

**Project Reports
On
Cadastral Survey using Total Station**

Of

Siyari-4, Rupandehi

Lumbini Province, Nepal

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Submitted By: Group C

2nd Batch of Diploma in Geomatics

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Acknowledgement would be incomplete without a word of appreciation for CTEVT administrator who provided us the working space and homely environment. Sincere thanks to those who are directly or indirectly involved in the preparation of this survey camp report.

This is a survey camp report prepared after the camp conducted for 8 days by the Survey Instruction Committee, Department of Diploma in Geomatics Engineering, Public Secondary School in Siyari-4, Rupandehi. The report contains such contents that symbolize the significance of Cadastral surveying in Geomatics Engineering. The report includes the tasks conducted, the methodologies used, observations and calculations with drawings. The report too includes observations and calculations on Cadastral surveying (Numerical).

This report is mainly emphasized on providing the practical knowledge to the readers about the field work of cadastral surveying.

Group C

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1.INTRODUCTION

Cadastral surveying is the sub-field of cadastre and surveying that specializes in the establishment and re-establishment of real property boundaries. It involves the physical delineation of property boundaries and determination of dimensions, areas and certain rights associated with properties. This is regardless of whether they are on land, water or defined by natural or artificial features.^[1] It is an important component of the legal creation of properties. A cadastral surveyor must apply both the spatial-measurement principles of general surveying and legal principles such as respect of neighboring titles.

The DGE Survey Camp 2080, organized by the Survey Instruction Committee, Public Secondary School is a part of the three-year Diploma's degree in Geometrics Engineering course, third year first semester, carrying a total of 200 marks. The total duration of the survey camp was 8 days, from 18th jeshth to 28th jeshth, 2080.

This is a detailed report of the works performed by group C during the camp period. It briefly explains the working procedures and technique along with the observations, calculations, and methods of adjustment of error. In addition, it also contains the main problem faced during work and their solution, results of all calculations.

The work done during the camp duration is:

- Cadastral survey around the public secondary school without traverse.

1.1 Background

The Cadastral Survey has been carried for determining Parcel around Public Secondary School inside Siyari rural municipality with its base station is arbitrary whose coordinate are taken by SW map. Survey has been started from jesh 18th and finished in 28th jesh. This report describes the project area, instrument used, adopted methodology for Cadastral survey and the post processed results.

1.2 Objectives

The main objectives of the study:

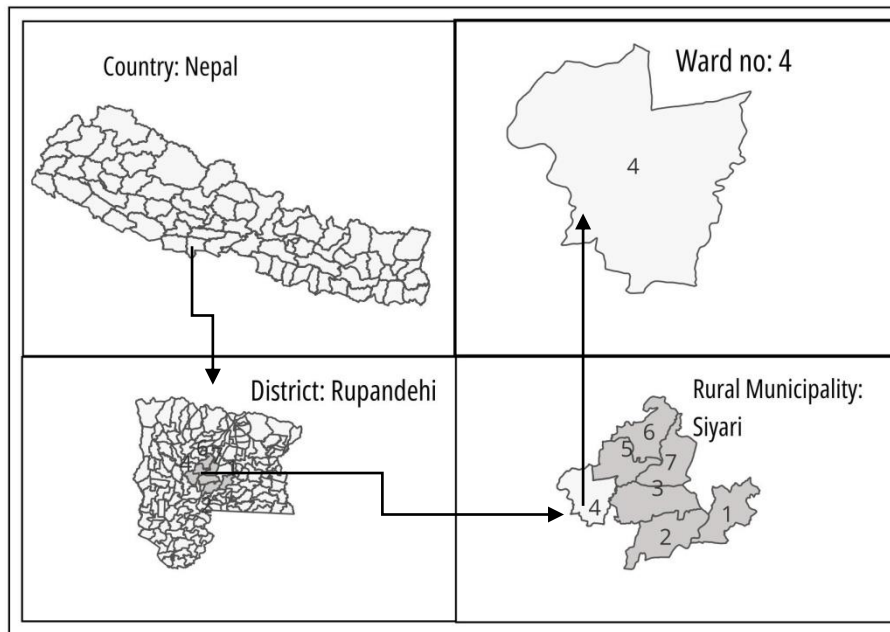
- Cadastral Survey around Public Secondary School without traverse
- Demarcation of Parcel

2. Study Area

The project area lies in Rupandehi district of Lumbini Province. Project area (Siyari Rural municipality) located in 27.566241°N 83.401469°E. There are altogether 7 wards in this rural municipality. Siyari-4, Chhapiya is about 22 km southern west part from Butwal. The area to be surveyed is area under Public Secondary School. The survey location is in our School. Thus, our project area was quite suitable and easily accessible. There is no any need of buses to reach survey site.

- **Country:** Nepal
- **Province :** Lumbini
- **District:** Rupandehi
- **Municipality:** Siyari
- **Ward No.:** 4
- **Location:** Siyari-4,Chhapiya,Rupandehi

Project area is shown in the figure below.



3. Instruments used:

S.N	Name of instrument	Quantity
1	Total station (Pentax R-2505NS)	1
2	Prism	2
3	Prism stand	2
4	Clamp	2
5	Tape (30m)	1
6	Wooden Peg	10
7	Hammer	1

3.1 Total Station

Total station is a surveying equipment combination of Electromagnetic Distance Measuring Instrument and electronic theodolite. It is also integrated with microprocessor, electronic data collector and storage system. The instrument can be used to measure horizontal and vertical angles as well as sloping distance of object to the instrument. In this survey project we used Pentax R-2505NS Total Station.



Fig: Pantex R-2505NS

Features of Pantex R-2500NS Total Station are:

- Long EDM range measuring distance: reflectorless up to 600m and up to 7,000m in prism mode
- Dual display as standard equipment
- Easy transfer to a PC via SD card, USB mini and RS-232C data port
- Pre-loaded PowerTopoLite Software which offers a package of versatile application functions
- Dual battery system for long time operation in the field
- Guiding lights for easy & fast stakeout
- Trigger key on the side cover for quick & light measurement key stroke
- + Dual battery system for long operation time in the field

3.2 Optical survey prism/Prism

Optical Survey prisms are a specially designed retro reflector, specifically a corner reflector that is used to reflect the Electronic Distance Measurement (EDM) beam of a total station. The survey prism reflects the EDM beam back to its source with both a wide angle of incidence and with high precision. Prisms reduce the scatter of the beam as it is reflected back to the total which allows for both a more accurate measurement and a longer range that the measurement can be made.



Fig: Prism

3.3 Prism Stand and Clamp

A prism stand can be used to make prism exact vertical on the station and measure the elevation of a specific ground point by using a sight level, which is important if you want to get accurate results. You can find a survey pole in a variety of materials — from metal and fiberglass to a variety of composites.

Clamp is used to make that stand stable in a vertical position on the station.



Fig: Clamp



Fig: Prism Stand

3.4 Tape

Tape is an accessories used in survey for linear measurement. In this survey 30m tape is used. There are 5 types of tapes available in surveying for linear measurements and they are as follows :

1. Linen Tape
2. Woven Metallic Tape
3. Steel Tape
4. Synthetic Tape
5. Invar Tape



Fig: Tape

3.5 Peg

Peg is used to mark the stations Position in ground. Pegs (see Fig. 8) are used when certain points on the field require more permanent marking. Pegs are generally made of wood; sometimes pieces of tree-branches, properly sharpened, are good enough. The size of the pegs (40 to 60 cm) depends on the type of survey work they are used for and the type of soil they have to be driven in. The pegs should be driven vertically into the soil and the top should be clearly visible.

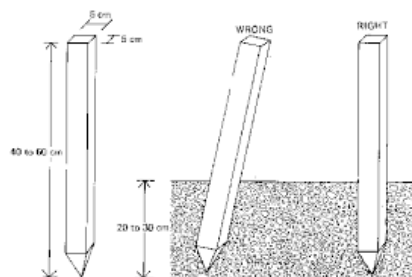


Fig : Peg

4. Methodology

4.1 Establishment of Survey monuments/Bench mark

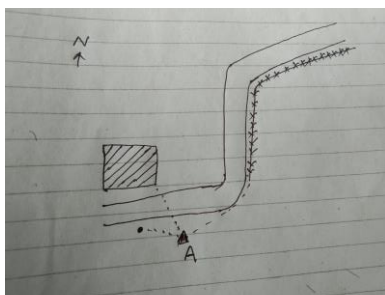
The main task of the project is to perform Cadastral survey without traverse. So we have fix a temporary control point whose coordinate is taken by using SW map application and whole area to be is covered by establishing 10 offsets. Then the size of 7.5cm*7.5cm*25cm peg are used for monumentation and fixed in different places in the project site.

4.1.i Preparation of D-card

D-Card of station A

<p><u>LOCATION DETAILS:</u></p> <p>District: Rupandehi</p> <p>Rural Municipality: Siyari</p> <p>Ward No: 4</p> <p>Village/Area:</p>	<p><u>DATE:</u> 18th jeshth,2080</p> <p><u>STATION NO:</u> 'A'</p> <p><u>COORDINATES:</u></p> <p>E: - 732790.015</p> <p>N: - 3051910.694</p> <p>Z: - 89.5</p> <p><u>References:</u></p> <table border="1"> <thead> <tr> <th>No:</th> <th>Type</th> <th>Dist(m)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Building</td> <td>16.30</td> </tr> <tr> <td>2</td> <td>Electric Pole</td> <td>2.35</td> </tr> <tr> <td>3</td> <td>Boundary</td> <td>7.93</td> </tr> </tbody> </table>	No:	Type	Dist(m)	1	Building	16.30	2	Electric Pole	2.35	3	Boundary	7.93
No:	Type	Dist(m)											
1	Building	16.30											
2	Electric Pole	2.35											
3	Boundary	7.93											
<p><u>Description:</u> This control point is located at the south side of road which is in back side of playground. Control point is established on the ground by fixing a wooden peg.</p>													

Location Sketch:



4.2 Adjustment of TS over Station

After performing cadastral survey the Ts should be adjusted over station and for the adjustment of Total station following steps should be follow:-

- At first instrument is setup over the Station 'A' with the help of Tripod.
- Then Total Station (TS) is centered by using Laser or plumbing laser which gives a red light on station. Plumb bob can be also use but Laser gives more accuracy than plumb bob.
- After the centering Leveling is done by making bubble in the center of circular level and level tube.
- Now the Total station is adjusted over the station.

4.3 Observation and Sketching

For the observation following steps should be followed-

- The occupied station's coordinates are taken from SW map application.
- Ts is turns towards the North direction by using compass or mobile.
- Then in that direction a peg is fixed in a known distance 'D' to find out coordinate of that point for the back sighting.
- To calculate the coordinate of Back sight station the distance 'D' is added to Northing.
- Now we have coordinates of both stations i.e., occupied station and Back sight station.
- After starting survey a sketch of survey should be made.
- Now a file should be created in TS with a suitable name and the survey process is started in that file.
- Then point no, coordinates: - Northing, Easting, z (height) and also the code of that station is entered in occ.
- After that TS is turns towards the back sight station 'B' and BS coordinate (N, E, Z) are entered and press Ent key if sighting is correct. The error also can be check by pressing measure or DNEZ key. The error must be 5mm to 10 mm/km.
- Now the Ts is oriented and then a suitable code for parcel is given then readings of corners of parcel are taken and point no should be noted in sketch.

- All the visible parcels should be taken and in case of non-visibility a Offset is thrown at a suitable place from other details (parcels & building corners) are visible.
- Then the instrument is shifted to that offset and again readings are taken from TS and noted in sketch.
- The point code should be different for unlike details.
- Similarly same process is done until the whole detail of survey site is taken.

The Total Station observes the coordinate in Geographic coordinate system which is WGS 84 because we have used WGS 84 projection system for the orientation of first control point. The coordinates of control points , offsets, and details are given below:-

POINT NO	N	E	Z	P-CODE
1	3051910.694	732790.015	89.5	A
2	3051921.434	732790.015	89.5	B
3	3051921.427	732790.015	89.599	B
4	3051908.443	732788.24	89.291	PAB
5	3051887.462	732777.954	89.151	PAB
6	3051900.226	732806.682	89.101	PAB
7	3051881.035	732798.404	89.401	PAB
8	3051889.776	732778.922	89.206	PAB
9	3051901.066	732761.478	89.134	PAB
10	3051915.203	732768.576	89.133	PAB
11	3051919.341	732758.794	88.732	PAB
12	3051894.841	732757.77	88.832	PAB
13	3051925.25	732747.081	88.683	PAB
14	3051898.468	732750.267	88.534	PAB
15	3051909.273	732737.915	88.477	PAB
16	3051934.512	732727.338	88.582	PAB
17	3051923.141	732716.805	88.329	PAB
18	3051907.167	732703.585	88.221	PAB
19	3051902.83	732710.298	88.389	PAB
20	3051903.317	732713.012	88.179	PAB
21	3051900.541	732698.694	87.967	PAB
22	3051892.07	732728.546	88.163	PAB
23	3051890.832	732728.833	88.225	PAB
24	3051893.982	732707.231	87.927	PAB
25	3051875.734	732747.796	88.483	PAB
26	3051887.492	732715.859	87.884	PAB

27	3051883.886	732752.168	88.727	PAB
28	3051882.791	732723.623	87.995	PAB
29	3051876.316	732732.475	88.048	PAB
30	3051867.685	732743.404	88.245	PAB
31	3051868.193	732743.947	88.292	PAB
32	3051871.957	732770.589	89.023	PAB
33	3051856.189	732762.899	88.494	PAB
34	3051859.716	732791.11	89.135	PAB
35	3051859.646	732790.865	89.133	PAB
33	3051856.131	732762.939	88.458	PAB
34	3051859.46	732790.969	89.114	PAB
35	3051844.814	732784.89	88.556	PAB
36	3051816.965	732735.461	88.85	OFF1
36	3051816.967	732735.461	89.509	OFF1
37	3051975.599	732858.636	89.764	OFF2
38	3051969.427	732848.801	89.732	RD
39	3051966.233	732850.963	89.73	RD
40	3051925.368	732800.29	89.73	RD
41	3051922.229	732802.871	89.754	RD
42	3051918.163	732797.433	89.842	RD
43	3051920.872	732793.977	89.663	RD
44	3051920.444	732792.244	89.663	RD
45	3051921.955	732787.797	89.566	RD
46	3051913.708	732796.884	89.582	RD
47	3051911.178	732793.89	89.539	RD
48	3051922.486	732780.236	89.394	RD
49	3051925.79	732783.171	89.41	RD
50	3051938.836	732764.343	89.008	RD
51	3051941.945	732767.682	89.002	RD
52	3051957.405	732749.275	88.738	RD
53	3051960.717	732752.578	88.674	RD
54	3051977	732723.257	88.489	RD
55	3051979.983	732726.109	88.357	RD
56	3051914.765	732775.418	89.411	PAB
57	3051916.295	732769.919	89.19	PAB
58	3051923.844	732753.089	88.906	PAB
59	3051932.51	732733.278	88.763	PAB
60	3051964.563	732750.188	88.676	PAB
61	3051947.725	732763.941	88.863	PAB
62	3051934.054	732775.837	89.281	PAB
36	3051816.967	732735.461	86.509	OFF1
67	3051816.967	732735.461	89.509	A
67	3051816.967	732735.461	89.509	OFF1
68	3051910.694	732790.015	89.5	A

68	3051910.7	732790.019	89.503	A
69	3051828.625	732749.417	89.03	PAB
70	3051820.925	732763.634	89.041	PAB
71	3051831.552	732743.163	88.965	PAB
72	3051815.888	732773.449	89.124	PAB
73	3051838.612	732727.901	88.731	PAB
74	3051840.99	732721.814	88.69	PAB
75	3051843.636	732715.439	88.644	PAB
76	3051847.72	732705.233	88.552	PAB
77	3051849.196	732699.602	88.506	PAB
78	3051851.275	732694.555	88.377	PAB
79	3051854.824	732686.884	88.283	PAB
80	3051859.223	732678.968	88.036	PAB
81	3051809.034	732784.094	89.365	PAB
82	3051803.139	732792.969	89.476	PAB
83	3051818.576	732799.485	88.901	PAB
84	3051821.286	732791.269	88.888	PAB
85	3051824.041	732792.032	88.785	PAB
86	3051848.262	732801.311	88.929	PAB
87	3051845.349	732810.461	88.982	PAB
88	3051867.606	732819.93	89.248	PAB
89	3051869.605	732809.224	89.407	PAB
90	3051862.235	732806.414	89.294	PAB
91	3051867.051	732794.041	89.445	PAB
92	3051878.623	732799.61	89.639	PAB
93	3051853.067	732788.528	88.896	PAB
94	3051816.967	732735.461	89.509	OFF1
95	3051910.694	732790.015	89.5	A
96	3051910.691	732790.014	89.514	A
97	3051822.632	732725.039	89.178	PAB
98	3051827.968	732715.27	88.98	PAB
99	3051833.936	732703.524	88.796	PAB
100	3051839.363	732693.856	88.513	PAB
101	3051844.969	732682.197	88.366	PAB
102	3051850.859	732669.84	87.991	PAB
103	3051858.541	732654.568	87.887	PAB
104	3051848.794	732649.598	88.091	PAB
105	3051839.707	732663.448	87.99	PAB
106	3051832.56	732674.585	88.249	PAB
107	3051832.252	732675.439	88.289	PAB
108	3051828.516	732681.05	88.438	PAB
109	3051823.705	732688.757	88.487	PAB
110	3051837.873	732643.55	88.023	PAB
111	3051819.962	732668.205	88.413	PAB

112	3051814.599	732675.346	88.411	PAB
113	3051808.503	732682.38	88.698	PAB
114	3051802.784	732689.442	88.949	PAB
115	3051818.986	732696.54	88.805	PAB
116	3051813.307	732705.577	89.055	PAB
117	3051806.922	732714.649	89.291	PAB
118	3051797.519	732696.117	89.325	PAB
119	3051800.712	732723.67	89.603	PAB
120	3051791.294	732704.712	89.527	PAB
121	3051785.624	732712.776	89.675	PAB
122	3051789.475	732740.984	89.912	PAB
123	3051778.473	732757.087	90.17	PAB
124	3051773.525	732767.649	90.086	PAB
125	3051789.786	732777.017	89.827	PAB
126	3051795.7	732767.466	89.891	PAB
127	3051805.145	732751.939	89.736	PAB
128	3051782.787	732785.207	90.194	BD
129	3051924.042	732689.999	88.518	PAB
130	3051944.61	732704.316	88.834	PAB
131	3051948.754	732632.119	88.739	PAB
132	3052015.577	732687.154	88.132	PAB
133	3051948.108	732636.446	88.423	POND
134	3051951.145	732635.926	88.268	POND
135	3052012.537	732689.409	88.281	POND
136	3052013.422	732687.156	88.117	POND
137	3052012.553	732685.213	88.255	POND
138	3051942.175	732651.811	88.83	POND
139	3051941.634	732657.421	88.933	POND
140	3051943.791	732659.091	88.814	POND
141	3051930.51	732682.301	88.96	OFF3
142	3051779.509	732720.808	89.706	PAB
143	3051772.636	732730.58	89.941	PAB
144	3051766.904	732737.991	89.875	PAB
145	3051760.474	732747.189	90.264	PAB
146	3051754.453	732758.195	90.64	PAB
147	3051742.945	732741.472	89.973	PAB
148	3051749.8	732729.538	90.109	PAB
149	3051738.651	732745.533	89.849	PAB
150	3051716.76	732732.507	89.732	PAB
151	3051727.461	732717.204	89.741	PAB
152	3051721.181	732725.359	89.704	PAB
153	3051723.552	732713.995	89.694	PAB
154	3051708.33	732706.096	89.564	PAB
155	3051703.915	732714.398	89.707	PAB

156	3051702.942	732702.826	89.654	RD
157	3051693.563	732715.674	89.958	RD
158	3051687.89	732714.225	89.971	RD
159	3051689.661	732717.542	90	RD
160	3051681.477	732719.475	90.139	RD
161	3051664.316	732720.843	90.423	RD
162	3051665.266	732718.18	90.409	RD
163	3051692.604	732737.038	89.643	PAB
164	3051707.918	732745.728	90.472	PAB
165	3051750.308	732716.872	89.653	PAB
166	3051756.705	732706.678	89.531	PAB
167	3051765.856	732710.382	89.687	PAB
168	3051769.574	732687.556	89.239	PAB
169	3051775.503	732695.092	89.604	PAB
170	3051816.967	732735.461	89.509	OFF1
171	3051910.694	732790.015	89.5	A
173	3051779.802	732675.429	89.407	PAB
174	3051815.307	732632.713	88.693	PAB
175	3051784.387	732669.709	89.603	PAB
176	3051784.379	732678.466	89.262	POND
177	3051782.002	732676.795	89.201	POND
178	3051783.94	732672.225	89.223	POND
179	3051785.107	732670.111	89.412	POND
180	3051789.555	732669.166	89.142	POND
181	3051804.323	732678.474	89.161	POND
182	3051806.286	732680.01	88.983	POND
183	3051805.897	732682.798	88.96	POND
184	3051802.287	732687.355	88.872	POND
185	3051800.639	732688.389	88.896	POND
186	3051797.838	732687.707	89.261	POND
187	3051804.971	732677.303	88.993	POND
188	3051807.621	732678.014	88.755	POND
189	3051810.381	732677.052	88.792	POND
190	3051831.248	732648.315	88.606	POND
191	3051831.487	732645.303	88.613	POND
192	3051830.225	732642.704	88.911	POND
193	3051794.737	732670.024	89.106	POND
194	3051792.323	732667.14	89.001	POND
195	3051793.34	732662.361	89.109	POND
196	3051816.135	732635.432	88.868	POND
197	3051814.059	732635.41	88.694	POND
198	3051812.036	732636.535	88.982	POND
199	3051747.423	732647.24	89.082	OFF4
200	3051747.423	732647.24	89.082	OFF4

201	3051816.967	732735.461	89.509	OFF1
202	3051816.958	732735.45	89.516	OFF1
203	3051769.844	732661.594	88.872	PAB
204	3051765.28	732661.375	88.747	PAB
205	3051762.995	732676.39	88.956	PAB
206	3051757.513	732672.635	89.024	PAB
207	3051738.665	732696.327	89.33	PAB
208	3051750.037	732702.14	89.228	PAB
209	3051736.303	732697.968	89.146	PAB
210	3051730.59	732705.41	89.438	PAB
211	3051747.91	732683.711	89.202	PAB
212	3051718.764	732684.52	89.251	PAB
213	3051732.103	732669.166	89.094	PAB
214	3051748.429	732652.239	88.859	PAB
215	3051777.309	732647.555	88.348	PAB
216	3051761.579	732636.395	88.722	PAB
217	3051796.538	732623.258	88.555	PAB
218	3051779.267	732613.554	88.603	PAB
219	3051758.819	732633.879	88.994	RD
220	3051745.244	732649.483	88.981	RD
221	3051729.4	732667.021	89.179	RD
222	3051715.732	732682.279	89.477	RD
223	3051806.072	732629.963	88.857	POND
224	3051809.069	732632.731	88.91	POND
225	3051809.384	732635.723	89.007	POND
226	3051772.917	732658.32	88.954	POND
227	3051772.857	732659.66	88.889	POND
228	3051774.08	732661.869	88.921	POND
229	3051800.037	732627.037	88.802	POND
230	3051798.162	732626.667	88.659	POND
231	3051796.422	732626.849	89.022	POND
232	3051782.002	732666.376	89.242	POND
233	3051784.501	732667.76	89.408	POND
234	3051786.358	732665.912	89.11	POND
235	3051675.055	732729.706	90.295	PAB
236	3051661.614	732755.96	91.264	PAB
237	3051930.51	732682.301	88.96	OFF3
238	3051816.967	732735.461	89.509	OFF1
240	3051997.696	732695.483	88.588	POND
241	3052000.594	732696.96	88.282	POND
242	3052003.165	732695.86	88.321	POND
243	3051996.184	732699.16	88.389	POND
244	3051994.772	732701.79	88.53	POND
245	3051996.171	732696.18	88.603	POND

246	3051979.737	732715.397	88.837	POND
247	3051975.571	732717.743	88.942	POND
248	3051970.18	732716.443	89.021	POND
249	3051949.874	732664.713	88.928	POND
250	3051946.826	732663.3	88.91	POND
251	3051944.402	732662.794	88.786	POND
252	3051943.098	732662.878	88.723	POND
253	3051940.879	732664.636	88.86	POND
254	3051935.054	732694.01	89.045	POND
255	3051930.437	732690.386	89.047	POND
256	3051929.991	732686.352	88.899	POND
257	3051945.743	732712.215	88.798	POND
258	3051948.117	732710.226	88.665	POND
259	3051951.277	732710.155	88.907	POND
260	3051970.843	732720.617	88.926	POND
261	3051972.505	732722.986	88.722	POND
262	3051972.133	732726.866	88.938	POND
263	3051960.594	732744.982	88.635	POND
264	3051957.387	732746.497	88.412	POND
265	3051953.132	732745.269	88.883	POND
266	3051938.071	732736.028	89.337	POND
267	3051937.145	732733.27	88.648	POND
268	3051936.893	732730.663	89.178	POND
269	3052019.968	732689.738	88.506	RD
270	3051983.922	732723.462	87.829	KULO
271	3051982.267	732725.542	87.973	KULO
272	3051981.963	732727.779	88.079	KULO
273	3052012.341	732698.363	87.283	KULO
274	3051984.942	732726.872	87.883	KULO
275	3051985.271	732725.455	87.99	KULO
276	3052014.54	732701.806	87.624	KULO
277	3051985.278	732725.396	87.983	KULO
278	3051992.716	732737.793	87.703	KULO
279	3051990.605	732739.361	88.179	KULO
280	3052005.314	732762.586	87.749	KULO
281	3051994.861	732748.044	88.096	KULO
282	3052011.932	732781.007	88.112	KULO
283	3052049.053	732751.523	87.866	PAB
284	3052023.961	732714.888	87.513	PAB
285	3051978.769	732763.264	88.613	PAB
286	3051962.106	732780.309	88.933	PAB
287	3051961.999	732780.06	88.931	PAB
288	3051975.599	732858.636	89.764	OFF2
289	3051910.694	732790.015	89.5	A

290	3051971.784	732851.945	89.789	RD
291	3051968.996	732854.657	89.75	RD
292	3051974.044	732856.492	89.831	RD
293	3051970.105	732858.125	89.766	RD
294	3051970.807	732863.464	89.924	RD
295	3051975.069	732862.86	89.908	RD
296	3051962.166	732940.295	90.945	RD
297	3051957.828	732939.1	90.908	RD
298	3051956.074	732940.447	90.889	RD
299	3051963.067	732942.848	90.865	RD
300	3051966.373	732944.894	90.792	RD
301	3051966.053	732950.321	90.821	RD
302	3051954.582	732946.535	90.903	RD
303	3051956.152	732940.99	90.909	RD
304	3051956.936	732935.115	90.526	BD
305	3051969.299	732864.603	89.512	BD
306	3051969.138	732861.328	89.478	BD
307	3051967.458	732855.757	89.396	BD
308	3051965.986	732853.788	89.39	BD
309	3051974.448	732852.866	89.267	PAB
310	3051980.688	732848.106	89.22	PAB
311	3051982.944	732849.745	89.223	PAB
312	3051987.629	732845.872	89.166	PAB
313	3051967.617	732825.791	89.183	PAB
314	3051959.635	732834.921	89.103	PAB
315	3051945.795	732820.209	89.115	PAB
316	3051954.254	732809.385	89.431	PAB
317	3051969.451	732820.967	89.305	PAB
318	3051982.312	732805.599	88.979	PAB
319	3051961.971	732779.955	89.03	PAB
320	3051944.422	732798.796	89.216	PAB
321	3051934.894	732808.546	89.418	PAB
322	3051937.818	732794.141	89.302	BC
323	3052038.634	732828.097	89.348	PAB
324	3052041.699	732822.241	89.507	PAB
325	3052039.207	732814.611	89.255	PAB
326	3052016.032	732856.539	89.47	PAB
327	3052010.144	732861.351	89.37	PAB
328	3052005.965	732859.803	89.202	PAB
329	3052004.608	732855.939	89.092	POND
330	3052008.911	732858.202	89.528	POND
331	3052012.785	732856.166	89.706	POND
332	3052033.129	732831.324	89.473	POND
333	3052036.862	732825.463	89.612	POND

334	3052037.982	732822.686	89.705	POND
335	3052038.167	732821.34	89.762	POND
336	3052035.599	732816.437	89.92	POND
337	3051975.752	732829.292	89.561	POND
338	3051974.058	732826.548	89.665	POND
339	3051973.904	732824.487	89.383	POND
340	3051974.43	732822.186	89.917	POND
341	3051976.263	732819.021	89.756	POND
342	3052021.65	732795.163	89.6	POND
343	3052017.213	732790.129	89.646	POND
344	3052013.388	732786.879	89.624	POND
345	3052011.227	732785.774	89.654	POND
346	3052008.888	732785.747	89.581	POND
347	3052006.574	732787.288	89.653	POND
348	3052011.076	732781.179	88.633	KULO
349	3052015.178	732780.031	87.981	KULO
350	3052024.016	732787.408	87.998	KULO
351	3052035.476	732804.65	88.284	KULO
352	3052047.32	732820.388	88.194	KULO
353	3052049.009	732822.994	88.146	KULO
354	3052022.753	732790.288	88.145	KULO
355	3052033.344	732806.235	88.869	KULO
356	3052039.704	732815.341	89.175	KULO
357	3052015.868	732861.651	88.74	KULO
358	3052013.69	732872.461	89.161	PAB
359	3052006.127	732883.507	89.366	PAB
360	3051997.465	732900.293	89.909	PAB
361	3051993.23	732908.515	89.918	PAB
362	3051971.188	732898.217	89.897	PAB
363	3051973.504	732886.269	89.737	PAB
364	3051978.306	732858.442	89.109	PAB
365	3051910.694	732790.015	89.5	A
366	3051921.434	732790.015	89.5	B
367	3051925.171	732794.002	89.655	BC
368	3051931.386	732787.63	89.5	BC
369	3051878.777	732800.528	89.522	BC
370	3051888.966	732805.998	89.757	BC
371	3051877.999	732865.867	90.396	OFF5
371	3051877.999	732865.867	90.396	OFF5
371	3051877.999	732865.867	90.396	OFF5
371	3051877.999	732865.867	90.396	OFF5
372	3051910.694	732790.015	89.5	A
373	3051874.812	732809.152	89.555	BC
374	3051884.978	732827.101	89.537	WALL

375	3051885.711	732828.003	89.96	RD
376	3051880.848	732832.674	90.038	RD
377	3051816.221	732816.558	89.765	POND
378	3051824.327	732813.538	89.785	POND
379	3051828.37	732813.638	90.081	POND
380	3051832.288	732814.304	90.116	POND
381	3051776.612	732841.736	91.354	POND
382	3051856.458	732823.797	90.111	POND
383	3051777.239	732843.571	91.324	POND
384	3051778.165	732845.346	91.394	POND
385	3051779.349	732846.719	91.456	POND
386	3051781.636	732848.451	91.506	POND
387	3051860.097	732827.114	89.785	POND
388	3051860.01	732832.013	90.053	POND
389	3051776.024	732838.386	91.307	POND
390	3051776.751	732831.49	91.242	POND
391	3051841.557	732859.844	90.245	POND
392	3051791.249	732806.813	90.794	POND
393	3051836.142	732864.691	90.146	POND
394	3051830.337	732866.195	90.85	POND
395	3051819.742	732868.585	90.943	POND
396	3051768.577	732846.607	91.625	BC
397	3051767.216	732837.661	91.441	BC
398	3051772.707	732830.478	91.428	BC
399	3051769.688	732824.147	91.067	BC
400	3051780.682	732809.074	90.996	BC
401	3051795.702	732802.346	90.39	BC
402	3051815.364	732810.567	90.266	BC
403	3051819.213	732801.427	90.536	BC
404	3051819.032	732869.781	91.309	BC
405	3051837.152	732877.474	91.187	BC
406	3051849.486	732881.069	90.963	WALL
407	3051838.823	732878.025	91.28	WALL
408	3051840.205	732912.289	91.625	WALL
409	3051842.868	732909.702	91.041	BD
410	3051842.442	732906.957	90.949	BSKT
411	3051856.585	732911.962	90.732	BSKT
412	3051865.589	732886.595	90.759	BSKT
413	3051851.673	732881.466	90.844	BSKT
414	3051838.174	732962.436	91.469	OFF6
415	3051838.174	732962.436	91.469	OFF6
416	3051838.174	732962.436	91.469	OFF6
417	3051877.999	732865.867	90.396	OFF5
418	3051858.159	732928.805	91.526	RD

419	3051858.275	732923.592	91.572	RD
420	3051852.463	732924.716	91.559	RD
421	3051853.247	732930.434	91.421	RD
422	3051847.164	732926.485	91.438	RD
423	3051844.752	732928.747	91.378	RD
424	3051843.176	732931.542	91.363	RD
425	3051852.268	732932.041	91.419	RD
426	3051848.766	732935.987	91.589	RD
427	3051840.799	732936.939	91.291	RD
428	3051846.003	732941.933	91.748	RD
429	3051835.857	732945.99	91.238	RD
430	3051842.841	732948.471	91.473	RD
431	3051832.994	732949.02	91.178	RD
432	3051839.597	732953.279	91.388	RD
433	3051831.14	732950.362	91.133	RD
434	3051836.556	732955.848	91.365	RD
435	3051827.636	732951.521	91.105	RD
436	3051836.071	732962.608	91.285	RD
437	3051823.429	732952.066	91.186	RD
438	3051827.55	732961.637	91.194	RD
439	3051816.342	732950.388	91.183	RD
440	3051823.273	732986.893	90.996	RD
441	3051828.181	732989.281	91.156	RD
442	3051815.052	732956.049	91.268	RD
443	3051827.925	732962.105	91.201	RD
444	3051824.256	732958.967	91.469	RD
445	3051829.228	732948.134	91.118	BC
446	3051804.234	732940.554	91.119	BC
447	3051768.705	732930.136	90.97	BC
448	3051763.815	732927.998	90.982	BC
449	3051746.399	732922.885	90.958	BC
450	3051746.203	732923.322	90.813	BD
451	3051742.705	732922.34	91.107	BD
452	3051741.941	732924.137	90.587	BD
453	3051717.135	732917.253	90.262	BD
454	3051678.055	732902.948	90.755	BD
455	3051813.972	732964.757	91.398	RD
456	3051809.827	732977.836	90.825	BC
457	3051808.198	732962.778	91.464	BC
458	3051801.896	732960.411	91.387	BC
459	3051794.926	732955.914	91.422	BC
460	3051845.13	732963.19	91.626	BC
461	3051846.185	732959.787	91.891	BC
462	3051846.002	732959.501	91.804	BC

463	3051848.505	732951.014	91.671	BC
464	3051848.941	732950.696	91.667	BC
465	3051851.549	732943.31	92.115	BC
466	3051852.281	732965.622	91.435	BC
467	3051827.777	732964.619	91.168	KULO
468	3051845.212	732919.425	91.338	BST
469	3051846.435	732916.153	91.084	BST
470	3051849.251	732916.615	91.022	BST
471	3051848.705	732920.061	91.538	BST
472	3051823.753	732983.438	91.035	PAB
473	3051760.835	732939.714	90.884	OFF7
474	3051838.174	732962.436	91.469	OFF6
475	3051675.616	732905.617	89.652	RD
476	3051675.659	732905.602	90.29	RD
477	3051673.469	732910.545	90.237	RD
478	3051697.631	732918.706	90.342	RD
479	3051702.027	732920.514	90.297	RD
480	3051700.988	732922.664	90.395	RD
481	3051731.883	732914.007	90.77	BC
482	3051725.115	732909.151	91.287	BC
483	3051763.653	732928.391	90.978	BC
484	3051746.215	732923.331	90.73	BC
485	3051761.462	732934.219	90.78	RD
486	3051766.947	732935.743	90.887	RD
487	3051757.449	732947.834	91.12	BC
488	3051764.413	732949.967	91.12	BC
489	3051765.695	732949.197	91.329	BC
490	3051771.82	732951.541	91.325	BC
491	3051773.503	732953.237	90.998	BC
492	3051756.868	732946.611	90.937	BC
493	3051748.646	732943.877	90.882	BC
494	3051746.434	732943.614	90.863	BC
495	3051738.673	732940.827	90.848	BC
496	3051736.489	732939.374	90.733	BC
497	3051728.019	732936.361	90.592	BC
498	3051675.473	732900.47	90.385	OFF8
499	3051675.473	732900.47	90.385	OFF8
500	3051760.835	732939.714	90.884	OFF7
501	3051760.839	732939.716	90.259	OFF7
502	3051674.157	732901.747	89.902	KULO
503	3051672.967	732901.796	89.908	KULO
504	3051657.767	732897.957	90.103	KULO
505	3051658.65	732896.074	90.086	KULO
506	3051653.126	732902.583	90.089	KULO

507	3051651.477	732904.864	89.956	KULO
508	3051660.304	732908.582	89.997	KULO
509	3051661.498	732906.922	90.055	KULO
510	3051666.566	732909.252	90.108	KULO
511	3051661.234	732908.872	90.146	KULO
512	3051665.863	732910.735	90.161	KULO
513	3051649.791	732927.488	90.14	KULO
514	3051648.967	732942.958	90.161	KULO
515	3051644.423	732940.373	90.167	KULO
516	3051661.562	732946.417	90.007	PAB
517	3051677.737	732916.313	90.408	PAB
518	3051685.905	732919.878	90.333	PAB
519	3051669.02	732931.786	90.701	BC
520	3051669.873	732894.882	90.481	BC
521	3051662.061	732891.396	90.446	BC
522	3051673.851	732885.69	90.453	BC
523	3051684.956	732891.226	90.448	PBA
524	3051697.225	732878.515	90.446	PBA
525	3051691.874	732875.775	90.84	BC
526	3051687.346	732886.244	90.591	BC
527	3051675.673	732880.23	90.521	BC
528	3051714.467	732869.762	90.335	TMP
529	3051718.723	732864.608	90.651	TMP
530	3051718.577	732873.467	90.409	TMP
531	3051734.277	732874.384	90.734	BC
532	3051743.213	732881.129	90.798	BC
533	3051746.343	732859.446	91.055	BC
534	3051734.663	732868.153	90.888	BC
535	3051727.539	732862.854	90.827	TMP
536	3051728.878	732859.896	91.097	TMP
537	3051725.917	732857.648	91.02	TMP
538	3051741.553	732836.976	91.245	OFF9
539	3051675.473	732900.47	90.385	OFF8
540	3051743.302	732829.041	91.263	BC
541	3051740.846	732825.202	91.299	BC
542	3051739.523	732825.782	91.246	BC
543	3051737.406	732822.145	91.257	BC
544	3051749.742	732824.997	91.438	BC
545	3051753.648	732822.024	91.381	BC
546	3051753.114	732823.053	91.379	RD
547	3051754.592	732825.213	91.279	RD
548	3051736.808	732838.795	91.08	PAB
549	3051717.84	732822.426	91.118	PAB
550	3051717.103	732858.278	90.663	PAB

551	3051706.529	732869.175	90.51	PAB
552	3051684.074	732855.885	90.244	PAB
553	3051713.321	732847.703	91.083	BC
554	3051719.483	732840.037	90.945	BC
555	3051711.753	732834.319	91.543	BC
556	3051729.946	732851.58	90.564	TMP
557	3051743.985	732854.975	90.612	TMP
558	3051755.319	732825.824	90.849	BC
559	3051760.887	732818.721	90.874	BC
560	3051760.366	732817.969	90.85	BC
561	3051783.541	732786.75	89.589	BC
562	3051758.562	732815.395	91.192	PAB
563	3051760.835	732939.714	90.884	OFF7
564	3051675.473	732900.47	90.385	OFF8
565	3051770.826	732919.766	91.086	OFF8
566	3051765.156	732924.867	90.987	GT
567	3051769.547	732926.282	91.033	GT
568	3051770.826	732919.766	91.086	OFF10
569	3051760.835	732939.714	90.884	OFF7
570	3051772.136	732922.224	91.618	TMP
571	3051770.981	732926.36	91.313	TMP
572	3051776.273	732923.493	91.639	TMP
573	3051776.533	732924.135	91.47	CS
574	3051803.016	732931.938	91.349	CS
575	3051800.915	732938.728	91.304	CS
576	3051806.283	732934.04	91.417	BC
577	3051824.5	732939.64	91.536	BC
578	3051833.404	732910.345	91.775	BC
579	3051839.547	732912.042	92.084	BC
580	3051828.723	732908.745	91.543	BC
581	3051832.988	732894.39	91.452	BC
582	3051836.053	732884.737	91.346	BC
583	3051833.973	732886.602	91.376	BC
584	3051765.549	732921.534	90.983	CS
585	3051748.267	732916.275	90.808	CS
586	3051752.552	732901.521	90.866	CS
587	3051758.684	732904.656	91.207	BC
588	3051766.928	732888.697	91.112	BC
589	3051765.513	732868.316	91.51	BC

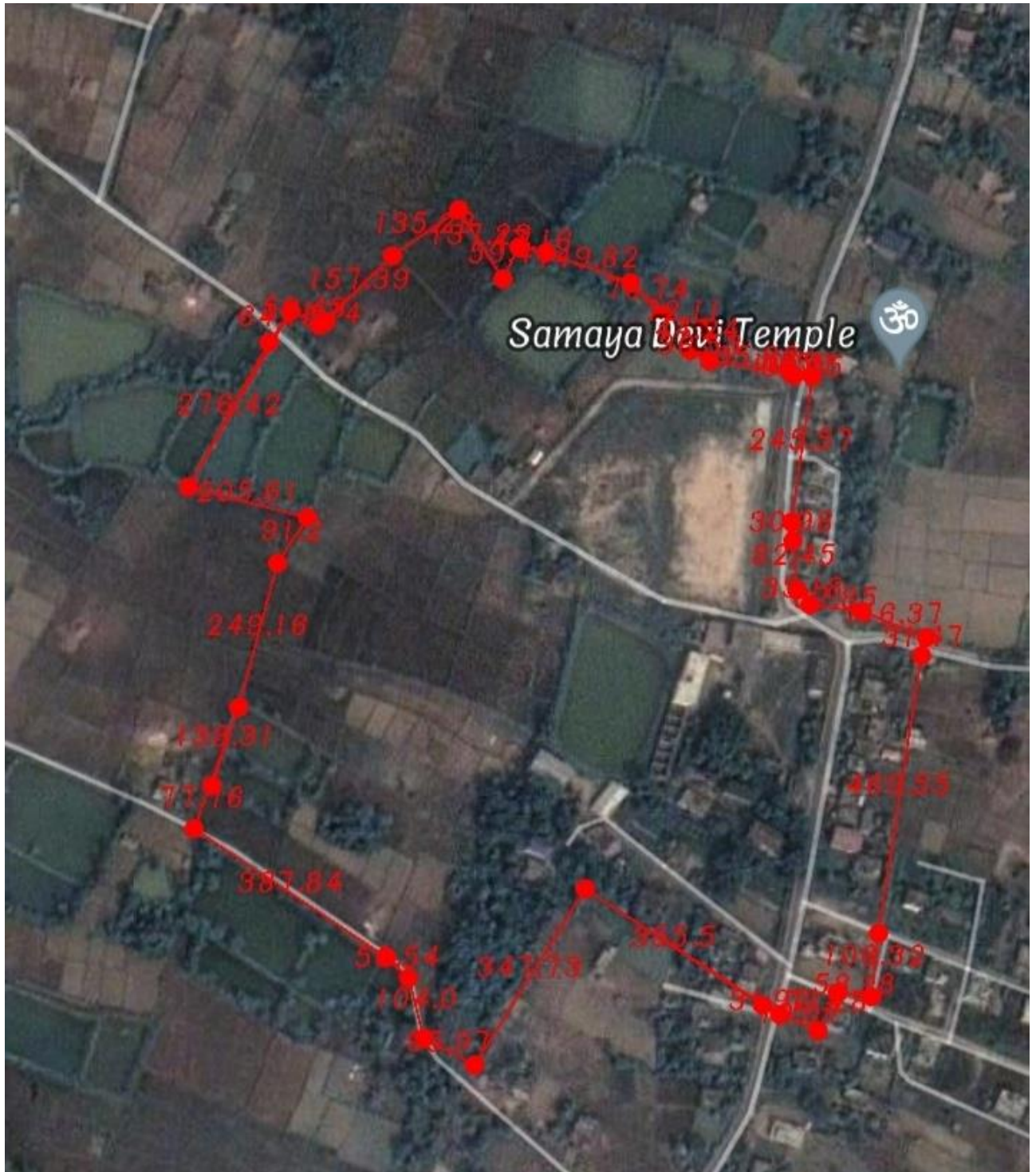


Fig: Total survey area [15-14-6.88(B-K-D)]

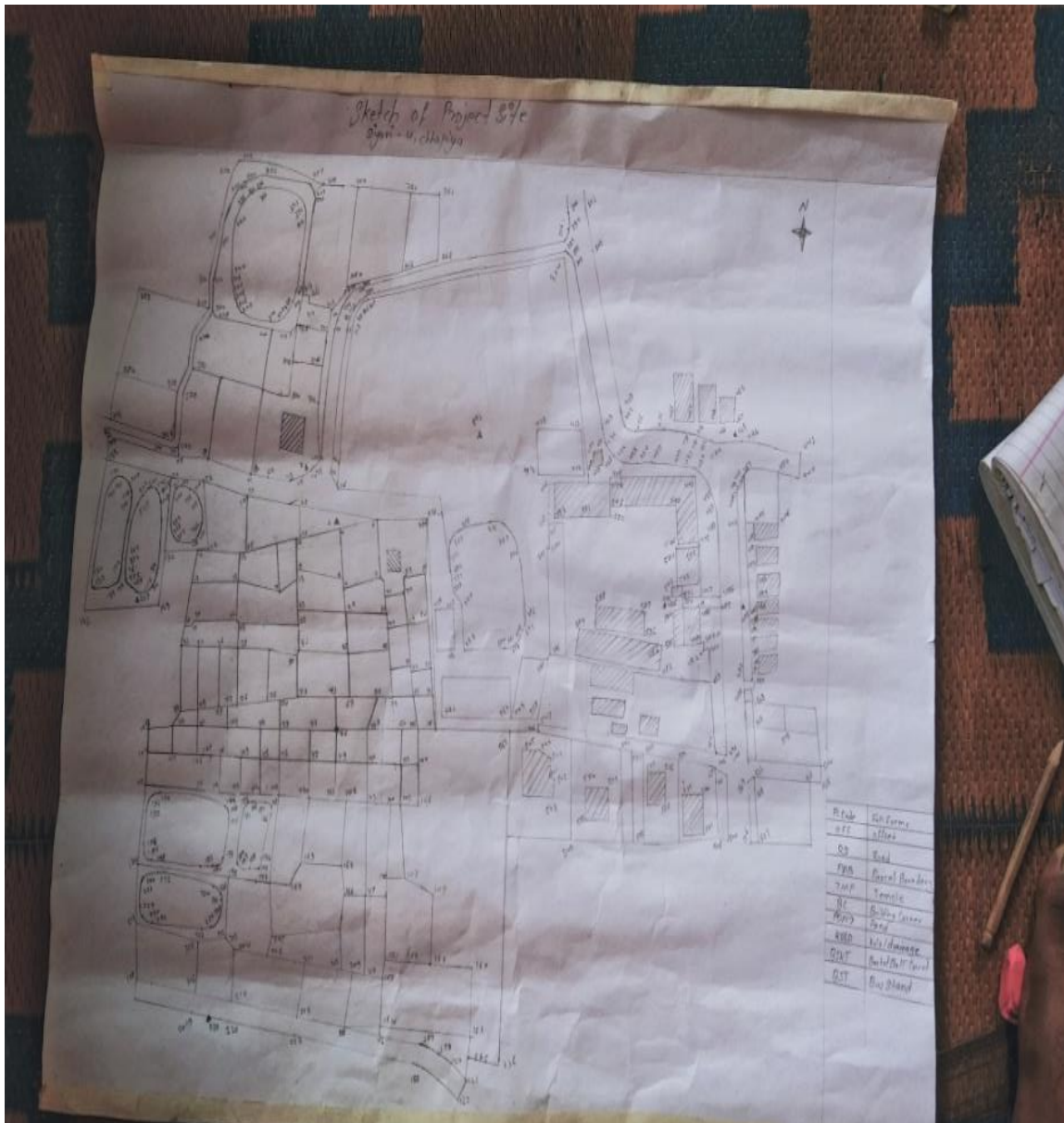


Fig: Sketch

• Abbreviation

P-CODE	FULLFORMS
OFF	Offset
RD	Road
PAB	Parcel Boundary
TMP	Temple
BC	Building corner
POND	POND
KULO	Kulo/Drainage
BSKT	Basketball Court
BST	Bus Stop



Fig: Total Points including offsets and control point

4.4 Data Extraction and Data Processing

Data extraction is the process extracting collected point data from Total Station through the Bluetooth, USB Cable, Pen drive, SD card. We extracted data through SD card.

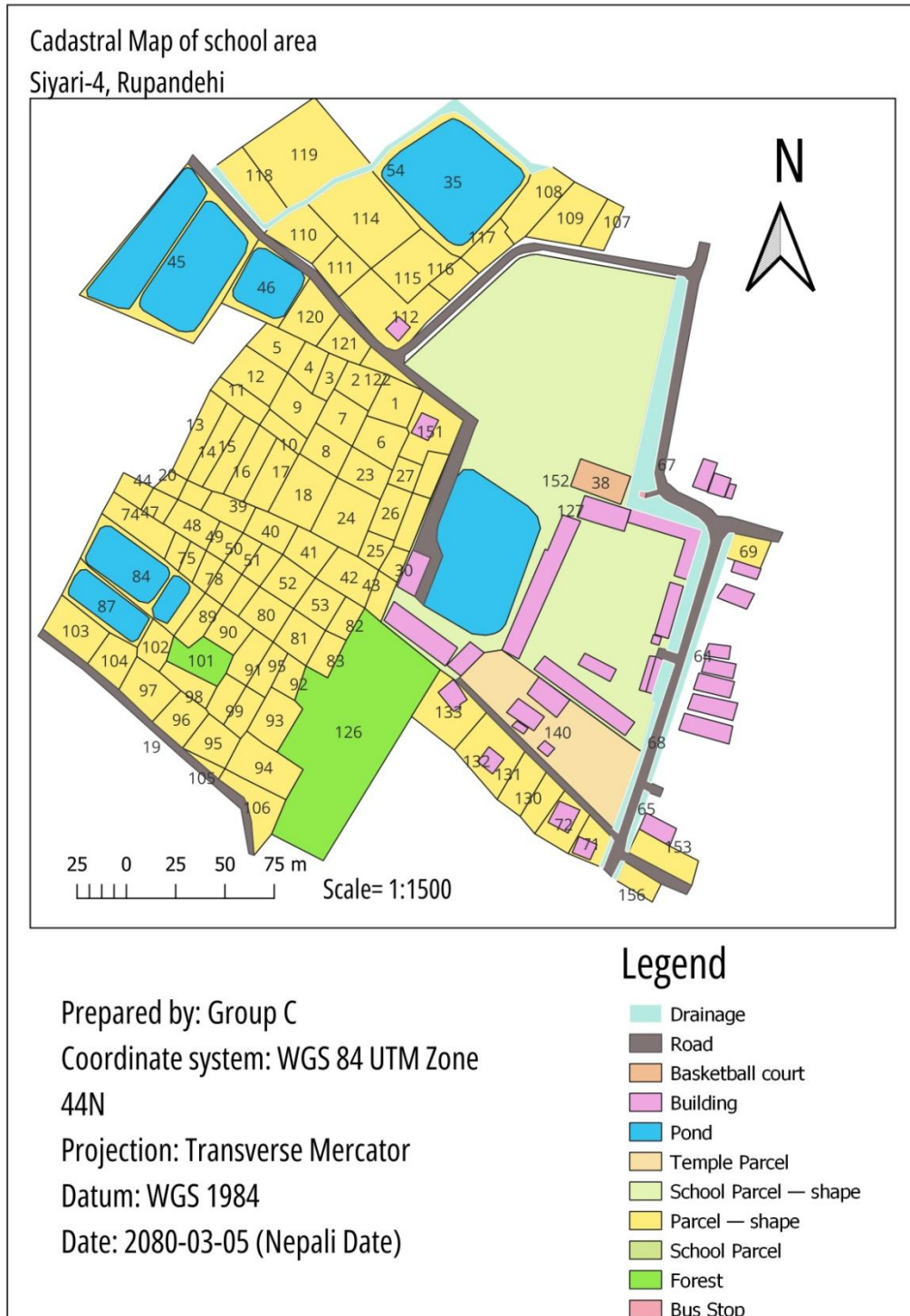
After the data is extracted the data is transferred to the computer and have to be processed. Data processing can be done by using: ArcGIS, QGis, Auto Cad etc.

Steps for data processing:

- Firstly convert the data into CSV Format.
- Then add the data in QGis or any other software and also give the Projection.
- Create shape file to join those points.
- The shape files geometry may be Point, Line, and Polygon according to the required feature.
- Now join those points and create a cadastral map of project site.
- For the base map earth satellite image can be added for checking our point's real world/ground position

5. Result/ Output:

After the data processing a Cadastral map as a output is ready.



6. Conclusion:

From this Practical of Cadastral survey we know how to determine the coordinates (N,E,Z) of control point with the help of SW map application and also know how to take readings of parcels corner by using Pentax R-2500NS Total Station.

This practical is very effective for practical knowledge about Cadastral survey. It helps to improve our skill of surveying and encourage us to our best performance in field as well as office work.

7. ANNEX-1

Relevant Photographs







