



ABSTRACT

Strategic planning for cemeteries should be one of the easier tasks for planners. Supply and demand can be estimated with some certainty from death rate. For the dead to rest in peace, Planners need to begin to see reason for planning for the death. The research was conducted via a reconnaissance and physical survey. The existing population of the study area was provided by the National Population Commission and information regarding death people was sourced from Kaduna State Ministry of Health. The inventory of the spatial distribution of cemeteries in Kaduna metropolis was done via physical survey and update of Google

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LANNING FOR URBAN CEMETRIES IN KADUNA METROPOLIS, KADUNA STATE, NIGERIA.

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Introduction

Webster's Third International Dictionary defines a cemetery as: an area for burial or entombment...any burial ground, typically a large one: a graveyard. Section 8100 of the Health and Safety Code provides: Six or more human bodies being buried at one place constitute the place a cemetery.

As a popular saying goes, "Death is inevitable" whereas the phenomenon of death and living is, and has been accepted by man as an inescapable index of his existence, he has nevertheless been over owed by its paradoxical presence. Man's preoccupation with death is as old as the history of man himself, people must be born and eventually die. Think of urban cemeteries as the first public parks in America. They enticed city-dwellers into an idyllic country experience with rolling green hills, shady trees and stone benches designed for reflective thought. Moreover, cemeteries can serve as more than just the resting place of the dead; providing the living with areas for contemplation, seeking solace, and gaining insights into the past.(Kevin, 2017).

Therefore, for the fact that death is inevitable, every human being will eventually die Cemeteries in towns and cities must be located in the city outskirts which should be above 1km from homes and living areas (Al-jibaly,1998). All public cemeteries must be standardized, designed and accessible with good linkages within an urban space (Chapin, 1970).



images of study area and digitization. The data were presented and analyzed using descriptive statistics techniques. The study identified 25 cemeteries spatially distributed within the metropolis and the facilities within the identified cemeteries were grossly inadequate and unplanned. The result also showed that the cemeteries are over utilized with regards to their capacity as about 70% of the cemeteries were filled beyond capacity with 80% of them totally in poor condition. Major recommendation and design proposal, which include provision of cemeteries within 1.5km radius for better service delivery as well as provision of land by government for additional grave sites.

Keywords: Burial grounds, cemeteries, spatial, internment, planning standards, characteristics.

With this regard, cemeteries within Kaduna metropolis are not properly located or distributed according to standard base on service radius and hierarchy from neighborhood to regional. For the fact that dead is inevitable, every human being will eventually die, over 2.5 million Nigerians are expected to die this year (WHO, 2016). The vast majority will be buried. Yet a number of communities, especially those more fully developed, are hard pressed to find cemetery space within their borders especially Kaduna metropolis.

Therefore, lack space and of physical design plan for cemeteries and management resulted to the underutilization of space and misuse of space, which as a result cemeteries are riddled with stumps that stick up from the sandy loam like matchsticks.

In view of the foresaid, this study assessed the characteristics (condition) and spatial distribution of cemeteries with the view to providing appropriate recommendations for improved spatial distribution and effective space use of cemeteries. The paper achieved the foresaid aim through the following sets of objectives: Review of the principles, standards and backdrop of cemeteries in cities; Examining the characteristics (physical condition), and spatial distribution of cemeteries within the study area; and through physical design proposal and recommendations towards improvement of cemeteries condition and spatial distribution in the study area.

Types of Cemeteries

According to M-Gillies (2011) Cemeteries, they are final resting places dedicated to our bodies after death colloquially known as sprawling necropolises; they are adorned with rows of gravestones and columbaria, and reflect the spiritual beliefs and preferences of every culture at every stage of their history. Since the mid-eighteenth century, cemeteries have also served as a city's green space, allowing families and others a place to go for visiting, mourning, reflecting and memorializing the dead. And while many people may only see a cemetery as just a place where the dead are laid to rest, cemeteries can be divided into different types which include:

1. The Church Cemetery: Between the Middle Ages and the Victorian era, the dead were often buried on the properties of churches – however with limited space, graves were often used multiple times. But as plagues and disease rose through the soils infecting those who attended



mass, new regulations were formed in regards to burials and burial plots, which included making it illegal to bury bodies less than six feet under the soil.

These days, churchyards are still used to house the dead, and while a church cemetery is often found in the churchyard, it can often be separate from the church. These churchyards are owned by the church and are considered private property; however, churchyards are generally open for all to visit.

One such famous churchyard is the Trinity Church Cemetery located in Manhattan, New York, USA, which is the home to many founding US representatives and Revolutionary War soldiers.

2. The Public Cemetery: Public Cemeteries are plots of land owned by a governmental unit within a town, city or county and are by law, public cemeteries that must remain open to the public.

3. The Customary Cemetery: With no formal or legal status; no sexton or sexton's records, customary cemeteries are simply plots used by neighbors as burying places, which are further cared for by survivors of those buried within. While they are not generally legal, these types of cemeteries are tolerated and can often be found in rural areas.

4. The Private Cemetery: Often owned and operated by a corporation, lodge, community organization, military or specific family, these cemeteries are restrictive to the public and will list the owners and/or caretakers at the cemetery entrance.

5. The Lodge Cemetery: Similar to the private cemetery, a lodge cemetery is owned and operated by lodges or other fraternal organizations, such as the *Bohemian Grove Club*, *Freemasons* or *Odd fellows*. In many cases, these cemeteries are strictly restricted to members of the organization, but often, others can purchase plots – and because many of these organizations were founded as a means to provide burial or death insurance, costs were generally inexpensive for members.

6. The Ethnic Cemetery: These types of cemeteries can either be private or public, but are owned, operated and maintained to support one religious group, such as Russians and the Russian Orthodox Church.

7. The Family Cemetery: In most states, these types of cemeteries are still legal, but while there are fewer family cemeteries, at one time there were thousands of them. Consisting of a plot of land, owned by a family, a family cemetery would see the occasional close friend buried on the property along with family members, due to many families owning large amounts of rural land, they could afford to allocate portions of land for this purpose to keep burial costs down.

8. The Veterans' Cemetery: As part of their service in the military, veterans who were honorably discharged from service are given the opportunity to be buried in a military cemetery. Currently there are 119 national veterans' cemeteries in the United States, the most famous of all being the Arlington National Cemetery.

9. The Monumental Cemetery: Monumental cemeteries are cemeteries in which headstones or other monuments made of marble, granite or similar materials rise vertically above the ground. However, because maintenance of monuments is the responsibility to the family, and further because of the number of graves inside the cemetery, monumental cemeteries have been considered unsightly.

Principles that guide the location of cemeteries.

The location of cemeteries is based on planning principles; such principle is influenced by the norms and values of the people. These principles also vary from place to place, which may be due to differences in the culture and way of life. (El-Nafaty, 2004).



- I. 0.5 hectares of land is required for cemetery, for population of 1000. This principle is adopted in Egypt. In Nigeria, it is 0.25 hectares for every 1000 population.
- II. Cemeteries are to be located away from the living and working areas. Germany uses a distance of 2km, Italy and Greece use 500m-1km while the distance adopted in Nigeria is 1km away from living areas.
- III. Cemeteries should be provided with an organized space for future expansion. The space reserved is based on the population of the area.
- IV. Cemetery is to be provided in each residential neighborhood, for a certain population.
- V. Cemeteries are to be located in city outskirts. This principle is mostly adopted in Islamic societies like Pakistan, Morocco and Saudi-Arabia.
- VI. Cemetery can also be located in organized tombs, buildings or historic sites. This principle is applicable in places like Egypt, and Israel.
- VII. Burial grounds or cemeteries can also be reserved for special people or royalties, e.g., kings, pharaohs, armed forces, wealthy or influential individuals.
- VIII. An exhausted cemetery is left fallow for about 70-100 years before its reused.
- IX. No cemetery is to be located in any land uses other than public /semipublic land uses or open spaces.
- X. All spaces within a cemetery must be fully utilized before the need for an expansion.

Table 1: Planning Standards for Cemeteries.

Catchment	One cemetery per village, town, or urban area (5000 and above)
Site requirement	: Low water table
Location:	Accessible to catchments area
: Site size	Site size will relate to population grouping.
Population of up to 5,000 persons	: 0.5ha to 1ha.
Population 5,000 to 15,000	: 1ha to 1.5ha.
population up to 100,000 persons	: 10 ha

Source: Ghana Ministry of Environment Science and Technology Town and Country Planning Department (2000)

Population to be served	: Population of the District (5000 and above)
Location criteria	: Near river, Lake or Sea. Not less than 20m from nearest dwelling house. Not less than 15m from public road. Accessible from catchments area. On site car parking for at least 25 vehicles.
Site size	: 1ha to 2.5 ha (including space for parking and storage facility)

Source: Ghana Ministry of Environment Science and Technology Town and Country Planning Department (2000).

Cemetery grave or burial plot sizes.

- A standard grave is about 8 feet long and 2 1/2 feet wide.



- This size provides room for an upright monument or flat grave marker.
- Some burial plots may be up to 9 feet long or 4 feet wide to accommodate a person of larger size.

Source: Ghana Ministry of Environment Science and Technology Town and Country Planning Department (2000).

Material and Methods.

A reconnaissance and physical survey were conducted during which the wards, neighborhoods and cemeteries within the boundaries of the four Local Government Areas that make up the metropolis of Kaduna were identified and updated on a base map of the study area. The existing population of the study area was sourced from National Population Commission (NPC), and information regarding death rate was gotten from the Kaduna state Ministry of Health. The spatial distribution of cemeteries in Kaduna metropolis was done by updating through physical survey of Google imageries of study area and digitization. The inventory of the cemeteries was done by physical counting and their conditions noted by physical observation. This was easily carried out by community cemetery attendant prior approval of the village and Ward heads. The information on the conditions of the cemeteries was gotten via physical observation using a checklist of available facilities prepared by the researcher as a guided by standards while descriptive statistics was used to analyze and discuss the data.

The Study Area.

Kaduna State is located on the southern edge of the high plains of Northern Nigeria, bounded by parallels $9^{\circ}03'N$ and $11^{\circ}32'N$ and extends from the upper River Mariga on $605E$ on the foot slopes of the scarp of Jos Plateau. The state occupies almost the central portion of northern Nigeria and shares borders with Sokoto, Katsina, Niger, Kano, Bauchi and Plateau States (Figure1) with a total land area of 46,053 square kilometers and a population base of 6,066,562 persons (NPC, 2006). It has a density of one hundred and thirty (130) persons per square kilometer and is made up of twenty-three (23) local Government Areas (Figure 1 & 2).

Kaduna metropolitan area is the capital of the state and consists of Kaduna North LGA, Kaduna south LGA, and part of Chikun and Igabi LGAs with existence of distinct local administrators. The metropolis has a projected population of 1,123,581 persons with growth rate of 2.55% and by this projection Kaduna City (metropolis) is the fifth largest city after Lagos (10,578,000), Kano (3,395,000), Ibadan (2,837,000), and Abuja (1,995,000) (Max Lock, 2010). Historically, Kaduna metropolis became prominent as a result of being the administrative capital of Northern Nigeria Protectorate from 1912 to 1917 and headquarters of North Central State from 1967 to 1975 (the North Central State was made of Zaria and Katsina Provinces). In 1975 the name changed from North Central State to Kaduna state but Kaduna metropolis remained the capital and maintained its sphere of influence. Kaduna State, North Central Nigeria, is politically classified as belonging to the now 'Northwest' zone of the current six (6) Geo – political zones of Nigeria. It is populated by about 59 to 63 different ethnic groups if not more with the exactitude of the number requiring further verification through a genuine field work (Max Lock, 2010).

The urban form of Kaduna metropolis: The initial setting of the town was based on the principle of segregation that aimed to prevent the native population from spreading malaria and other disease to the Europeans. The strangers and the indigenous Hausa were also kept apart to



prevent the former from being a bad influence on the later who were mainly Muslims. Kaduna has long outgrown the three distinct city sectors described above and the lines of segregation have been blurred with time. As described in the 1967 Kaduna master plan, the historical governmental functions of Kaduna have also strongly influenced its spatial development and form. From the mid-1950s onwards, based on records available in the survey Department, the army drew up series of plans for the rationalization of its land (Max Lock and Partners Consultancy, 1967).



Figure 1: Map of Nigeria showing Kaduna State.

Source: Max Lock Consultancy limited (2010) and modified by author, 2017

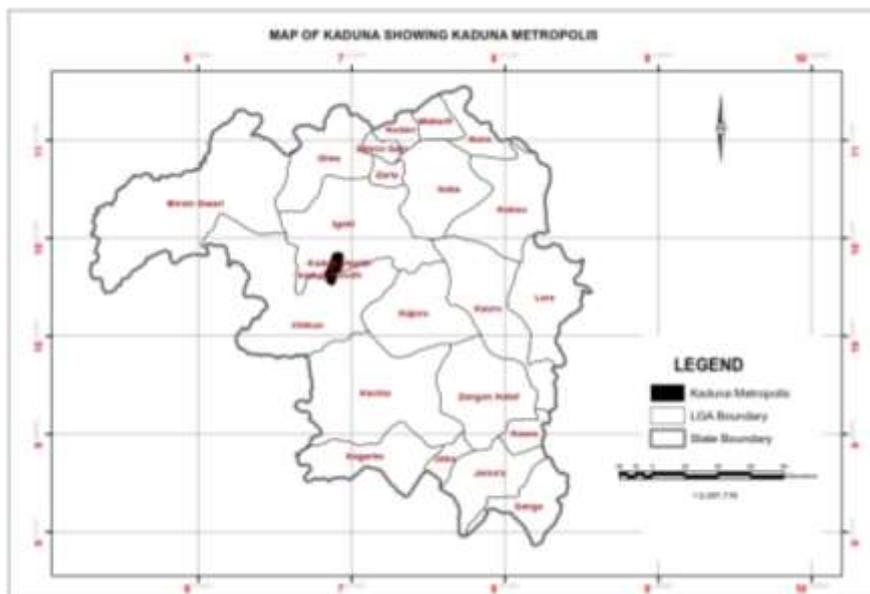


Figure 2: Map of Kaduna State showing Kaduna Metropolis.

Source: Max Lock Consultancy limited (2010) and modified by author, 2017



Results and Discussions

Table 2: Adequacy of land area for Cemeteries within the metropolis.

S/no	Location	Population	Area in ha	Expected	Short fall	Remark	Hierarchy
1	Kabala Doki	36,244	0.65 Ha	3.6Ha	1.9 Ha	Inadequate	Neighborhood
2	Kabala Doki		1.05 Ha			Inadequate	Community
3	Gabisawa	1211	0.045 Ha			Inadequate	Neighborhood
4	T/Wada	96,302	1.54 Ha	9.6 Ha	6.83 Ha	Inadequate	Community
5	T/Wada		1.23 Ha			Inadequate	Community
6	Kawo	148,405	0.46 Ha	14.8 Ha	13.08 Ha	Inadequate	Neighborhood
7	Kawo		1.26 Ha			Inadequate	Community
8	Hayin Baki	43,128	0.65 Ha	4.3 Ha	3.65 Ha	Inadequate	Neighborhood
9	Kabala west	42,813	0.68 Ha	4.2 Ha	3.5 Ha	Inadequate	Neighborhood
10	Nariya	148,234	1.31 Ha	14.8 Ha	13.5 Ha	Inadequate	Community
11	Unguan Mu'azu	60,230	0.47 Ha	6.0 Ha	5.5 Ha	Inadequate	Neighborhood
12	Kudenda Zikoriko	4,302	0.49 Ha	0.5 Ha	0.01 Ha	Adequate	Neighborhood
13	Barnawa	60,198	0.56 Ha	6.0 Ha	4.77 Ha	Inadequate	Neighborhood
14	Barnawa		0.67 Ha			Inadequate	Neighborhood
15	Narayi	40,808	0.34 Ha	4.8 Ha	4.46 Ha	Inadequate	Neighborhood
16	Romi	55,129	0.86 Ha	5.5 Ha	4.64 Ha	Inadequate	Neighborhood
17	Unguan Pama	22,673	0.46 Ha	2.2 Ha	1.74 Ha	Inadequate	Neighborhood
18	Unguan Sarki	41,395	0.51 Ha	4.1 Ha	3.59 Ha	Inadequate	Neighborhood
19	Unguan kanawa	45,397	0.48 Ha	4.5 Ha	4.02 Ha	Inadequate	Neighborhood
21	Malali	47,397	1.13 Ha	4.7 Ha	2.7 Ha	Inadequate	Community
22	Malali		0.87 Ha			Inadequate	Neighborhood
23	Kakuri	98,222	0.87 Ha	9.8 Ha	8.93 Ha	Inadequate	Neighborhood
24	Unguan Maigero	4,231	0.73 Ha	0.5 Ha	+ 0.23 Ha	Surplus	Neighborhood
25	Unguan Rimi	84,193	0.64 Ha	8.4 Ha	7.76 Ha	Inadequate	Neighborhood
	Total		20.15	107.8 Ha	87.65 Ha		

Source: Authors field survey 2017

Table 3: Adequacy with regards to capacity of Cemeteries within Kaduna metropolis.

S/no	Location	Area in ha	Capacity	Required	Proportion
1	Kabala Doki	0.65 Ha	914	1300 graves	386
2	Kabala Doki	1.05 Ha	567	2100 graves	1533
3	Gabisawa	0.045 Ha	27	90 graves	63
4	Tudu wada	1.54 Ha	1872	3080 graves	1208
5	Tudu Wada	1.23 Ha	2873	2460 graves	+413
6	Kawo	0.46 Ha	498	920 graves	422
7	Kawo	1.26 Ha	2987	2520 graves	+467
8	Hayin Banki	0.65 Ha	1724	1300 graves	+424
9	kabala west	0.68 Ha	1423	1360 graves	+63
10	Nariya	0.31 Ha	687	620 graves	+67
11	Unguan Mu'azu	0.47 Ha	1123	940 graves	+183
12	Kudenda Zikoriko	0.49 Ha	587	980 graves	393



13	Barnawa	0.56 Ha	2567	1120 graves	+1447
14	Barnawa	0.67 Ha	1874	1340 graves	+534
15	Narayi	0.34 Ha	783	680 graves	+103
16	Romi	0.86 Ha	3167	1720 graves	+1401
17	Unguan Pama	0.46 Ha	1231	920 gr aves	+401
18	Unguan Sarki	0.51 Ha	689	1020 graves	331
19	Unguan kanawa	0.48 Ha	1321	960 graves	+361
21	Malali	1.13 Ha	2142	2260 graves	118
22	Malali	0.87 Ha	1987	1740 graves	+247
23	Kakuri	0.87 Ha	2543	1740 graves	+803
24	Unguan Maigero	0.73 Ha	627	1460 graves	842
25	Unguan Rimi	0.64 Ha	1231	1280 graves	49

Source: Authors field survey 2017

The table reveals that most of the cemeteries within Kaduna metropolis is full as a result, graves are reused without reaching the period of time needed before it can be reused. Therefore, provision of addition land for burial is required so that facilities within the cemeteries should not be over utilized. This is calculated using 60% land area for grave while 40% is allocated to supporting facilities. It also shows that spaces within the cemeteries are not adequately utilized. It also reveals that, most of the cemeteries are only graves site neglecting other supporting facilities.

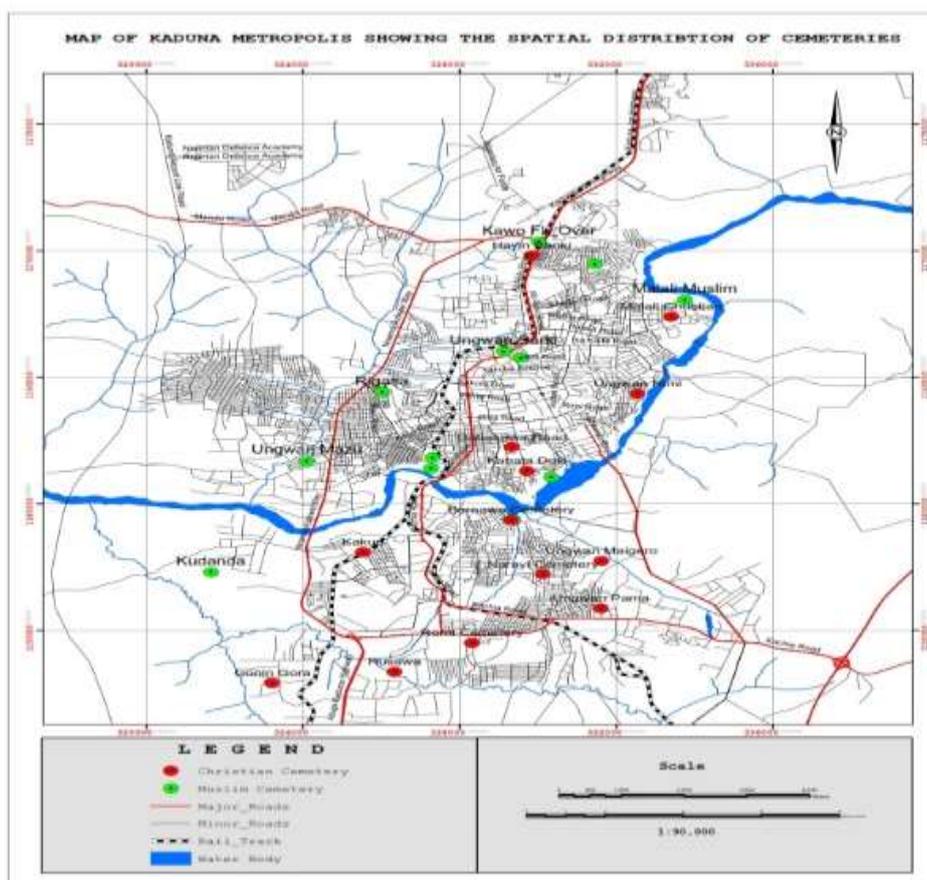
Table 4: Cemetery facilities and their condition.

S/NO	LOCATION	FACILITIES				CONDITION		
		BOREHOLE WELL	ROADS	FENCE	MANAGEMENT OFFICE	B.HOLE/ WELL	FENCE	LIGHT
1	Kabala Doki	1	NILL	✓	•	FUNCTIONING	GOOD	GOOD
2	Kabala Doki	2	NILL	✓	•	GOOD	GOOD	NILL
3	Gabisawa	1	NIL	✓ S	•	GOOD	GOOD	GOOD
4	Tudu wada	2	NIL	✓	✓	GOOD	GOOD	GOOD
5	Tudu Wada	NIL	NILL	✓	•	FAIR	GOOD	GOOD
6	Kawo	1	NILL	✓	•	GOOD	GOOD	NILL
7	Kawo fly Over	3	NILL	✓	✓	FAIR	BAD	NILL
8	Hayin Banki	NILL	NILL	✓	NILL	BAD	BAD	NILL
9	Kabala west	1	NILL	•	NILL	FAIR	NILL	NILL
10	Narayi	NILL	NILL	NILL	NILL	NILL	NILL	NILL
11	Unguan Muazu	1	NILL	NILL	NILL	FAIR	NILL	NILL
12	Kudenda Zikoriko	1	NILL	NILL	NILL	FAIR	NILL	NILL
13	Barnawa	2	NILL	NILL	NILL	FAIR	NILL	NILL
14	Barnawa	2	NILL	NILL	NILL	FAIR	NILL	NILL
15	Narayi	NILL	NILL	NILL	NILL	BAD	NILL	NILL
16	Romi	1	NILL	NILL	NILL	BAD	NILL	NILL
17	Unguan Pama	1	NILL	NILL	NILL	BAD	NILL	NILL
18	Unguan Sarki	1	NILL	NILL	✓	GOOD	BAD	GOOD



19	Ungwan kanawa	1	NILL	✓	✓	GOOD	GOOD	GOOD
20	Ungwan Yero	1	NILL	NILL	NILL	FAIR	NILL	NILL
21	Malali	2	NILL	NILL	NILL	FAIR	NILL	NILL
22	Malali	2	NILL	NILL	NILL	FAIR	NILL	NILL
23	Kakuri	1	NILL	✓	✓	FAIR	BAD	NILL
24	Ungwan Maigero	2	NILL	✓	✓	GOOD	GOOD	GOOD
25	Ungwan Rimi	2	NILL	NILL	NILL	FAIR	NILL	NILL

Source: Authors field survey 2017



From the table above, there are few facilities located within the cemeteries e.g., borehole, and well, fence etc. The conditions of the facilities are bad due to poor management and over stretched of the facilities due to insufficient provision of the facilities. It also shows that less attention is given to cemeteries because they are places for the dead. It also shows that as a result of lack of management staff in most of the cemeteries there is tendency that some facilities like light when provided can be stolen. More also because of the absence of good accessibility within most of the cemeteries, there are no drainages within the cemeteries for run-off water, as a result of that, water runs and wash away some graves within the



cemeteries. This data also shows that cemeteries without fence around are prone to stealing of some valuables within the cemetery.

Figure 3: Spatial Distribution of Cemeteries in Kaduna Metropolis.

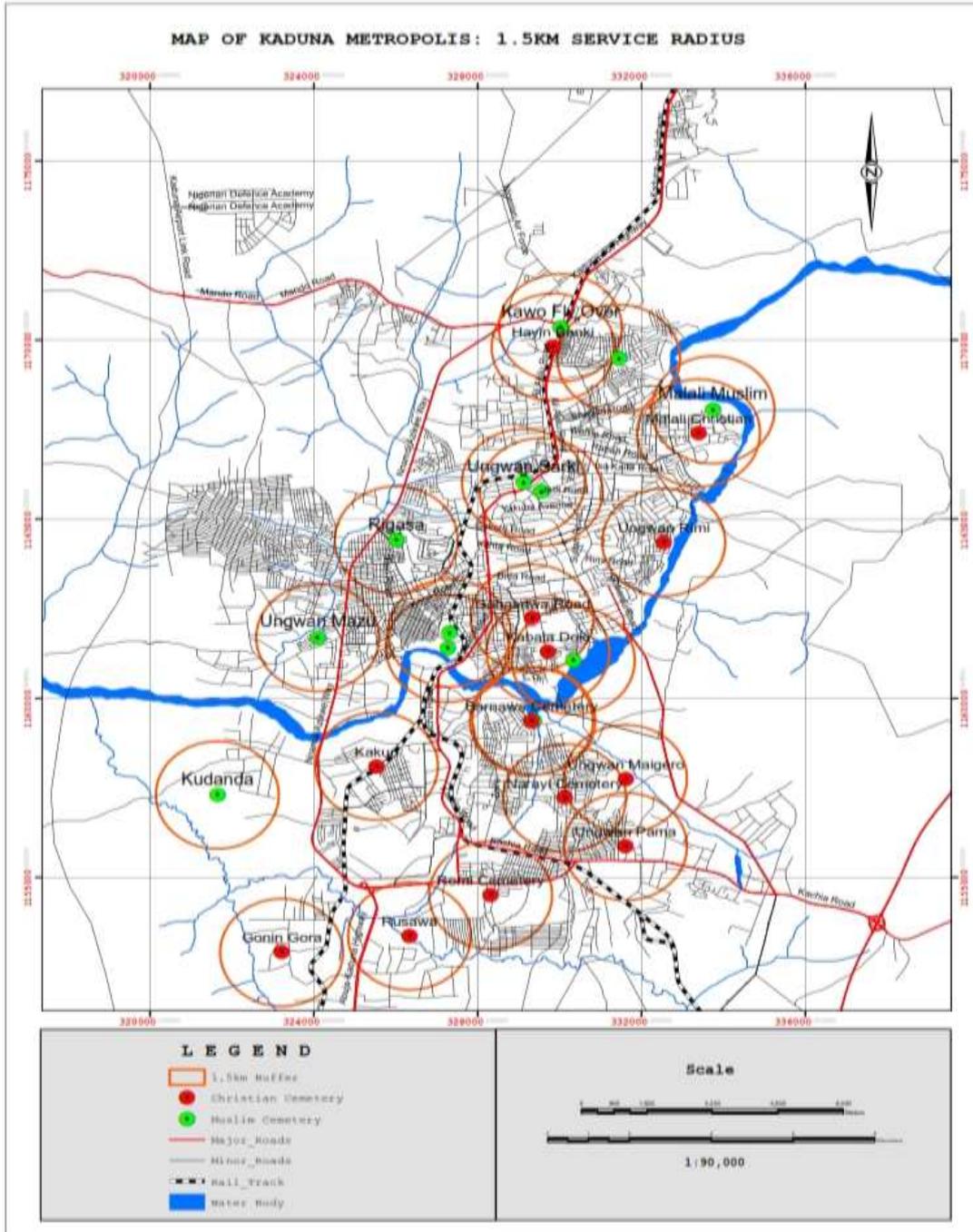


Figure 4: Showing 1.5 service radius for cemeteries in Kaduna Metropolis.

Table 5: Space projection from 2017 to 2021

S/no.	Year	Population	Death rate	Total death	Area /Ha
1	2017	1,482,339	1.27	18,826	7.9



2	2018	1,572,613	1.27	19,972	8.4
3	2019	1,619,792	1.27	20,571	8.7
4	2020	1,668,386	1.27	21,186	8.9
5	2021	1,718,437	1.27	21,842	9.1
TOTAL		8,061,567		102,397	43.0HA

Source: Author 2017

Result in the table above, illustrates, that from the projected population starting from 2017 to 2021, with death rate of 1.27%, it was estimated in each year the number of persons that are expected with die within the metropolis and also, the estimate land requirement, needed to bury them.

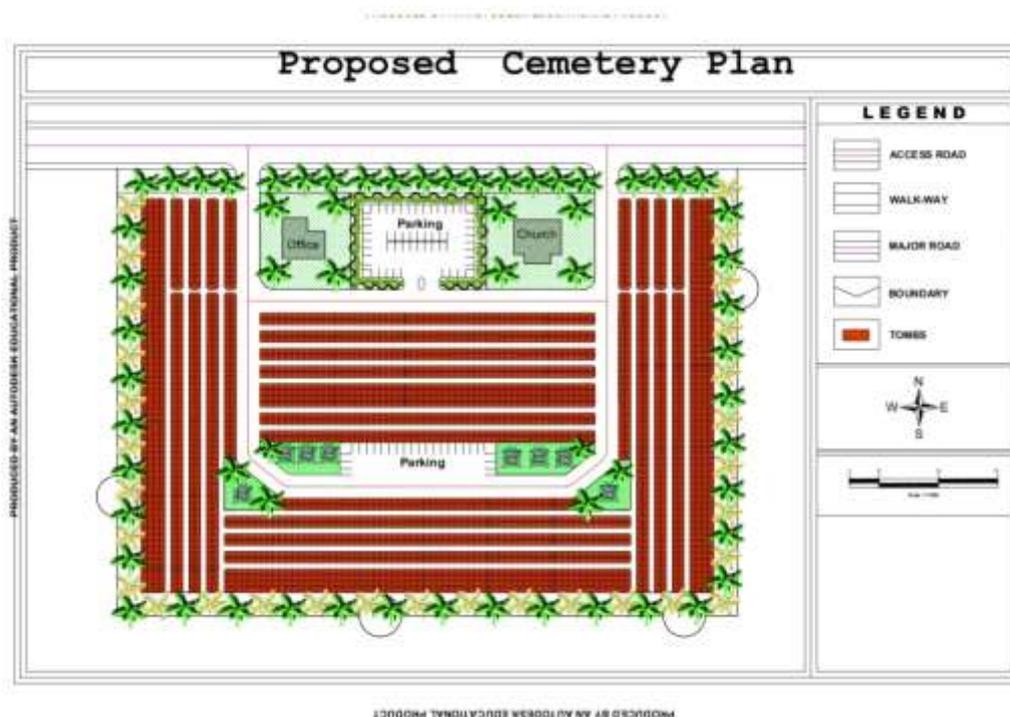


Figure 5: Proposed layout plan for cemetery

The layout plan is been design to solve the challenges of planned Cemeteries within the metropolis. This is a prototype to be adopted within the fringes of all the four (4) LGAs within the Metropolis. The design provides for a place for solace and relaxation. The death can never rest in peace without a good resting place.

Conclusion and Recommendations.

The place of cemeteries in land use planning cannot be overemphasized due to the fact that all the living, live to die someday and be buried at the foresaid place. Unfortunately, the study has revealed that cemeteries are unevenly distributed and grossly inadequate with low attention in providing of space for the cemeteries, facilities and overstretching of already filled to capacity cemeteries in Kaduna Metropolis, which is supposed to be a place of meditation, aesthetics and sober reflection. In other to improve the capacity and effectiveness of



cemeteries operations in Kaduna Metropolis, the following are suggestions that may help towards improvement.

Cemeteries should be provided within the metropolis using the standard population of 10,000 persons per hectare, by doing so, the shortfalls in the area will be curtailed to the minimum level. A grave layout designed above is a prototype that should be implemented around the fringes of the four LGAs within the Metropolis. This will minimize under and over utilization of space. The legal backing for cemeteries operation should be reviewed to meet up with the current need and challenges of the contemporary. Cemeteries that are full should be stopped in use and allowed to fallow for 70 years before it can be re-used again. The Cemeteries currently in use should be managed by the aid of an employed cemetery superintendent, section and row at a time before moving to another row, so that there will be coordination and well utilized. There should be proper boundary delineation of all cemeteries without fence and fence should be provided in other to stop people from encroaching into cemeteries. Facilities should be adequately provided to reduce over utilization and depletion of the ones available. Drainages should be provided within all the cemeteries for easily flow of water to avoid erosion of graves. Circulation should also be adequately provided within cemeteries for easy access to grave sites and aesthetic view and lighting within the cemeteries. There is need for more provision of public cemeteries within the Metropolis because people prefer using the public cemeteries than the private home or other means.

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