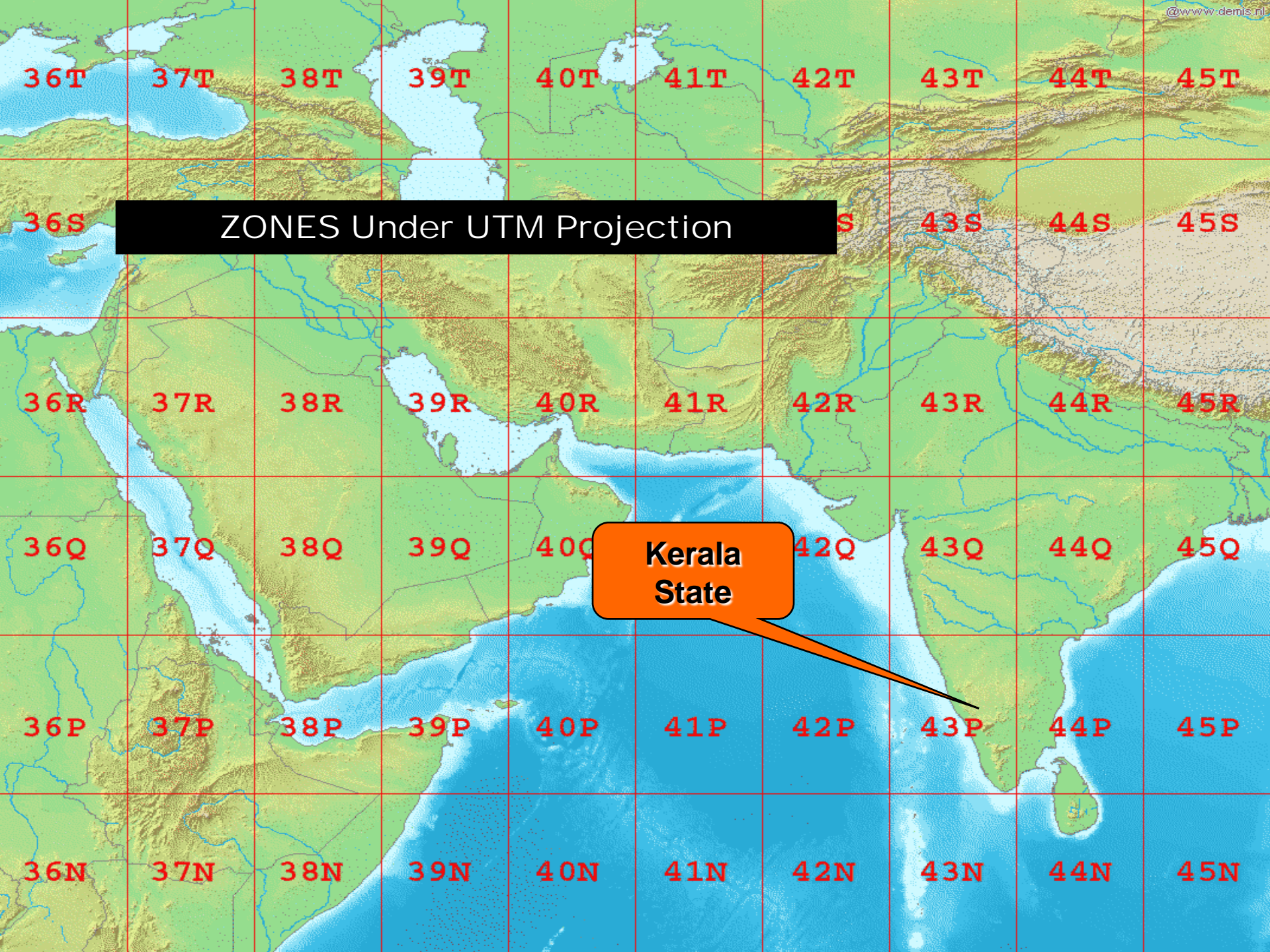


A closer look at measurements



Bringing
KERALA LAND RECORDS

to WGS-84 datum/TM Projection



ZONES Under UTM Projection

Kerala
State

13°

Minimum
Longitude
line

Maximum
Latitude
line

Maximum
Longitude
line

**Arbitrary
Origin with
Easting
70,00,000 &
Northing
40,00,000**

10.5°N, 76° E

Latitude
line of
origin

Minimum
Latitude
line

Longitude line of origin

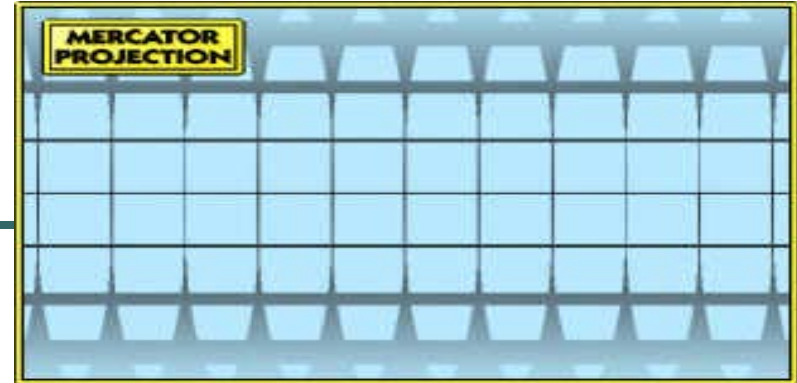
78°

8°

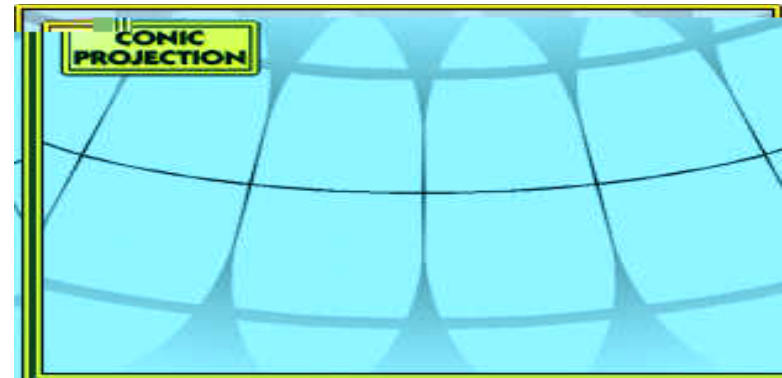


Distortions

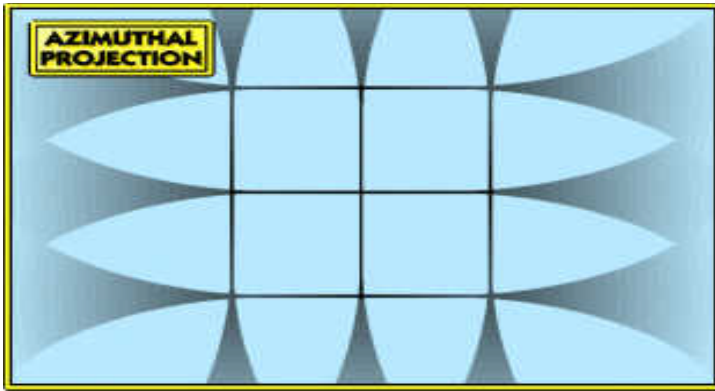
In three main projections



Cylindrical



Conic

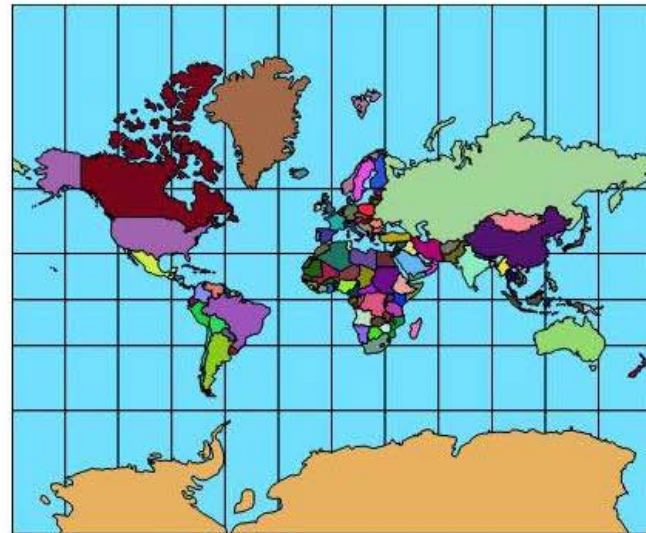
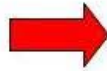
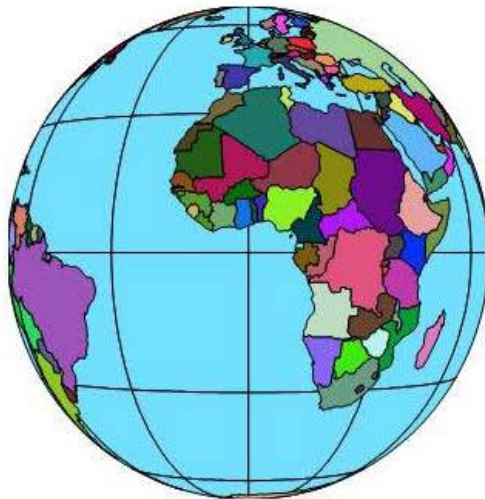


Azimuthal

Minimum distortions in cylindrical Projection, Hence Transverse Mercator projection which is cylindrical selected



Mercator Projection





UTM zone Disintegration

**24 DEGREES TO BE DIVIDED
INTO 1 DEGREE SHEET (1:250,000)**

12°

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X

8°

72°

C43E

78°



UTM zone Disintegration

**1° SHEET IS DIVIDED
INTO 15'x15' SHEET(1:50,000)**

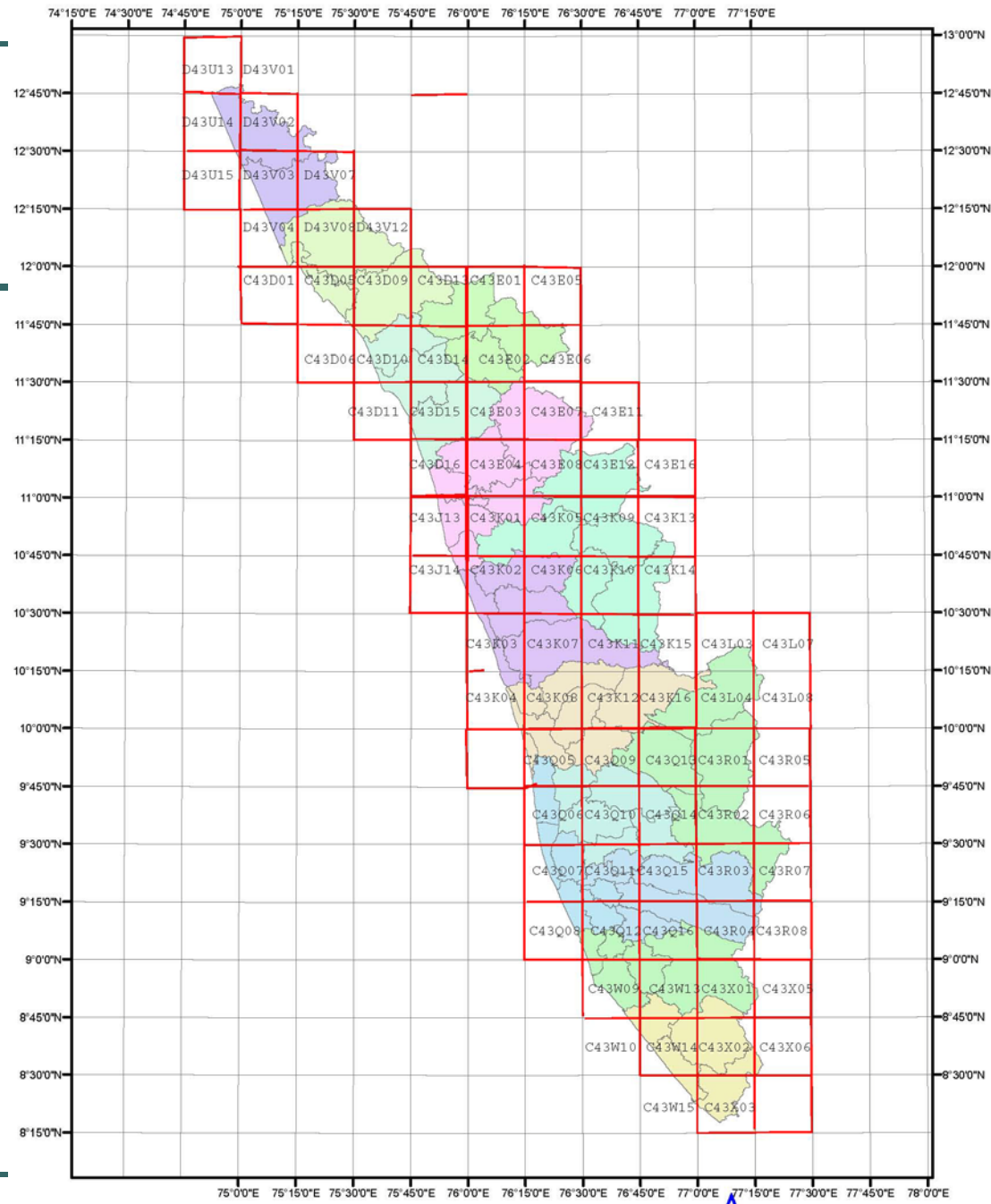
12°	01	05	09	13
	02	06	10	14
	03	07	11	15
11°	04	08	12	16
	76°	C43E09		77°



Kerala

- the block concept

**Blocks in
1:50000 scale of
Survey of India**





UTM zone Disintegration

**15' SHEETS DIVIDED
INTO 3' SHEETS (1:10,000)**

12°

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

11°45'

76° 30'

C43E09M

76° 45'



UTM zone Disintegration

**3' SHEET DIVIDED
INTO 36" SHEET (1:2000)**

11°54'	1	6	11	16	21
	2	7	12	17	22
	3	8	13	18	23
	4	9	14	19	24
11°51'	5	10	15	20	25
	76° 36'				76° 39'

C43E09M17



UTM zone Disintegration

**36" SHEET DIVIDED
INTO 6" SHEETS (1:1000)**

11°53'24"

1	7	13	19	25	31
2	8	14	20	26	32
3	9	15	21	27	33
4	10	16	22	28	34
5	11	17	23	29	35
6	12	18	24	30	36

11°52'48"

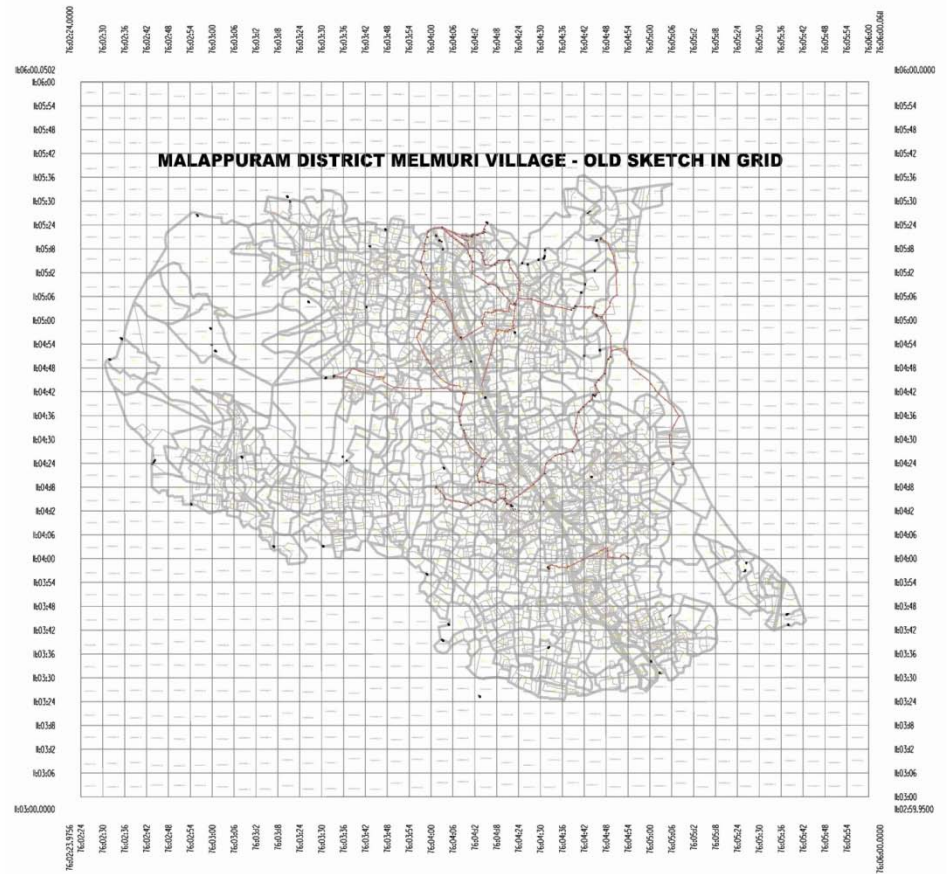
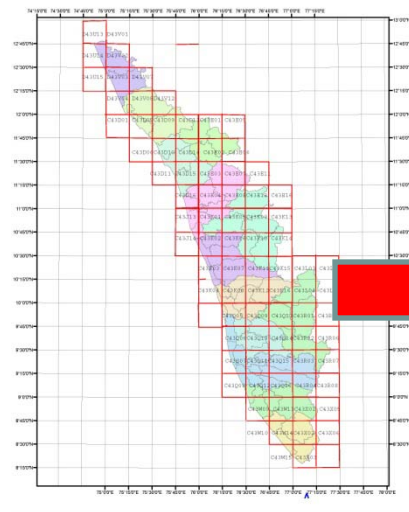
76°37' 48"

76° 38' 24"

C43E09M17_26



Disintegration of Grids



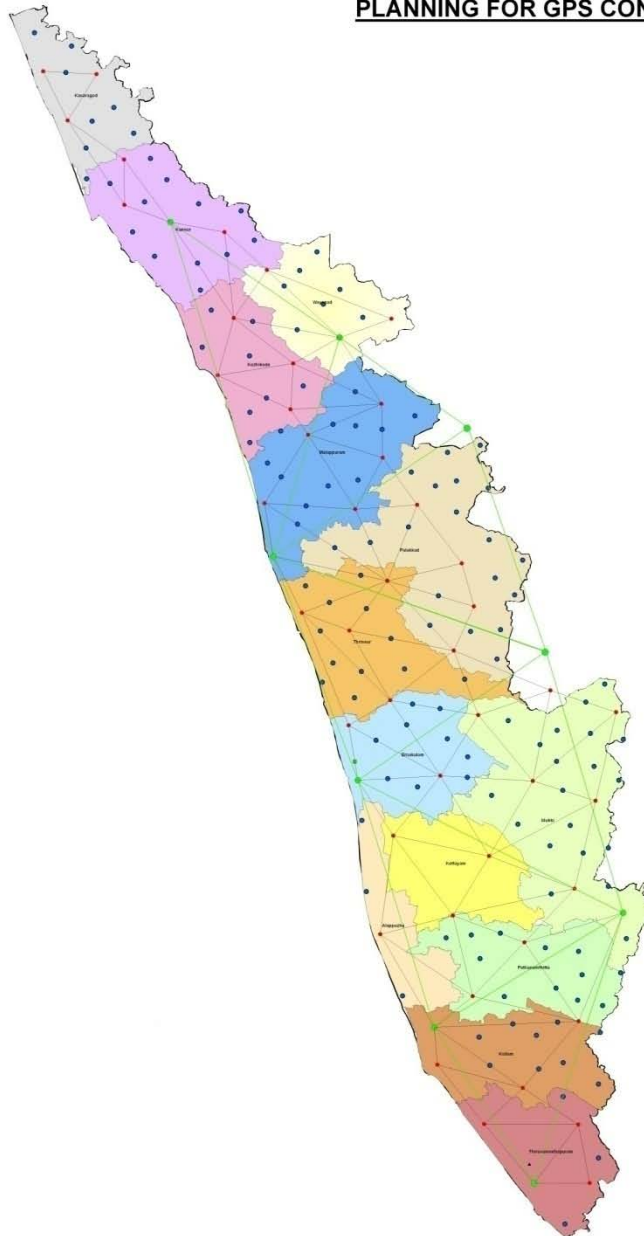


GC Network

**Extension
of Survey of
India GCPs**

Sunday, October 21,
2012

PLANNING FOR GPS CONTROL FOR KERALA



INDEX

- FIRST
- SECOND
- THIRD
- PERMANENT
- ▲ PERMANENT TRI

40 20 0 40 80 120 Kilometers

Scale-1:2,500,000

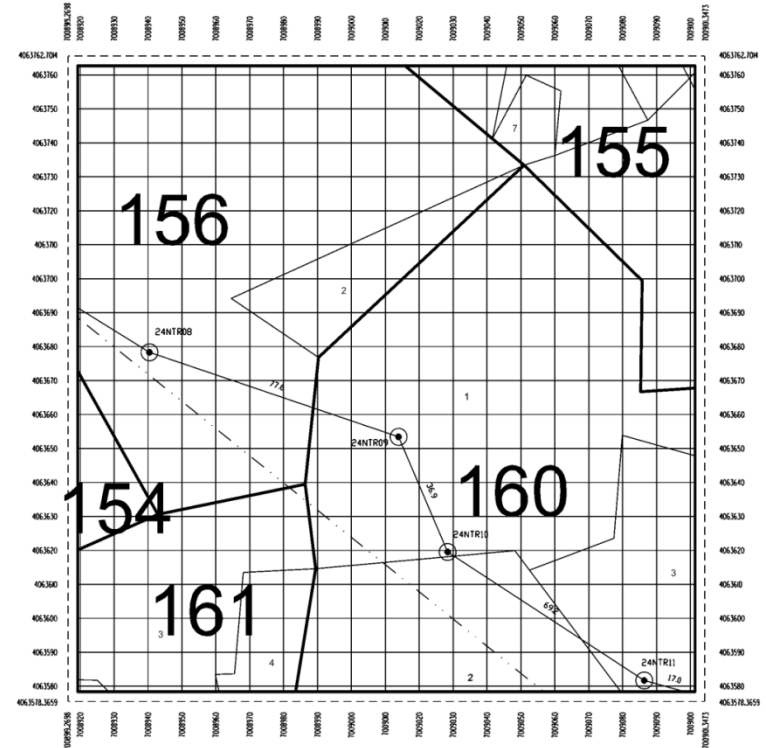




**Total Station
Data Plotted on
this sheet over
the vectorised
old FMB**

DISTRICT MALAPPURAM
TALUK ERNAD

SHEET NO C43E04Q18_09



Checked by : _____

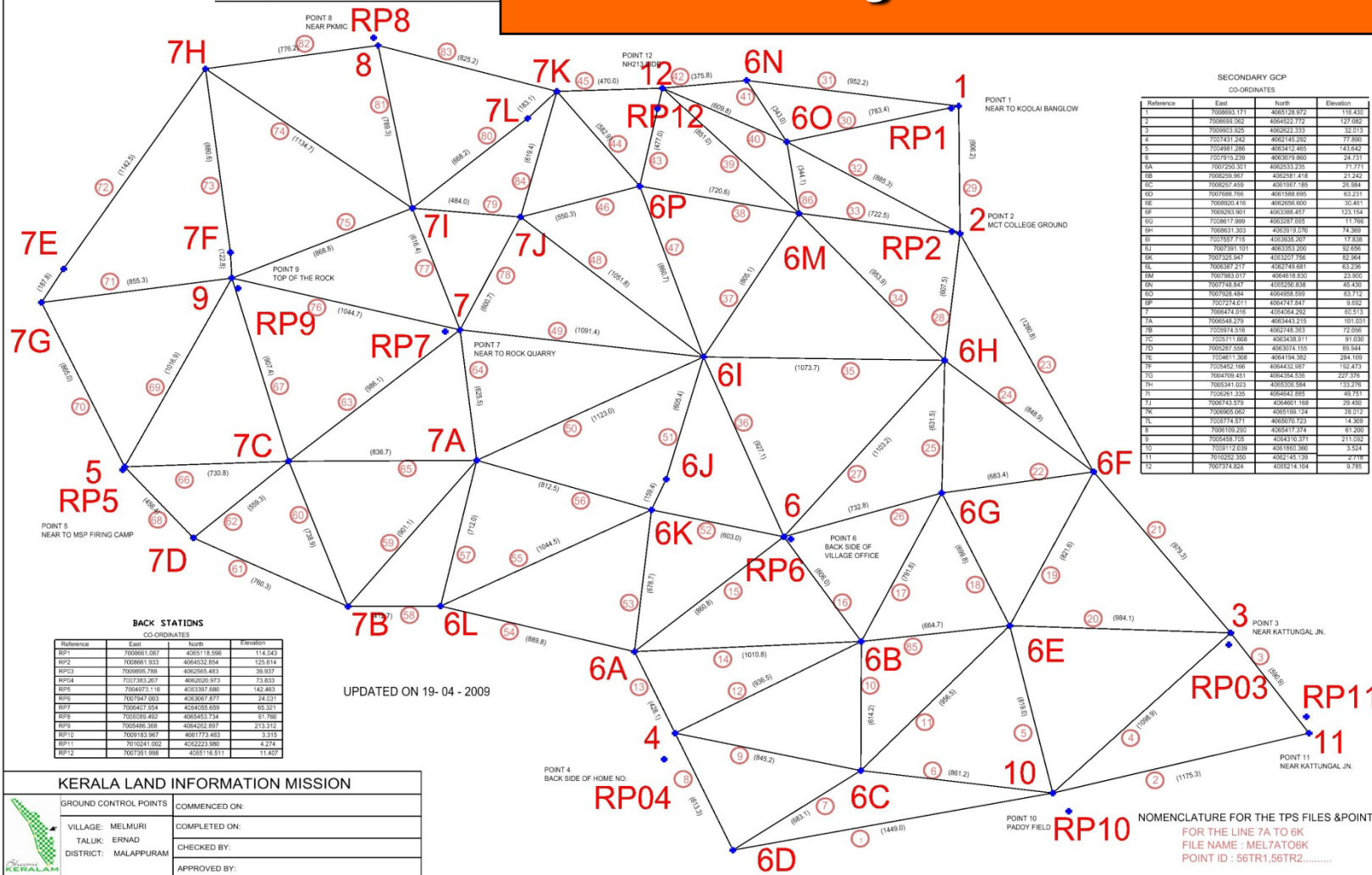
C43E04Q18.02	C43E04Q18.08	C43E04Q18.14
C43E04Q18.03	C43E04Q18.09	C43E04Q18.15
C43E04Q18.04	C43E04Q18.10	C43E04Q18.16

Point ID	EASTING	NORTHING	HEIGHT
----------	---------	----------	--------

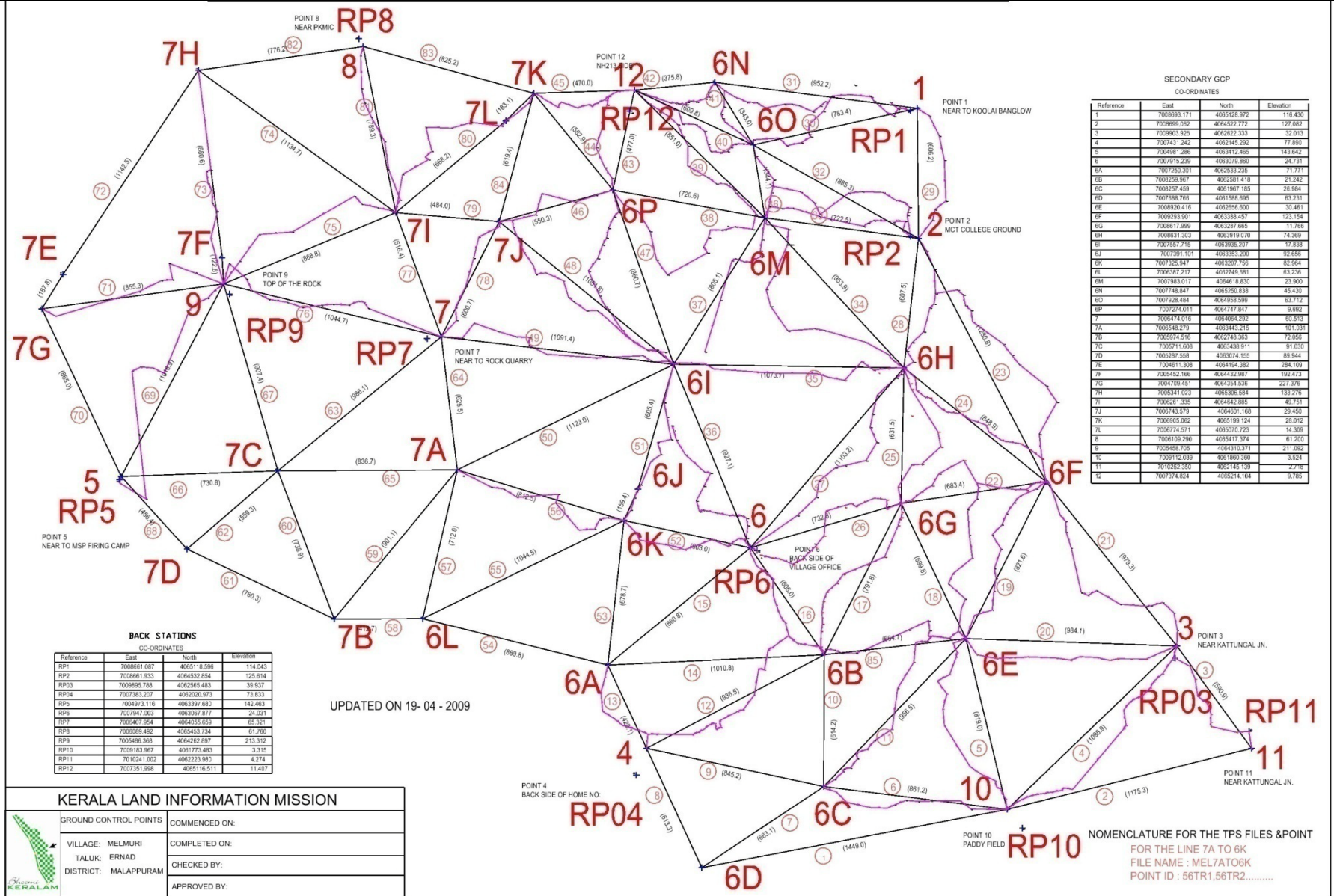
24NTR08	7008940.420	4063678.319	75.026
24NTR09	7009013.909	4063653.430	86.180
24NTR10	7009028.376	4063619.526	93.856
24NTR11	7009086.3712	4063581.7075	107.8478

Secondary GCP Network

MALAPPURAM DISTRICT ME



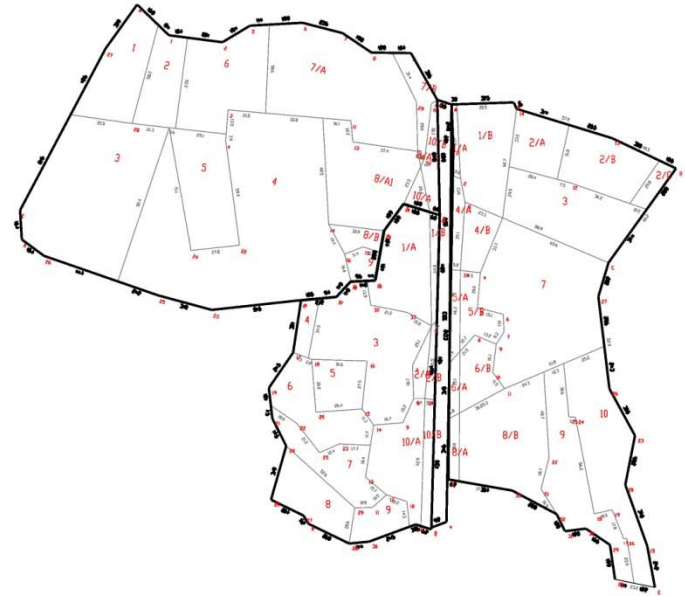
Secondary Ground Control Points Connected using Electronic Total Stations (Traverse) to get Tertiary CPs





Mosaiced FMBs

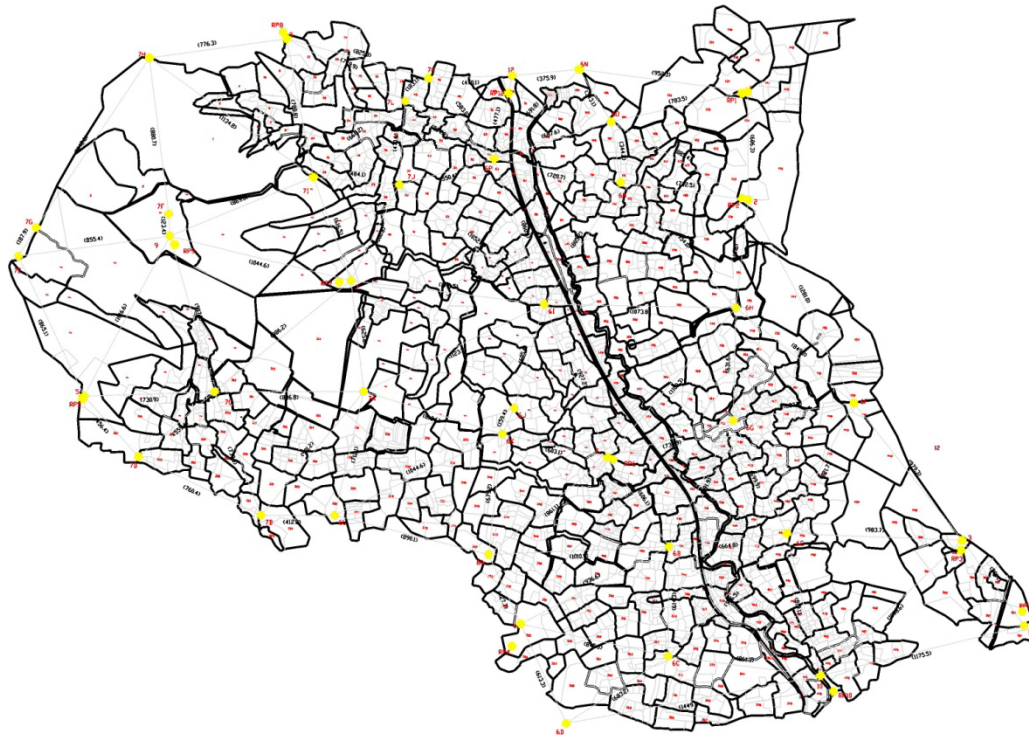
**Vectorised FMBs
are stitched in
Microstation;
forced
mosaicing
(dimensions will
change)**





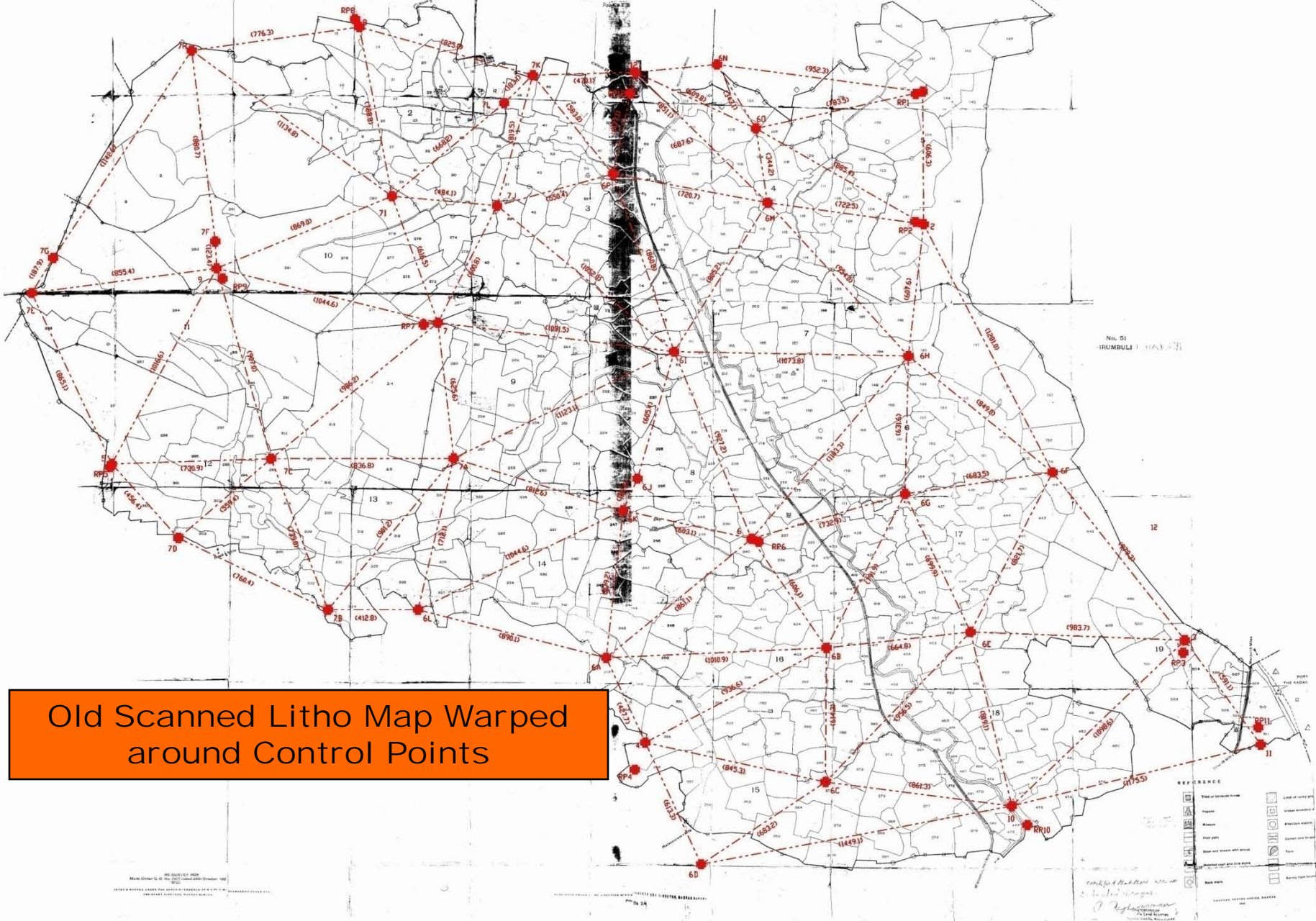
Vectorised Village Map warped around GCPs

MALAPPURAM DISTRICT MELMURI VILLAGE - VECTOR MAP WARPED WITH GROUND CONTROL POINTS

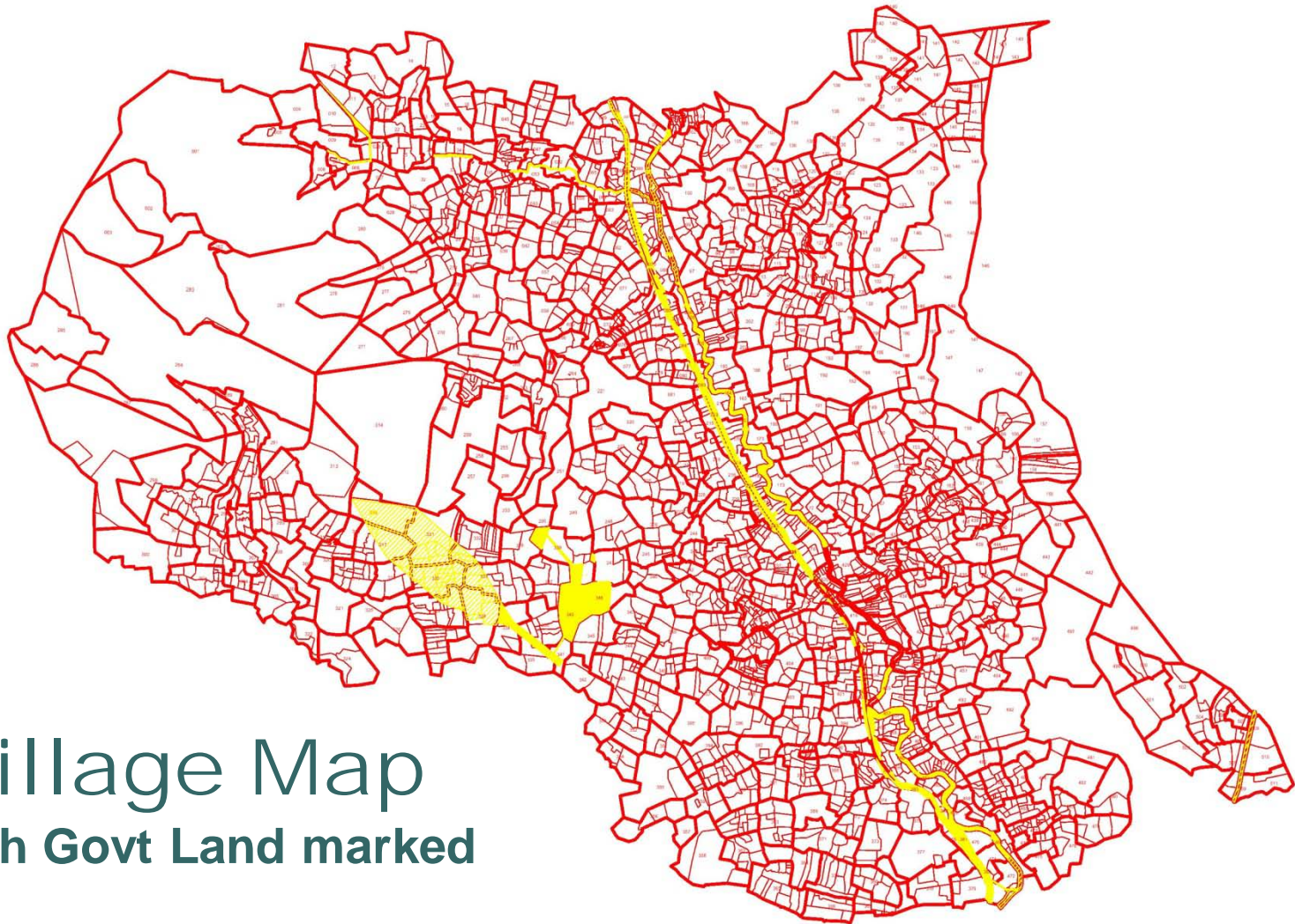
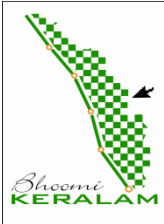


[illegible]

Old Scanned Litho Map Warped around Control Points



MALAPPURAM DISTRICT MELMURI VILLAGE



Village Map
with Govt Land marked

**Super
imposed over
Satellite
images for
location
survey**

**Shift from actual
boundaries; but helps
in recognition
of old points**





Field Sheet

with Old FMB & Ref.Points

**Old stones
Identified using
“stake out”
program of ETS**

**ETS data plotted
on this sheet in
the field
itself**



KERALA LAND INFORMATION MISSION

FIELD DRAWING SHEET

SCALE 1:1000

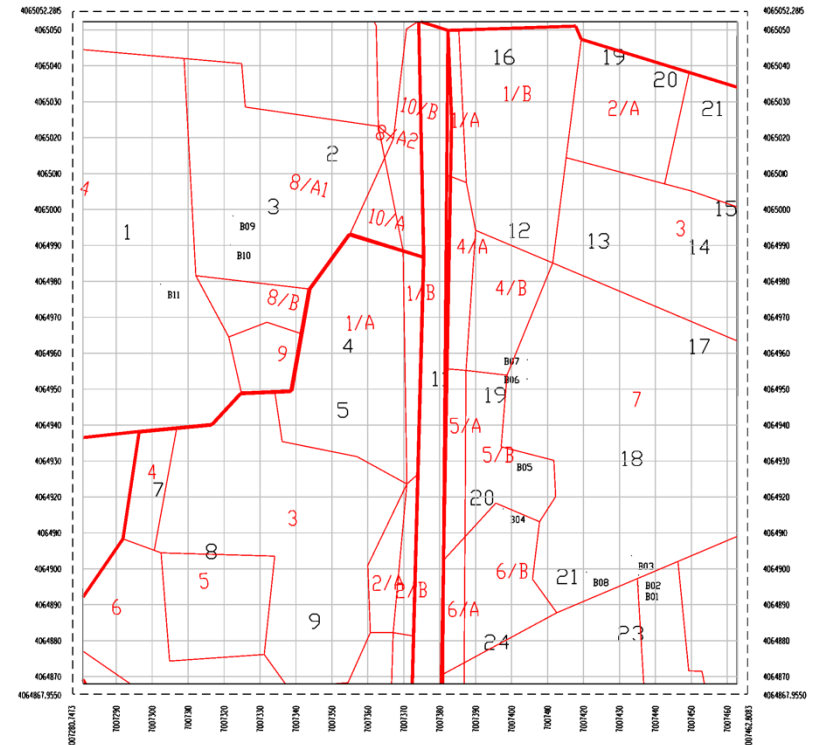
FIELD SEASON 2009

DISTRICT MALAPPURAM

TALUK ERNAD

VILLAGE MELMURI

SHEET NO C43E04Q07_26



Commenced on: _____

Finished on : _____

Demarcated by: _____

Prepared by : _____

Checked by : _____

Sheet Index

C43E04Q07_19	C43E04Q07_25	C43E04Q07_31
C43E04Q07_20	C43E04Q07_26	C43E04Q07_32
C43E04Q07_21	C43E04Q07_27	C43E04Q07_33

Coordinates of control points

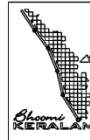
Point ID EASTING NORTHING HEIGHT



Field Sheet

with Total Station Data

The points marked and joined then & there based co-ordinates obtained from ETS using pencils



KERALA LAND INFORMATION MISSION

FIELD DRAWING SHEET

SCALE 1:1000

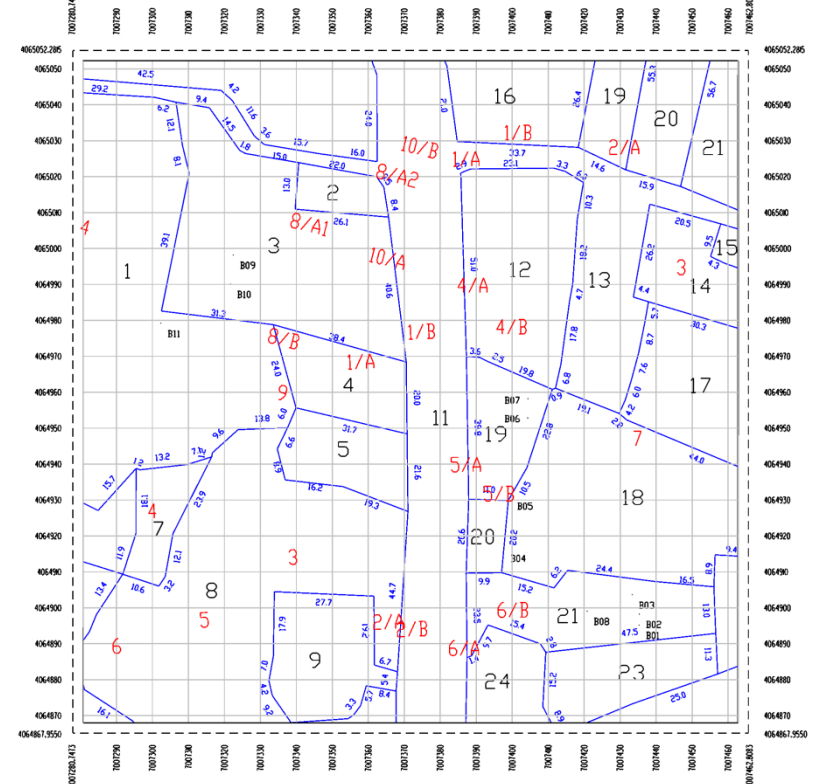
FIELD SEASON 2009

DISTRICT MALAPPURAM

TALUK ERNAD

VILLAGE MELMURI

SHEET NO C43E04Q07_26



Commenced on: _____

Finished on : _____

Demarcated by: _____

Prepared by : _____

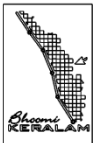
Checked by : _____

Sheet Index

C43E04Q07_19	C43E04Q07_25	C43E04Q07_31
C43E04Q07_20	C43E04Q07_26	C43E04Q07_32
C43E04Q07_21	C43E04Q07_27	C43E04Q07_33

Coordinates of control points

Point ID EASTING NORTHING HEIGHT



KERALA LAND INFORMATION MISSION FIELD DRAWING SHEET

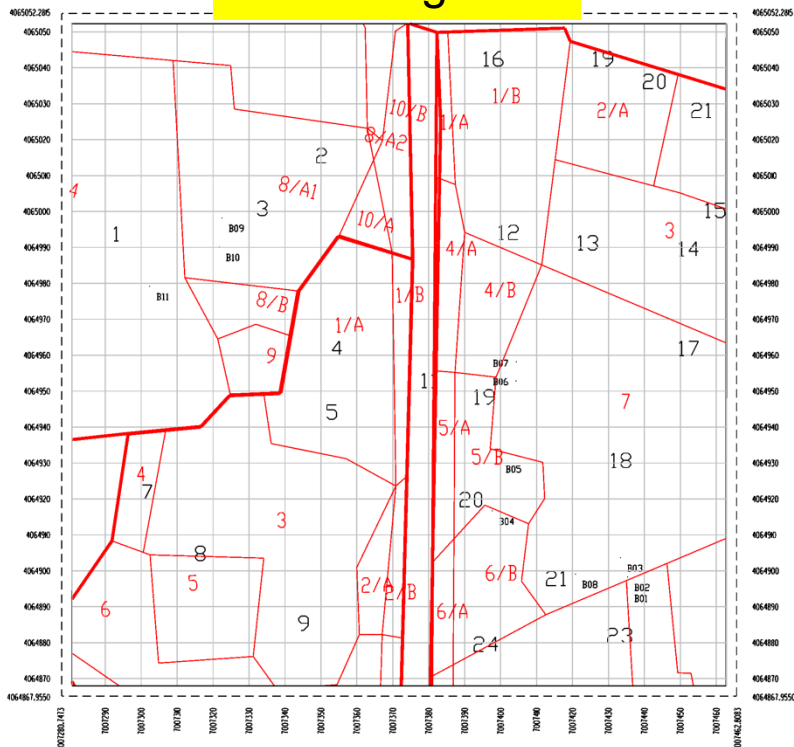
SCALE 1:1000
FIELD SEASON 2009

DISTRICT MALAPPURAM
TALUK ERNAD

VILLAGE MELMURI

**Original survey
sketch digitised**

SHEET NO C43E04Q07_2



Commenced on: _____

Finished on : _____

Demarcated by: _____

Prepared by : _____

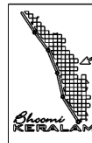
Checked by : _____

Sheet Index

C43E04Q07_19	C43E04Q07_25	C43E04Q07_31
C43E04Q07_20	C43E04Q07_26	C43E04Q07_32
C43E04Q07_21	C43E04Q07_27	C43E04Q07_33

Coordinates of control point

Point ID EASTING NORTHING HEIGHT



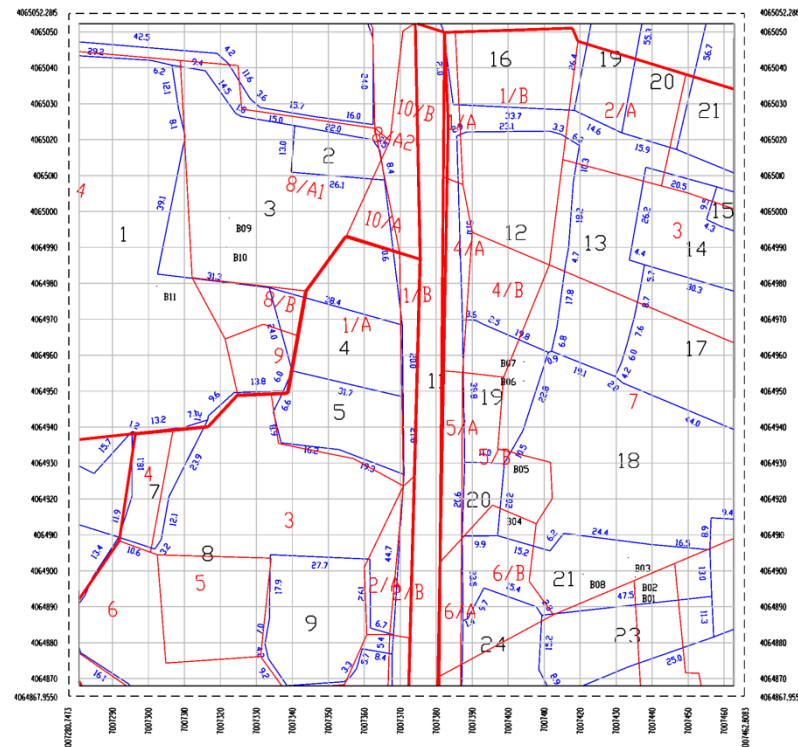
KERALA LAND INFORMATION MISSION FIELD DRAWING SHEET

SCALE 1:1000
FIELD SEASON 2009

DISTRICT MALAPPURAM
TALUK ERNAD

VILLAGE MELMURI

SHEET NO C43E04Q07_26



Commenced on: _____

Finished on : _____

Demarcated by: _____

Prepared by : _____

Checked by : _____

**Original survey sketch &
New ETS survey data
superimposed**

C43E04Q07_2	C43E04Q07_27	C43E04Q07_33
-------------	--------------	--------------

Field Records

DEMARICATION SURVEY

SCALE 1:1000
FIELD SEASON 2009

DISTRICT MALAPPURAM
TALUK ERNAD
VILLAGE MELMURI

SHEET NO C43E04Q07 26

Commenced on: _____
Finished on: _____
Demarcated by: _____
Prepared by: _____
Checked by: _____

Village Boundary rock mark (old)
Khandam Boundary Rock Mark (old)
Village Boundary stone (old)
Khandam Boundary Stone (old)
Control Points (NEW)

Sheet Index

C43E04Q07 16	C43E04Q07 26	C43E04Q07 31
C43E04Q07 26	C43E04Q07 31	C43E04Q07 36
C43E04Q07 31	C43E04Q07 36	C43E04Q07 41

Coordinates of control points

Point ID	EASTING	NORTHING	HEIGHT

KERALA LAND INFORMATION MISSION(Sample)

District Malappuram	Taluk Ponani	Village Melmuri	Locality Inderanagar	Grid sheet No C43E04Q12_07
Datum WGS 84	Projection Transverse Mercator	Co-ordinates of Station		
Origin	Longitude 76°00'00"	Grid Easting 7004356.435	Geographical Latitude 10° 30'00"	Longitude
Scale factor 0.9996000	Latitude 10° 30'00"	Northing 4056784.045	Height 135.7m	Height
Name of the Observer		Date of observation From to		
Reliability/Stability <input checked="" type="checkbox"/> Most Reliable <input type="checkbox"/> Probably hold <input type="checkbox"/> May not hold		Status <input type="checkbox"/> Old point <input checked="" type="checkbox"/> Newly Created		
Stamping 		Setting Type <input checked="" type="checkbox"/> Bed Rock <input type="checkbox"/> Granite pillar <input type="checkbox"/> Concrete pillar <input type="checkbox"/> Others		
Photo of the Control Point				
<p>General Location and Approach (Sample)</p> <p>Station is engraved on a bed rock/Granite pillar/Concrete pillar as per the above marking and in the above locality. It is about 34m NE of building No 43 of ward 2 and about 4.5 m SW of a well.</p> <p>Station can be approached from a road junction of NH1 and road leading to above locality. It can be approached by any transport upto the point. It false in grid sheet No C04E12Q14_02.</p>				
Sketch				

Form Topo 1

Kerala Land Records

Village Name

SEASON.....

Locality.....

Grid Sheet No

[illegible]

Name & Signatures of Observer.....
Date.....

Name & Signatures of Recorder.....
Date.....

Note: While filling up the point code **1st two digits** should be **Parcel ID**. **Third Digit** should specify whether it is parcel(P), Road(R), Building(B), Canal(C), Well(W) etc and **balance digit** should specify the point number for parcel
Example: 02P09 WHERE 02 IS PARCEL ID, P is Parcel 09 is the point no for measurement

Co-ordinates of Start point, Reference point, Old stones and permanent points created in a grid should be filled in Red

To start with always have a check reading by measuring distance between occupied point and Reference point. If distance is less than 2 cms accept the point else check the co-ordinates.

Page No.....

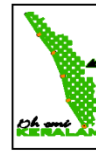
Kerala Land Information Mission									
Attribute Collection Sheet									
District		Taluk		Village		Locality		Grid Sheet No	
As per Old Records									
Name of the Pattadar as per BTR					Father's Name				
Address as per Records									
House No		Ward No		Locality		Municipality			
Old Survey No		Sub Div No		Thandapar No		Area			
As per New Records									
Name of the Pattadar					Father's Name				
Present Address									
House No		Ward No		Locality		Municipality			
Telephone No		Name of 2nd Pattadar if any			Name of 3rd Pattadar if any				
Whether tribal		Whether SC		Passport No		Voter ID			
<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No							
Nature of holding									
<input type="checkbox"/> Donated <input type="checkbox"/> Inherited <input type="checkbox"/> Patta <input type="checkbox"/> Trust <input type="checkbox"/> others									
Type of Holding			If Govt						
<input type="checkbox"/> Private <input type="checkbox"/> Govt			<input type="checkbox"/> School <input type="checkbox"/> College <input type="checkbox"/> Hospital <input type="checkbox"/> Vet Disp <input type="checkbox"/> Road <input type="checkbox"/> Canal <input type="checkbox"/> Police Stn						
			<input type="checkbox"/> River/stream <input type="checkbox"/> Electric sub Station <input type="checkbox"/> Others						
Source of Irrigation					Land Use				
<input type="checkbox"/> Canal <input type="checkbox"/> Stream <input type="checkbox"/> Bore well <input type="checkbox"/> Well					<input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial				
Nature of Agriculture									
<input type="checkbox"/> Paddy <input type="checkbox"/> Plantation <input type="checkbox"/> Barren <input type="checkbox"/> others <input type="checkbox"/> Industrial <input type="checkbox"/> Others									
Commercial									
<input type="checkbox"/> Small Scale Industry <input type="checkbox"/> Large scale Industry <input type="checkbox"/> Shop <input type="checkbox"/> Shopping Complex									
Whether Building Exists			If Yes						
<input type="checkbox"/> Yes <input type="checkbox"/> No			Building No		Plinth area		Water Connection No		
Electric Connection No			Type of Construction						
			<input type="checkbox"/> Brick/stone <input type="checkbox"/> Mud bricks <input type="checkbox"/> No floors						
Water Supply									
<input type="checkbox"/> Municipal Tap <input type="checkbox"/> Private Well <input type="checkbox"/> Panchayat Well <input type="checkbox"/> Whether building is Connected to road <input type="checkbox"/> Yes <input type="checkbox"/> No									
For Official Use									
Temporary Parcel ID					Permanent Parcel ID				
Resurvey Block No									
Confirm if attributes agree with the old records <input type="checkbox"/> yes <input type="checkbox"/> No									
Signatures of Survey Officer									



Verification Sheet issued to all landholders

**7 notices
during survey**

**Land holders
to file appeals
before 3 levels
of Appeal
Committees**



കേരളം ലാന്റ് ഇൻഫർമേഷൻ മിഷൻ

റീസർവ്വേ വെരിഫിക്കേഷൻ ഷീറ്റ്

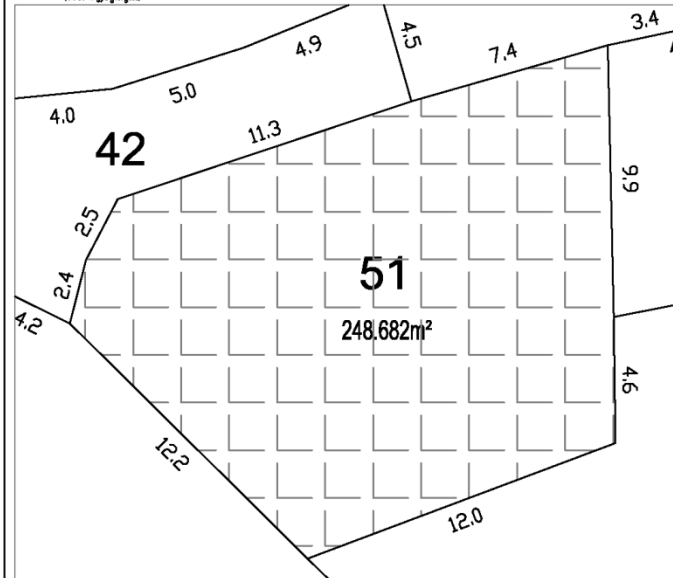
FIELD SEASON 2009

ജില്ല : തിരുവനന്തപുരം
താലൂക്ക് : തിരുവനന്തപുരം
വില്ലേജ് : വഞ്ചിയൂർ
പഴയ സർവ്വേ നമ്പർ :
റഫറൻസ് നമ്പർ :
വീട്ട് നമ്പർ :
ഗ്രിഡ് ഷീറ്റ് നമ്പർ :

പട്ടാമേരുടെ പേര് :
പിതാവിന്റെ/ഭർത്താവിന്റെ പേര് :
അഡ്രസ്സ്:

വസ്തുവിന്റെ വിസ്തീർണ്ണം.....Acre.....CentHectare.....Are.....Sqm

ഇലക്ഷൻ കാർഡ് നമ്പർ:
(നം. എഴുതുക)



ഭൂമിയുടെ തരം (✓ചെയ്യുക)	
പുരയിടം-ഗാർഹികം	
പുരയിടം-വ്യവസായികം	
നൈവയൽ/നിലം	
പട്ടാമേരുടെ (തോട്ടം)	
മറ്റുള്ളവ (വിശദമാക്കുക)	

ഐ.ഡി നമ്പർ(പട്ടാമേരി)	
ഇലക്ഷൻ കാർഡ്	
റേഷൻ കാർഡ്	
പാസ്പോർട്ട്	

കൈവശക്കാരന്റെ പേരും വിലാസവും	
------------------------------	--

അവകാശരേഖയുടെ ഇനം *	
വിലയാധാരം	
കോടതി വിധി	
റവന്യൂ റിക്കവറി/വേലം	
പിൻതുടർച്ച	
ലാൻഡ് അസൈൻമെൻഡ്	
ലാൻഡ് അക്വിസിഷൻ	
ഓലിങ്കിഷ്മെൻ	
ഒഴുക്വരി	
കുട്ടവകാരം ഒഴുക്വരി	
ദാനം/ഇഷ്ടദാനം	
ദാഹപത്രം	
ധന നിശ്ചയം	
പിൻതുടർച്ചാവകാശം	
വെറും പാട്ടം	
ജന്മം	
പണ്ടാരം വക വെറും പാട്ടം	
മുൻപാട്ടം	

The distance mentioned above are horizontal distance. Unit : Meter

മുകളിൽ കാണിച്ചിരിക്കുന്ന സ്കെയ്ൽ അംഗീകരിക്കുന്നുവോ* ഉണ്ട് ഇല്ല ✓ ചെയ്യുക
നോട്ട്:വെരിഫിക്കേഷൻ ഷീറ്റ് പരിശോധിച്ച് ഇതിൽ രേഖപ്പെടുത്തിയിരിക്കുന്ന വിവരങ്ങൾ/ വസ്തു അളവുകൾ എന്നിവയ്ക്ക് വ്യത്യാസമുണ്ടെങ്കിൽ ആ വിവരങ്ങൾ രേഖകൾ സ്ഥിരം ഏഴ് ദിവസത്തിനകം യൂണിറ്റ് ഓഫീസർക്ക് കൈമാറേണ്ടതാണ് , ഇതിൽ രേഖപ്പെടുത്തിയിട്ടില്ലാത്ത വിവരങ്ങളും രേഖപ്പെടുത്തി തിരികെ നൽകാവുന്നതാണ് .ഷീറ്റ് തിരികെ ലഭിക്കാത്തപക്ഷം പരാതി ഇല്ലെന്ന് കണ്ട് തീർപ്പു കൽപ്പിക്കുന്നതായിരിക്കും.
* രേഖപ്പെടുത്തിയിരിക്കുന്ന കോളങ്ങൾ നിർബന്ധമായി പൂരിപ്പിക്കേണ്ടതാണ്.

ഇല്ല , എങ്കിൽ കാരണങ്ങൾ ഇവിടെ രേഖപ്പെടുത്തുക
പേര്/ഒപ്പ് : ഫോൺ നമ്പർ:

ജന്മാവകാശം സിദ്ധിച്ച പ്രമാണത്തിന്റെ പട്ടയത്തിന്റെ നം. / തീയതി:



Encroachment

By correlation

**Encroachments
found and fixed
accurately within
10 cms.**



KERALA LAND INFORMATION MISSION

FIELD DRAWING SHEET

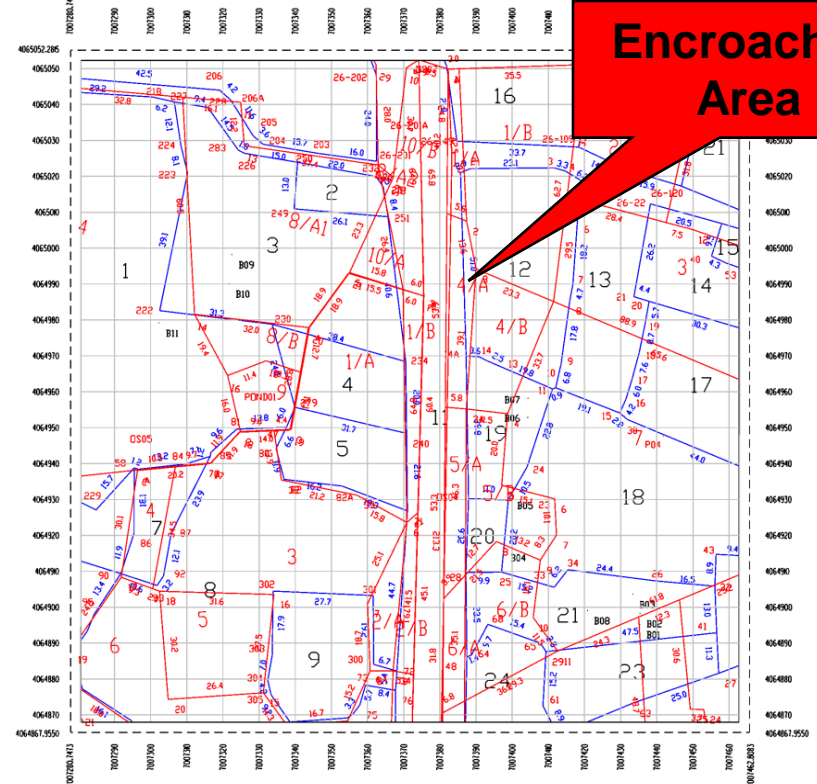
SCALE 1:1000
FIELD SEASON 2009

DISTRICT MALAPPURAM
TALUK ERNAD

VILLAGE MELMURI

SHEET NO C43E04Q07_26

**Encroached
Area**



Commenced on: _____

Finished on : _____

Demarcated by: _____

Prepared by : _____

Checked by : _____

Sheet Index

C43E04Q07_19	C43E04Q07_26	C43E04Q07_31
C43E04Q07_20	C43E04Q07_28	C43E04Q07_32
C43E04Q07_21	C43E04Q07_27	C43E04Q07_33

Coordinates of control points

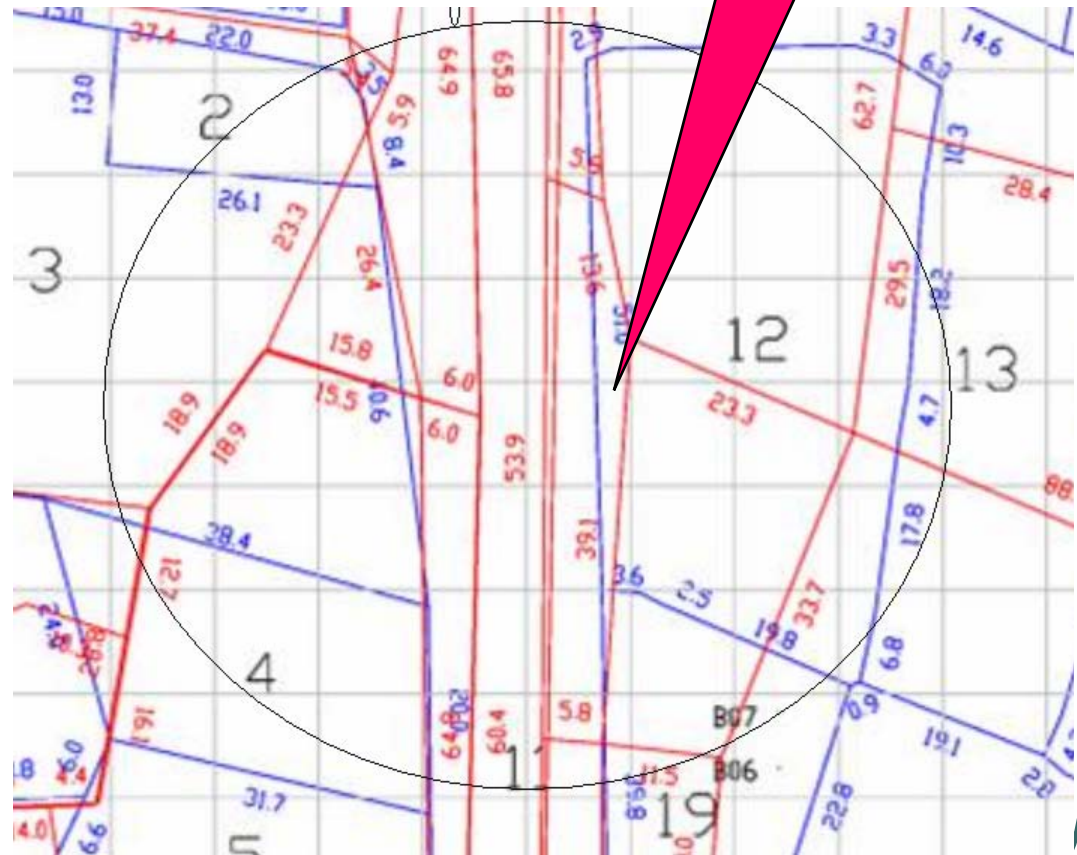
Point ID EASTING NORTHING HEIGHT



Encroachment

A closer look

**Encroached
area further
verified on
ground &
notices (with
sketch)
issued**

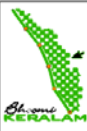




Encroachment Verification Sheet

issued in suspected cases

Issued to the Land Holders encroaching into the Government land before verification



കേരളാ ലാന്റ് ഇൻഫർമേഷൻ മിഷൻ

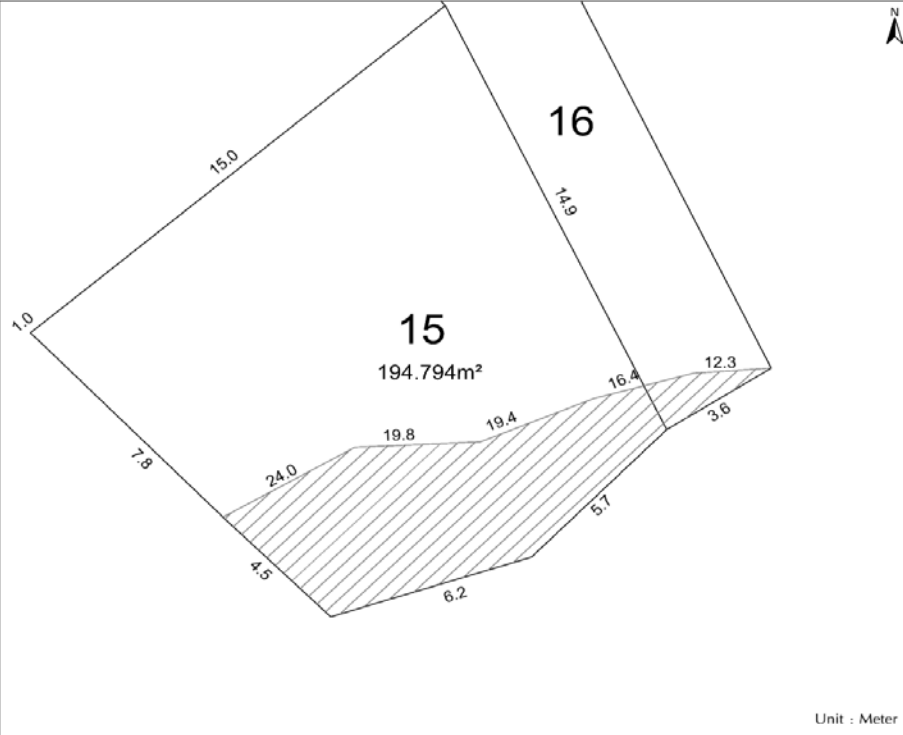
എൻക്രോച്ച്മെന്റ് വെരിഫിക്കേഷൻ ഷീറ്റ്

FIELD SEASON 2009

<p>ജില്ല : തിരുവനന്തപുരം താലൂക്ക് : തിരുവനന്തപുരം വില്ലേജ് : വഞ്ചിയൂർ പഴയ സർവ്വേ നമ്പർ : റഫറൻസ് നമ്പർ : വീട്ട് നമ്പർ : ഗ്രിഡ്-ഷീറ്റ് നമ്പർ :</p>	<p>പട്ടാമ്പരയുടെ പേര് : പിതാവിന്റെ/ഭർത്താവിന്റെ പേര് : അഡ്രസ്സ്:</p>
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വസ്തുവിന്റെ വിസ്തീർണ്ണം	Acre.	Cent	Hectare	Are	Sqm
-------------------------	-------	------	---------	-----	-----

എൻക്രോച്ച്മെന്റ് വിസ്തീർണ്ണം Acre. Cent Hectare Are Sqm നിലിയിരുപ്പ്

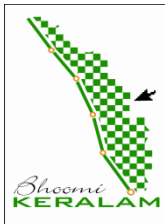


Unit : Meter

നോട്ട്: എൻക്രോച്ച്മെന്റ് വെരിഫിക്കേഷൻ ഷീറ്റിൽ ഷെയ്ഡ് ചെയ്ത ക്ഷേത്രം കാണിച്ചിരിക്കുന്നത് ഭാഗം താങ്കൾ കൈവശം വച്ചിരിക്കുന്ന സർക്കാർ ഭൂമിയാണെന്ന് അറിയിച്ചുകൊള്ളുന്നു. സർക്കാർ ഭൂമിയിലുള്ള കൈവശം നിർമ്മാണസ്മാരകം അധികാരപ്പെടുത്താത്തതിൽ അത് തെളിയിക്കുന്ന രേഖകൾ 7 ദിവസത്തിനകം യൂണിറ്റ് ഓഫീസർക്ക് കൈമാറേണ്ടതാണ്. ലഭിക്കാത്ത പക്ഷം അന്ധശ്രുത കൈവശമാണെങ്കിൽ ആ വിവരങ്ങൾ താങ്കളെ ബോധ്യപ്പെടുത്തി സർക്കാർ ഭൂമിയുടെ അതിർത്തിയിൽ കല്ലുകൾ സ്ഥാപിക്കുന്നതാണ്.

പേര്/ഒപ്പ് :

ഫോൺ നമ്പർ:

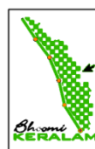


Encroachment Demarcation Sketch

issued to encroachers

to file appeal in
15 days

Handed over to
District
Collector &
State Land Bank



കേരളാ ലാന്റ് ഇൻഫർമേഷൻ മിഷൻ

എൻക്രോച്ച്മെന്റ് ഡിമാർക്കേഷൻ സ്കെച്ച്

FIELD SEASON 2009

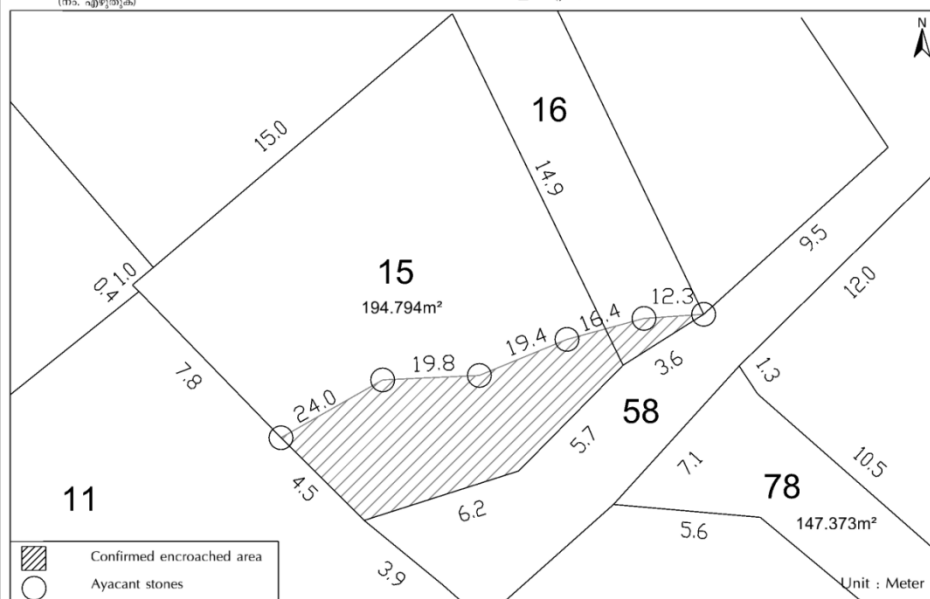
ജില്ല : തിരുവനന്തപുരം
താലൂക്ക് : തിരുവനന്തപുരം
വില്ലേജ് : വഞ്ചിയൂർ
പഴയ സർവ്വേ നമ്പർ :
റഫറൻസ് നമ്പർ :
വീട്ട് നമ്പർ :
ഗ്രിഡ് നമ്പർ :

പട്ടാഭാരതപ്പേര് :
പിതാവിന്റെ/ജർത്താവിന്റെ പേര് :
അഡ്രസ്സ് :

വസ്തുവിന്റെ വിസ്തീർണ്ണം	Acre.	Cent	Hectare	Are	Sqm
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ഇലക്ഷൻ കോർഡ് നമ്പർ:
(നാ. എഴുത്തുക)

എൻക്രോച്ച്മെന്റ് ഏരിയ ബാലൻസ്



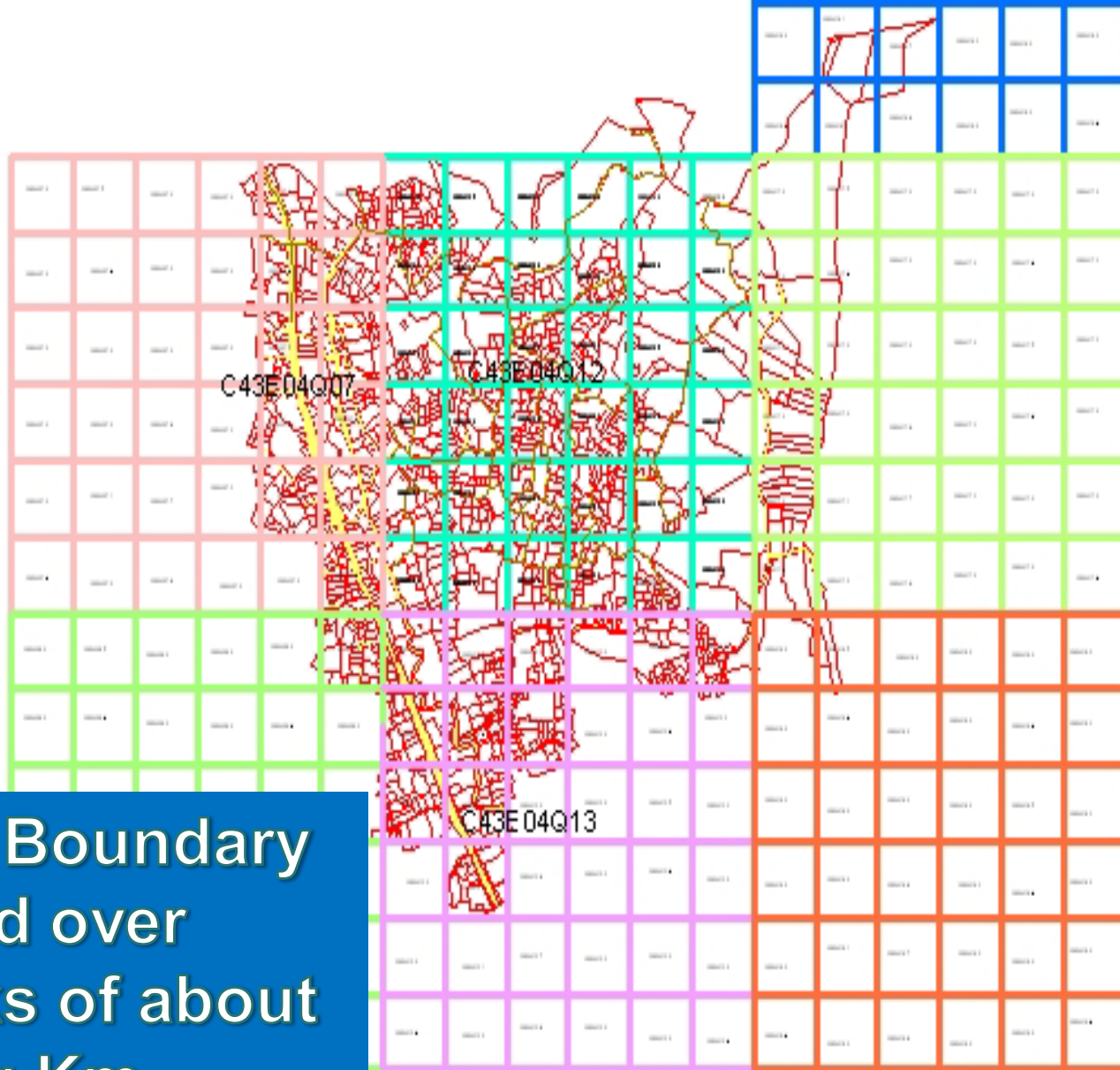
മുകളിൽ കാണിച്ചിരിക്കുന്ന സ്കെച്ച് അംഗീകരിക്കുന്നുവോ	ഉണ്ട്	ഇല്ല	✓ ചെയ്യുക
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നോട്ട്: വെരിഫിക്കേഷൻ ഷീറ്റ് പരിശോധിച്ച് ഇതിൽ രേഖപ്പെടുത്തിയിരിക്കുന്ന വിവരങ്ങൾ/ വസ്തു അളവുകൾ എന്നിവയ്ക്ക് വ്യത്യാസമുണ്ടെങ്കിൽ ആ വിവരങ്ങൾ രേഖകൾ സഹിതം ഏഴ് ദിവസത്തിനകം യൂണിറ്റ് ഓഫീസർക്ക് കൈമാറേണ്ടതാണ്. ഇതിൽ രേഖപ്പെടുത്തിയിട്ടില്ലാത്ത വിവരങ്ങളും രേഖപ്പെടുത്തി തിരികെ നൽകാവുന്നതാണ്. ഷീറ്റ് തിരികെ ലഭിക്കാത്തപക്ഷം പരാതി ഇല്ലെന്ന് കണ്ട് തീർപ്പു കൽപ്പിക്കുന്നതായിരിക്കും.
* രേഖപ്പെടുത്തിയിരിക്കുന്ന കോളങ്ങൾ നിർബന്ധമായി പൂരിപ്പിക്കേണ്ടതാണ്.

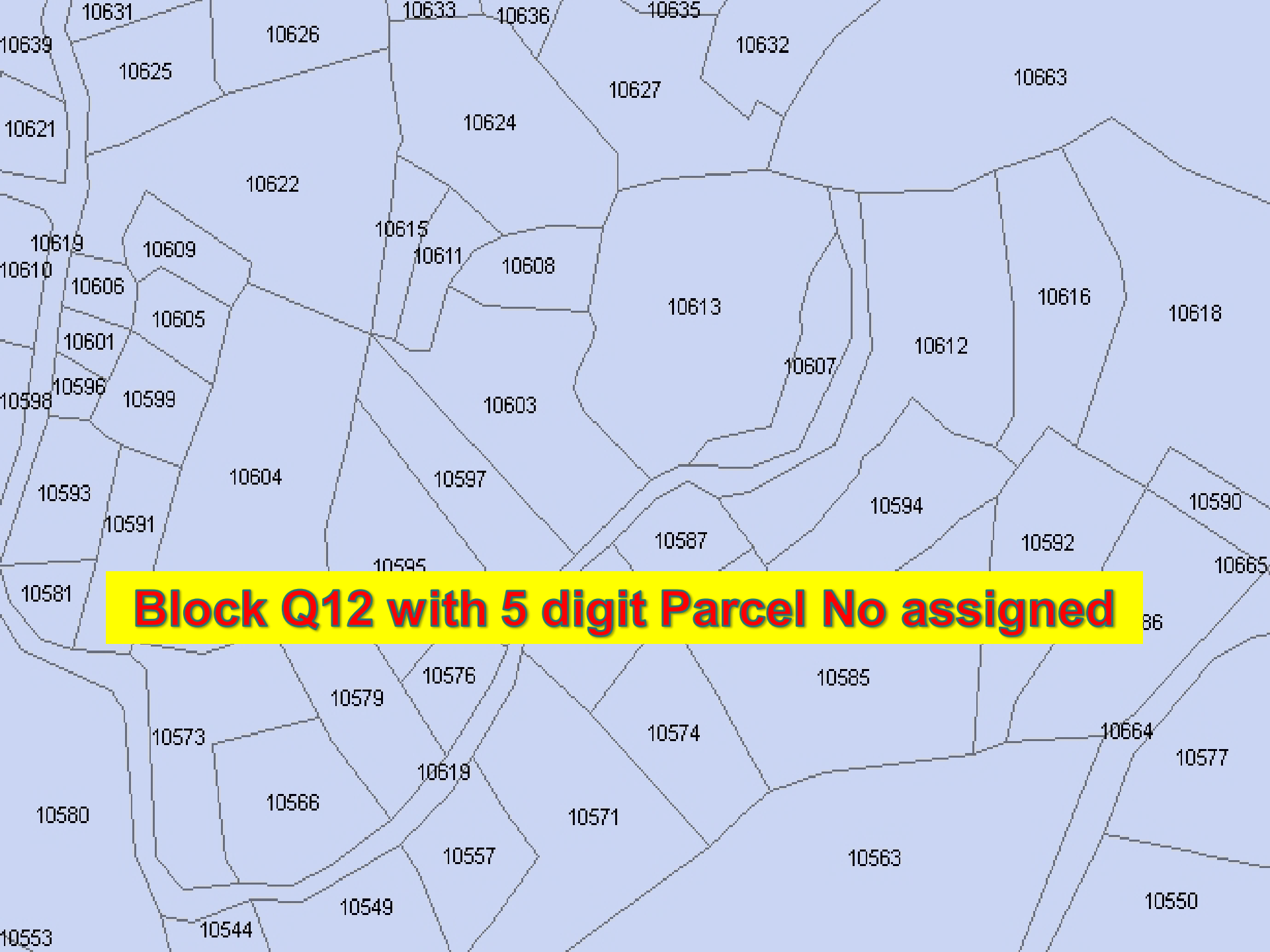
ഇല്ല. എങ്കിൽ കാരണങ്ങൾ ഇവിടെ രേഖപ്പെടുത്തുക

പേര്/ഒപ്പ് :

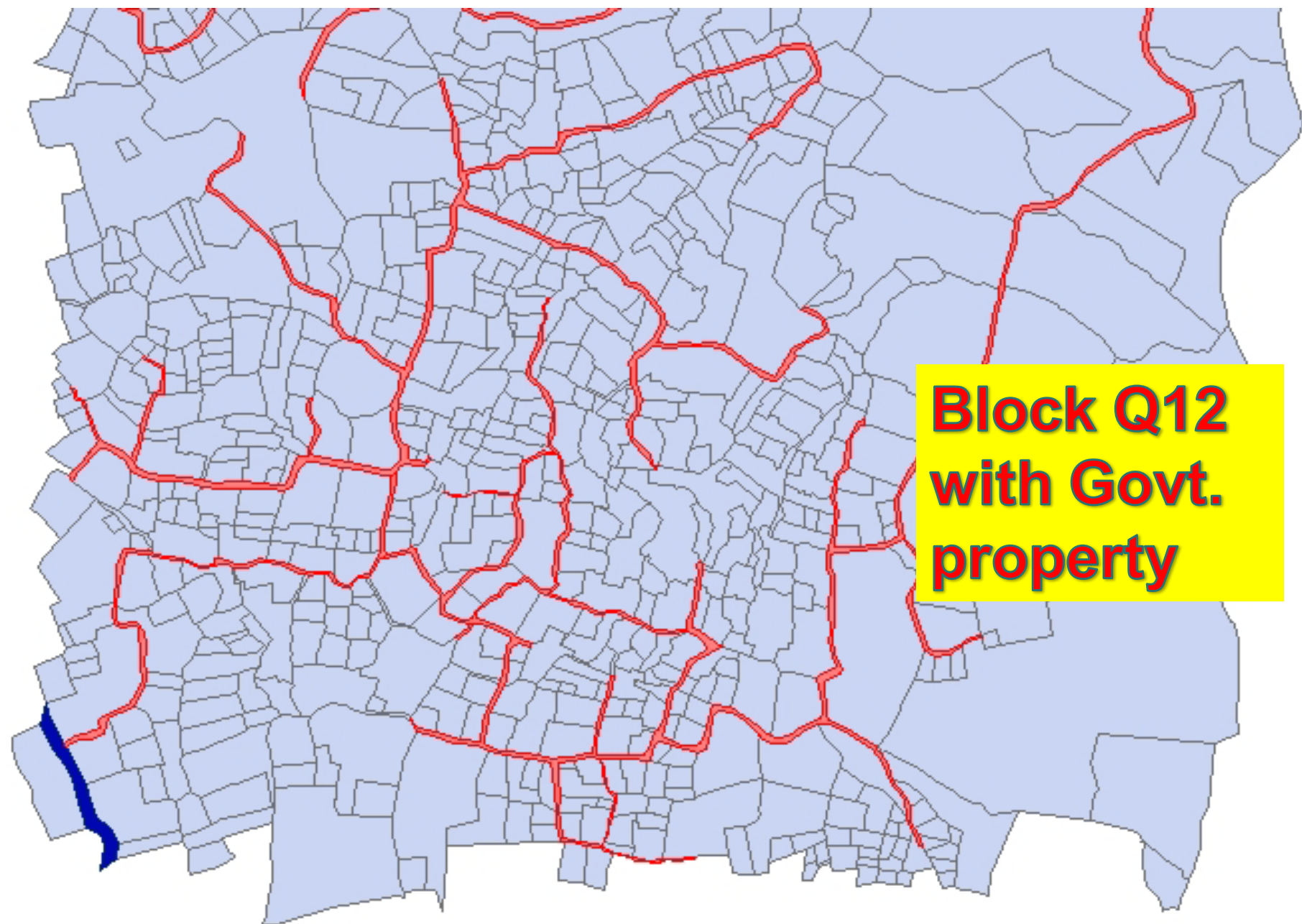
ഫോൺ നമ്പർ:



**Ward Boundary
placed over
Blocks of about
1.2 Sq Km
(36 grids)**



Block Q12 with 5 digit Parcel No assigned



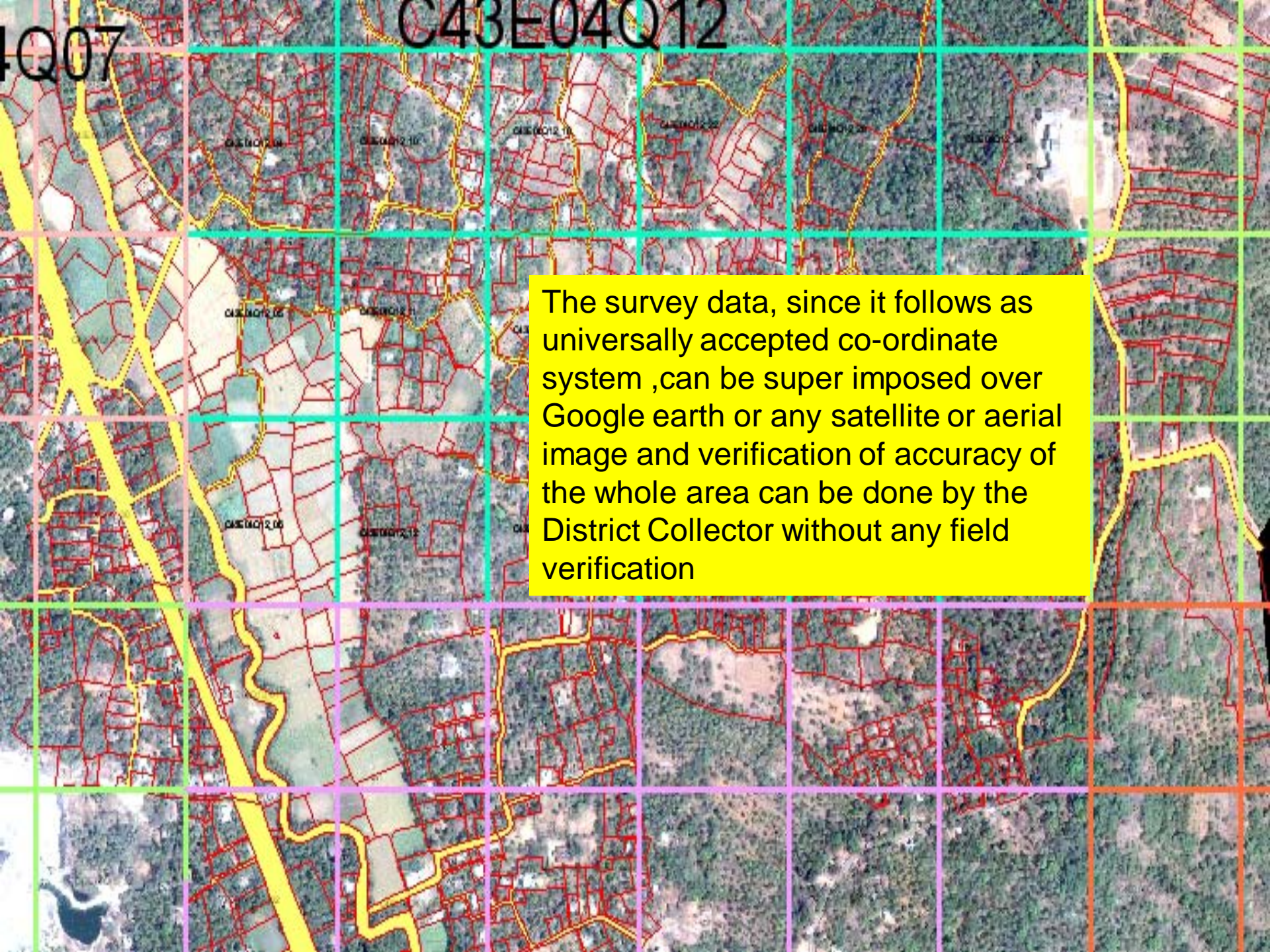
**Block Q12
with Govt.
property**

Block page sample

Will Contain almost all Land Register details - every land parcel has a database containing not only land revenue details, but also information like coordinates of buildings, electric posts, water taps, roads, public offices

Also the personal details like ration card, census data etc can also be linked

C43E04Q07_35



4Q07

C43E04Q12

C43E04Q12.04

C43E04Q12.10

C43E04Q12.10

C43E04Q12.20

C43E04Q12.20

C43E04Q12.24

C43E04Q12.06

C43E04Q12.11

C43E

C43E04Q12.00

C43E04Q12.12

C43E

The survey data, since it follows as universally accepted co-ordinate system ,can be super imposed over Google earth or any satellite or aerial image and verification of accuracy of the whole area can be done by the District Collector without any field verification



Generation of Parcel ID on the basis of attributes

1000-1999	State Government
2000-2999	Central Government
3000-3999	Other Public Institutions
4000-4999	Paddy Land
5000-5999	Plantations
6000-6999	Other agricultural Land (Pvt)
7000-7999	Residential
8000-8799	Commercial
8800-8999	Residential cum Commercial
9000-9999	Tribal

Land parcel ID-- common for Revenue, survey & Registration depts so that Government land cannot be alienated through the networked system without orders of assignment.

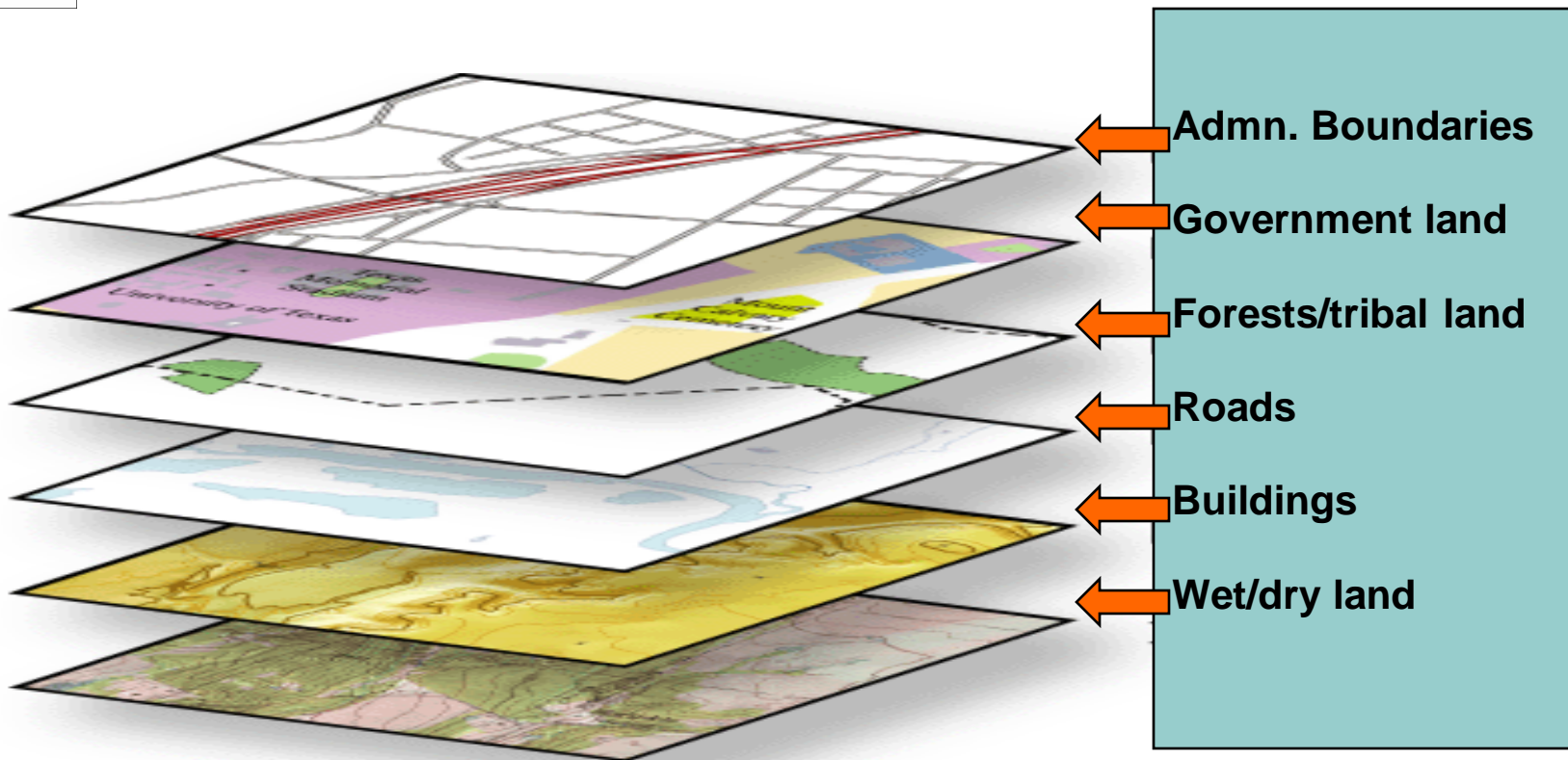


Remaining Operations

- Grid sheet data combined to form blocks
- Data cleaning & layer formation
- Integration of attribute (land holder) data
- Ground verification
- Printing of RoR verification sheets
- Distribution to land holders
- Appeals, hearing & finalization
- Mandatory notifications



GIS layers

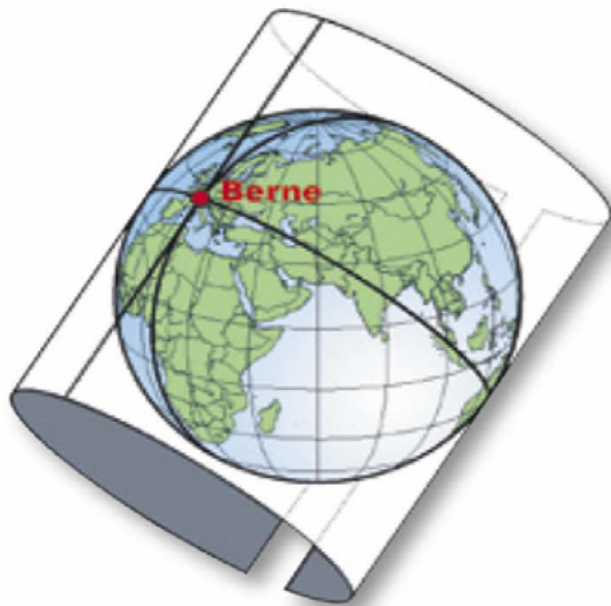


Additional layers will be added as per the requirements of various depts.

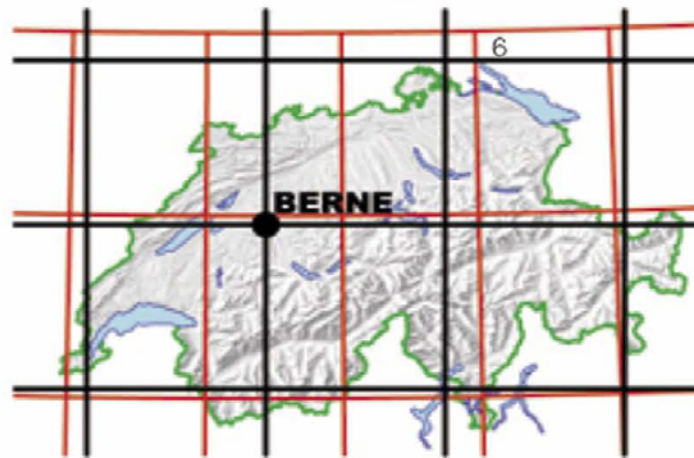
Systems followed world wide

Switzerland & Dubai system
as example

Swiss projection system (Merkator)



Sphère terrestre
enveloppée par un
cylindre

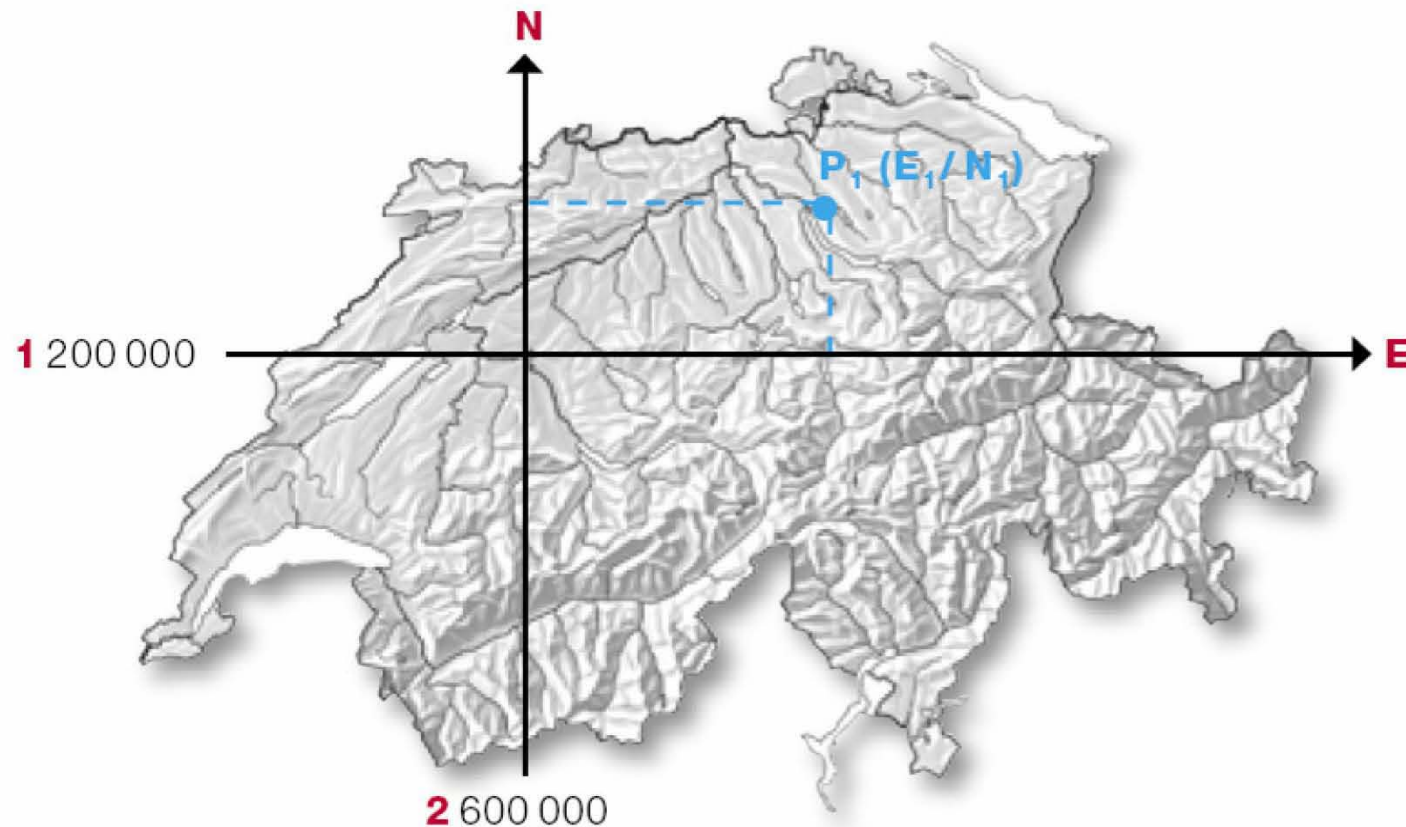


Le système des coordonnées nationales de la Suisse

— Système de référence géographique

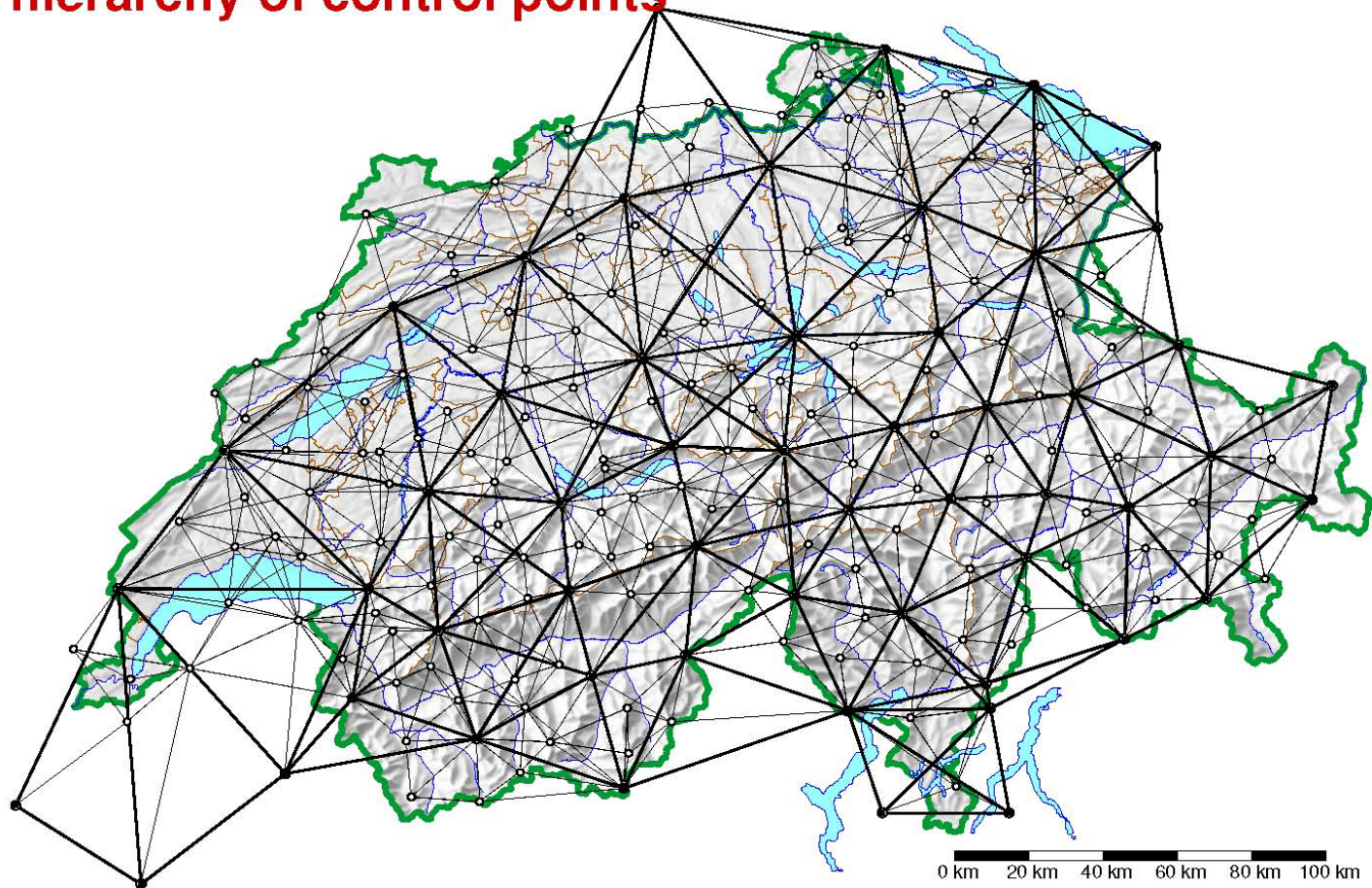
— Système de projection suisse

New reference system (CH03 → LV95)



Control point network

Old hierarchy of control points



Control point network

New hierarchy of control points



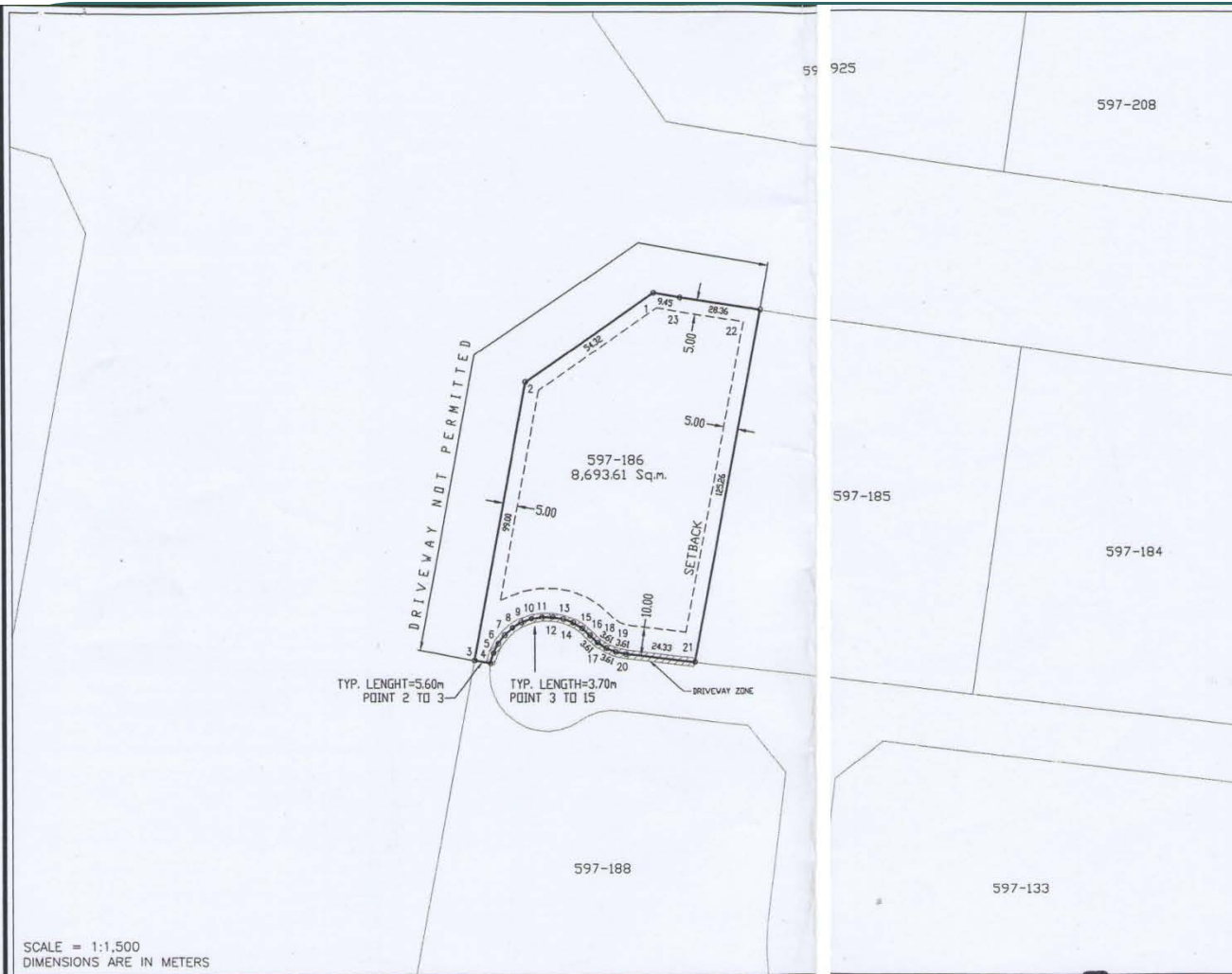
Control point network

Old hierarchy

Triangulation points	Number	Density	Responsible
1. order	ca. 50	30-50 km	swisstopo
2. order	ca. 150	10-20 km	swisstopo
3. order	ca. 4'500	5-15 km	swisstopo
4. order	ca. 67'000	2-4 Pts/km ²	Cad. Surveying
Traverse points (Polygonpunkte, Points polygones)	ca. 5 million	50-100 m	Cad. Surveying

New hierarchy

	Number	Density	Responsible
Lagefixpunkte 1 (LFP1)	ca. 200	20-30km	swisstopo
Lagefixpunkte 2 (LFP2)		~ 1.5 Pts/km ²	Canton
Lagefixpunkte 3 (LFP3)		2-150 Pts/km ²	Licensed surveyor



SCALE = 1:1,500
DIMENSIONS ARE IN METERS



KEY PLAN

COORDINATES TABLE

POINT	EASTING	NORTHING
1	485017.617	2763017.854
2	484973.129	2762986.679
3	484955.201	2762989.312
4	484960.708	2762988.285
5	484961.721	2762991.848
6	484963.374	2762995.164
7	484965.611	2762998.117
8	484968.353	2762990.607
9	484971.508	2762992.549
10	484974.967	2762993.876
11	484978.611	2762994.542
12	484982.316	2762994.524
13	484985.954	2762993.823
14	484989.400	2762992.464
15	484992.536	2762990.492
16	484995.255	2762997.976
17	484997.898	2762995.518
18	485000.939	2762993.576
19	485004.280	2762992.211
20	485007.811	2762991.469
21	485031.979	2762988.635
22	485054.942	2763011.773
23	485026.923	2763016.185

ZONING DISTRICT: INDUSTRIAL (I1)

- ☒ FINAL PLOT PLAN
☐ DRAFT PLOT PLAN

Plot No. 597-186
Dubai Investments Park
Leased to M/S ABU DHABI PIPES
Effective ___ / ___ / 2005
By Dubai Investments Park Development Company LLC,
Wholly owned subsidiary of Dubai Investments PJSC

Khalid Kalban Date
Chief Executive Officer, Dubai Investments PJSC

With the issue of this plot plan, the Lessee hereby
accepts handing over of the site.

Signed for the Lessee Name
Date

PLOT PLAN PREPARED BY

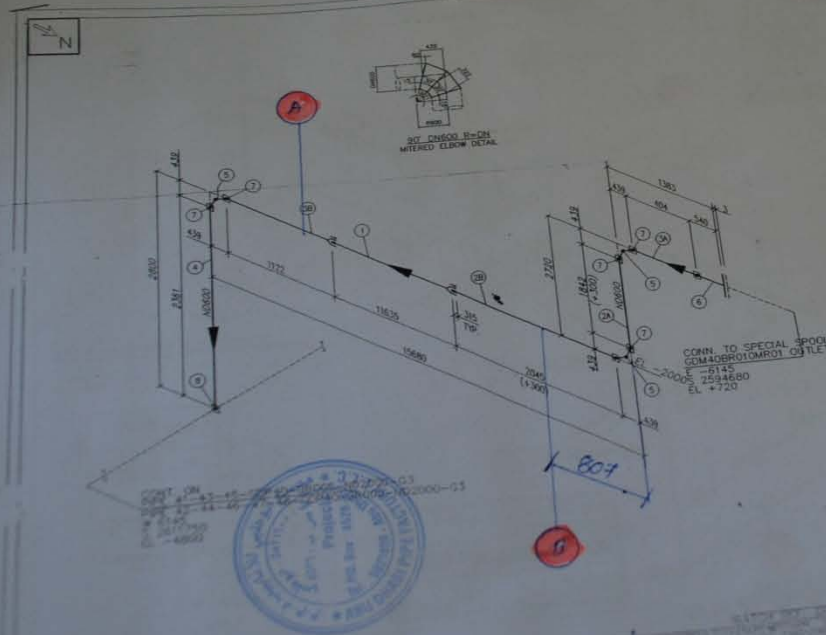


DUBAI INVESTMENTS PARK
DEVELOPMENT COMPANY LLC



DUBAI INVESTMENTS PJSC
Any delay will result in withdrawal of the plot
at any notice and the Lease Agreement
is considered Null & Void.





ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL
1	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
2	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
3	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
4	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
5	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
6	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
7	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
8	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
9	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
10	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
11	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
12	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
13	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
14	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
15	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
16	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
17	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
18	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
19	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
20	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
21	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
22	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
23	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
24	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
25	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
26	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
27	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
28	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
29	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
30	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
31	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
32	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
33	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
34	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
35	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
36	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
37	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
38	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
39	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
40	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
41	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
42	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
43	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
44	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
45	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
46	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
47	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
48	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
49	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
50	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
51	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
52	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
53	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
54	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
55	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
56	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
57	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
58	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
59	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
60	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
61	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
62	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
63	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
64	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
65	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
66	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
67	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
68	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
69	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
70	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
71	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
72	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
73	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
74	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
75	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
76	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
77	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
78	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
79	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
80	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
81	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
82	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
83	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
84	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
85	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
86	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
87	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
88	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
89	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
90	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
91	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
92	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
93	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
94	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
95	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
96	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
97	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
98	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
99	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00
100	PIPE 1/2" DIA. 10' LONG	100	1	1.00	1.00

POSITION	COORDINATES	ELEVATION
POSITION A	REQD E-6.145	-1693
	DESIGN E-6.130	-1679
	ACTUAL -6.116	-1681
POSITION B	REQD E-6.145	-1693
	REQD 5.2988-877	
	DESIGN E-6.157	-1679
	DESIGN 5.2988-880	
	ACTUAL -6.154	-1721
	ACTUAL 2988.891	





Advantages

- No further resurvey; constant updation
- Highly accurate (upto 10 cms)
- Avoids stones completely; saves cost and effort (about Rs. 2000/Ha vs Rs..8250/Ha)
- Totally digital data conforming to WGS-datum/UTM projection system followed world wide and by SOI – easily integratable to National Geodetic system – topo details of SOI and Cadastral details of KLIM
- Combines several conventional methods of survey into a single days operation
- Possibility of errors low; measurements plotted on the ground on grid sheets and correlated to old records
- Encroachments identified on computers by the administrators &
- Automatic mosaicing - every point has coordinates
- Extraction of administrative boundary data is very easy; delimitation also becomes easy
- Spatial data superimposed over [Google earth](#) for identification by land holders and administrators