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# An Assessment of Background Radiation Doses in Buildings Using a Geiger-Muller Counter across Jos-Bukuru Metropolis, North-Central Nigeria

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### **ABSTRACT**

An assessment of background radiation dose in buildings was carried out from different ongoing/uncompleted buildings across Jos-Bukuru metropolis and environs using a Geiger-Muller Counter (gernie39ync105po model), which has a high sensitivity and wide measurement range with GM-hose as the central sensor, which supports automatic data recording. Two hundred and twelve (212) measurements of gamma radiation readings emanating from the naturally radioactive constituents in uncompleted houses within the studied area were recorded. The data captured the average dose rate (uSv/h), which varied from one building to another. The values were then calculated and converted to determine the absorbed dose rate ranging between 1.56mSv/y (180 nGyh<sup>-1</sup>) and 4.12mSv/y (470nGy/h) with a mean value of 2.45mSv/y (279.7664nGy/h), annual effective dose equivalent varied from 0.8278mSv/y to 2.1615 mSv/y, while the excess lifetime cancer risk factor ranged between 2.8974x10<sup>-3</sup>Sv and 7.5654x10<sup>-3</sup>Sv. These values in some buildings are higher than the recommended ImSv/v and therefore pose some health risks for the occupants over a long period of time.

Keywords: Radiation, Radionuclides, Dose Rate (DR), Annual Effective Dose Equivalent (AEDE), Excess Lifetime Cancer Risk (ELCR).

#### INTRODUCTION

Radiation found in soils is as a result of the presence of the natural radionuclides in them, the most significant of which are <sup>238</sup>U, <sup>232</sup>Th and <sup>40</sup>K (Solomon, 2005). Radionuclides



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are heavy isotopes in the environment that are not stable. To be stable, these nuclides emit radiation or particles (Baxter, 1983). The radionuclides are present almost everywhere around us; in the earth's crust, air, water, plants, and so on. They may be naturally occurring or artificially produced (Beretka et al., 1985). These radionuclides all have very long half-lives and have been present in the Earth since its formation (Martins & Harbinson, 1979).

# **Review of Previous Work on Radiation**

A review of Indoor gamma ray measurements, activity concentrations and radiation hazard assessment of residential mud buildings in Miango, North Central Nigeria (Solomom et al, 2018) shows that the content of <sup>238</sup>U, <sup>232</sup>Th and <sup>40</sup>K in the mud houses in the studied area varies from 3.77-10.77ppm, 27.08-73.77ppm, and 1.47-6.27% respectively, while the activity concentrations of these radioelements vary from 46.52-132.97Bq/Kg for <sup>238</sup>U, 109.76-299.49Bq/Kg for <sup>232</sup>Th, and 459.07-1961.47Bq/Kg for <sup>40</sup>K. Assessment of the natural background radiation characteristics of basalts on the Jos Plateau and the radiological implications of the use of the rocks for house construction was also carried out by Solomon et al. (2002). The report shows that the gamma radiation dose rate varies from 0.3225 to 0.5805mSv/yr, while dose rates due to Alpha/Beta radiation range from 1.575 to 3.15mSv/yr, making buildings constructed with the basalts radiologically relatively safe for the dwellers.

Ajayi et al (2013) assessed radiological hazard indices of building materials in Ogbomoso, South-West Nigeria, and reported that the activity concentration of <sup>40</sup>K was found to range from 132.76 - 276.42Bq.kg<sup>-1</sup> with an average of 204.59Bq.kg<sup>-1</sup>. The mean radionuclide concentration obtained for the <sup>238</sup>U range from 27.79Bq.kg<sup>-1</sup> to 30.65Bq.kg<sup>-1</sup> with an average of 29.22Bq.kg<sup>-1</sup>. For the <sup>232</sup>Th, the range is from 16.69Bq.kg<sup>-1</sup> to 22.73Bq.kg<sup>-1</sup> with an average of 19.71Bq.kg-1.

Radionuclide concentration and lifetime cancer risk due to gamma radioactivity from Quarry Stone Aggregates in Jos and its Environs, North Central Nigeria were studied by Solomon et al (2018). The report show the concentration and specific activity of <sup>238</sup>U, <sup>232</sup>Th and <sup>40</sup>K with their respective radiological indices from the various quarries (absorbed dose rate in air, annual effective dose equivalent, radium equivalent activity, internal hazard index and excess lifetime cancer risk) were found to be generally higher within the Getegere Stone Crushing Company Bukuru, Jos and the Mararaba Jamma Quarry Bukuru, Jos with both quarries sourcing their aggregate product from biotite granite belonging to the Jos-Bukuru Complex. According to the report, the average of total Excess Lifetime Cancer Risk from the quarries (4.45x10<sup>-3</sup>) is 15.34 times higher than the world average of 0.29x10<sup>-3</sup>, below which there is a negligible risk of developing cancer.

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Jibiri et al (2009), working on farming activities on the sand situated in high background radiation (HBR) areas in Jos, recorded that farming activities enhance the radiation exposure scenarios and pathways to humans. According to this report, annual external dose values vary from 0.07mSv/y to 2.02mSv/y, while the internal dose values for the locations were reported as 9.9mSv/y for Bitsichi, 3.9mSv/y for Bukuru and 3.9mSv/y for Ropp. Ajayi (2008) reported that the radiation background values of Tin Mining sites in Jos have an equivalent dose of 3.0mSv/y due to the gamma radiation from the radionuclides <sup>40</sup>K, <sup>238</sup>U and <sup>232</sup>Th in the soil samples surrounding the mining sites. Though the value is below the average dose rate value for Radiation workers (20mSv/y), it's far above the world/global safety value of 1mSv/y for an individual as reported by the UNSCEAR (2000).

Isa et al (2024) assessed natural background radiation exposure in the Federal Capital Territory of Nigeria and reported the absorbed dose rate as 87.87nGy/h for Abuja Municipal Area Council, 60.03nGy/h for Kuje, 100.05nGy/h for Bwari, 164.43nGy/h for Abaji, 109.62nGy/h for Kwali and 113.10nGy/h for Gwagwalada, while the estimated annual effective dose equivalent was 0.11mSv/y for Abuja Municipal Area Council, 0.07mSv/y for Kuje, and 0.12mSv/y for Bwari. 0.20mSv/y for Abaji, 0.13mSv/y for Kwali and 0.14mSv/y for Gwagwalada.

James et al (2020) examined indoor and outdoor radiation levels and human health risk in Sheda Science and Technology Complex and its environment, Abuja, Nigeria. He concluded in his findings that the total dose rate (indoor and outdoor), the total annual equivalent dose (indoor and outdoor), total annual effective dose equivalent (indoor and outdoor) and the total excess lifetime cancer risk (indoor and outdoor) are  $0.113\pm0.022$  (µSv/h),  $0.071\pm0.016$  (µSv/h),  $0.794\pm0.155$  mSv/y,  $0.124\pm0.074$  mSv/y,  $0.556\pm0.109 \text{ mSv/y}, 0.087\pm0.020 \text{ mSv/y}, 1.945\pm0.379, 0.304\pm0.104.$ 

A review of Eke et al (2024) assessment of radiation hazard indices due to natural radionuclides in soil samples from Imo State University, Owerri, Nigeria showed that the dose rate ranged between 15.56 and 36.91nGy/h, while the annual effective dose ranged from 0.07156mSv/y to 0.169749mSv/y.

### Geology of the Area

The rocks found within the study areas were predominantly basement rock, which comprises the gneisses, and Older Granite, which were mostly intruded by the Younger Granites. Gneiss is a banded rock formed during high-grade regional metamorphism. Gneisses found within the study area are mostly of granitic origin. There are different types of gneisses based on the type of rock from which they were formed (e.g., Granitegneiss, Diorite-gneiss, etc.) or, in some cases, the mineral which dominates the composition of the rock (e.g., Biotite-gneiss, Hornblende-gneiss, etc.). In places around Mazah environs, the gneisses found here have a near migration into migmatites and are

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composed of more dark coloured minerals striking 232°SW, whereas in places around Gold and Base, their gneiss outcrops are predominantly made up of light coloured minerals (feldspars) striking 32°NE.

The Younger Granite province comprises non-orogenic granite, rhyolite, basalts, crystal-rich ignimbrite and porphyrite of the Mesozoic Era (MacLeod *et al.*, 1971). Within the study area, they include the Jos-Bukuru, Buji, Rukuba and Shere Complexes constitute the bulk of the Younger Granites suite in and around the study area. It consists essentially of biotite granite, riebeckite biotite granite, hornblende fayalite granite, hornblende biotite granite, rhyolite, syenite, gabbro, dolerites and basalts, with a significant amount of natural concentration of uranium, thorium and potassium (Solomon, 2005). The alluvial deposits of cassiterite (tin oxide, SnO2) and columbite (oxide of tantalum-niobium, iron and manganese, (Fe, Mn) (Ta, Nb)2O6), as well as radioactive mineral such as thorite (ThSiO4), zircon (ZiSiO4) and monazite (Ce, La, Yt)PO4) on the Jos Plateau are believed to have been derived from these Complexes.

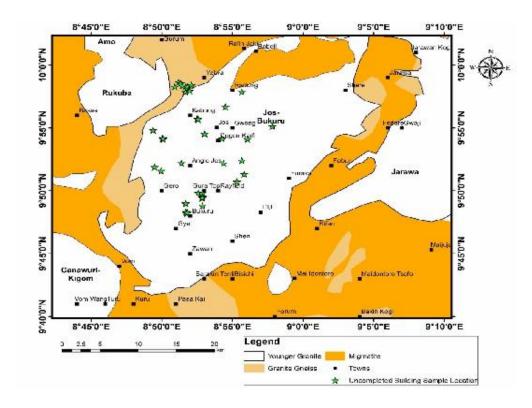


Figure: Geologic Map of the study area with the locations of the uncompleted buildings superimposed on the geology.

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### MATERIALS AND METHODS

For this research data collection, a GARMIN GPS map 62 model was used for taking coordinates, a compass clinometer was used for direction and a handheld Geiger-Muller counter (gernie39ync105po model) was used for taking radiation values across uncompleted houses.







Plate 1

Plate 2 = Geiger-Muller counterPlate 1 = GARMIN GPSmap 62 model,

Plate 3 = Taking background radiation reading from uncompleted buildings

### **METHOD**

Two hundred and twelve (212) measurements of gamma radiation readings emanating from the naturally radioactive constituents in uncompleted houses within the Jos metropolis and environs were recorded using Hand-held Geiger-Muller Counter (Gernie 39 ync 105 po Model) which has a high sensitivity and wide measurement range. It uses precision GM-hose as the central sensor that supports automatic data recording. It detects and monitors indoor, outdoor and other similar environmental radiations when placed directly on the surface of the object to be studied. For better accuracy, a preset time of 8 minutes was used for the measurement per point, while the assay mode provides the average radiation absorbed dose (uSv/h). The values were then calculated and converted to determine the annual effective dose equivalent (mSv/y) and the excess lifetime cancer risk factor (Sv).

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### RESULTS AND DISCUSSION

As a way of assessing the effect of radionuclides in buildings, background radiations were measured within different ongoing/uncompleted buildings across Jos metropolis using a Geiger-Muller Counter (gernie39ync105po model). Field data captured the average dose rate in microsievert per hour (uSv/h), which were then analyzed to determine the annual effective dose equivalent in millisievert per year (mSv/y) and excess lifetime cancer risk factor in sievert (Sv).

**Table 1:** Absorb dose rate, annual effective dose equivalent and excess life-time cancer risk factor recorded from analysis of random uncompleted buildings in Jos metropolis and environs.

			OORDINATES	RADIOI	RADIOLOGICAL INDICES					
S/N	N <sup>0</sup>	$\mathbf{E}^0$	ELV. (m)	LOCATION	Avg. DR (uSv/h)	Avg. DR (nGy/h) = DR (uSv/h)* 1000	Dose Rate (mSv/y) = uSv/h* 0.001*2 4*365	AEDEin (mSv/y) = Din(nGy/h) * 8760 * 0.75 * 0.7(Sv/Gy) * 0.000001	ELCRin (Sv) = AEDEin * DL(70) * RF(0.05)	
1.	09 54 48.3	008 49 23.1	1268	Dong	0.23	230	2.0148	1.05777	3.70220	
2.	09 54 48.5	008 49 23.4	1269	Dong	0.21	210	1.8396	0.96579	3.38027	
3.	09 54 48.7	008 49 23.6	1267	Dong	0.21	210	1.8396	0.96579	3.38027	
4.	09 54 48.8	008 49 23.3	1271	Dong	0.24	240	2.1024	1.10376	3.86316	
5.	09 54 49.1	008 49 23.0	1266	Dong	0.24	240	2.1024	1.10376	3.86316	
6.	09 54 48.9	008 49 23.6	1269	Dong Sand Heep	0.23	230	2.0148	1.05777	3.70220	
7.	09 54 48.9	008 49 23.7	1268	Dong Sand Heep	0.25	250	2.19	1.14975	4.02413	
8.	09 54 05.6	008 50 05.8	1301	Zoo Fence, Dong	0.23	230	2.0148	1.05777	3.70220	
9.	09 54 06.5	008 50 05.5	1298	Zoo Fence, Dong	0.25	250	2.19	1.14975	4.02413	
10.	09 54 07.4	008 50 05.6	1303	Zoo Fence, Dong	0.25	250	2.19	1.14975	4.02413	
11.	09 54 08.9	008 50 05.0	1304	Zoo Fence, Dong	0.23	230	2.0148	1.05777	3.70220	
12.	09 54 09.9	008 50 04.6	1306	Zoo Fence, Dong	0.26	260	2.2776	1.19574	4.18509	
13.	09 54 10.9	008 50 04.5	1305	Zoo Fence, Dong	0.24	240	2.1024	1.10376	3.86316	
14.	09 54 12.2	008 50 04.1	1300	Zoo Fence, Dong	0.26	260	2.2776	1.19574	4.18509	
15.	09 54 11.8	008 50 03.8	1301	Zoo Sand Heep	0.26	260	2.2776	1.19574	4.18509	
16.	09 54 08.9	008 50 04.6	1299	Zoo Sand Heep	0.23	230	2.0148	1.05777	3.70220	
17.	09 51 34.5	008 49 57.3	1310	Loh-Dik, Rantya	0.32	320	2.8032	1.47168	5.15088	
18.	09 51 34.6	008 49 57.4	1319	Loh-Dik, Rantya	0.3	300	2.628	1.37970	4.82895	
19.	09 51 34.7	008 49 57.6	1314	Loh-Dik, Rantya	0.31	310	2.7156	1.42569	4.98992	
20.	09 51 34.3	008 49 57.5	1331	Loh-Dik Stair	0.34	340	2.9784	1.56366	5.47281	
21.	09 51 34.5	008 49 57.8	1324	Loh-Dik 1st floor	0.26	260	2.2776	1.19574	4.18509	
22.	09 51 34.5	008 49 57.3	1322	Loh-Dik 1st floor	0.23	230	2.0148	1.05777	3.70220	
23.	09 51 52.5	008 49 29.7	1293	Bwak, Rantya	0.3	300	2.628	1.37970	4.82895	
24.	09 51 52.6	008 49 29.4	1294	Bwak, Rantya	0.29	290	2.5404	1.33371	4.66799	
25.	09 51 52.2	008 49 29.4	1297	Bwak, Rantya	0.27	270	2.3652	1.24173	4.34606	
26.	09 51 52.1	008 49 29.9	1298	Bwak, Rantya	0.28	280	2.4528	1.28772	4.50702	
27.	09 51 52.3	008 49 30.0	1299	Bwak, Rantya	0.24	240	2.1024	1.10376	3.86316	
28.	09 51 52.2	008 49 30.1	1295	Bwak, Rantya	0.3	300	2.628	1.37970	4.82895	
29.	09 51 52.1	008 49 29.9	1294	Bwak, Rantya	0.33	330	2.8908	1.51767	5.31185	
30.	09 51 52.5	008 49 30.1	1298	Bwak, Rantya	0.25	250	2.19	1.14975	4.02413	
31.	09 52 11.2	008 51 23.6	1304	Opp. GJSS	0.25	250	2.19	1.14975	4.02413	
32.	09 52 11.2	008 51 23.1	1297	Kufan (Amusement Park)	0.3	300	2.628	1.37970	4.82895	
33.	09 52 10.9	008 54 23.1	1305	Kufan (Amusement Park)	0.3	300	2.628	1.37970	4.82895	
34.	09 52 11.0	008 54 22.7	1307	Odus,	0.29	290	2.5404	1.33371	4.66799	
35.	09 56 40.6	008 54 30.5	1207	Odus,	0.34	340	2.9784	1.56366	5.47281	
36.	09 56 40.4	008 54 30.6	1208	Odus,	0.33	330	2.8908	1.51767	5.31185	
37.	09 56 40.5	008 54 30.4	1204	Odus,	0.28	280	2.4528	1.28772	4.50702	

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38.	09 56 40.7	008 54 30.4	1206	Odus,	0.36	360	3.1536	1.65564	5.79474
39.	09 56 40.4	008 54 30.0	1209	Odus,	0.26	260	2.2776	1.19574	4.18509
40.	09 56 40.6	008 54 29.8	1211	Odus,	0.27	270	2.3652	1.24173	4.34606
41.	09 56 40.7	008 54 30.3	1206	Odus,	0.28	280	2.4528	1.28772	4.50702
42.	09 54 08.7	008 54 16.5	1230	Rikko Round-about	0.27	270	2.3652	1.24173	4.34606
43.	09 54 08.5	008 54 16.7	1233	Rikko Round-about	0.25	250	2.19	1.14975	4.02413
44.	09 54 08.2	008 54 16.7	1233	Rikko Round-about	0.27	270	2.3652	1.24173	4.34606
45.	09 54 08.1	008 54 16.6	1241	Rikko Round-about	0.26	260	2.2776	1.19574	4.18509
46.	09 54 08.1	008 54 16.9	1228	Rikko Round-about	0.28	280	2.4528	1.28772	4.50702
47.	09 54 07.9	008 54 16.6	1238	Rikko Round-about	0.25	250	2.19	1.14975	4.02413
48.	09 54 07.6	008 54 16.5	1233	Rikko Round-about	0.27	270	2.3652	1.24173	4.34606
49.	09 54 06.3	008 56 03.8	1291	Beside Lamingo Dam	0.18	180	1.5768	0.82782	2.89737
50.	09 54 05.8	008 56 03.9	1290	Beside Lamingo Dam	0.18	200	1.752	0.91980	3.21930
51.	09 54 05.9	008 56 04.2	1291	Beside Lamingo Dam	0.25	250	2.19	1.14975	4.02413
52.	09 54 06.3	008 56 04.2	1294	Beside Lamingo Dam  Beside Lamingo Dam	0.23	200	1.752	0.91980	3.21930
53.	09 54 06.7	008 56 04.2	1288	Beside Lamingo Dam	0.21	210	1.8396	0.96579	3.38027
54.	09 54 06.7	008 56 03.7	1291	Beside Lamingo Dam  Beside Lamingo Dam	0.21	210	1.8396	0.96579	3.38027
55.	09 55 07.6	008 50 03.7	1333	Behind Juth Lamingo	0.21	320	2.8032	1.47168	5.15088
56.	09 55 07.6	008 57 49.8	1331	Behind Juth Lamingo	0.32	310	2.7156	1.42569	4.98992
57.	09 55 07.5	008 57 50.4	1330	Behind Juth Lamingo	0.31	280	2.4528	1.42309	4.50702
58.	09 55 07.9	008 57 50.4	1329	Behind Juth Lamingo  Behind Juth Lamingo	0.24	240	2.4328	1.10376	3.86316
59.	09 55 08.0	008 57 50.0	1333	Behind Juth Lamingo  Behind Juth Lamingo	0.24	310	2.7156	1.42569	4.98992
60.	09 55 08.0	008 57 49.2	1330	Behind Juth Lamingo Behind Juth Lamingo	0.31	280	2.4528	1.42569	4.50702
61.	09 52 23.5	008 57 49.2	1292	Opp. Catholic Complex, Kwan	0.26	260	2.4328	1.19574	4.18509
62.	09 52 23.8	008 55 39.5	1288		0.20	330	2.8908	1.51767	5.31185
63.	09 52 23.6	008 55 39.4	1285	Opp. Catholic Complex, Kwan Opp. Catholic Complex, Kwan	0.33	270	2.3652	1.24173	4.34606
64.	09 52 22.9	008 55 39.2	1290	Opp. Catholic Complex, Kwan	0.27	240	2.1024	1.10376	3.86316
65.	09 52 23.1	008 55 39.4	1293	Opp. Catholic Complex, Kwan	0.24	260	2.2776	1.19574	4.18509
66.	09 52 23.1	008 55 40.4	1301	Opp. Catholic Complex, Kwan	0.20	310	2.7156	1.42569	4.98992
67.	09 52 23.7	008 55 40.4	1299	Opp. Catholic Complex, Kwan	0.24	240	2.1024	1.10376	3.86316
68.	09 52 23.4	008 55 40.0	1295	Opp. Catholic Complex, Kwan	0.24	230	2.1024	1.05777	3.70220
69.	09 52 23.4	008 55 49.6	1324	Kwam Road side	0.23	300	2.628	1.37970	4.82895
70.	09 51 19.4	008 55 49.0	1323	Kwam Road side	0.3	300	2.628	1.37970	4.82895
71.	09 51 19.3	008 55 49.9	1319	Kwam Road side	0.34	340	2.028	1.56366	5.47281
72.	09 51 19.8	008 55 49.8	1323	Kwam Road side	0.34	320	2.8032	1.47168	5.15088
73.	09 51 19.3	008 55 49.7	1323	Kwam Road side (1st floor)	0.32	230	2.0148	1.05777	3.70220
74.	09 51 19.4	008 55 49.5	1320	Kwam Road side (1 Hoor)  Kwam Road side (1st floor)	0.23	230	2.0148	1.05777	3.70220
75.	09 51 19.8	008 55 49.0	1320	Kwam Road side (1 Hoor)  Kwam Road side (1st floor)		180	1.5768	0.82782	2.89737
76.	09 51 19.0	008 55 49.5	1318	Kwam Road side (1 Hoor)  Kwam Road side (1st floor)	0.18	290	2.5404	1.33371	4.66799
77.	09 50 42.2	008 55 18.5	1332	Rayfield	0.29	300	2.628	1.37970	4.82895
78.	09 50 42.2	008 55 18.5	1336	Rayfield	0.3	300	2.628	1.37970	4.82895
79.	09 50 42.7	008 55 18.5	1328	Rayfield	0.3	300	2.628	1.37970	4.82895
80.	09 50 42.7	008 55 18.8	1332	Rayfield	0.3	240	2.1024	1.10376	3.86316
81.	09 50 43.0	008 55 18.2	1333	Rayfield	0.24	260	2.2776	1.19574	4.18509
82.	09 50 43.2	008 55 18.4	1331	Rayfield	0.20	320	2.8032	1.47168	5.15088
83.	09 50 42.8	008 55 18.4	1332	Rayfield	0.32	240	2.1024	1.10376	3.86316
84.	09 50 42.5	008 55 18.9	1330	Rayfield	0.34	340	2.9784	1.56366	5.47281
85.	09 50 42.1	008 55 19.0	1331	Rayfield	0.28	280	2.4528	1.28772	4.50702
86.	09 57 50.7	008 55 40.2	1134	Farin Gada	0.28	280	2.4528	1.28772	4.50702
87.	09 57 50.8	008 55 40.0	1138	Farin Gada	0.29	290	2.5404	1.33371	4.66799
88.	09 57 51.3	008 55 40.2	1134	Farin Gada	0.27	270	2.3652	1.24173	4.34606
89.		008 51 39.9	1131	Farin Gada (Angwan Jarawa)	0.27	270	2.3652	1.24173	4.34606
90.	09 57 51.3	008 51 40.0	1135	Farin Gada (Angwan Jarawa)	0.29	290	2.5404	1.33371	4.66799
91.	09 57 50.7	008 51 40.2	1130	Farin Gada (Angwan Jarawa)	0.3	300	2.628	1.37970	4.82895
92.	09 57 51.0	008 51 40.2	1130	Farin Gada (Angwan Jarawa)	0.38	380	3.3288	1.74762	6.11667
93.	09 57 51.3	008 51 40.1	1138	Farin Gada (Angwan Jarawa)	0.32	320	2.8032	1.47168	5.15088
94.	09 57 51.6	008 51 40.1	1136	Farin Gada (Angwan Jarawa)	0.34	340	2.9784	1.56366	5.47281
95.	09 57 50.7	008 51 40.1	1132	Farin Gada (Angwan Jarawa)	0.31	310	2.7156	1.42569	4.98992
96.	09 57 50.0	008 51 40.1	1136	Farin Gada (Angwan Jarawa)	0.26	260	2.2776	1.19574	4.18509
97.	09 57 51.2	008 51 39.8	1133	Farin Gada (Angwan Jarawa)	0.28	280	2.4528	1.28772	4.50702
98.	09 57 51.8	008 51 39.9	1134	Farin Gada (Angwan Jarawa)	0.27	270	2.3652	1.24173	4.34606
	010101.0					270	2.3652	1.24173	4.34606
	09 54 31 6	008 53 01 3	1130	L CER A Upp Shendam Court MIIN Citice					
99.	09 54 31.6	008 53 01.3	1130	G.R.A Opp. Shendam Court, MTN Office	0.27				
	09 54 31.6 09 54 31.9 09 54 32.4	008 53 01.3 008 53 00.9 008 53 02.0	1130 1232 1227	G.R.A Opp. Shendam Court, MTN Office G.R.A Opp. Shendam Court, MTN Office G.R.A Opp. Shendam Court, MTN Office	0.27 0.34 0.36	340 360	2.9784 3.1536	1.56366 1.65564	5.47281 5.79474

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103.   98.53.17.   98.53.01.7   1219   G.R. A.Opp. Sheedstan Court. MTN Office   0.35   550   3.066   1.09065   5.63378	102.	09 54 32.1	008 53 02.5	1227	G.R.A Opp. Shendam Court, MTN Office	0.34	340	2.9784	1.56366	5.47281
1945   948   584   108   51   42.2   1231   Federal Low-cost Bakura   0.4   400   3.504   1.8596   6.4866     1956   948   58.4   108   51   41.7   1248   Federal Low-cost Bakura   0.4   400   3.504   1.8596   6.4866     1976   948   58.5   108   51   41.5   1231   Federal Low-cost Bakura   0.57   370   3.212   7.7016   5.55571     198.										
105.   948 SS.   108 51 42.1   1229   Federal Low-cost Biokura										
100. 9  48 St. 80   085   141.7   1248   Federal Low-cost Bukura   0.37   370   3.2412   1.7016   5.95571   108. 9  48 St. 87   085   141.5   1231   Federal Low-cost Bukura   0.32   330   2.8032   1.47168   5.15088   109. 9  48 St. 82   085   141.5   1231   Federal Low-cost Bukura   0.32   330   2.8032   1.47168   5.15088   109. 9  48 St. 83   085   141.5   1245   Federal Low-cost Bukura   0.33   330   3.503   1.50564   5.75974   110. 9  48 St. 85   085   141.2   1245   Federal Low-cost Bukura   0.37   370   3.2412   1.70163   5.95571   111. 9  48 St. 86   085   141.2   1240   Federal Low-cost Bukura   0.36   360   3.1566   1.65564   5.75974   112. 9  48 St. 86   085   142.4   1247   Reside Jos-South LGA Secreteria   0.29   290   2.5404   1.53371   4.66799   114. 9  48 St. 3   085   142.5   1225   Beside Jos-South LGA Secreteria   0.29   290   2.5404   1.53371   4.66799   114. 9  48 St. 3   085   142.5   1235   Beside Jos-South LGA Secreteria   0.28   280   2.4528   1.28772   4.50002   116. 9  48 St. 3   085   142.6   1235   Beside Jos-South LGA Secreteria   0.28   280   2.4528   1.28772   4.50002   116. 9  48 St. 3   085   142.6   1235   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33371   4.66799   116. 9  48 St. 3   085   142.7   1235   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33371   4.66799   116. 9  48 St. 3   085   142.5   1235   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33571   4.05666   3.47281   117. 9  48 St. 5   0.85   142.5   1235   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33571   4.05666   3.47281   117. 9  48 St. 5   0.85   144.8   1266   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33571   4.05666   3.47281   117. 9  48 St. 5   0.85   144.8   1266   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33571   4.05666   3.47281   117. 9  48 St. 5   0.85   144.8   1266   Beside Jos-South LGA Secreteria   0.29   200   2.5404   1.33571   4.05666   3.47281   117. 9  4.05666   3.47281   117. 9  4.05666   3.47281   4.056										
107. 94 8 85.0   085 14.13   222   Federal Low-cons Bukuru   0.37   370   3.2412   1.70163   5.95571										
108, 94 8 88, 2										
1999   948 SS.2   085   41.6   2245   Federal Low-cost Bukuru   0.37   370   3.1536   1.65564   5.79474										
110. 99 48 S.8.   008 51 41-2   1240										
11.   99.48 S8.6   108.5 14.9   1240   Federal Low-cost Bukuru   0.36   300   3.156   1.65564   5.79474   113.   99.48 IR.8   108.5 14.22   1247   Beside Jos-South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281   114.   99.48 IR.8   108.5 14.22   1259   Beside Jos-South LGA Secreteria   0.28   230   2.4528   1.28772   4.50702   115.   99.48 IR.5   108.5 14.27   1253   Beside Jos-South LGA Secreteria   0.26   200   2.2766   1.19574   4.18509   116.   99.48 IR.5   108.5 14.27   1253   Beside Jos-South LGA Secreteria   0.29   200   2.2404   1.133371   4.676799   117.   99.48 IP.5   108.5 14.22   1258   Beside Jos-South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281   118.   99.48 IP.5   108.5 14.24   1266   Beside Jos-South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281   119.   99.48 IP.5   108.5 14.24   1266   Beside Jos-South LGA Secreteria   0.32   30   2.8032   1.47168   5.15088   119.   99.48 IP.5   108.5 14.49   1269   Beside Jos-South LGA Secreteria   0.32   30   2.8032   1.47168   5.15088   122.   99.48 IP.5   108.5 14.49   1249   Bukuru   0.36   300   3.1556   1.65564   5.79474   122.   99.48 IP.5   108.5 14.50   1256   Bukuru   0.36   300   3.1556   1.65564   5.79474   122.   99.48 IP.5   108.5 14.50   1256   Bukuru   0.47   470   4.1172   2.1515   5.75536   125.   99.48 IP.5   108.5 14.5   1256   Bukuru   0.41   410   3.5946   1.88599   6.59957   125.   99.48 IP.5   108.5 14.5   1256   Bukuru   0.44   410   3.5946   1.83696   6.47881   1257   99.48 IP.5   108.5 14.5   1157   Paul Gindiri Estate, Fairin Gada   0.26   200   2.2776   1.19574   4.18509   1.19574   4.18509   1.19574   4.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19574   1.18509   1.19575   1.19574   1.18509   1.19575   1.19574   1.18509   1.19575   1.19574   1.18509   1.19575   1.19575   1.19574   1.18509   1.19575   1.19575   1.19575   1.19575   1.19575   1.19575   1.19575   1.19575   1.19575   1.19575										
112.   94.8   18.6   108.5   12.4   12.47   Beside Jos-South LGA Secreteria   0.34   3.30   2.9784   1.53656   5.47281   11.1   99.48   18.3   108.5   14.25   12.55   Beside Jos-South LGA Secreteria   0.28   280   2.4528   1.28772   4.18859   11.5   99.48   18.3   108.5   14.25   12.51   Beside Jos-South LGA Secreteria   0.28   280   2.4528   1.28772   4.18859   11.5   99.48   18.9   108.5   14.26   12.54   Beside Jos-South LGA Secreteria   0.29   290   2.5404   1.33371   4.18859   11.5   99.48   18.9   108.5   14.26   12.54   Beside Jos-South LGA Secreteria   0.29   290   2.5404   1.33371   4.66799   11.7   99.48   19.0   108.5   14.2   12.58   Beside Jos-South LGA Secreteria   0.34   3.0   2.9784   1.56366   5.47281   11.8   99.48   19.0   108.5   14.2   12.57   Beside Jos-South LGA Secreteria   0.34   3.0   2.9784   1.56366   5.47281   11.8   99.48   19.0   108.5   14.2   12.66   Beside Jos-South LGA Secreteria   0.34   3.0   2.9784   1.56366   5.47281   12.9   94.8   12.5   108.5   14.4   1.262   Beside Jos-South LGA Secreteria   0.34   3.0   2.9784   1.56366   5.47281   12.9   94.8   12.5   108.5   14.8   12.62   Beskurs   0.37   3.70   3.2412   1.70163   5.95571   12.1   99.48   13.0   108.5   14.5   12.57   Bukurs   0.37   3.70   3.2412   1.70163   5.95571   12.1   99.48   13.0   108.5   14.5   12.57   Bukurs   0.47   4.70   4.112   2.16153   7.56536   12.59   Bukurs   0.47   4.70   4.112   2.16153   7.56536   12.59   12.59   94.8   13.0   108.5   4.50   12.56   Bukurs   0.47   4.70   4.112   2.16153   7.56536   12.59   12.59   94.8   13.0   108.5   4.50   12.56   Bukurs   0.47   4.70   4.112   2.16153   7.56536   12.59   12.59   94.8   13.5   108.5   4.60   12.50   Bukurs   0.4   4.00   3.5916   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   1.85990   6.43860   6.43860   6										_
13.1   94 8   18.4   108 5   14.2   1249   Beside Dos South LGA Secreteria   0.28   230   2.4528   1.28772   4.50702     115. 99 48   18.5   108 5   14.27   1253   Beside Dos South LGA Secreteria   0.26   200   2.2756   1.19574   4.18509     117. 99 48   18.5   108 5   14.27   1253   Beside Dos South LGA Secreteria   0.29   200   2.2766   1.19574   4.18509     117. 99 48   19.0   108 5   14.22   1258   Beside Dos South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281     118. 99 48   19.0   108 5   14.23   1277   Beside Dos South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281     119. 99 48   19.1   108 5   14.24   1266   Beside Dos South LGA Secreteria   0.32   320   2.8032   1.47168   5.15088     119. 99 48   19.1   108 5   14.24   1266   Beside Dos South LGA Secreteria   0.32   320   2.8032   1.47168   5.15088     121. 99 48   13.0   108 5   14.21   1267   Buskuru   0.36   300   3.1556   1.65564   5.79474     121. 99 48   13.0   108 5   14.51   1257   Buskuru   0.36   300   3.1556   1.65564   5.79474     122. 99 48   13.0   108 5   14.51   1257   Buskuru   0.47   470   4.1172   2.16153   7.56536     123. 99 48   129   108 5   14.56   1256   Buskuru   0.47   470   4.1172   2.16153   7.56536     125. 99 48   129   108 5   14.56   1256   Buskuru   0.47   470   4.1172   2.16153   7.56536     126. 99 48   13.0   108 5   14.51   1250   Buskuru   0.34   340   2.9784   1.56366   5.47281     127. 99 48   15.0   108 5   14.56   1256   Buskuru   0.34   340   2.9784   1.56366   5.47281     128. 99 48   15.5   108 5   14.85   1137   Paul Gindiri Estate, Farin Gada   0.26   200   2.2776   1.19574   4.18509     129. 99 48   15.5   108 5   14.85   1137   Paul Gindiri Estate, Farin Gada   0.26   200   2.2776   1.19574   4.18509     131. 99 48   15.0   108   14.55   108 5   14.75   1135   Paul Gindiri Estate, Farin Gada   0.24   2.00   2.104   1.10376   3.86316     131. 99 88   15.0   108   14.75   1132   Paul Gindiri Estate, Farin Gada   0.25   2.50   2.19   1.14975   4.18509     131. 99 88   15.0   108										
114.   94.8   18.3   108.5   42.5   1255   1255   1256   1256   1257										_
115.   99.48   18.5   108.5   14.27   1253   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1254   1255										
11.1   11.2   11.2   12.5										
117   94 81 90   108 51 42.2   228   Beside Jos South LGA Secreteria   0.34   340   2.9784   1.56366   5.47281   118   109 481 91   108 51 42.4   1266   Beside Jos South LGA Secreteria   0.32   320   2.8032   1.47168   5.15088   129										
118.   D.   948   19.0   108   51   42.3   1257   Beside Jos-South LGA Secreteria   0.32   330   2.9784   1.55366   5.47281   129.0   948   12.5   108   51   44.8   1262   Bukuru   0.37   370   3.2412   1.71063   5.95571   1210   948   12.5   108   51   44.8   1262   Bukuru   0.36   360   3.1586   1.65564   5.79474   122.0   948   13.0   108   51   45.1   1257   Bukuru   0.36   360   3.1586   1.65564   5.79474   122.0   948   13.0   108   51   45.1   1257   Bukuru   0.47   470   4.1172   2.16153   7.56536   123.0   948   13.0   108   51   45.0   1256   Bukuru   0.47   470   4.1172   2.16153   7.56536   125.0   948   13.0   108   51   45.0   1256   Bukuru   0.47   470   4.1172   2.16153   7.56536   125.0   948   12.9   108   14.55   12.58   Bukuru   0.47   470   4.1172   2.16153   7.56536   125.0   948   12.9   108   14.55   12.58   Bukuru   0.47   470   4.1172   2.16153   7.56536   125.0   948   12.9   108   14.55   12.58   Bukuru   0.34   340   2.9784   1.156666   5.47281   12.59										
19.   94   19.   10.   85   42.4   1266   Beside Jos-South LGA Secreteria   0.32   320   2.8032   1.47168   5.15088   120.   94   12.5   98.5   14.8   1262   Bukuru   0.36   360   3.1536   1.65564   5.99574   121.   94   12.5   98.5   14.9   1249   Bukuru   0.36   360   3.1536   1.65564   5.79474   122.   94   81.30   30.8 51   45.5   1257   Bukuru   0.47   470   4.1172   2.16153   7.56536   1.83559   6.59957   124.   91.4813.0   30.8 51   45.5   1258   Bukuru   0.47   470   4.1172   2.16153   7.56536   6.59957   124.   91.4813.0   30.8 51   45.5   1258   Bukuru   0.47   470   4.1172   2.16153   7.56536   1.255   Bukuru   0.44   410   3.5916   1.88559   6.59957   124.   91.4813.0   30.8 51   45.0   1256   Bukuru   0.44   400   3.594   1.83960   6.43860   122.   91.4813.0   30.8 51   46.0   1260   Bukuru   0.44   400   3.594   1.83960   6.43860   122.   91.4815.5   30.8 51   48.6   1136   Paul Gindiri Estate, Farin Gada   0.26   200   2.276   1.19574   4.18509   128.   91.4815.5   30.8 51   48.6   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   133.   91.4815.5   30.8 51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.26   200   2.2776   1.19574   4.18509   131.   94.8 15.5   30.8 51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   133.   91.4815.5   30.8 51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   135.   93.8 15.9   38.5 14.8   1138   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   135.   93.8 15.9   38.5 14.8   1131   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   135.   93.8 15.9   38.5 14.8   1131   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413   135.   93.8 15.9   38.5 14.8   1131   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413   135.   93.8 15.8   38.5 14.8   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413   139.   93.8 15.8   38.5 14.8										_
120,   94   12.5   08.5   14.8   126.2   Bukuru										
121.   948   12.5   108   51.44   9   1249   Bukuru										
122,   948   13,0   108   514   51.   1257   Bukuru										
123,   948   130,   1008   51   45.0   1256   1256   1256   1256   1257   1258   125										_
124,   948 13.2   108 51 45.5   1258   Bukuru										_
125.   948 12.9   108 51 45.6   1256   Bukuru   0.34   340   2.9784   1.56366   5.47281     126.   948 13.0   108 51 46.0   1260   Bukuru   0.4   400   3.504   1.83960   6.43860     127.   948 13.5   108 51 48.5   1137   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     128.   90 48 15.5   108 51 48.6   1135   Paul Gindiri Estate, Farin Gada   0.28   280   2.4528   1.28772   4.50702     129.   94 81 5.5   108 51 48.6   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     130.   99 48 15.5   108 51 48.1   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     131.   94 81 5.5   108 51 47.8   1135   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     132.   99 48 15.5   108 51 47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     133.   99 58 15.5   108 51 48.2   1139   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     134.   99 58 15.0   108 51 48.0   1131   Paul Gindiri Estate, Farin Gada   0.23   230   2.0148   1.05777   3.70220     134.   99 58 15.0   108 51 48.9   1130   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     135.   99 58 15.5   108 51 48.9   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137.   99 58 15.8   108 51 48.8   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   99 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   99 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   99 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   95 816.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   2.00   2.19   1.14975   4.02413     140.   90 58 16.7   108 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.25   2.00   2.19										
126.   948   13.0   108   51   46.0   1260   1260   127.   948   15.9   127.   948   15.9   128.   948   15.9   128.   948   15.9   128.   948   15.5   128.   138.   948   15.5   128.   138.   948   15.5   128.   138.   948   15.5   128.   138.   948   138.   948   15.5   128.   138.   138.   948   15.5   128.   138.										_
127.   09   48   1.59   08   51   48.5   1136   Paul Gindiri Estate, Farin Gada   0.26   220   2.2776   1.19574   4.18509     128.   99   48   1.55   108   51   48.6   1136   Paul Gindiri Estate, Farin Gada   0.28   280   2.4528   1.28772   4.50702     129.   99   48   1.55   108   51   48.6   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     130.   99   48   1.55   108   51   48.1   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     131.   99   48   1.55   108   51   47.8   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     132.   90   48   1.56   108   51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     133.   99   58   1.50   108   51   48.2   1139   Paul Gindiri Estate, Farin Gada   0.23   230   2.0148   1.05777   3.70220     134.   90   58   1.50   108   51   48.0   1131   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     135.   90   58   1.59   108   51   48.0   1131   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     136.   90   58   1.59   108   51   48.0   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137.   90   81   80   81   49.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   90   58   1.65   108   51   48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   90   58   1.65   108   51   48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     140   90   58   1.67   108   1.48   1133   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141   90   58   1.67   108   1.48   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142   90   58   4.0   80   51   4.75   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143   90   58   4.0   80   51   4.75   1138   Pa										_
128.   948   1.55   108   51   48.6   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   130.   948   15.5   108   51   48.1   1138   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   131.   948   15.5   108   51   48.1   1138   Paul Gindiri Estate, Farin Gada   0.25   260   2.2776   1.19574   4.18509   131.   948   15.5   108   51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   132.   948   15.0   108   51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027										
120.   948   1.5.5   908   51   48.6   1135   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   131.   948   15.5   908   51   47.8   1135   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   131.   948   15.5   908   51   47.8   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   3.86316   313.   948   15.5   908   51   47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027										
130.   948 15.4   08 51 48.1   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     131.   948 15.5   088 51 47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     133.   958 15.2   088 51 48.2   1139   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     133.   958 15.2   088 51 48.2   1139   Paul Gindiri Estate, Farin Gada   0.23   230   2.0148   1.05777   3.70220     134.   958 15.9   088 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     135.   958 15.9   088 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     136.   958 15.9   088 51 48.9   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   958 16.5   088 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   958 16.5   088 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   958 16.5   088 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141.   95 81 16.8   088 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141.   95 88 16.8   088 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   95 84 16.7   088 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   95 84 16.7   088 51 47.7   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   95 84 16.8   088 52 30.2   1160   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     144.   95 54 3.6   088 52 30.5   1179   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34066     147.   95 54 4.1   088 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149.   95 54 4.0   088 52 30.5   1176   Mega Structure Pol										
131.   948 15.5   08 51 47.8   1135   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316   3.32   948 15.6   088 51 47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027   3.380										
132, 9 48 15.6   108 51 47.6   1142   Paul Gindiri Estate, Farin Gada   0.21   210   1.8396   0.96579   3.38027     133, 9 58 15.2   108 51 48.2   1139   Paul Gindiri Estate, Farin Gada   0.23   230   2.0148   1.05777   3.70220     134, 9 58 15.9   108 51 48.0   1131   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     135, 9 58 15.9   108 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     136, 9 58 15.9   108 51 48.9   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137, 9 58 15.8   108 51 49.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138, 9 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138, 9 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138, 9 58 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     140, 9 58 16.7   108 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     140, 9 58 16.8   108 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     141, 9 58 16.7   108 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143, 9 58 16.4   108 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143, 9 58 16.4   108 52 30.2   1160   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     146, 9 55 43.6   108 52 30.2   1171   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606     147, 9 55 44.1   108 52 30.2   1176   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     151, 9 55 43.6   108 52 30.5   1175   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     151, 9 55 41.5   108 52 33.8   1171   New Plaza Opp. Polo Club   0.26   260   2.2776										
133. 958 15.2   108 51 48.2   1139   Paul Gindiri Estate, Farin Gada   0.23   230   2.0148   1.05777   3.70220     134. 958 15.0   108 51 48.0   1131   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     35. 958 15.9   108 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     36. 958 15.9   108 51 48.9   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     37. 958 15.8   108 51 48.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     38. 958 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     39. 958 16.5   108 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     39. 958 16.5   108 51 48.0   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     414. 958 16.8   108 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     414. 958 16.8   108 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     414. 958 16.7   108 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     414. 955 44.0   108 52 30.2   1160   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185     415. 955 44.1   108 52 30.2   1176   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     416. 955 43.5   108 52 30.2   1176   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     418. 955 43.5   108 52 30.2   1176   Mega Structure Polo Round About   0.27   2.70   2.3652   1.2413   4.34606     417. 955 44.1   108 52 30.2   1176   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     418. 955 43.5   108 52 30.5   1175   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     419. 955 44.0   108 52 33.2   1184   New Plaza Opp. Polo Club   0.25   250   2.19   1.14975   4.02413     418										
134, 95 88 15.9   008 51 48.0   1131   Paul Gindiri Estate, Farin Gada   0.24   240   2.1024   1.10376   3.86316     135, 95 88 15.9   008 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137, 95 88 15.8   008 51 48.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138, 95 88 16.5   008 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138, 95 88 16.5   008 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139, 95 88 16.5   008 51 48.4   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     140, 95 88 16.7   008 51 48.1   1133   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141, 195 88 16.8   008 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     142, 95 81 6.7   008 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143, 95 81 6.4   008 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     144, 95 55 44.0   008 52 30.2   1160   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185     145, 95 55 43.5   008 52 30.5   1179   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     146, 95 55 43.1   008 52 30.2   1176   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     148, 95 55 43.9   008 52 30.4   1158   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149, 95 55 44.6   008 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149, 95 55 41.0   008 52 33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     151, 95 55 41.0   008 52 33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     152, 95 55 41.0   008 52 33.8   1177   New Plaza Opp. Polo Club   0.26   260   2.2776										
135.   95 88 15.9   08 51 48.7   1132   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     136.   95 88 15.9   08 51 48.9   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137.   95 88 15.8   08 51 49.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   95 88 16.5   08 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   95 88 16.5   08 51 48.4   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     140.   95 88 16.7   08 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141.   95 88 16.8   08 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142.   95 88 16.7   08 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   95 81 6.4   08 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     144.   95 55 43.5   08 52 30.2   1160   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185     145.   95 55 43.5   08 52 30.2   1171   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     146.   95 55 43.6   08 52 30.2   1176   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606     147.   95 55 43.6   08 52 30.5   1175   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34506     148.   95 55 43.6   08 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     148.   95 55 43.6   08 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149.   95 55 43.6   08 52 30.6   1183   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     150.   95 55 43.6   08 52 33.4   1177   New Plaza Opp. Polo Club   0.27   270   2.3652   1.24173   4.36066     151.   95 55 41.6   08 52 33.8   1174   New Plaza Opp. Polo										
136.   99 58 15.9   908 51 48.9   1136   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     137.   97 58 15.8   908 51 48.0   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     138.   97 58 16.5   908 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   99 58 16.5   908 51 48.4   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     140.   97 58 16.7   908 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141.   97 58 16.8   908 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142.   99 58 16.7   908 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   99 58 16.4   908 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     144.   99 55 44.0   908 52 30.2   1160   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185     145.   99 55 43.5   908 52 30.5   1179   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     146.   99 55 44.1   908 52 30.2   1176   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606     147.   99 55 44.1   908 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149.   99 55 44.0   908 52 30.6   1183   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     150.   99 55 41.6   908 52 33.4   1177   New Plaza Opp. Polo Club   0.21   2.3652   1.24173   4.34606     151.   99 55 41.6   908 52 33.8   1174   New Plaza Opp. Polo Club   0.21   2.3652   1.24173   4.34606     153.   99 55 41.0   908 52 33.8   1174   New Plaza Opp. Polo Club   0.25   250   2.19   1.14975   4.02413     151.   99 55 41.0   908 52 33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     152.   99 55 41.0   908 52 33.8   1171   New Plaza Opp. Polo Club   0.26										
137.         99 58 15.8         308 51 49.0         1137         Paul Gindiri Estate, Farin Gada         0.25         250         2.19         1.14975         4.02413           138.         99 58 16.5         308 51 48.6         1137         Paul Gindiri Estate, Farin Gada         0.25         250         2.19         1.14975         4.02413           139.         99 58 16.5         308 51 48.4         1133         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           140.         99 58 16.7         308 51 47.7         1134         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           142.         99 58 16.7         308 51 47.7         1134         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           142.         99 58 16.7         308 51 47.2         1133         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           143.         99 58 16.5         308 52 30.2         1160         Mega Structure Polo Round About         0.33         330         2.8908         1.51767         5.3185           145.         99 5										
138.   95 81 6.5   98 51 48.6   1137   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     139.   95 81 6.5   98 51 48.4   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     141.   99 581 6.7   98 51 4.00   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142.   99 581 6.7   98 51 4.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142.   99 581 6.7   98 51 4.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   99 58 16.4   308 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   99 58 40.4   308 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.22   220   1.9272   1.01178   3.54123     144.   99 55 44.0   308 52 30.2   1160   Mega Structure Polo Round About   0.23   28098   1.51767   5.31185     145.   99 55 43.5   308 52 30.2   1179   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702     146.   99 55 43.6   308 52 30.2   1176   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606     147.   99 55 44.1   308 52 30.2   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     148.   99 55 43.6   308 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149.   99 55 44.0   308 52 30.6   1183   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     150.   99 55 43.6   308 52 33.4   1177   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     151.   99 55 41.6   308 52 33.4   1177   New Plaza Opp. Polo Club   0.27   270   2.3652   1.24173   4.34606     153.   99 55 41.6   308 52 33.5   1148   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     151.   99 55 41.6   308 52 33.5   1175   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     152.   99 55 41.0   308 52 33.8   1174   New Plaza Opp. Polo Club   0.2										
139.   99 58 16.5   008 51 48.4   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   140.   99 58 16.7   008 51 40.0   1134   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413   141.   99 58 16.7   008 51 47.7   1134   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   142.   99 58 16.7   008 51 47.5   1138   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   143.   99 58 16.4   008 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509   143.   99 58 16.4   008 51 47.2   1133   Paul Gindiri Estate, Farin Gada   0.22   220   1.9272   1.01178   3.54123   144.   99 55 44.0   008 52 30.5   1179   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185   145.   99 55 43.5   008 52 30.5   1179   Mega Structure Polo Round About   0.28   280   2.4528   1.28772   4.50702   146.   99 55 43.6   008 52 30.2   1176   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606   147.   99 55 44.9   008 52 30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413   149.   99 55 44.4   008 52 30.6   1183   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413   149.   99 55 44.6   008 52 30.4   1158   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509   150.   99 55 44.6   008 52 30.4   1158   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509   151.   99 55 44.6   008 52 33.4   1177   New Plaza Opp. Polo Club   0.31   310   2.7156   1.42569   4.98992   152.   99 55 44.0   008 52 33.8   1174   New Plaza Opp. Polo Club   0.27   270   2.3652   1.24173   4.34606   153.   99 55 44.0   008 52 33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509   155.   99 55 44.0   008 52 33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509   156.   99 55 44.0   008 52 34.8   1178   New Plaza Opp. Polo Club   0.26   260   2.2776										
140.   90   58   16.7   16.8   16.7   10.8   51   40.0   11.34   Paul Gindiri Estate, Farin Gada   0.25   250   2.19   1.14975   4.02413     141.   90   58   16.8   10.8   51   47.7   11.34   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     142.   90   58   16.7   10.8   51   47.5   11.38   Paul Gindiri Estate, Farin Gada   0.26   260   2.2776   1.19574   4.18509     143.   90   58   16.7   10.8   51   47.2   11.33   Paul Gindiri Estate, Farin Gada   0.22   220   1.9272   1.01178   3.54123     144.   90   55   44.0   10.8   52   30.2   1160   Mega Structure Polo Round About   0.33   330   2.8908   1.51767   5.31185     145.   90   55   43.5   10.8   52   30.5   1179   Mega Structure Polo Round About   0.27   270   2.3652   1.24173   4.34606     147.   90   55   44.1   10.8   52   30.2   1176   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     148.   90   55   43.5   10.8   52   30.5   1175   Mega Structure Polo Round About   0.25   250   2.19   1.14975   4.02413     149.   90   55   44.4   10.8   52   30.6   11.83   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     150.   90   55   44.5   10.8   52   30.4   1158   Mega Structure Polo Round About   0.26   260   2.2776   1.19574   4.18509     151.   90   55   44.5   10.8   52   33.4   1177   New Plaza Opp. Polo Club   0.31   310   2.7156   1.42569   4.98992     152.   90   55   44.5   10.8   52   33.8   1174   New Plaza Opp. Polo Club   0.25   250   2.19   1.14975   4.02413     154.   90   55   44.5   10.8   52   33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     155.   90   55   44.5   10.8   52   33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     155.   90   55   44.5   10.8   52   33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     158.   90   55   44.5   10.8   52   33.8   1174   New Plaza Opp. Polo Club   0.26   260   2.2776   1.19574   4.18509     158.   90   54   44.5   10.										_
141.         9 58 16.8         008 51 47.7         1134         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           142.         Dy 58 16.7         008 51 47.5         1138         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           143.         Dy 58 16.7         008 51 47.2         1133         Paul Gindiri Estate, Farin Gada         0.22         220         1.9272         1.01178         3.54123           144.         Dy 55 44.0         008 52 30.2         1160         Mega Structure Polo Round About         0.33         330         2.8908         1.51767         5.31185           145.         Dy 55 43.5         008 52 30.2         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         Dy 55 43.6         008 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         Dy 55 43.6         008 52 30.4         1158         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         Dy 5										
142.         D9 58 16.7         08 51 47.5         1138         Paul Gindiri Estate, Farin Gada         0.26         260         2.2776         1.19574         4.18509           143.         D9 58 16.4         08 51 47.2         1133         Paul Gindiri Estate, Farin Gada         0.22         220         1.9272         1.01178         3.54123           144.         D9 55 44.0         088 52 30.2         1160         Mega Structure Polo Round About         0.28         2.800         2.4528         1.28772         4.50702           146.         D9 55 43.5         08 52 30.2         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         D9 55 43.6         08 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         D9 55 43.9         D8 52 30.5         1175         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         D9 55 43.6         D8 52 30.6         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         D9 55 4										
143.         99 58 16.4         008 51 47.2         1133         Paul Gindiri Estate, Farin Gada         0.22         220         1.9272         1.01178         3.54123           144.         09 55 44.0         008 52 30.2         1160         Mega Structure Polo Round About         0.33         330         2.8908         1.51767         5.31185           145.         09 55 43.5         008 52 30.5         1179         Mega Structure Polo Round About         0.28         280         2.4528         1.28772         4.50702           146.         09 55 43.6         108 52 30.5         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         09 55 44.1         108 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         09 55 44.1         108 52 30.6         1183         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         09 55 43.6         108 52 33.4         1177         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6										
144.         99 55 44.0         008 52 30.2         1160         Mega Structure Polo Round About         0.33         330         2.8908         1.51767         5.31185           145.         99 55 43.5         008 52 30.5         1179         Mega Structure Polo Round About         0.28         280         2.4528         1.28772         4.50702           146.         99 55 43.6         008 52 30.2         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         99 55 43.1         108 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         99 55 43.9         108 52 30.6         1183         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         99 55 44.4         108 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         19 55 41.6         108 52 33.4         1177         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           151.         19 55 41.6										
145.         09 55 43.5         08 52 30.5         1179         Mega Structure Polo Round About         0.28         280         2.4528         1.28772         4.50702           146.         09 55 43.6         08 52 30.2         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         09 55 44.1         08 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         09 55 44.1         08 52 30.5         1175         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.02413           150.         09 55 43.6         08 852 30.4         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         09 55 43.6         08 852 30.4         1188         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         09 55 43.6         08 852 33.4         1177         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6 </td <td></td>										
146.         99 55 43.6         008 52 30.2         1171         Mega Structure Polo Round About         0.27         270         2.3652         1.24173         4.34606           147.         19 55 44.1         108 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         19 55 43.9         108 52 30.5         1175         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         19 55 44.4         108 52 30.6         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         19 55 41.6         108 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           151.         19 55 41.6         108 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         19 55 41.6         108 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         19 55 41.2										
147.         09 55 44.1         008 52 30.2         1176         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           148.         09 55 43.9         008 52 30.5         1175         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         09 55 44.4         008 52 30.6         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         09 55 44.6         008 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6         008 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         09 55 41.6         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.8         1175         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
148.         09 55 43.9         008 52 30.5         1175         Mega Structure Polo Round About         0.25         250         2.19         1.14975         4.02413           149.         09 55 44.4         008 52 30.6         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         09 55 43.6         008 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6         008 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         09 55 41.9         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 40.2         008										
149.         09 55 44.4         008 52 30.6         1183         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           150.         09 55 43.6         008 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6         008 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         09 55 41.9         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.0         008 52 33.8         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 3										
150.         09 55 43.6         008 52 30.4         1158         Mega Structure Polo Round About         0.26         260         2.2776         1.19574         4.18509           151.         09 55 41.6         008 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         09 55 41.9         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.0         008 52 33.8         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 33.8         1171         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8 <td></td>										
151.         09 55 41.6         008 52 33.4         1177         New Plaza Opp. Polo Club         0.31         310         2.7156         1.42569         4.98992           152.         09 55 41.9         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.3         08 52 33.6         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           156.         09 55 40.0         08 52 33.9         1169         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 34.8         1178         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         008 52 34.8										
152.         09 55 41.9         008 52 33.8         1174         New Plaza Opp. Polo Club         0.27         270         2.3652         1.24173         4.34606           153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.3         008 52 33.6         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 33.9         1169         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         008 52 52.5										
153.         09 55 41.6         008 52 33.2         1184         New Plaza Opp. Polo Club         0.25         250         2.19         1.14975         4.02413           154.         09 55 41.3         008 52 33.6         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.0         008 52 33.9         1169         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         008 52 52.3										
154.         09 55 41.3         008 52 33.6         1175         New Plaza Opp. Polo Club         0.28         280         2.4528         1.28772         4.50702           155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 33.9         1169         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         08 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         08 52 52.5         1265         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         08 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.0         08 52 52.1 <td></td>										
155.         09 55 41.0         008 52 33.8         1171         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           156.         09 55 40.2         008 52 33.9         1169         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         08 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         08 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         08 52 52.3         1265         Ray field (Little Rayfield)         0.22         220         1.9272         1.01178         3.54123           161.         09 49 48.7         08 52 52.1         1268         Ray field (Little Rayfield)         0.23         230         2.0148         1.05777         3.70220           162.         09 48 47.7         008 52 52.6<										
156.         09 55 40.2         008 52 33.9         1169         New Plaza Opp. Polo Club         0.32         320         2.8032         1.47168         5.15088           157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         008 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         08 52 52.3         1265         Ray field (Little Rayfield)         0.22         220         1.9272         1.01178         3.54123           161.         09 49 48.0         08 52 52.1         1268         Ray field (Little Rayfield)         0.23         230         2.0148         1.05777         3.70220           162.         09 48 47.7         008 52 52.3         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           163.         09 48 47.9         008 52 52										
157.         09 55 40.6         008 52 34.8         1178         New Plaza Opp. Polo Club         0.26         260         2.2776         1.19574         4.18509           158.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         008 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         08 52 52.3         1265         Ray field (Little Rayfield)         0.22         220         1.9272         1.01178         3.54123           161.         09 49 48.0         08 52 52.1         1268         Ray field (Little Rayfield)         0.23         230         2.0148         1.05777         3.70220           162.         09 48 47.7         008 52 52.3         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           163.         09 48 47.9         008 52 52.6         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           164.         09 49 31.3         008 52 5					11					
158.         09 49 48.7         008 52 34.8         1263         Ray field (Little Rayfield)         0.26         260         2.2776         1.19574         4.18509           159.         09 49 48.4         008 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         008 52 52.3         1265         Ray field (Little Rayfield)         0.22         220         1.9272         1.01178         3.54123           161.         09 49 48.0         088 52 52.1         1268         Ray field (Little Rayfield)         0.23         230         2.0148         1.05777         3.70220           162.         09 48 47.7         008 52 52.3         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           163.         09 48 47.9         008 52 52.6         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           164.         09 49 31.3         008 52 53.2         1256         Hossana Blocks Ind. Rayfield (Mai-Adiko)         0.31         310         2.7156         1.42569         4.98992										
159.         09 49 48.4         008 52 52.5         1265         Ray field (Little Rayfield)         0.24         240         2.1024         1.10376         3.86316           160.         09 49 48.2         008 52 52.3         1265         Ray field (Little Rayfield)         0.22         220         1.9272         1.01178         3.54123           161.         09 49 48.0         008 52 52.1         1268         Ray field (Little Rayfield)         0.23         230         2.0148         1.05777         3.70220           162.         09 48 47.7         008 52 52.3         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           163.         09 48 47.9         008 52 53.2         1265         Ray field (Little Rayfield)         0.25         250         2.19         1.14975         4.02413           164.         09 49 31.3         008 52 53.2         1256         Hossana Blocks Ind. Rayfield (Mai-Adiko)         0.31         310         2.7156         1.42569         4.98992										
160.     09 49 48.2     008 52 52.3     1265     Ray field (Little Rayfield)     0.22     220     1.9272     1.01178     3.54123       161.     09 49 48.0     008 52 52.1     1268     Ray field (Little Rayfield)     0.23     230     2.0148     1.05777     3.70220       162.     09 48 47.7     008 52 52.3     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       163.     09 48 47.9     008 52 52.6     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       164.     09 49 31.3     008 52 53.2     1256     Hossana Blocks Ind. Rayfield (Mai-Adiko)     0.31     310     2.7156     1.42569     4.98992										
161.     09 49 48.0     008 52 52.1     1268     Ray field (Little Rayfield)     0.23     230     2.0148     1.05777     3.70220       162.     09 48 47.7     008 52 52.3     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       163.     09 48 47.9     008 52 52.6     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       164.     09 49 31.3     008 52 53.2     1256     Hossana Blocks Ind. Rayfield (Mai-Adiko)     0.31     310     2.7156     1.42569     4.98992										
162.     09 48 47.7     008 52 52.3     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       163.     09 48 47.9     008 52 52.6     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       164.     09 49 31.3     008 52 53.2     1256     Hossana Blocks Ind. Rayfield (Mai-Adiko)     0.31     310     2.7156     1.42569     4.98992										
163.     09 48 47.9     008 52 52.6     1265     Ray field (Little Rayfield)     0.25     250     2.19     1.14975     4.02413       164.     09 49 31.3     008 52 53.2     1256     Hossana Blocks Ind. Rayfield (Mai-Adiko)     0.31     310     2.7156     1.42569     4.98992										
164. 09 49 31.3 008 52 53.2 1256 Hossana Blocks Ind. Rayfield (Mai-Adiko) 0.31 310 2.7156 1.42569 4.98992										
165.   09 49 31.6   008 52 53.3   1257   Hossana Blocks Ind. Rayfield (Mai-Adiko)   0.35   350   3.066   1.60965   5.63378										
	165.	09 49 31.6	008 52 53.3	1257	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.35	350	3.066	1.60965	5.63378

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166.	09 49 31.5	008 52 52.9	1259	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.27	270	2.3652	1.24173	4.34606
167.	09 49 31.4	008 52 52.6	1263	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.39	390	3.4164	1.79361	6.27764
168.	09 49 31.3	008 52 52.8	1264	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.34	340	2.9784	1.56366	5.47281
169.	09 49 31.2	008 52 53.0	1253	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.33	330	2.8908	1.51767	5.31185
170.	09 49 31.2	008 52 53.3	1258	Hossana Blocks Ind. Rayfield (Mai-Adiko)	0.33	330	2.8908	1.51767	5.31185
171.	09 49 25.3	008 52 51.4	1265	Opp. Government House, Mai-Adika	0.26	260	2.2776	1.19574	4.18509
172.	09 49 25.2	008 52 51.6	1261	Opp. Government House, Mai-Adika	0.27	270	2.3652	1.24173	4.34606
173.	09 49 25.5	008 52 51.4	1259	Opp. Government House, Mai-Adika	0.29	290	2.5404	1.33371	4.66799
174.	09 49 24.6	008 52 51.3	1254	Opp. Government House, Mai-Adika	0.26	260	2.2776	1.19574	4.18509
175.	09 49 25.1	008 52 50.3	1267	Opp. Government House, Mai-Adika	0.24	240	2.1024	1.10376	3.86316
176.	09 49 24.9	008 52 51.1	1265	Opp. Government House, Mai-Adika	0.27	270	2.3652	1.24173	4.34606
	09 49 24.7	008 52 51.1	1261	Opp. Government House, Mai-Adika	0.28	280	2.4528	1.28772	4.50702
	09 49 24.5	008 52 51.6	1266	Opp. Government House, Mai-Adika	0.27	270	2.3652	1.24173	4.34606
	09 49 26.7	008 52 51.4	1262	Opp. Government House, Mai-Adika	0.25	250	2.19	1.14975	4.02413
	09 49 26.9	008 52 51.5	1255	Opp. Government House, Mai-Adika	0.25	250	2.19	1.14975	4.02413
	09 58 15.4	008 50 54.4	1159	Army Engineer	0.27	270	2.3652	1.24173	4.34606
	09 58 15.7	008 50 54.5	1155	Army Engineer	0.26	260	2.2776	1.19574	4.18509
	09 58 15.9	008 50 54.3	1163	Army Engineer	0.33	330	2.8908	1.51767	5.31185
	09 58 16.1	008 50 54.6	1160	Army Engineer	0.26	260	2.2776	1.19574	4.18509
	09 58 15.9	008 50 54.8	1158	Army Engineer	0.27	270	2.3652	1.24173	4.34606
	09 58 15.6	008 50 54.6	1163	Army Engineer	0.36	360	3.1536	1.65564	5.79474
	09 58 37.6	008 51 10.8	1160	Gamajigo	0.24	240	2.1024	1.10376	3.86316
	09 58 37.0	008 51 10.8	1161	Gamajigo	0.24	220	1.9272	1.01178	3.54123
	09 58 38.0	008 51 10.7	1157	Gamajigo	0.23	230	2.0148	1.05777	3.70220
	09 58 37.8	008 51 10.8	1175	Gamajigo	0.23	220	1.9272	1.01178	3.54123
	09 58 32.3	008 51 11.0	1173	Ajigo "A"	0.25	250	2.19	1.14975	4.02413
	09 58 32.3	008 51 19.8	1155	Ajigo "A"	0.23	210	1.8396	0.96579	3.38027
	09 58 32.4	008 51 20.1	1152	Ajigo 'A'  Ajigo "A"	0.21	230	2.0148	1.05777	3.70220
	09 58 32.1	008 51 20.3	1132	Ajigo "A"	0.23	240	2.1024	1.103777	3.86316
	09 58 32.2	008 51 19.8	1149	Ajigo "A"	0.24	230	2.1024	1.05777	3.70220
	09 58 32.4	008 51 19.9	1153	Ajigo 'A'	0.23	280	2.4528	1.28772	4.50702
				3.0					
	09 58 32.3	008 51 19.4	1154	Ajigo "A"	0.24	240	2.1024	1.10376	3.86316
	09 58 20.4	008 51 27.8	1147	Ajigo	0.19	190 220	1.6644	0.87381	3.05834
	09 58 20.7	008 51 28.2	1152	Ajigo			1.9272	1.01178	3.54123
	09 58 20.9	008 51 28.3	1134	Ajigo	0.23	230	2.0148	1.05777	3.70220
	09 58 21.0	008 51 28.4	1145	Ajigo	0.26	260	2.2776	1.19574	4.18509
	09 58 21.1	008 51 27.8	1139	Ajigo	0.26	260	2.2776	1.19574	4.18509
	09 58 20.5	008 51 27.6	1148	Ajigo	0.22	220	1.9272	1.01178	3.54123
	09 58 20.8	008 51 27.5	1148	Ajigo	0.23	230	2.0148	1.05777	3.70220
	09 58 23.2	008 52 05.6	1128	Uliliba	0.23	230	2.0148	1.05777	3.70220
	09 58 23.5	008 52 05.3	1124	Uliliba	0.25	250	2.19	1.14975	4.02413
	09 58 23.4	008 52 06.3	1129	Uliliba	0.23	230	2.0148	1.05777	3.70220
	09 58 24.1	008 52 05.3	1128	Uliliba	0.27	270	2.3652	1.24173	4.34606
	09 57 56.7	008 51 58.6	1130	Uliliba "B"	0.32	320	2.8032	1.47168	5.15088
	09 57 56.6	008 51 58.2	1125	Uliliba "B"	0.3	300	2.628	1.37970	4.82895
	09 57 56.8	008 51 58.5	1129	Uliliba "B"	0.27	270	2.3652	1.24173	4.34606
212	09 57 56.5	008 51 58.6	1125	Uliliba "B"	0.31	310	2.7156	1.42569	4.98992
					Avg.	Avg. DR	Dose	AEDEin	
		1			DR	(nGy/h)	Rate	(mSv/y)	ELCRin (Sv)
		ļ			(uSv/h)		(mSv/y)		
				MINIMUM	0.18	180	1.5768	0.82782	2.89737
				MAXIMUM	0.47	470	4.1172	2.16153	7.56536
		1		AVERAGE	0.2793	279.76	2.45075	1.28665	4.50326
		l			3.2.75	6	_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	_,_000	

From the results obtained, the concentration of radiation dose varied from one building to another, with some buildings having values that fall within the safe dose limit of 1mSv/y, while in some buildings, the values are slightly or higher than the global permissible limit. Absorbed dose rate, annual effective dose equivalent and excess lifetime cancer risk were all determined and recorded.



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#### **Absorbed Dose Rate**

From the analysis, the absorbed dose rate recorded ranges between 1.56mSvy<sup>-1</sup>  $(180nGyh^{-1})$  and 4.12mSv/y (470nGy/h) with a mean value of 2.45mSv/y(279.7664nGy/h) across the uncompleted buildings accessed as shown in the table above.

# **Annual Effective Dose Equivalent (***AEDE***)**

To determine the annual effective dose equivalent (indoor), the following equation was used (Beretka & Mathew, 1985) and the UNSCEAR (2000) equation 2

$$AEDE_{indoor}(mSvy^{-1}) = D(nGy^{-1}) \times 8760hy^{-1} \times 0.75 \times 0.75vGy^{-1} \times 10^{-6}$$
 (2)

Where 8760 is the total number of hours in a year (24 hours x 365days), 0.75 is the indoor occupancy factor, which was estimated at 18 hours a day, while  $0.7SvGy^{-1}$  is the conversion coefficient from the absorbed effective dose received. Average AEDE<sub>indoor</sub> recorded across the area of study falls within the range of 0.8278 and 2.1615 mSvv<sup>-1</sup> as seen in Table 1.

# Excess Lifetime Cancer Risk (ELCR)

This is the estimate of an additional risk for someone developing cancer as a result of exposure to toxic substances or radionuclides over a long period of time. Emelue et al. (2014) outlined the formula for ELCR as follows;

$$ELCR_{indoor} = AEDE_{in} \times DL(70) \times RF(0.05)$$

Where DL is the average duration of life, which was pegged at 70, while RF is the risk factor per sievert, which was pegged at 0.05Sv for the public exposure by the International Committee on Radiation Protection (ICRP), 1991. The average values obtained across the study area range between 2.8974 x 10<sup>-3</sup> and 7.5654 x 10<sup>-3</sup> (indoor), which were far above the recommended level set by the International Commission on Radiological Protection (ICRP) (1991).

### **Impact of Ionizing Radiation on Human Health**

Ionizing radiation has the capacity to disrupt life processes (Solomon et al, 2018). As exposure to ionizing radiation increases, so does the potential for health hazards if not properly contained. When these ionizing radiations are at a very high level, acute health effects such as skin burns, nausea, etc., may occur. If the radiation dose is delivered at a low rate over a long period of time, though damaged body tissues might likely be repaired but there is still a risk of long-term effects such as cataract or cancer decades later. These

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effects are proportional to the radiation doses received over time. This risk is higher in children and adolescents as they are significantly more sensitive to radiation exposures than adults (WHO, 2023)

# **Summary of Findings**

The summary of the findings of this study is as follows:-

- 1. Background radiation dose rate in buildings was assessed.
- 2. The levels of background radiation from each building have been measured.
- 3. Analyses of the radiological indices from each building were carried out to determine the average dose rate, annual effective dose equivalent and excess lifetime cancer risk from each of the buildings studied.

### **CONCLUSION**

At the end of this study, the distribution of radionuclide concentrations and their doses from uncompleted buildings within Jos and its environs were determined. Radiological parameters and indices such as absorbed dose rate, annual effective dose equivalent and excess life-time cancer risk were all determined. Acute short-term effects of these ionizing radiation as well as long-term effects, were also carefully stated.

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