

# **D**EMARCATION AND SURVEY OF GOVERNMENT APPROVED LAYOUT NUMBER (YBTP/069/R).

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## **ABSTRACT**

*The layout survey was carried out for the purpose of issuance of certificate of occupancy. The project involves the translation of the entire approved layout plan of thirty five (35) plots unto the ground by setting out of plots corner points, beaconing, coordination of the emplaced corner points, and production of a surveyed plan of the layout at a scale of 1:1,500. The Sokkia SET 630R Total Station was used in the setting and the final survey exercises. The final survey plan was produced with the AutoCAD Land Development. A total of 70 beacons were monumented and surveyed in the Layout. The plots are meant to be allocated to individuals after payment have been made for the Issuance of certificate of occupancy and effective housing and physical development of the state capital.*

**Keyword:** *Cadastral, Demarcation, Monument*

**S**urvey system as a collaborative multitude of land administration which include boundary demarcation and

## **Introduction:**

Land administration is the method in which the Spatial and attribute about the ownership is efficiently in control of central expert that regulate the structure and pattern of land possession, land use, and access of public to the land resources (Usman, 2010). Layout could be defined as the way individual items are arranged, (Ramsay, 1997). The sustainable development of housing estates, towns and cities all over the world depends largely on sound and efficient planning; which is based on a good survey and setting out of the urban plans or designs for the area. Chileshe & Shamaoma, (2014), outline Cadastral

definition, surveying, registration, adjudication, dispute resolution and information management. This arrangement can be in the area of cadastral layout survey, which deals with the proper arrangement of land property in order to produce a plan designed for a typical neighborhood residential settlement, (Dashe, 1987). In order to actualize the planners' design, the demarcation and survey of each plot as designed for the cluster housing estate must be done.

The purpose of the project is to demarcate the plots on ground and the final plan will be produce which will be used for the building construction and development of 35 plots (approximate sizes = (30 x 20m) for individual plot owners within Damaturu metropolitan .

### **Aims and Objectives of the Project**

The aim of the study is to demarcation and survey the Government approved layout Number YBTP/069/R along Gashua Road, Damaturu Yobe state.

**The specific objectives** are to:

- i. To demarcate 35 plot of land on Layout YBTP/069/R.
- ii. To set out the 35 plots within the layout.
- ii. Produce the survey plan for the 35 plots (scale 1:1,500); which shall be used for issuance of certificate occupancy and for building construction of the housing estate.

### **Location of the Project Site**

The project site is located between 3-Bedroom housing estate and Ali Marami Housing Estate; it borders with part of YBTP/004/R/C from southern and western part and 3-Bedroom housing estate in eastern part, along Gashua road in Damaturu, Yobe state, at 822206.230 m E, 1302040.671 m N, in UTM zone 32.

## **INSTRUMENTATION AND METHODOLOGY**

### **Reconnaissance (Recce)**

The Recce exercise in this project was conducted in two stages known as field and office reconnaissance.

### **Office Reconnaissance**

Instruction to survey (I to S) of project was issued and beacons with numbers CSBT 028, CSBT 030 and CSBT 031 were collected from Ministry of Land and

Survey. The cadastral map of the metropolitan in which the layout is located was studied alongside the layout design. The site selection was done prior the layout design. The choice of instruments to be used was also made at this stage. The obtained coordinates of the controls were shown in table 2.1.

Table 2.1: Coordinate of control used

Station	Easting	Northing
CSTB 028	822021.061	1301879.313
CSTB 030	822352.033	1301877.224
CSTB 031	822694.457	1301852.71

### Field Reconnaissance

With the information extracted from the office recce, the field recce commenced and the chosen location which was visited with members of the survey team in order to practically identify the topographical status of the site. Three existing tertiary control stations near the site location were CSTB 028, CSBT030, and CSBT 031. They were cleared of bush for inter-visibility. Having satisfied with inter-visibility, at the end of the field recce a sketch of the reconnaissance was drawn Appendix I.

### EQUIPMENT USED

The following equipment and instrument were used in the execution of the project

- i. Sokkia SET 630R Total Station and Tripod
- ii. Reflectors
- iii. Cutlasses
- iv. Casio Programmable Calculator
- v. Handset telephone
- vi. Iron rods
- vii. Field Book
- viii. HP Intel Core i3 Laptop
- ix. HP Deskjet printer

The necessary plate bubble and collimation tests together with sensor/reflector integrity calibration were carried out on the Total Station prior to use them in the project, as shown in the Instrument tests' table 2.3 below.

### Instrument Test

The three instrument tests carried out on the Sokkia SET 630R Total Station include:

- (i) the plate bubble,
- (ii) horizontal collimation adjustment tests and
- (iii) sensor/reflector integrity calibration.

### Horizontal Plate Bubble Adjustment Test

This test was to ensure that after leveling the horizontal plate bubble, it will continue to remain at the Centre of its run, while the instrument still remained there and being used at the same station. In doing this test, the Total Station was set up on a selected point outside the office and horizontal bubble was leveled using the foot screws. The instrument was turned through 90°, re-leveled by the third foot screw and turned through 180° and 360° and bubble remained in the Centre of its run; hence the instrument was declared not to have any maladjustment in that regard.

### Horizontal Collimation Adjustment Test

The Instrument was tested for horizontal collimation error; which was aimed at ensuring that the line(s) of sight between the Total Station and the reflector(s) are truly horizontal and perpendicular to the trunion axis. The two pegs test method and observing on face left and face right mode was used.

The Total Station was set up midway between the two reflectors mounted on bipods (figure 2.1) and after the temporary station adjustment, directional readings were taken to reflector A and B on both faces respectively. The difference between the face readings to a reflectors A and B respectively should be  $\pm 180^\circ$  or  $180^\circ \pm 30''$  (3<sup>rd</sup> order accuracy), as shown in table 2.2

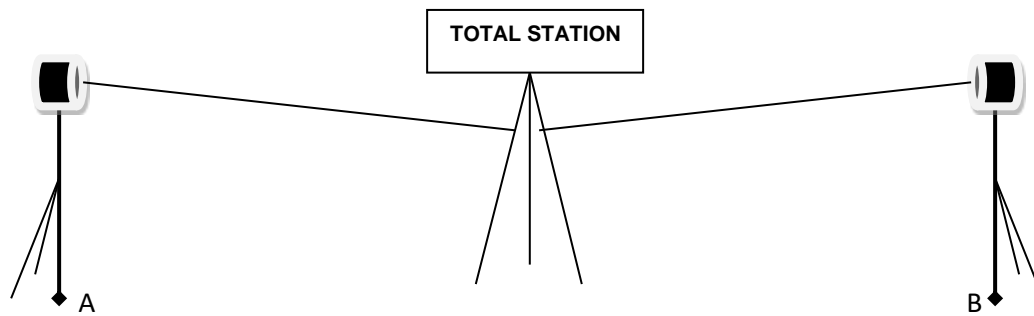


Figure 2.1: Two Peg Test for Horizontal Collimation Adjustment

Station	Sight	Face	Horiz. Readings	Directional	Horizontal Angle	Mean Horiz. Angle
Total Station	A	L	130° 36' 30"			
	B	L	300° 42' 50"		170° 06' 20"	170° 06' 21"
	B	R	120° 42' 54"		170° 06' 22"	
	A	R	310° 36' 32"			

The difference between the Face Left and face Right to A and B were 02” and 04” respectively. These values are tolerable; hence the instrument is adjudged to be in good condition, therefore requires no permanent adjustment.

**Sensor/reflector Integrity Calibration**

The distance between the Total Station instrument and the reflector at A in figure 2.2 was measured using 100 meter tape to be 80m. The telescope of the Total Station was moved vertically over the prism (reflector) until it got to the level of the reflector, when a clicking sound of detection and tracking was observed. In order to be sure of the integrity of the signal for the EDM, the distance between A and the Total was measured several times as indicated Table 2.3.

Table 2.3: Total Station EDM Calibration Test

Distance by Tape	Distance by EDM	Diff (m)
80.00	79.998	0.002
80.00	79.998	0.002

80.00	79.996	0.004
80.00	79.998	0.002
80.00	79.998	0.002

The difference between the taped distance and the Total Station is an average of 0.002m; which is tolerable. This difference may be due to the nature of terrain which has an effect on the tape.

**In-Situ Check of Controls Used**

After the selection of the **three controls**, they were checked to ascertain whether they have been tampered with.

**Procedure**

The Total Station was leveled on CSBT 030 and the reflectors were positioned on CSBT 028 and CSBT 31 as fore and back stations respectively as shown in figure 2.2. The distances and directional angle readings were observed and compared with the values computed from the coordinates of the controls. By specification, the deviations in the angle and distances must not exceed 30" and 0.3m respectively. The summary computation is in Table 2.4, and it shows that the three controls station used in this project were In-situ.

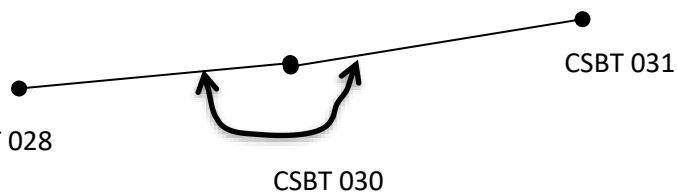


Figure 2.2: in-situ CSBT 028

**Table 2.4: Summary Results of In-situ Check**

Station	Sight	Face	Horiz. Directional Readings	Horizontal Angle	Mean Horiz. Angle	Distance (m)		
						Measured	Computed	Diff. (m)
CSBT 030	CSBT 028	L	39° 48' 39"			330.978	330.979	0.011
	CSBT 031	L	223° 32' 29"	183° 43' 50"		343.302	343.300	0.002
	CSBT 031	R	43° 32' 29"	183° 43' 50"	183° 43' 50"			

	CSBT 028	R	219° 48' 39"				
Computed Angles from Bearings of the Coordinates							
Item	CSBT 030→CSBT 028		CSBT 030→CSBT 031		Angle	Diff.	
Computed	90° 21' 42"		94° 05' 41"		183° 43' 59"	09"	

## FIELD EXECUTION

### Connection of survey

When the Monumentation was completed, the four located boundary control points around the area were coordinated by the Total Station (using coordinate mode) from the available control nearby the site. Having checked CSBT 028, CSBT 30 and CSBT 031 to be in-situ, the coordination of the beacons was carried out by a traverse from CSBT 028 and closing back on CSBT 031.

The operation is as follows:-

- The Total station SET 630R was set and leveled at CSBT 028
- The coordinate of the occupied control station (CSBT 028) was fed into the instrument together with the height of Instrument.
- The coordinate of target station that is CSBT 030 also fed into the instrument as back sight together with target height.
- The coordinate of back sight was confirmed.
- The connection started
- The observation was made to PBY 28897 as fore sight. Bearing in mind the principle of whole to part.
- The reflector was placed at all the visible established beacons from the occupied instrument station.
- The same procedure was repeated once the instrument was moved to occupy next established temporary control station.

### Setting out Data

In setting out the bearing and distance of each lines of the plot is required as such, the setting out data comprising the bearings and distances of each line of the plots were derived by geo-referencing of the planner's layout design, after scanning using the actual coordinates of the perimeter boundary beacons at the layout corners. The provisional coordinates for the setting out were thereafter generated.

### Setting out of Plots

The plots' coordinate data generated were then set out on the ground, In the setting out, 35 plots were set out from PBY28897 from PBY 28898 from PBY122 and PB123 respectively, giving the total of 70 points set out . The coordinate mode of the Sokkia 630R Total Station was used in the setting out exercise and the distances and bearings to all the radiating points were observed. The points were marked with iron pegs during the setting out; and subsequently monumented in preparation for the final Survey.

The setting out perimeter boundary using the temporary controls points established in site. The principle of "Working from whole to part" was also adhered to, in carrying out the project. The coordinates of the station was imputed into the Total Station to set the station, and the target at **CSBT 030** was bisected and coordinate was input into the instrument for the orientation. After the orientation had been set, the reading was taken to the station CSBT 031 as test of data input and station CSBT 028 also bisected and reading was taken, the two readings were compared with the original coordinate of the station and the difference was less than 03" in each.

The instrument was changed to setting out mode. This made the instrument to request for the coordinate of the next station which was input and it gave the angle and distance from the present station to the next station, the angle was turned until when it displayed 00° 00' 00" then clamped the forward target man was asked to pace the distance displayed towards the direction. When the target man got there, the target was bisected and the reading was taken and it now displayed some centimeter on the screen. The target man was asked to move along the same line until when got to the actual point approximately that is when it displayed less than 18mm on the screen. The person was asked to peg the point with iron rod. The process continues like that till when the whole points were set out.

### Monumentation of Beacons

The beacons for the 35 plots were monumented according to SURCON Specification of 1:2:3 parts of cement; gravel and sand respectively. The beacons were molded on the marked point and cast In-situ as shown in figure 2.3



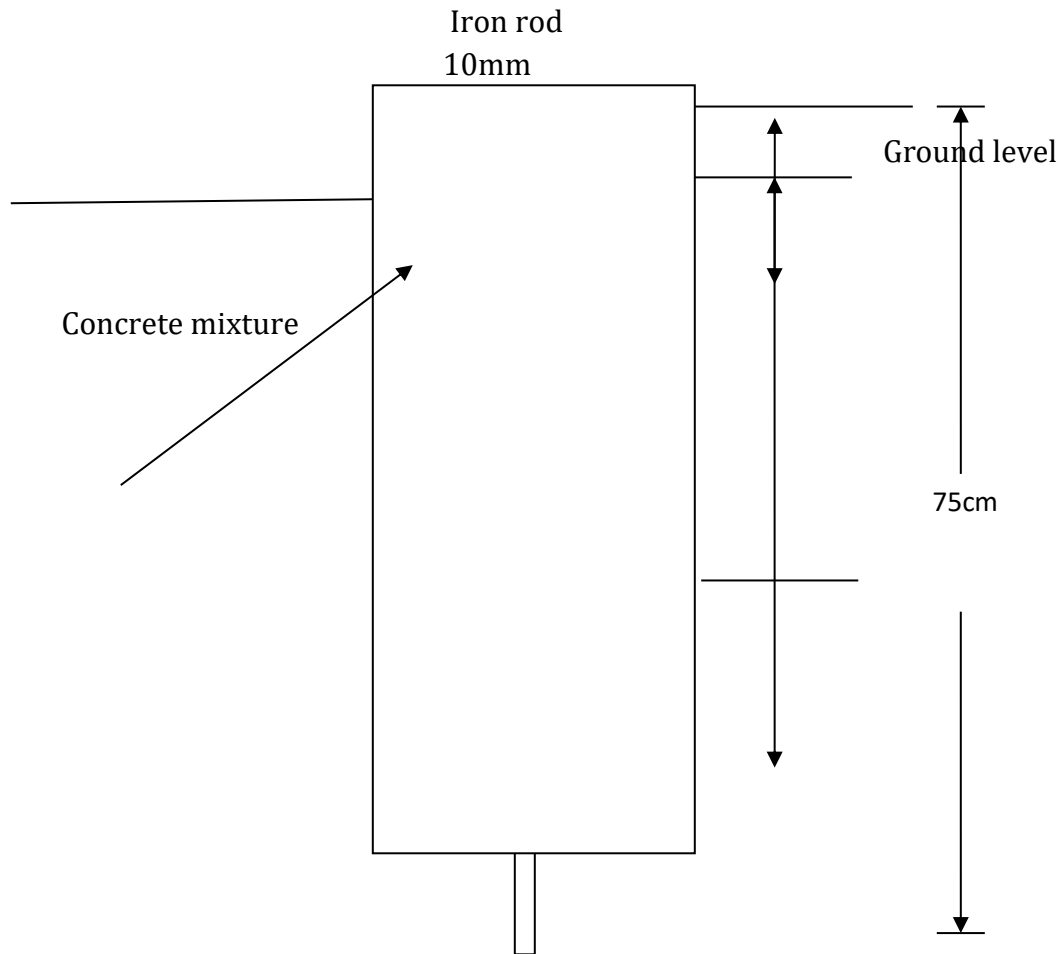


Figure 2.3a: Sectional View of the Beacon (Not to scale).

PBY = Property beacon Yobe  
YB = YOBE

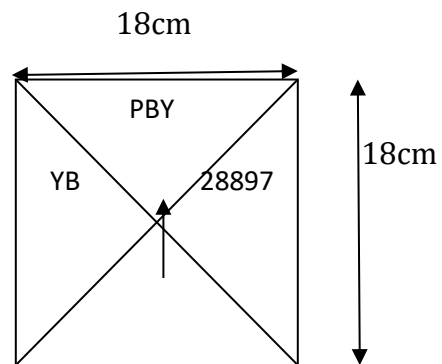


Figure 2.2b: Plan (Top) View of Layout Beacon

The beacon numbering for this layout ranged between PBY28897 and PBY9897. The dimension of the beacons is 18cmx18cmx75cm (figures 5a and b)

### **The Final Survey and Layout Plotting**

The final survey was carried out using the same Sokkia SET 630R Total Station. The radiation method from the corner pillars was used to acquire the final coordinates of the plot beacons. The coordinates, distances and bearing and areas of the plot were computed as shown in Appendix II.

## **RESULT AND ANALYSIS**

### **Results**

There are a total of 35 plots, 70 beacons at YBTP/069/R. The plots are meant to be allocated to individuals and their C of O; therefore the final coordinates of the layout was obtained, the back computation and area of each plot in the layout was presented in Appendix II.

### **Layout Survey Plan**

The plan was plotted on Scale 1:1,500, there are a total of 35 plots, with 70 property beacons and Boundary beacons. The plan is shown in Appendix III

## **PROJECT COSTING**

Accuracy and cost of a cadastral survey are closely related. Both depend on the purpose, method of survey and the location of the land surveyed. In precise traversing of a high order like first order, accuracy takes precedence over all other considerations but for third order traversing for cadastral purpose, low cost and time of work are of primary importance as long as the required accuracy is maintained.

### **Cost of Project Execution**

The project costing was based on the 1996 Federal Government Scale of Fees for Consultants in the Construction Industry which makes provision for the remuneration of Surveyors for Consultancy Services and Direct Costs in the execution of survey works.

The costing is done by direct field cost, taking into consideration the Central bank inflation rate for the month of July 2014. This is based on the personnel,

materials, equipment, transportation and other contingences as indicated in table 4.1 below.

**Table 4.1: Cost of the Layout Survey of YBTP/069/R**

S/No	Project Components	Direct Cost Parameters	Cost Estimates(₦)
1.	Reconnaissance 1 days	1 Pupil Surveyor @ ₦9814.20/day	9814.20
		1 Technical Officer @ ₦6542.80/day	6542.80
		2 Survey Attendants @ ₦2039.33each/ day	4098.66
		Transport (Field vehicle, fuel /Driver @ ₦9,000/day)	19,826.67
		Basic Equipment (hand-held GPS, steel tape etc.@ ₦9000/day)	9,000.00
		<b>Sub-Total</b>	<b>49,282.33</b>
2.	In-situ Checks /Perimeter/ Connection Traverse 1 day	1 Pupil Surveyor @ ₦9814.20/day	9814.20
		1 Technical Officer @ ₦6542.80/day	6542.80
		1Asst. Tech. Officer @ ₦4078/day	4078.66
		2 Survey Attendants @ ₦2059.33each /day	28,323.80
		Basic Equipment (Theodolite and Accessories) @ ₦19,000/day	19,000.00
		<b>Sub-Total</b>	<b>71,837.46</b>

3.	Setting out of corner beacons/Line Clearing 3 days	1 Pupil Surveyor @	29442.60
		9814.20/day	19,628.40
		1 Technical Officer @ ₦	12,234.00
		6542.80/day	18,533.97
		1Asst. Tech. Officer ₦ 4078/day	
		3 Survey Attendants @ ₦	84,971.40
		2059.33each /day Basic Equipment (Theodolite and Accessories) @	57,000.00
		N28,323.80/day Transport (Vehicle + Fuel +Driver @ N19,000/day)	
		<b>Sub-Total</b>	<b>165,018.36</b>
4.	Pillar Emplacement, Capping and Numbering 2 days	1 Pupil Surveyor @	19628.40
		9,814.20/day	13,085.60
		1 Technical Officer @ ₦	8,156.00
		6,542.80/day	3,118.66
		1Asst. Tech. Officer ₦	56,647.60
		3 Survey Attendants @ ₦	38,000.00
		2059.33each /day Basic Equipment (Total station and Accessories) @	42,000.00
		N28,323.80/day Transport (Vehicle + Fuel +Driver @ N19,000/day)	
		70 Propety Beacon @ N600 Each	
		<b>Sub -Total</b>	<b>180,636.26</b>
5.	Data Acquisition of 3 blocks by traverse method 2 days	1 Pupil Surveyor @	19,628.40
		9,814.20/day	13,085.60
		1 Technical Officer @ ₦	8,156.00
		6,542.80/day	12,355.98
		1Asst. Tech. Officer ₦	56,647.60
		4,078/day	38,000.00

		3 Survey Attendants @ ₦ 2,059.33each /day Basic Equipment @ 28,323.80/day Transport (Vehicle + Fuel +Driver @ N19,000/day)	
		<b>Sub-Total</b>	<b>147,873.58</b>
6.	Data Processing 2 days	1 Pupil Surveyor @ N13,085.60/day 1 Technical Officer @ ₦ 7,944.83/day 1 Asst. technical officer @4,673.43/day Programmable Calculators @ N21,242.85/ day	<b>26,171.20</b> <b>15,889.66</b> <b>9,346.86</b> <b>42,485.70</b>
		<b>Sub-Total</b>	<b>93,893.42</b>
7.	Plan Preparation, Plotting and Draughting 2 days	1 Pupil Surveyor @ N7,095.75/day 1 Technical Officer @ ₦ 4,830.50/day Computer + Accessories + Plotting @ N10,000/day	<b>14,191.50</b> <b>9,661.00</b> <b>20,000.00</b>
		<b>Sub-Total</b>	<b>43,852.50</b>
8.	Project Technical Report 1 day	1 chief surveyor @ N 14,487.62 1 Pupil Surveyor @ N7,095.75/day 1 No Confidential Secretary @N6,542 / Computer + Accessories @ N10,000 /day	<b>14,487.62</b> <b>7,095.75</b> <b>6,542.00</b> <b>10,000.00</b>
		<b>Sub-Total</b>	<b>44,975.25</b>
		<b>TOTAL BEFORE INFLATION</b>	<b>797,369.44</b>
9		Inflation at 3.9%	<b>31,097.41</b>
		<b>TOTAL AFTER INFLATION</b>	<b>828,466.85</b>
10.	Mobilisation/ Demobilisation	10% of Total Cost	<b>82,846.685</b>

11.	Contingencies	5% oF Total Cost	41,423.34
12	Consultancy fee	5 %	41,423.34
13	VAT	5 % of total Cost	41,423.34
GRAND TOTAL			1,035,583.56

The total vetted cost for the execution of the project was One Million and thirty five thousand, Five Hundred and Eight Three Naira, Fifty Six kobo only.

### CONCLUSION

The various tasks executed in the project include: the setting out and demarcation and the final survey of 35 plots, production of the layout survey plan for the plots at scale 1:1,500; which shall be used in the Issuance of certificate of occupancy and for building construction of the housing estate and allocation. This project was in its real sense challenging, particularly the setting out phase. A total of 70 beacons were monument and surveyed in the 35 plots. All the plots are of equal sizes except one plot. The plots are meant to be allocate to the Individuals for the effective housing implementation and physical development of layout YBTP/069/R. It should be noted that this survey was purely for the issuance of certificate of occupancy. The difference between the setting out and the final survey coordinates computed Project shows an average deviation of 0.083mE and 0.087mN respectively; which is a good result for reference and usage for the purpose of survey. The beacons were precisely placed within the layout for effective documentation and building construction in the propose layout.

### Recommendations

The following are hereby recommended:

- a) The survey of the remaining layout in the Yobe state should be adequately funded for qualitative, organized and aesthetic housing project of Damaturu.
- b) The techniques of layout design digital scanning, geo-referencing with established pillar coordinates and setting out data generation prior setting out and final survey with a Total Station Instrument should be encouraged in order to reduce cost, labour and project duration of

layout surveys for the Surveyor. This however does not imply a reduction in the cost of the contract for the surveyor; rather should increase it, considering the quality of techniques and the equipment used.

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APPENDICE  
Appendix I Recce Diagram





## APENDIX II: BACK COMPUTATION

PLOT 1					
FROM STATION	BEARING	DISTANCE	EASTING	NORTHING	TO STATION
			822085.274	1302088.22	PBY28897
PBY28897	44° 11' 32"	7.071	822090.203	1302093.29	PBY28898
PBY28898	89° 09' 36"	15.006	822105.207	1302093.51	PBY28899
PBY28899	179° 10' 16"	30.003	822105.641	1302063.51	PBY288914
PBY28914	269° 10' 10"	32.022	822085.274	1302088.22	PBY28897
PBY28897	359° 09' 41"	25.003	822085.274	1302088.22	PBY28813
	Area= 587.500SQM				
PLOT 2					
			822085.642	1302063.22	PBY28913
PBY28913	0° 49' 51"	20	822105.64	1302063.51	PBY28914
PBY28914	270° 51' 49"	29.993	822106.092	1302033.52	PBY28910
PBY28910	180° 50' 26"	14.996	822091.098	1302033.3	PBY28911
PBY28911	135° 56' 41"	7.076	822086.013	1302038.22	PBY28912
PBY28912	90° 51' 01"	25.003	822085.642	1302063.22	PBY28913
	Area= 587.535 SQM				
PLOT 3					
			822105.2	1302093.51	PBY28899
PBY28899	0° 51' 35"	19.992	822125.19	1302093.81	PBY28900
PBY28900	270° 51' 34"	30.003	822125.64	1302063.81	PBY28915
PBY28915	180° 51' 34"	20.002	822105.64	1302063.51	PBY28914
PBY28914	90° 50' 25"	30.003	822105.2	1302093.51	PBY28899
	Area = 599.983 SQM				
PLOT 4					
			822105.64	1302063.22	PBY28914
PBY28914	1° 41' 23"	20.009	822125.64	1302063.81	PBY28915
PBY28915	270° 50' 25"	30.003	822126.08	1302033.81	PBY28909
PBY28909	180° 49' 52"	19.992	822106.09	1302033.52	PBY28810
PBY28810	90° 52' 5"	29.703	822105.64	1302063.22	PBY28914
	Area = 597.047 SQM				
PLOT 5					
			822125.19	1302093.81	PBY28900
PBY28900	0° 49' 51"	20.002	822145.19	1302094.1	PBY28901
PBY28901	270° 51' 35"	29.993	822145.64	1302064.11	PBY28916
PBY28916	180° 51' 34"	20.002	822125.64	1302063.81	PBY28915
PBY28915	90° 51' 34"	30.003	822125.19	1302093.81	PBY28900
	Area = 600.003 SQM				

<b>PLOT 6</b>					
			822125.64	1302063.81	PBY28915
PBY28915	0° 51' 34"	20.002	822145.64	1302064.11	PBY28916
PBY28916	270° 50' 25"	30.003	822146.08	1302034.11	PBY28908
PBY28908	180° 51' 34"	20.002	822126.08	1302033.81	PBY28909
PBY28909	90° 50' 25"	30.003	822125.64	1302063.81	PBY28915
	Area = 600.132 SQM				
<b>PLOT 7</b>					
			822145.19	1302094.1	PBY28901
PBY28901	0° 51' 34"	20.002	822165.19	1302094.4	PBY28902
PBY28902	270° 50' 25"	30.003	822165.63	1302064.4	PBY28917
PBY28917	180° 49' 52"	19.992	822145.64	1302064.11	PBY28916
PBY28916	90° 51' 35"	29.993	822145.19	1302094.1	PBY28901
	Area = 599.881 SQM				
<b>PLOT 8</b>					
			822145.64	1302064.11	PBY28916
PBY28916	0° 49' 52"	19.992	822165.63	1302064.4	PBY28917
PBY28917	270° 51' 35"	29.993	822166.08	1302034.41	PBY28907
PBY28907	180° 51' 34"	20.002	822146.08	1302034.11	PBY28908
PBY28908	90° 50' 25"	30.003	822145.64	1302064.11	PBY28916
	Area = 599.881 SQM				
<b>PLOT 9</b>					
			822165.19	1302094.4	PBY28902
PBY28902	0° 51' 4"	35.004	822200.19	1302094.92	PBY28903
PBY28903	315° 48' 8"	7.072	822205.26	1302089.99	PBY28904
PBY28904	270° 50' 53"	49.995	822206	1302040	PBY28905
PBY28905	225° 48' 8"	7.072	822201.07	1302034.93	PBY28906
PBY28906	180° 51' 5"	34.994	822166.08	1302034.41	PBY28907
PBY28907	90° 51' 35"	29.993	822165.63	1302064.4	PBY28917
PBY28917	90° 50' 25"	30.003	822165.19	1302094.4	PBY28902
	Area = 2374.969 SQM				
<b>PLOT 10</b>					
			822086.46	1302008.22	PBY28918
PBY28918	44° 05' 00"	7.071	822091.38	1302013.3	PBY28919
PBY28919	89° 09' 36"	15.002	822106.38	1302013.52	PBY28920
PBY28920	139° 19' 31"	30.003	822106.83	1301983.52	PBY28938
PBY28938	269° 10' 09"	20.002	822086.83	1301983.23	PBY28937
PBY28937	359° 09' 06"	24.993	822086.46	1302008.22	PBY28918

<b>Plot 11</b>			822086.83	1301983.23	PBY28937
PBY28937	89° 10' 09"	20.002	822106.83	1301983.52	PBY28938
PBY28938	179° 09' 40"	29.993	822107.27	1301953.53	PBY28934
PBY28934	269° 07' 18"	15.002	822092.27	1301953.3	PBY28935
PBY28935	134° 11' 52"	7.072	822087.2	1301958.23	PBY28936
PBY28936	179° 09' 08"	25.003	822086.83	1301983.23	PBY28937
	Area = 578.207 SQM				
<b>PLOT 12</b>					
			822106.38	1302013.52	PBY28920
PBY28920	0° 51' 34"	20.002	822126.38	1302013.82	PBY28921
PBY28921	270° 50' 25"	30.003	822126.82	1301983.82	PBY28939
PBY28939	180° 51' 35"	19.992	822106.83	1301983.52	PBY28938
PBY28938	90° 51' 34"	30.003	822106.38	1302013.52	PBY28920
	Area = 599.984 SQM				
<b>PLOT 13</b>					
			822106.83	1301983.52	PBY28938
PBY28938	0° 51' 35"	19.992	822126.82	1301983.82	PBY28939
PBY28939	270° 51' 34"	30.003	822127.27	1301953.82	PBY28933
PBY28933	180° 49' 51"	20.002	822107.27	1301953.53	PBY28934
PBY28934	90° 50' 26"	29.993	822106.83	1301983.52	PBY28938
	Area = 599.881 SQM				
<b>PLOT 14</b>					
			822126.38	1302013.82	PBY28921
PBY28921	0° 49' 51"	20.002	822146.38	1302014.11	PBY28922
PBY28922	270° 50' 26"	29.993	822146.82	1301984.12	PBY28940
PBY28940	180° 51' 34"	20.002	822126.82	1301983.82	PBY28939
PBY28939	90° 50' 25"	30.003	822126.38	1302013.82	PBY28921
	Area = 600.030 SQM				
<b>PLOT 15</b>					
			822126.82	1301983.82	PBY28939
PBY28939	0° 51' 34"	20.002	822146.82	1301984.12	PBY28940
PBY28940	270° 51' 34"	30.003	822147.27	1301954.12	PBY28932
PBY28932	180° 51' 34"	20.002	822127.27	1301953.82	PBY28933
PBY28933	90° 51' 34"	30.003	822126.82	1301983.82	PBY28939
	Area = 600.135 SQM				

<b>PLOT 16</b>					
			822146.38	1302014.11	PBY28922
PBY28922	0° 51' 34"	20.002	822166.38	1302014.41	PBY28923
PBY28923	270° 50' 25"	30.003	822166.82	1301984.41	PBY28941
PBY28941	180° 49' 51"	20.002	822146.82	1301984.12	PBY28940
PBY28940	90° 50' 26"	29.993	822146.38	1302014.11	PBY28922
	Area = 600.030 SQM				
<b>PLOT 17</b>					
			822146.82	1301984.12	PBY28940
PBY28940	0° 49' 51"	20.002	822166.82	1301984.41	PBY28941
PBY28941	270° 50' 26"	29.993	822167.26	1301954.42	PBY28931
PBY28931	180° 51' 35"	19.992	822147.27	1301954.12	PBY28931
PBY28931	90° 51' 34"	30.003	822146.82	1301984.12	PBY28940
	Area = 599.881 SQM				
<b>PLOT 18</b>					
			822166.38	1302014.41	PBY28923
PBY28923	0° 51' 35"	19.992	822186.37	1302014.71	PBY28924
PBY28924	270° 51' 34"	30.003	822186.82	1301984.71	PBY28942
PBY28942	180° 51' 34"	20.002	822166.82	1301984.41	PBY28941
PBY28941	90° 50' 25"	30.003	822166.38	1302014.41	PBY28923
	Area = 599.983 SQM				
<b>PLOT 19</b>					
			822166.82	1301984.41	PBY28941
PBY28941	0° 51' 34"	20.002	822186.82	1301984.71	PBY28942
PBY28942	270° 50' 25"	30.003	822187.26	1301954.71	PBY28930
PBY28930	180° 49' 51"	20.002	822167.26	1301954.42	PBY28931
PBY28931	90° 50' 26"	29.993	822166.82	1301984.41	PBY28941
	Area = 600.030 SQM				
<b>PLOT 20</b>					
			822186.37	1302014.71	PBY28924
PBY28924	0° 50' 25"	15.002	822201.37	1302014.93	PBY28925
PBY28925	315° 48' 8"	7.072	822206.44	1302010	PBY28926
PBY28926	270° 52' 16"	24.993	822206.82	1301985.01	PBY28927
PBY28927	180° 51' 34"	20.002	822186.82	1301984.71	PBY28942
PBY28942	90° 51' 34"	30.003	822186.37	1302014.71	PBY28924
	Area = 587.480 SQM				

<b>PLOT 21</b>					
			822186.82	1301984.71	PBY28942
PBY28942	0° 51' 34"	20.002	822206.82	1301985.01	PBY28927
PBY28927	270° 50' 52"	25.003	822207.19	1301960.01	PBY28928
PBY28928	225° 48' 8"	7.072	822202.26	1301954.94	PBY28929
PBY28929	180° 52' 42"	15.002	822187.26	1301954.71	PBY28930
PBY28930	90° 50' 25"	30.003	822186.82	1301984.71	PBY28942
	Area = 587.630 SQM				
<b>PLOT 22</b>					
			822225.26	1302090.29	PBY28943
PBY28943	45° 51' 37"	7.065	822230.18	1302095.36	PBY28944
PBY28944	0° 52' 15"	25.003	822255.18	1302095.74	PBY28945
PBY28945	270° 51' 34"	20.002	822255.48	1302075.74	PBY28965
PBY28965	180° 51' 34"	30.003	822225.48	1302075.29	PBY28966
PBY28966	90° 50' 25"	15.002	822225.26	1302090.29	PBY28943
	Area = 587.507 SQM				
<b>PLOT 23</b>					
			822255.18	1302095.74	PBY28945
PBY28945	0° 50' 52"	25.003	822280.18	1302096.11	PBY28946
PBY28946	315° 48' 8"	7.072	822285.25	1302091.18	PBY28947
PBY28947	270° 50' 25"	15.002	822285.47	1302076.18	PBY28948
PBY28948	180° 50' 26"	29.993	822255.48	1302075.74	PBY28965
PBY28965	90° 51' 34"	20.002	822255.18	1302095.74	PBY28945
	Area = 587.552 SQM				
<b>PLOT 24</b>					
			822225.48	1302075.29	PBY28966
PBY28966	0° 51' 34"	30.003	822255.48	1302075.74	PBY28965
PBY28965	270° 49' 51"	20.002	822255.77	1302055.74	PBY28964
PBY28964	180° 51' 35"	29.993	822225.78	1302055.29	PBY28967
PBY28967	90° 51' 34"	20.002	822225.48	1302075.29	PBY28966
	Area = 600.033 SQM				
<b>PLOT 25</b>					
			822255.48	1302075.74	PBY28965
PBY28965	0° 50' 26"	29.993	822285.47	1302076.18	PBY28948
PBY28948	270° 51' 34"	20.002	822285.77	1302056.18	PBY28949
PBY28949	180° 50' 25"	30.003	822255.77	1302055.74	PBY28964
PBY28964	90° 49' 51"	20.002	822255.48	1302075.74	PBY28965
	Area = 600.030 SQM				

<b>PLOT 26</b>					
			822225.78	1302055.29	PBY28967
PBY28967	0° 51' 35"	29.993	822255.77	1302055.74	PBY28964
PBY28964	270° 51' 34"	20.002	822256.07	1302035.74	PBY28963
PBY28963	180° 50' 25"	30.003	822226.07	1302035.3	PBY28942
PBY28942	90° 49' 52"	19.992	822225.78	1302055.29	PBY28967
	Area = 599.881 SQM				
<b>PLOT 27</b>					
			822255.77	1302055.74	PBY28964
PBY28964	0° 50' 25"	30.003	822285.77	1302056.18	PBY28949
PBY28949	270° 51' 35"	19.992	822286.07	1302036.19	PBY28950
PBY28950	180° 51' 34"	30.003	822256.07	1302035.74	PBY28963
PBY28963	90° 51' 34"	20.002	822255.77	1302055.74	PBY28964
	Area = 599.984 SQM				
<b>PLOT 28</b>					
			822226.07	1302035.3	PBY28942
PBY28942	0° 50' 25"	30.003	822256.07	1302035.74	PBY28963
PBY28963	270° 51' 34"	20.002	822256.37	1302015.74	PBY28962
PBY28962	180° 50' 25"	30.003	822226.37	1302015.3	PBY28943
PBY28943	90° 51' 34"	20.002	822226.07	1302035.3	PBY28942
	Area = 600.132 SQM				
<b>PLOT 29</b>					
			822256.07	1302035.74	PBY28963
PBY28963	0° 51' 34"	30.003	822286.07	1302036.19	PBY28950
PBY28950	270° 49' 51"	20.002	822286.36	1302016.19	PBY28951
PBY28951	180° 51' 35"	29.993	822256.37	1302015.74	PBY28962
PBY28962	90° 51' 34"	20.002	822256.07	1302035.74	PBY28963
	Area = 600.030 SQM				
<b>PLOT 30</b>					
			822226.37	1302015.3	PBY28943
PBY28943	0° 50' 25"	30.003	822256.37	1302015.74	PBY28962
PBY28962	270° 49' 52"	19.992	822256.66	1301995.75	PBY28961
PBY28961	180° 51' 34"	30.003	822226.66	1301995.3	PBY28942
PBY28944	90° 49' 51"	20.002	822226.37	1302015.3	PBY28943
	Area = 599.979 SQM				

<b>PLOT 31</b>					
			822286.36	1302016.19	PBY28951
PBY28951	179° 08' 00"	20.003	822286.66	1301996.19	PBY28952
PBY28952	269° 10' 01"	30.003	822256.66	1301995.75	PBY28961
PBY28961	359° 10' 10"	19.992	822256.37	1302015.74	PBY28962
PBY28962	89° 08' 25'	29.99	822286.36	1302016.19	PBY28951
	Area = 597.035 SQM				
<b>PLOT 32</b>					
			822226.66	1301995.3	PBY28944
PBY28944	0° 51' 34"	30.003	822256.66	1301995.75	PBY28961
PBY28961	270° 51' 34"	20.002	822256.96	1301975.75	PBY28960
PBY28960	180° 51' 34"	30.003	822226.96	1301975.3	PBY28959
PBY28959	90° 51' 34"	20.002	822226.66	1301995.3	PBY28944
	Area = 600.135 SQM				
<b>PLOT 33</b>					
			822256.66	1301995.75	PBY28961
PBY28961	0° 50' 25"	30.003	822286.66	1301996.19	PBY28952
PBY28952	270° 49' 51"	20.002	822286.95	1301976.19	PBY28953
PBY28953	180° 50' 26"	29.993	822256.96	1301975.75	PBY28960
PBY28960	90° 51' 34"	20.002	822256.66	1301995.75	PBY28961
	Area = 600.03SQM				
<b>PLOT 34</b>					
			822226.96	1301975.3	PBY28959
PBY28959	0° 51' 34"	30.003	822256.96	1301975.75	PBY28960
PBY28960	270° 49' 51"	20.002	822257.25	1301955.75	PBY28956
PBY28956	180° 50' 54"	24.993	822232.26	1301955.38	PBY28957
PBY28957	135° 51' 31"	7.079	822227.18	1301960.31	PBY28958
PBY28958	90° 50' 27"	14.992	822226.96	1301975.3	PBY28959
	Area = 587.479SQM				
<b>PLOT 35</b>					
			822256.96	1301975.75	PBY28960
PBY28960	0° 50' 26"	29.993	822286.95	1301976.19	PBY28953
PBY28953	270° 52' 42"	15.002	822287.18	1301961.19	PBY28954
PBY28954	225° 48' 8"	7.072	822282.25	1301956.12	PBY28955
PBY28955	180° 50' 52"	25.003	822257.25	1301955.75	PBY28956
PBY28956	90° 49' 51"	20.002	822256.96	1301975.75	PBY28960
	Area = 587.527SQM				