

## HIGH QUALITY HOUSING ESTATE PLANNING FOR GREATER YANGON METROPOLITAN REGION

Dr. Zar Zar Wann Maung

Lecturer, Department of Architecture

Technological University (Hmawbi), Yangon, Myanmar

[zzwm.maung@gmail.com](mailto:zzwm.maung@gmail.com)

**ABSTRACT:** Improvement in space requirements and building services becomes more and more sophisticated because of the technological changes and changes of living style. Moreover, changes in life style of the citizens, family size and structure mainly effect the consideration of today's Architectural Planning. Housing estate development is therefore more essential and reasonable to create quality living standard and pleasant environment. Many countries accept that housing estates can be able to provide not only better security, more pleasant and healthful environment and quality living standard but also quality of life issues. Housing estates have been remarkably redeveloped in Yangon City after 1993 and it has been improving in the architectural design of the estates and amenities of the community. Most estates can provide some amenities and some estates have been built without considering to neighborhood condition. It is, therefore, required to carry out a detailed analysis in housing estate planning. Physical planning of the site is analyzed by layout plan and site densities. Communities facilities provided are found by analysis on the existing situation of residence inhabitants, family size and structure of housing estates. Finally, high quality housing estate is defined by correlation between physical planning and communities' facilities. The existing situation of residence inhabitants are known by questionnaires survey on residents. The main focus of this research has been to analyze the existing housing estates condition in Yangon and to recommend the factors for future housing estates planning to meet the users' requirements and to relevant their environment.

**Keywords:** high quality housing estate, pleasant living environment, physical planning, communities' facilities

### 1. INTRODUCTION

With the changes of Time, Space, and Technology, the living standard of the people is also changes. Nowadays, people want to live in pleasant environment and security spaces for their life. Many countries tried to fill the needs of their citizen by doing many research upon housing and their environment. The modern

concept in housing takes into account the importance of environment as well. Not only must the dwelling be structurally sound and livable inside, the environment must also be pleasant and serve as a physical setting for community development.

Yangon, the capital of Myanmar is situated on a peninsula surrounded by the waters of the Hlaing River, the Yangon River and the Pazundaung Creek. The first plan of Yangon city was made by Dr. William Montgomerie. His plan was modified by Lt.A.Fraser in the year 1852 after second Englo-Myanmar war. In that plan, the city was laid out on a chessboard pattern for a population of 36,000 with the Sule Pagoda at the center as a hub of the road system. The city was formed as a rectangle and the center has been the central business district since that time. The city's boundary has changed and expanded to 242 square miles in 1995. Nowadays, Yangon city consists of 33 townships and it can be classified into seven zones. Among these seven zones, high density area around 100 population per acre can be found in CBD and inner urban ring, medium density area around 65 population per acre can be found in south of CBD, older suburbs and outer ring, and low density area around 40 population per acre can be found in northern suburbs and new suburbs<sup>1</sup>.

Nowadays, Yangon city with a population nearly 6 million, and the city is being transformed into modernized city by providing many types of housing and others requirements of the city. The city has grown rapidly in recent years and increasing demographic rate of Yangon city is averagely about 4.65% a year within the last decade. So, new suburban satellite townships have been developed by the government to accommodate the increasing population and many more housing estates are likely to come up.

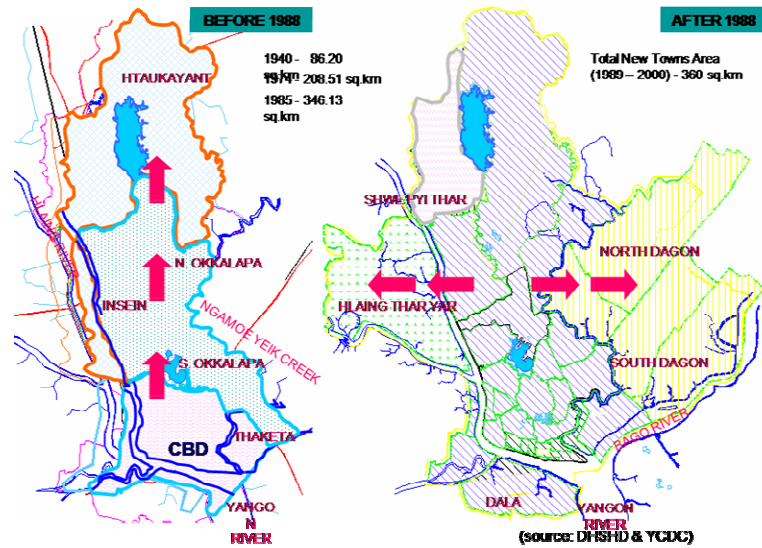


Fig. 1. Development of Yangon City Structure Plan

## 2. METHODOLOGY

Field study and data collection on selected housing estates are conducted in this research and questionnaires survey is intended to collect information regarding residents' opinion on their environment. Three types of questionnaires were used to get the information from the four focus groups; workers, students, housewives and older persons. There have been known that not only good

<sup>1</sup>Swe Swe Aye, Daw. December 2000. *Formulation of Guidelines for Urban Design in Yangon City Residential Areas*. Ph.D. Thesis, Yangon Technological University.

quality buildings but also pleasant environment and communities facilities should be provide in the creation of high quality housing estate. Housing Estate can therefore be defined a housing complexes with the difference in lifestyle in which the amenities and well planned communities provide. Quality Housing Estate can therefore be defined a housing estate in which not only the quality building themselves but also good housing layout and pleasant environment with amenities are provided.

## **2.1 Development of Housing Estates in Yangon**

Housing estates with amenities have been provided since 1952. For example, Yankin housing estate was the oldest estate and it comprises eight varieties of house types and self contained amenities such as nursery, health clinic, post office, schools, shopping center, community hall and playground<sup>2</sup>. Many projects and actions effecting the housing sectors in urban development were launched because of a change of Government policy from socialist economy to free market economy since 1988. Residential housing estates are being constructed everywhere in Yangon<sup>3</sup>. There are several types of Housing Estates which can be classified into the following five groups: High-rise Housing Estates, Condominium Housing Estates, Aerial Development Housing Estates, Single Family Housing Estates and Garden City Housing Estates<sup>4</sup>.

Most of the housing estates are high-rise housing estates which can mostly found in inner urban ring and outer urban ring. The following Fig 2 presents number of housing estates in each township. As the changes of time, space and technology, people wanted to quality living standard with pleasant environment and safe for their lives. So, housing estates with pleasant environment and amenities were remarkably redeveloped after 1993 and it has been as so-called garden city housing estates. Most of the garden cities housing estates are constructed in suburb area<sup>5</sup>.

## **2.2 Selection of Study Area**

Preliminary survey had already done all around the city to understand the general condition of housing estates planning and facilities provided in Yangon. And then three survey centers which are middle class housing estates have

---

<sup>2</sup> DHSHD. *Housing in Burma*

<sup>3</sup> DHSHD. (1988-1994). *A Report on Construction Activities*

<sup>4</sup> Htay Htay Myint, Ma. (September 2002). *Analysis on Recently Built Housing Estates in Yangon*. M.Arch Thesis, Yangon Technological University

<sup>5</sup> Yangon City Development Committee. 2004. *The Map of Yangon*.

been selected to make detail analysis and questionnaire survey. FMI, Nawaday and Mingalardon garden city were selected to study. All of these estates are garden city housing estates with different site areas and located suburb area as shown in Fig 3. There was a very good response from the residents of the estates under survey, in which 20% of the total dwelling units were chosen as sample unit areas at the time of the survey.

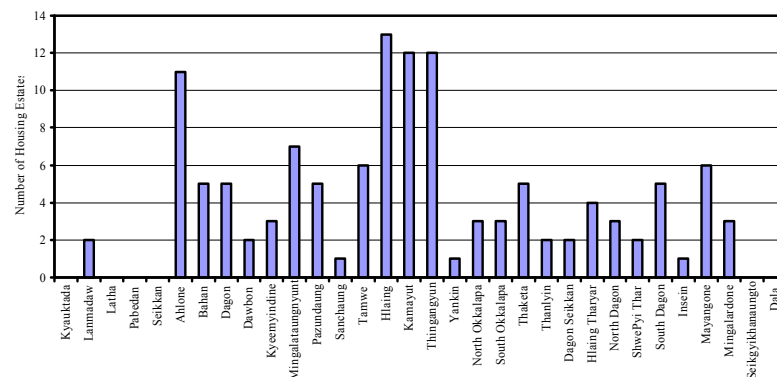


Fig. 2. Number of Housing Estates in Each Township

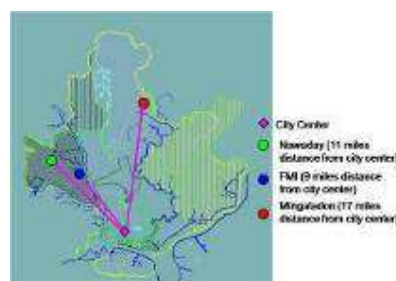


Fig. 3. Location of Selected Housing Estates



Fig. 4. Site Plan of Mingalardon Garden City

### 2.3 Study and analysis of Selected Housing Estates

FMI and Nawaday Garden City are located in HlaingTharYar Township at the north west of Yangon city and have developed since 1994. The site area of FMI is

about 500 acres and Nawaday is about 214 acres. Mingalardon garden city is located in Mingalardon Township at the north of Yangon city. It has developed since 1996. The site area is about 3000 acres (including industrial park about 1000 acres). At these estates, variety of house type and different plot size are provided for different income groups.

### Density

In FMI garden city, the maximum FAR is 0.84 in condominium and its population density is 83 per acre and unit density is 26 plots per acre. Average plot per acre of all plots groups is 12 plots per acre. In this estate, total plots area is 55 %, total road area is 36 %, total green area is 5 % and total public area is 4 %. In Nawaday garden city, the maximum FAR is 0.8 in shop houses and its unit density is 18 plots per acre. Average plot per acre of all plots groups is 12 plots per acre. In Mingalardon garden city, maximum FAR is 0.527 in Kayay Yeiktar and its unit density is 2 plots per acre. Average dwelling density of all groups is 1.88 plots per acre. In this estate, some plots cannot get their floor area because they are now conceptual design stage.

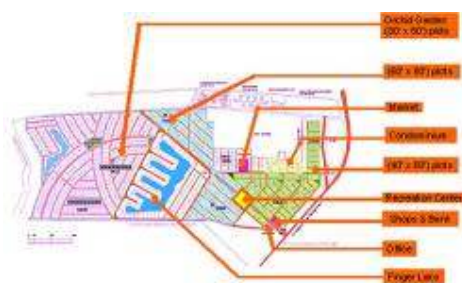


Fig. 5. Site Plan of FMI Garden City



Fig. 6. Site Plan of Nawaday Garden City

### Layout Plan

The shape of the site of FMI garden city is rectangular shape as shown in Fig 5. Type of the houses are single storey detached houses, two storey detached houses and condominium. Most of the plots except from 80'x 80' plots are located within ½ mile radius far from recreation centre. Shops, bank and market are also located within ½ mile radius as shown in Fig 7. In this estate, there was used curve street pattern and loop street pattern, and long blocks and sharp angle lots can be found in this estate as shown in Fig 8,9,10. Green spaces are provided and bounded by lots. Lots are facing to green spaces but some given open spaces are unusable because of non facing lots and lacking maintenance.

Nawaday garden city's site plan is square shape plan as shown in Fig 6. This shape can create well layout plan. All of the street patterns are grid street pattern. All of the houses are located within 1/4 mile radius far from recreation centre. So, residents can easily access to community facilities. There was used rectangular or grid street pattern so most of the plots are rectangular shape as shown in Fig 11. The blocks lengths are mostly too short less than 750 ft.

The shape of this site of Mingalardon garden city is irregular shape as shown in Fig 4. This shape can create attractive layout plan. All of the street patterns are grid street pattern as shown in Fig 12. There are seven types of plots groups by name. Those of four groups, detail analysis are carried out on four groups. because some layout plan of plots groups are nearly the same. All of the houses are two storey detached houses and located near main entrance.



Fig. 7. Analysis on Access Way  
to Community Facilities



Fig. 8. Analysis on Streets and Lots  
Layout Plan



Fig. 9. Analysis on Streets and  
Lots Layout Plan



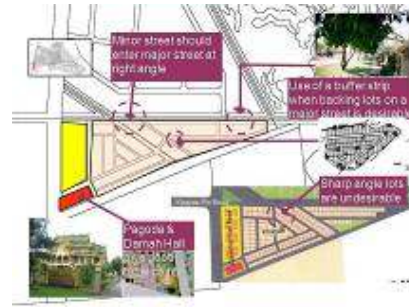
Fig. 10. Analysis on Access Way to  
Community Facilities and Layout Plan

Commercial area and religious facilities are also located near the main gate. So, residents can easily access to commercial area, pagoda and damma hall. But

there is no special recreation area given for residents. Golf course is quiet far from most of the residential area.



*Fig. 11. Analysis on Streets and Lots Layout Plan*



*Fig. 12. Analysis on Street and Lots Layout Plan*

Most of the residential areas are so far from public transit and there is no internal public transit and pedestrian friendly environment within the blocks in all these estates. There is no buffer zone between industrial park and the residential area and not safely traffic because of mix use of truck from industrial park.

The junctions between major street and minor streets around recreation centre are not desirable as a pedestrian and motorize traffic can conflict as shown in Fig 7. The blocks along the major road, in which use of buffer strip when backing lots on a major street is desirable. When considering the corner lots arrangement, there are undesirable sharp angle lots as well as desirable corner lots arrangement are found. Lots that have sharp-pointed corners are wasteful of land because the resulting wedge-shaped areas have little or no utility. Such lots also constitute poor building sites as shown in Fig 8.

There was used rectangular or grid street pattern and some blocks are too short less than 750 ft. The initial construction cost can be increased because of the large number of cross streets, and also increase traffic hazards and travel time through such districts as shown in Fig 8. The planning of suburban residential blocks 750 to 1300 ft in length by two lot-depths wide, bounded by streets that are adjusted to topographic and traffic requirements, are recommended as being most economical.

If the length of the blocks were long, it should provide crosswalks near the centre of the blocks to afford more direct access to nearby community facilities. Such pedestrian ways near the middle of all blocks exceeding 1000 ft in length

are recommended. When a nearby shopping centre, school, or park is so located that a large number of residents of a neighbourhood are forced into circuitous routes in order that they may reach their destination, it is often desirable to provide crosswalks in shorter blocks- those over 750 ft in length. This often brings the playgrounds or grocery store as much as a 1/4 mile nearer in walking distance to the doorsteps of many homes<sup>6</sup>.

### Community Facilities

FMI city had been provided the community facilities to create pleasant environment: shops, market and supermarket, bank, recreation centre, clinic, school bus and ferry. All of the community facilities are located within 1/4 mile far from recreation centre<sup>7</sup>. Shops, supermarket and bank are located in one building and it is located near main entrance. The design of this building can enhance the quality of its environment. Market is located near condominium and it can be easily access from most of the residential area. Clinic is also located within recreation centre. It can clearly see through the main entrance.

---

<sup>6</sup> Joseph De Chiara, Julius Panero, Martin Zelnik. (1995). *Time-Saver Standards for Housing and Residential Development*. 2<sup>nd</sup> ed.

<sup>7</sup> Field Study

*Table 1. Area Ratio of Each Community Facilities(FMI garden city)*

Type of Community Facilities	Floor area (sqft)	Land area (sqft)	Land area (acre)	Area per person (sqft)
Office Area	17,321.5	63,144	1.45	1.4
Recreation Area	10,176	97,200	2.2	2.12
Shopping Centre and Bank Area	18,000	32,105	0.74	0.7
Market Area	16,000	65,731	1.51	1.4
Green Area and	-	1,067,716	24.5	23.6

Nawaday garden city had been provided the following community facilities:

shop and supermarket, recreation centre, restaurant, damma hall, school. All of the community facilities are located within 1/4 mile far from recreation centre<sup>8</sup>. Total land area of shops area is 1.02 acre for 800 populations. Local shopping

centre should be located within convenient and safe walking distance for the residents and designed to afford adequate off-street delivery and parking facilities. Recreation centre is located in the middle of the site and it can easily access from all of residential area. School and Damma hall are also located within recreation area. Total land area of recreation centre is 8.24 acre and recreation area per person is 30 sqft. Table 2 shows detail analysis of area ratio of each type of communities.

*Table 2. Area Ratio of Each Community Facilities(Nawaday garden city)*

Type of Community Facilities	Floor Area (sqft)	Land Area (sqft)	Land Area (acre)	Area per person(sqft)
Office	-	10,000	0.23	0.42
Recreation Area	11,986	358,778	8.24	15.23
Green Area	-	707,590	16.24	30.0
School	-	93,922	2.16	4.0
Religious	1,855	27,300	0.63	1.16
Restaurant	-	40,254	0.92	1.7
Shopping Centre	-	44,584	1.02	1.9

Mingalardon Garden City is quite different with as it has industrial estate with golf course. But it is no special recreation area given for residents. There had been provided the following community facilities: commercial area, hospital, golf course, pagoda and damma hall, school. Total land area of commercial area 20.349 acres for 12900 populations (approximate population). Local shopping centre should be located within convenient and safe walking distance for the

---

<sup>8</sup> Field Study

residents and designed to afford adequate off-street delivery and parking facilities<sup>9</sup>. Golf course area is located in the middle of the site and it can easily access from all of residential area. Moreover, it serves as buffer strip between residential and industrial zone. School and Damma hall are also located adjacent to main entrance. Table 3 shows detail analysis of area ratio of each type of communities.

*Table 3. Area Ratio of Each Community Facilities(Mingalardon garden city)*

Type of Community Facilities	Floor Area (sqft)	Land Area (sqft)	Land Area (acre)	Area per person (sqft)
Golf Course	-	7,927,920	182.0	615.0
Commercial area	-	886,402	20.349	68.7
Hospital area	-	1,328,580	30.505	103.0
School area	-	2,178,000	50.0	168.8
Religious area	-	348,480	8.0	27.0

### Analysis from social aspect

The population of FMI garden city is presently estimated 4800 in 925 dwelling units and its expected population is 7500 for 1500 dwelling units. There had considered population of this estate by age group. It has fourteen ages groups see detail in Fig 13. In this Figure, demographic structure shows that the amount of middle ages groups 15 to 34 is greater than younger and elder ages groups because most of the industrial stuff and students rent by grouping about 10 to 24 person per dwelling unit in this estate<sup>10</sup>.

It is absolutely different with demographic structure of Myanmar based on 1998 statistical year book and Yankin estate based on population of year 2001.

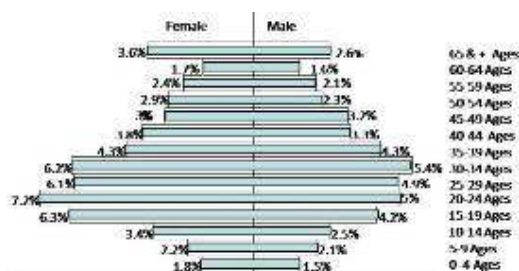


Fig. 13. Demographic Structure of FMI City

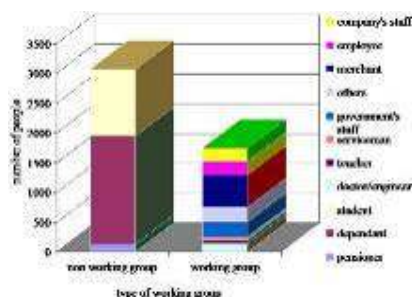


Fig. 14. Occupation of Residents in FMI City

<sup>9</sup> Field Study

<sup>10</sup> Field Study

The nature of the demographic structures of developing countries is like pyramidal shape. So, the shape of the demographic structures of this estate is like the shape of the demographic structures of developed countries.

### Type and size of families

There had divided into four groups in the consideration of no. of families in this research as shown in Table 2. The total number of families is 925 and its population is 4800. Couple with children is 44 % of total family and it is the largest amount of all type of family. The second largest amount is 24 % of total family in the type of couple with parents and children. Moreover, 4 to 6 ages group is the largest amount of number of families and 7 to 10 ages group is the second largest amount of number of families as shown in Fig 15.

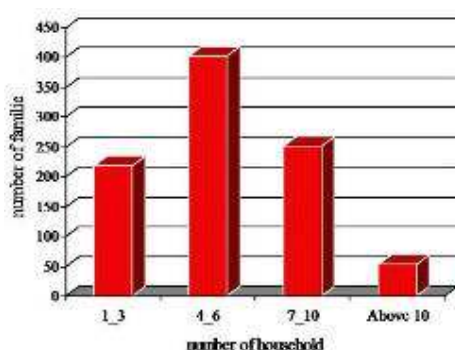


Fig. 15. Size of Families Live in FMI City

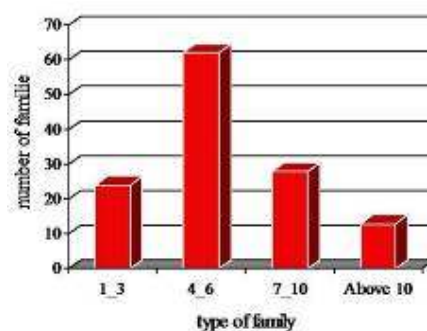


Fig. 16. Size of Families Live in Nawaday Garden City

In Nawaday garden city, it is just get no. of household per family to analyse. The population of this estate is presently estimated 800 in 130 dwelling units and its expected population is 7500 for 1500 dwelling units. There had divided into four groups in the consideration of number of families in this research. The above Fig 16 shows that 4 to 6 ages group is the largest amount of number of families and 7 to 10 ages group is the second largest amount of number of families.

In Mingalardon garden city, the detail data cannot get to analyse from social point of view. So, there is just estimated expected population of this estate based on 5 households per family. There is presently estimated for 2580 dwelling units and its expected population is 12900.

### **Occupation of residents**

When considering occupation of the residents, it had divided into two groups such as working group and non-working group. In non-working group, it includes pensioners, students and dependents. In working group, most of the residents are merchants, businessman and governments stuff. The above Fig 14 shows the amount of non-working group (64 %) is greater than working group (36 %).

In non-working group, especially pensioners and dependents are living in their home in a whole day, and students are also living in their home most of the time. Therefore, it should provide more facilities and more convenient layout plan for pensioners, dependents and children. So, the planner should attention to this effect in the creation of layout plan and the provision of facilities for pensioners, dependents and children.

### **Evaluation and Findings of the Selected Housing Estates**

The master plan of Nawaday garden city is quiet relevant to standard because of the provision of community facilities within the maximum walking distance (1/2 mile) from all of the residential area. The following Table 4 is the comparison of these estates. The layout plan of Nawaday garden city is not an attractive plan. Because it used just only one type of street pattern and not provided variety of lot size, for these two aspects, it does not enhance the visual character and residential amenity of the site. The layout plan of FMI city is an attractive plan because it provided variety of street pattern and lot size that makes variety of dwelling design. It can, therefore, enhance the visual character and residential amenity of the site and the residents will consider this estate is an attractive place with pleasant environment, so it will enhance their living standard.




In summary, the layout plan of FMI city is the best among these estates because of the provision of the variety of the size of the lot and the type of street pattern. Most of the community facilities of Nawaday garden city can serve all of the residential area of this estate because the shape of the site of this estate is square shape. So, the square shape site is more effective than the rectangular shape site or irregular shape in the provision of community facilities.

### **3. CONCLUSION**

In this study concluded that the housing estate in which simple house types are grouped together, the hierarchy of vehicular and pedestrian access, the extent of

landscaping, play provision, and many other considerations in the detail design of the layout are just as important to the final quality of a residential environment as the design of the house themselves. For further study, questionnaires survey need to conduct to find out the residents requirements for the quality housing estate. This study intended to find out the quality of the places where people will live. Guidelines and recommendations will be given after conducting questionnaires survey.

Table 4. Comparisons of Selected Housing Estate

Nawaday Garden City  214 acres	FMI Garden City  500 acres	Mingalardon Garden City  3000 acres
Street and Lots layout -Rectangular or grid street pattern -T-junction	Street and Lots layout -Rectangular or grid street pattern -Curve Street -Cul-de-sac Street	Street and Lots layout -Rectangular or grid street pattern -Curve Street -A group around a green
Observation  -Pedestrian friendly environment together with green open spaces should be given -Shop houses do not have security	Observation  -Need to provide more community facilities especially educational facilities, health care facilities and religious facilities such as damah hall -Given community facilities should be within minimum walking distance of all types of housing groups and pedestrian friendly environment should be created	Observation  -Given community facilities should be within minimum walking distance of all types of housing groups -Pedestrian friendly environment together with green open spaces should be given -Buffer zone should be given between residential zone and industrial zone

#### 4. REFERENCES

- Swe Swe Aye, Daw. (December 2000). *Formulation of Guidelines for Urban Design in Yangon City Residential Areas*. Ph.D. Thesis, Yangon Technological University.
- Joseph De Chiara, Julius Panero, Martin Zelnik. (1995). *Time-Saver Standards for Housing and Residential Development*. 2<sup>nd</sup> ed.
- Htay Htay Myint, Ma. (September 2002). *Analysis on Recently Built Housing Estates in Yangon*. M.Arch Thesis, Yangon Technological University.
- Part One: *What is Quality Housing?*. December 2004 < univ-of-minn-cp.pdf >
- Department of Human Settlements and Housing Development. *Housing in Burma*.

Department of Human Settlements and Housing Development. (1988-1994). *A Report on Construction Activities*.

Patricia Tutt and David Adler. (1995). *New Metric Handbook, Planning and Design Data*. Butterworth-Heinemann Ltd., Linacre House, Jordan Hill, Oxford.

DETR. (1998). *Improving the Quality of Housing Layouts in Northern Ireland*. CEF, NIHE, Roads Service and Planning Service. England. November 2004. <Quality HousingLayouts. pdf>

H.S.McKay, C. James. (May 2000). *Achieving Quality in Residential Developments , Creating Places*. Incorporating guidance on layout and access. Northern Ireland. <CreatingPlaces.pdf>

*The Layout and Design of New Housing Development*. July 2005 [http://www.stirling.gov.uk/dan\\_new\\_housing-3.pdf](http://www.stirling.gov.uk/dan_new_housing-3.pdf).

Department of the Environment, Department of Transport.1992. Design Bulletin 32, *Residential roads and footpaths – Layout considerations*.2nd ed. London. Stationery Office. January 2005 < BS-DB32 - Layout of Residential Roads and Footpaths.pdf>