

VOLUME 1

MASTER PLANS AND UNITS DESIGN

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INTRODUCTION

1. INTRODUCTION

The Ministry of Housing and Cooperatives through the Public Corporation for Housing has assigned to Spectrum Engineering Consultants s.a.r.l. to carry out the National Housing Plan for the next 10 years.

This study with a total duration of 13 months has six stages. Four stages have been already completed, submitted and approved. The report at hand is the outcome of the studies for Stage 5.

The contents of the previous four stages were as following:

Stage 1 : GENERAL INTRODUCTION TO HOUSING

Stage 2 : STATISTICS

Stage 3 : ECONOMIC STUDIES

Stage 4 : FINAL REPORT

During Stage 4, a workshop/presentation was held in which the Consultants presented in detail the methodology of the whole study, the outcome of the three completed stages and finally their proposals for Stage 4 which was still under elaboration.

The Client was represented by its high rank officers from the Public Corporation for Housing, including the Chairman-General Manager Mr. Antoine Shamoun and the members of the Corporation. The workshop was also attended by the members of the Follow-up / Liaison Committee.

The Consultants wish to take advantage of this opportunity to express their warmest gratitudes for the invaluable remarks, comments and guidance of the Chairman and the members of the PCH which helped to improve the already high quality of the studies.

The Consultants would also like to convey once more their gratefulness for being selected and entrusted to carry out a project with such magnitude, significance and complexity, hoping that their effort will contribute in solving one of the most difficult problems facing the Lebanon.

The present phase, which is practically the final stage of the study; as Stage 6 includes exclusively the submission of the deliverables, consists of the following components:

- Brief presentation of the proposed housing programme and housing policies.
- Description of the sites selection procedures.
- Presentation of master plans.

- Presentation of mass plans / house clusters.
- Elaboration on units design / house types.
- General conclusions.

In the coming chapters, the above components are presented in more details and the various issues which are related to each subject are analysed.

PROPOSED HOUSING PROGRAMME AND HOUSING POLICIES

2. PROPOSED HOUSING PROGRAMME AND HOUSING POLICIES

The term Housing Programme as used here refers to all the actions of the government aiming at directly alleviating the housing shortage for lower-middle and low income families. The term Housing Policies has a broader meaning and refers to all the policies which directly or indirectly may affect the supply or the demand for housing and which could consequently contribute to an alleviation of the housing problem. Under the circumstances prevailing in Lebanon, the Housing Programme and the Housing Policies have to work together in order to achieve the desired ends. It would be a mistake to think that the Housing Programme could hope to make the desired difference without the contribution of a well thought out package of housing policies. If the deeper causes of the housing problem at the level of the broader housing policies are not adequately dealt with through the appropriate action, the contribution of the housing programme will not be adequate and its beneficial effects will tend to be partially offset by the negative effects of inappropriate housing policies.

The Housing Programme and the Housing Policies were elaborated in detail and were presented in Stage 4 (please see Final Report, Volume 2, Housing Programme, Housing Policies). Nevertheless, it is useful to demonstrate the Housing Programme the figures which were used as the basis for the selection of sites and the elaboration of the layout plans. These data are depicted in Table 1.

The above table presents the proposed Housing Programme with reference levels at Mouhafazat, Qada and town. The information given in the table include the following:

- Total number of programmed dwelling units by Mouhafazat
- Total number of programmed dwelling units by Qada
- Name of programmed zones
- Total number of programmed dwelling units by programmed zone
- Proposed areas
- Cadastral No.
- Ownership
- Area of lot in sq. m.
- Number of proposed dwelling units by area
- Number of proposed dwelling units by Mouhafazat
- Number of proposed dwelling units by Qada
- House type
- Height of buildings (number of stories including ground floor)

PROGRAMMED					PROPOSED												
Muhafazat	Programmed div by Muhafazat	Qada	Programmed div by Qada	Programmed Zone	No. of Programmed div	Proposed Area Zone	Cadastral No.	Ownership	Area Per Sq.m.	No. of Proposed div	No. of Proposed div by Qada	No. of Proposed div by Muhafazat	House Type	No. of Stories			
EL-BEKKA	1460	Zahle	635	Zahle	425	Anjar	2021/2020	Public	76000	632	632	1471	4A	5			
				Riyak	150										4B		
				Kabb Elias	60											4C	
				West Bekka	120	Jeb Jennin	60	Lala	893	Public	17000	121	121		4A	4	
				Bealbek	575	Mashgharh	60	Bealbek	317	Public	98349	576	576		4B 4C	2,5	
					95	Bealbek	480		189 - 190	Public	107554	576	576		5A	4	
					95	Younin	95			Public-Private						3A 3B	4
					35	El-Hermel	95	Ras Bealbek	84	Public	82000	97	97			4A 4C	3
						Rashayya	35	Karnabiky	172	Public	9475	45	45			4A 4C	3
						Sayda	420	Abra	360								4A
SOUTH	740	Sayda	420	Ghazya	60		32	Water	122000	437	417	736	4B				
				Jeizin	20										4C		
				Sour	360	Sour	175		1565	Public	42000	299	299		4A	3	
						Maarakah	35									5A	
						Aabbassyah	85									5B	
EL-NABATIYYE	700	El-Nabatiyye	410	El-Nabatiyye	320	Insar	521	Public	app. 64000	408	408	700	5A	4			
				Harouf	90										4A 4C	5	
				Bent Jbayl	135	Tibnine	614	Private	17000	136	136				4A 4B	4	
				Marj'yn	65	Al Khlam	3582	Private	22800	156	156				4C	4	
		Hasbayya	90	Hasbayya	90		5814										

SELECTION OF SITES

3. SELECTION OF SITES

Due to the scarcity of land in Lebanon, the land component constitutes a considerable share within the total cost for housing. Hence, it was established as a prerequisite of this study that the programme should be preferably implemented on government owned land.

There is an extensive list of government owned land at the Ministry of Finance. From this list only few hundreds can be defined as for their area and location. As for the remainder, no information is available regarding their location, boundaries, size, etc.

For those sites for which information were available, a huge investigation was carried out all over Lebanon in order to locate and examine all the candidate sites. The result of this survey is an inventory which includes a total number of more than 300 sites.

A set of criteria was formed for the selection of the most appropriate sites. The site selection criteria included the following:

- **Ownership Status:** each site was examined with respect to its ownership status in order to determine if the site is owned by the public, and if yes what kind of ownership it holds (state owned, municipal, waqf or other forms of public ownership, etc...).
- **Topography:** the land relief of a site is a very significant criterion. If the land is on a very steep slope, it is not possible to develop the site for residential purposes. On the other hand, if the slope is rather mild, the development is possible, but the cost is bigger than that of a flat or nearly flat land.
- **Size and Dimensions:** the size of a site is also an important criterion. If the site is very small, it is not worthwhile to develop it and provide it with services, because the outcome would be only few dwelling units with a considerable cost. Therefore, all the lands which had an area of less than 1ha (10,000 sq.m) were rejected. The dimensions (the shape) of a site were also considered. The area of a site may be satisfactory, but if its dimensions are not appropriate (e.g. a very narrow site) the development would be problematic.
- **Land Use:** the existing or programmed land use of a site is an important factor. There are cases when a site is suitable for development as far as the other criteria are concerned, but either it is already occupied by another public authority (health, education, etc.) or it is programmed for another public facility.
- **Accessibility:** is another factor which should be taken into consideration, as it is naturally preferable to have a site which is easily accessible rather than a site the accessibility to which presents some problem or at present it is not accessible at all.

- **Distance from an Existing Development Centre:** the selected sites should be preferably at a reasonable distance from a settlement to which they will relate. Otherwise, if the site is located at a remote distance it should be completely sustainable meaning that it must have such a volume to permit it to become an independent settlement.
- **Major Infrastructure Networks:** the existence of the major networks (water, electricity, etc.) near the site is an important factors for the selection of a site.
- **Major Community Facilities:** the existence of such facilities (health, education, etc.) makes a site more advantageous.
- **Land hazard or other Obstacles:** the sites which demonstrate severe land hazards (land sliding, flooding, etc.) or pollutions should be preferably avoided.

By applying the above criteria to the candidate sites, four categories were formed: D) the majority of sites (about 250) which were rejected by macroscopic analysis, C) those sites which were rejected after the field survey mainly due to unsuitable topography, B) the sites which are relatively acceptable, but due to their steeper slope, their development would cost more, and finally, A) the sites which are selected for development because a) they exhibit no major problem and b) with respect to their topography they are either flat or have a mild slope.

In very few cases, it was not practically possible to find an appropriate government owned site at a reasonable distance from a settlement for which a housing scheme had to be provided. In such cases, privately owned sites which would fulfil the above mentioned criteria and would have an affordable cost of land were chosen. These cases are limited to the following: El Shammise (Shouf), Aytat, Bint Jbeil, and El Khiyam.

The site selection procedures, which was carried out in detail by field surveys and office work employing all the available data and material from various sources, is fully demonstrated in the report: 1. SITE INVESTIGATION.

MASTER PLANS

4. MASTER PLANS

The term Master Plan as used here refers to the general plan of the site at scale 1/1250 in which all the required features of the housing development are demonstrated: These features include, but are not limited to, the following:

- Site boundaries
- Orientation
- Access road(s)
- Lot's cadastral No.
- Location of residential areas
- Layout of internal roads
- Location of community facilities / services
- Location of parking lots
- Landscaping

In the elaboration of the master plans, effort was made to place the residential areas in appropriate locations, to allocate enough space for the community facilities and to adapt the arrangement of the road pattern to the general configuration of the ground (contour lines), so that unnecessary earthworks would be avoided.

The master plans as for all the 23 sites are presented in the report: 2. MASTER PLANS & MASS PLANS. However, one example of these master plans is presented here for reference purposes.

MASS PLANS / HOUSE CLUSTERS

5. MASS PLANS /HOUSE CLUSTERS

The term Mass Plan/House Cluster as used here refers to the deployment of the various house types in different combinations in three dimensions, namely: width, length and height.

For each of the 23 selected sites and on the basis of the Proposed Housing Programme which defines the number of the dwelling units to be constructed in each administrative sub-division, a mass plan is elaborated at scale 1/500 and 1/1250.

The proposed mass plan demonstrates this 3-dimensional concept in such a way to satisfy a) the requirements of each area as per the Proposed Housing Programme and b) the particular technical characteristics of the site, such as land configuration, infrastructural issues, etc.

In the mass plan the following features are presented:

- Site boundaries
- Orientation
- Access road(s)
- Lot's cadastral No.
- Residential units including:
 - number of buildings
 - house types
 - total number of each type
 - total number of apartments
- Layout of internal roads
 - main roads (8.0 m)
 - secondary roads (6.0 m)
 - parking lanes (2.70 m)
- Location of community facilities / services
- Location and volume of parking lots
- Landscaping
- Other auxiliary features such as plantation, etc.

In the elaboration of mass plans, care was taken to provide every dwelling unit with ample view as well as appropriate airing and lighting conditions. By employing imaginative design patterns and creative clustering arrangements, the proposed layouts aimed at producing interesting and lively residential areas, avoiding dull and monotonous patterns. It was always kept in mind that the ultimate objective is not only the provision of shelter - any shelter - to the people who may need it, but also production of housing areas with high aesthetic qualities and human scales. Creation of an environment in which not only the very essential function of "sheltering" is

satisfied, but also other human needs such as quality of life, pleasant living conditions, tranquillity, privacy, etc., are enhanced.

At the same time, every measure was taken so that the proposals comply with the building regulations and planning codes which are at present in force in Lebanon.

The heights of the buildings vary from 3 stories (i.e. ground floor plus two floors) to 7 stories (i.e. ground floor plus six floors). Nevertheless, structural provisions are made for blocks of flats up to 9 stories in order to make it possible - if needed - to increase the density of some of the sites by increasing the height.

In addition to the mass plans, a set of preliminary studies concerning the infrastructure networks are elaborated for each site. These plans include:

- Water supply network
- Electricity network
- Telephone network
- Sanitary sewage network
- Surface water drainage network

The mass plans are elaborated in detail for each site and are presented in the report: 2. MASTER PLANS & MASS PLANS. However, one example of these mass plans is presented here for reference purposes.

UNITS DESIGN / HOUSE TYPES

6. UNITS DESIGN/HOUSE TYPES

By the results of the sample survey especially carried for this project in its initial stage and also by the economic analysis of the housing expenditure of the various strata of lower-middle and low income families, it was concluded that the proposed house types should make all the possible combinations of the following elements:

- Total area of dwelling units: 76 to 123 sq.m.
- Number of bedrooms: 1 to 3.
- Number of other rooms : 1 or 2 living/dining rooms combined or separated.
- Auxiliary facilities : 1 kitchen, 1 or 2 toilets / bathrooms, 1 laundry-room / store-room.
- Balconies and verandas : as appropriate to the plan.

On the basis of the above programme, the following 12 house types were elaborated which combine 2 to 4 apartments and will satisfy all the requirements of the housing programme as far as cost and size are concerned.

Table 2
The House Types and Their Characteristics

Building Type	Area (m ²)		No. of B/R	No. of O/R	Kitchen	No. of Toilet	Laundry /Store	
	Apartment	Total						
1A	2 x 2 B/R	81	162	2	1	√	1	-
1B	1 x 2 B/R	81	201	2	1	√	1	-
	1 x 3 B/R	120		3	2	√	2	-
1C	2 x 3 B/R	117	234	3	2	√	2	-
1D	1 x 2 B/R	91	337	2	2	√	2	-
	2 x 3 B/R	123		3	2	√	2	-
2	2 x 2 B/R	86	414	3	1	√	2	-
	2 x 3 B/R	121		3	1	√	2	-
3A	4 x 2 B/R	91	364	2	1	√	1	√
3B	4 x 3 B/R	112	448	3	1	√	1	√
4A	1 x 1 B/R	76	262	1	1	√	1	√
	2 x 2 B/R	93		2	1	√	1	√
4B	1 x 2 B/R	92	440	2	1	√	2	-
	3 x 3 B/R	116		3	1	√	2	-
4C	2 x 3 B/R	119	238	3	1	√	1	-
5A	1 x 2 B/R	78	302	2	1	√	1	√
	2 x 3 B/R	112		3	1	√	1	√
5B	2 x 2 B/R	84	168	2	1	√	1	√

The detail of all the house types including the plan of the ground floor and that of the typical floor, elevation, indicative section, structural drawings, mechanical drawings (water, electricity, sewage, telephone), etc., are presented in the report: 3. HOUSE TYPES. However, some examples of these house types are presented here for reference purposes.

CONCLUSIONS

7. CONCLUSIONS

With the present phase, Stage 5 of the National Housing Plan for Lebanon, the studies undertaken by the Consultants has reached its end. Eleven months have elapsed since the project commenced. During this period a huge bulk of work has been completed which cover all the required tasks, from Sample Survey to Programme and Policies and then to Site Selection, Master Plans, Mass Plans and House Type Design. Many thousands pages of text including tables, charts, diagrams, etc. have been compiled and hundreds of plans and drawings of all sorts and scales have been elaborated.

The Consultants feel really proud and content to have been able to produce all this work. A work which is not only massive in quantity but also rewarding in quality. The Consultants are grateful for having been granted the challenge of participating in this project and would like to express their cordial wishes that their effort will help in solving the problem of housing in Lebanon.

Nevertheless, the completion of this study has no real meaning if the implementation of this project is not successful. The implementation will be successful if it is based on correct management and wise decision making.

The Public Corporation of Housing, although very young, has accomplished a considerable amount of work. A major success of the PCH is to have launched, financed, organised and followed-up the National Housing Plan for Lebanon, which is carried out after 30 years of studies and in a historical moment when the situation was ripe for its implementation.

However, the PCH, in order to be able to implement such a vast and resource consuming task, as is the production of tens of thousands of dwelling units, must be prepared for such task. Not only the PCH should have the required in-house expertise to be able to follow-up such a challenging enterprise, but should also secure the appropriate management of this effort. In today's world of technology and know-how, the "project management", in any form that it might be taken according to the particular situation and requirements, is a pre-requisite for any successful implementation, both in terms of quality and economy.

REPUBLIC OF LEBANON

MINISTRY OF HOUSING AND COOPERATIVES - THE PUBLIC CORPORATION FOR HOUSING

NATIONAL HOUSING PLAN FOR LEBANON

PHASE 5





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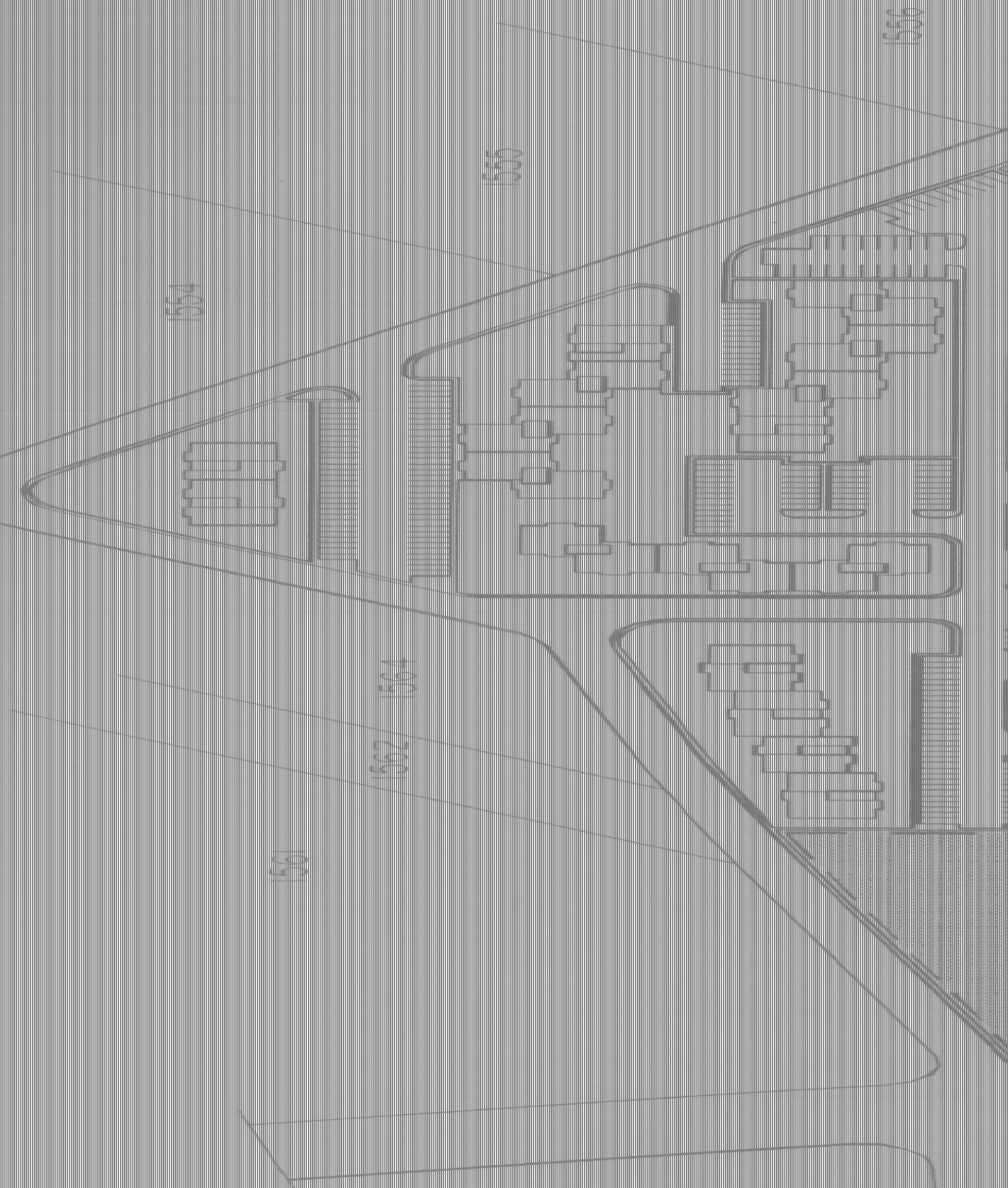
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