3.2.1 Calculation of Street Value

1) Roads Subject to Street Value

In the present road network, all public roads serving vehicles and/or pedestrians are subject to street values. Planned roads on the cadastral map are considered to become public roads with necessary public works. Accordingly, they are also subject to street values. As only one road can cope with vehicular traffic, it is suitable for the standard road.

In the future road network, all planned roads, except a back lane in the commercial area, are subject to street values.

2) Adjustment Factors

The factors which adjust street values at the project area were examined considering the area characteristics. There are a total of eight chosen and each factor has a properly allocated range of coefficient value. And then, the roads are to be assessed by the factors in comparison with the standard road.

The adjustment factors and their coefficient values are summarized in Table 3.2 and described below:

Road Condition (hierarchy, connection, etc.): Currently, all roads, except the standard road, do not function as carriageway. They are composed of narrow agricultural roads and nonexistent roads and assessed at -5% and -10%, respectively. On the other hand, future roads will function as both carriageway and walkway and will form a good network. They were assessed in compliance with their hierarchical order (refer to Figure 3.4 and 3.6).

Road Amenity (utilization of private land): At present, land utility is slightly different, whether the lots are facing the standard road or not. But, in the future, the favorable road network will totally enhance road amenity on the whole area.

Accessibility: The project area is so compact that the accessibility to/from communal facilities is considered to be equal in the whole area. But communal facilities such as a playground, play lots, a mosque and retail shops will be newly developed and the future road network will provide good accessibility to residents in the area.

Road Width: Since a standard road has a width of 10m, positive coefficient values are given to wider roads and negative values to narrower roads (refer to Figure 3.5 and 3.7).

Pavement Type: Pavement types affect road availability to some extent.

Sewerage/Drainage: Sewers as well as drainage systems will be newly installed at all roadsides. It will also enhance land availability.

Water Supply: Currently water pipes are installed only under the standard road; in the future, water pipes will be installed and organized under all the roads.

Figure 3.4
Road Hierarchy "Before" Project

Project Implementation Area
(1) Street Number
Main Street And Street In The Block   0%
Sub Street In The Block   -5%
Street On The Cadastral Map   -10%
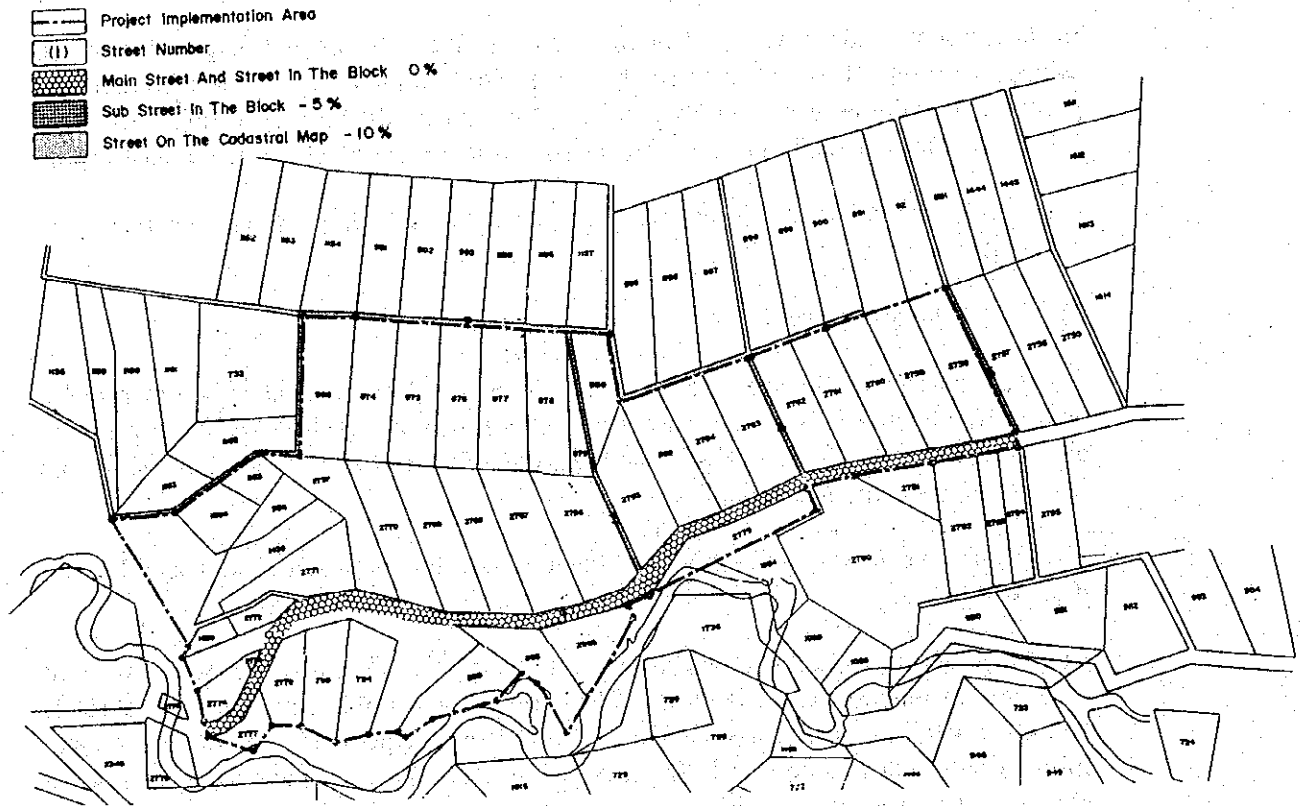
Figure 3.5
Road Width "Before" Project

Project Implementation Area
(1) Street Number
W = 10 m (The Present Condition)   0%
W = 6 m   -5%
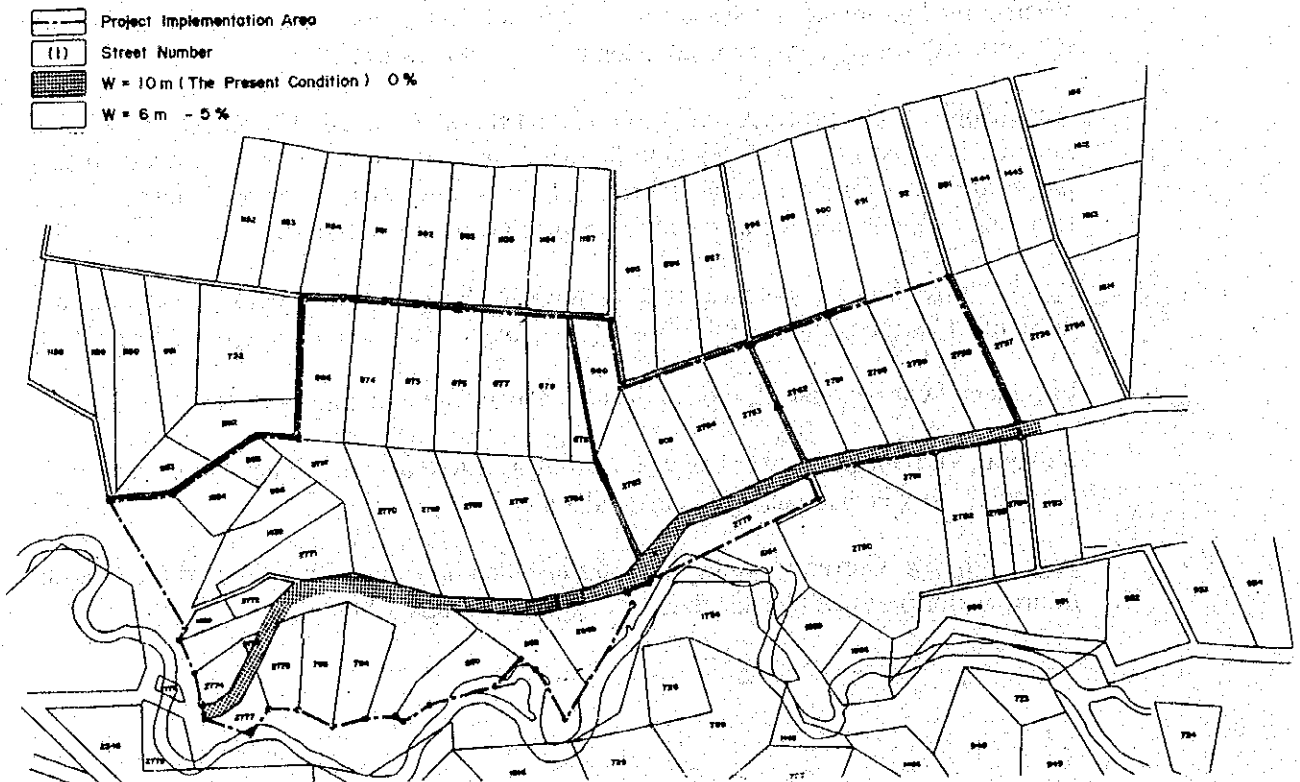
Figure 3.6
Road Hierarchy "After" Project

Project Implementation Area
(1) Street Number
Main Street + 15 %
Sub Main Street + 10 %
Main Street In The Block + 5 %
Street In The Block 0 %
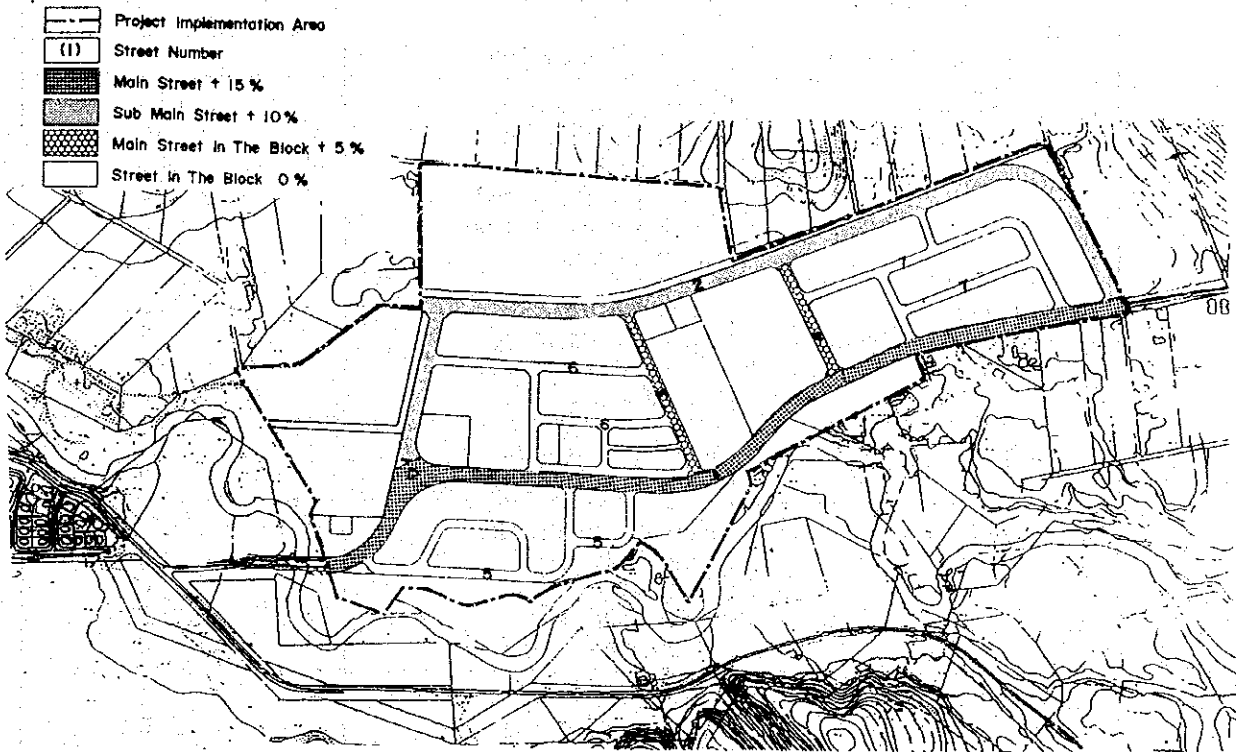
Figure 3.7
Road Width "After" Project

Project Implementation Area
(1) Street Number
W = 20 m + 10 %
W = 15 m + 5 %
W = 12 m + 2 %

Table 3.2

Adjustment Factors and Their Coefficient Values in Street Value Method

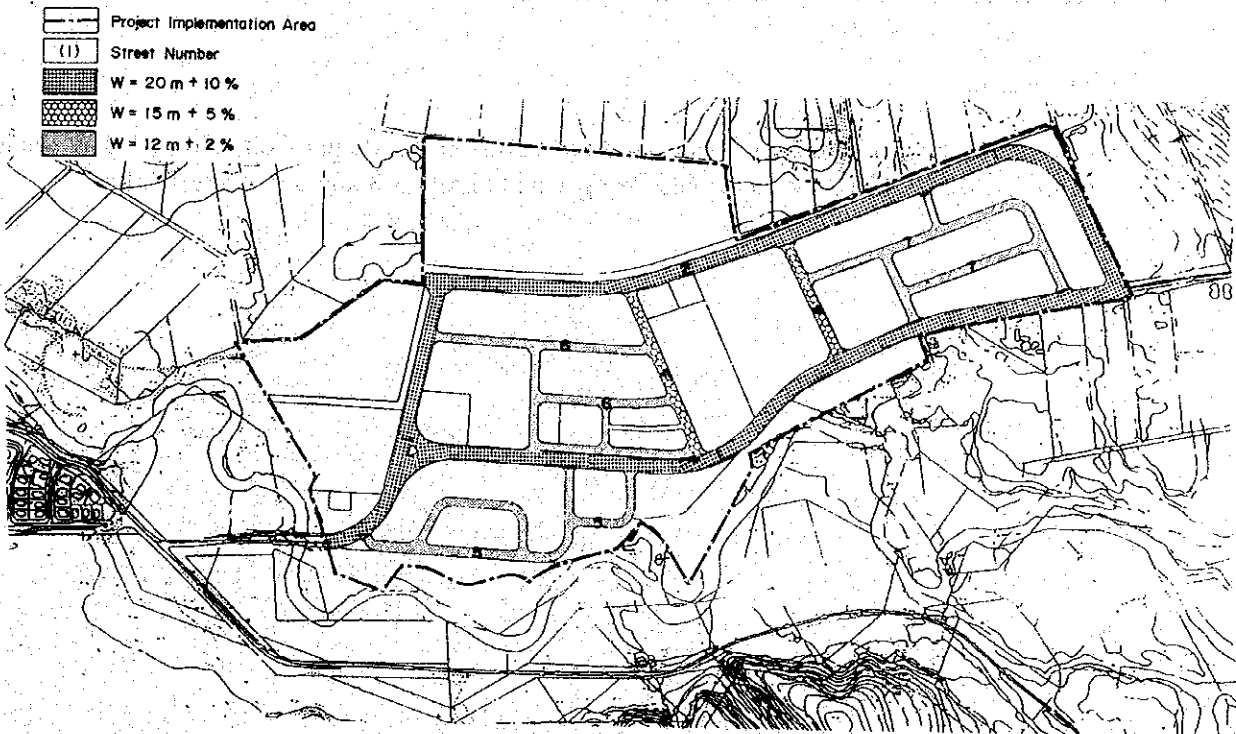| Adjustment Factor	Condition	Coefficient Value (%)
Road Hierachy (hierarchy, connection)	future collector road future major local road future minor local road existing standard road existing agricultural road nonexistent road	+ 15 + 10 + 5 0 - 5 - 10
Road Amenity (utilization of private land)	all future roads existing standard road existing agricultural road/ nonexistent road	+ 150 0 - 5
Accessibility	future road network existing road network	+ 20 0
Road Width	more than 20 m width 15 m width 10 m width 4-6 m width 2-3 m width	+ 10 + 5 0 - 5 - 10
Pavement Type	paved road macadamized road lateritic road	0 - 5 - 10
Sewerage/Drainage	future road network existing road network	+ 30 0
Water Supply	road with water pipe road without water pipe	0 - 5

3) Results

Consequently, calculated street value index before the project ranges from 650 to 1,000, while from 3,120 to 3,350 after the project as shown in Figure 3.8 and 3.9, respectively.
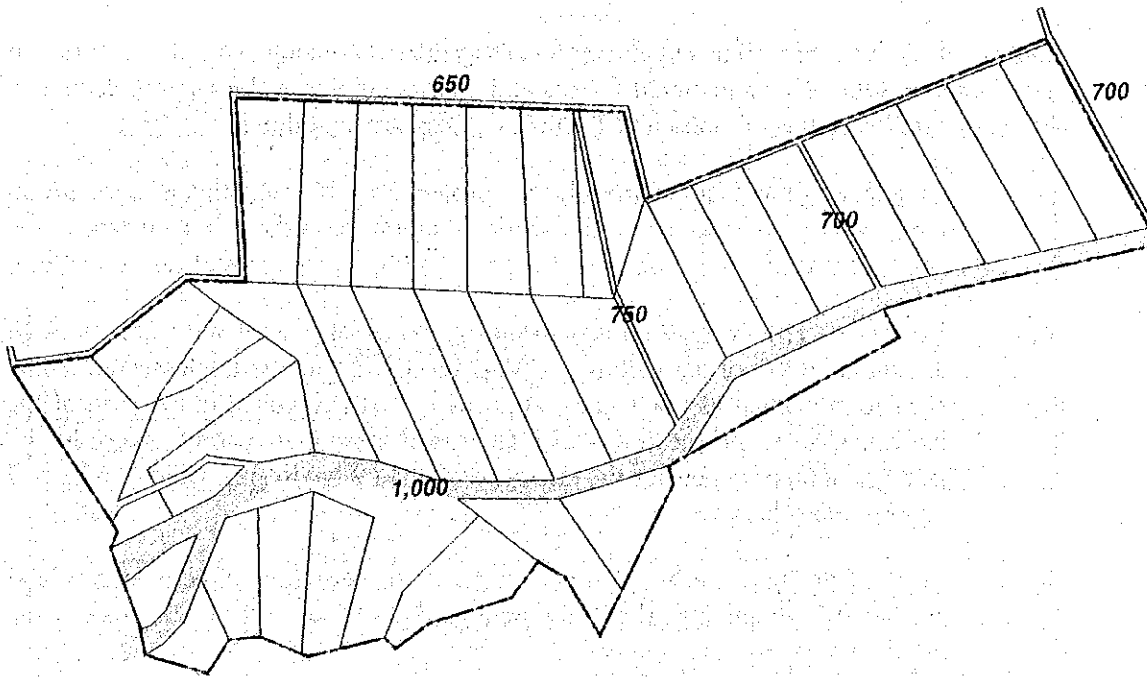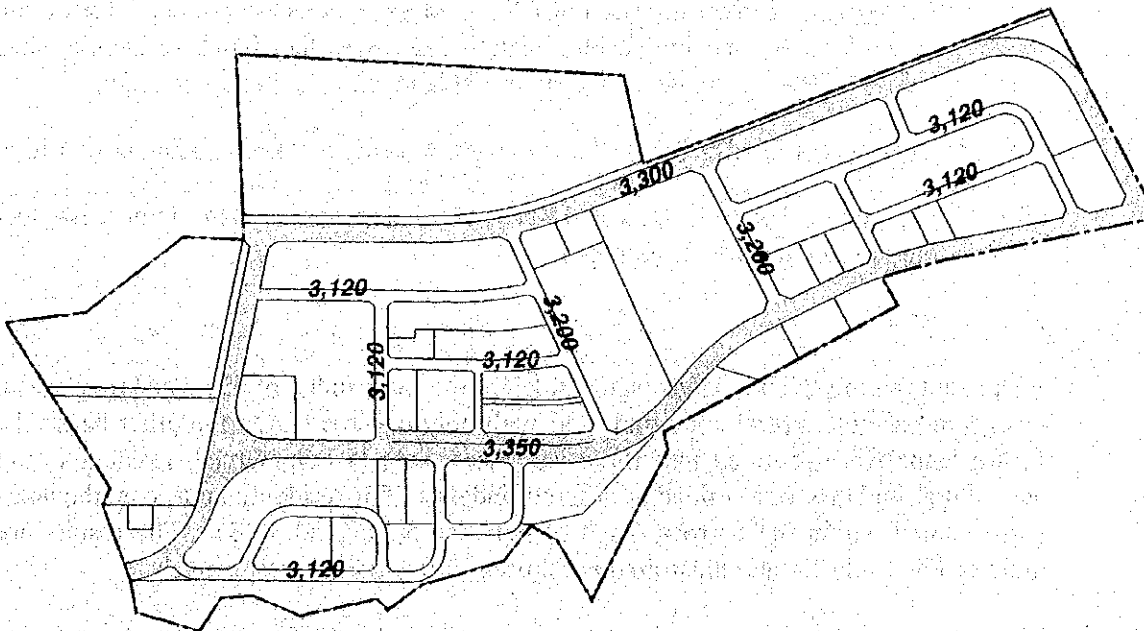
Figure 3.8
Street Value Index "Before" Project

Figure 3.9
Street Value index "After" Project

3.2.2 Land (Individual Lot) Valuation

1) Preparation of Valuation Conditions

Individual lots have been valued by further adjusting the street values with the factors that are unique to lots. The adjustment factors and their coefficient values were adequately selected and determined as shown in Table 3.3. They are as follows:

i) Category of Landuse: Currently, the project area is designated as agricultural land solely. Judging from the land valuation records in its environs, the coefficient value varies from - 20 % to + 200 % on the basis of residential use.

ii) Lot Size: The average lot size in the area is as large as 9,800 sq.m. since all alienated lands are agriculture. Unless the LR project is implemented, some contribution such as open space allocation must be needed in the case of the individual development of lots with an area of more than 5 acres. Accordingly, land valuation distinguishes the lots of more than 2 ha. in size, which is nearly 5 acres, from others.

iii) Terrain Condition: Although it is a matter of degree, slope directly affects land availability. Practically, the land with a gradient of more than 5 % poses some disadvantages to development.

iv) Existence of Nuisance Facility: The project area has a cemetery and it is considered to be distasteful to neighbors.

v) Height Difference between Road and Lot: According to the related land development plan, the project area is flat except for the agricultural land which is located beyond a new waterway and is 2 meters higher than its access road.

vi) Corner Lot: Corner lots are considered advantageous as commercial sites due to easy access and noticeable location. On the other hand, residential sites enjoys a little advantage and agricultural land expects no appreciation.

vii) Dual Access Roads: The dual access roads benefit the lots like being corner lots.

viii) No Access Road: Lots should have at least one access road. Otherwise, lots ought to be negatively assessed.

2) Results

As a result, all the existing lands were valued at the same index of 697 since they are all designated as agricultural and connected with only one road. On the other hand, the future lands were grouped into three land uses, namely commercial, residential and agricultural, and they were valued at different indexes. For residential purpose, the lands were valued within the narrow range of between 3,245 and 3,485. The results are indicated in Table 3.4 and illustrated in Figures 3.10 and 3.11, respectively.

In comparison with the project implementation plan, almost the same increase rate for residential land and more moderate ones for agriculture and commercial lands were estimated. In total, the increase rate of 3.9182 in the land valuation is slightly less than that of 4.1727 in the project implementation plan. However, it is deemed to be within an

acceptable range in order to materialize the project implementation plan in replotting design.

Table 3.3
Factors and Their Coefficient Values for Land Valuation

Factor	Condition	Coefficient Value (%)	Note
Category of Land Use	Commerce Residence Agriculture	+ 200 0 - 10	
Size	$A < 20,000\ m^2$ $A \geq 20,000\ m^2$	0 - 5	
Terrain	Gradient $\leq$ 5% Gradient $\geq$ 5%	0 - 5	
Nuisance Facilities	Adjoining Land	- 5	
Height Difference Between Road and Lot	H < 1m - 1m $\leq$ H $\leq$ 1m	- 3 0	only applied to the block valuation "after" project
Corner Lot	Commerce Residence	+ 10 + 2	
Dual Access Roads	Commerce Residence	+ 10 + 2	
No Access Road		- 5	

Table 3.4
Land Valuation Results

"Before" Project Valuation Index	"After" Project			Increase Rate in Project Implementation Plan
	Land Use	Average Valuation Index	Increase Rate	
Agriculture 697	Agriculture	832	1.1937	1.7442
	Residential	3,371	4.8364	4.6512
	Commercial	10,080	14.4620	21.3953
	Total	2,731	3.9182	4.1727

Figure 3.10
Individual Lot Valuation "Before" Project

800 ≥ @< 900	
700 ≥ @< 800	
600 ≥ @< 700	
500 ≥ @< 600	
State Land	
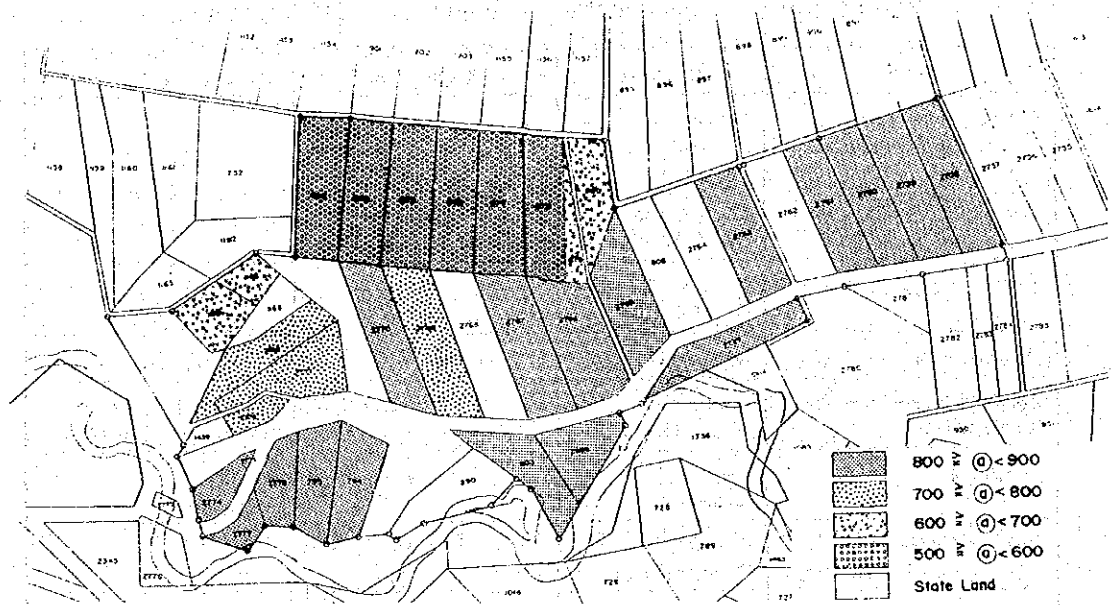
Figure 3.11
Block Valuation "After" Project

832

3,443

3,432

3,182

3,353

3,417

3,420

3,350

3,252

10,080

3,385   3,484   3,417

3,245
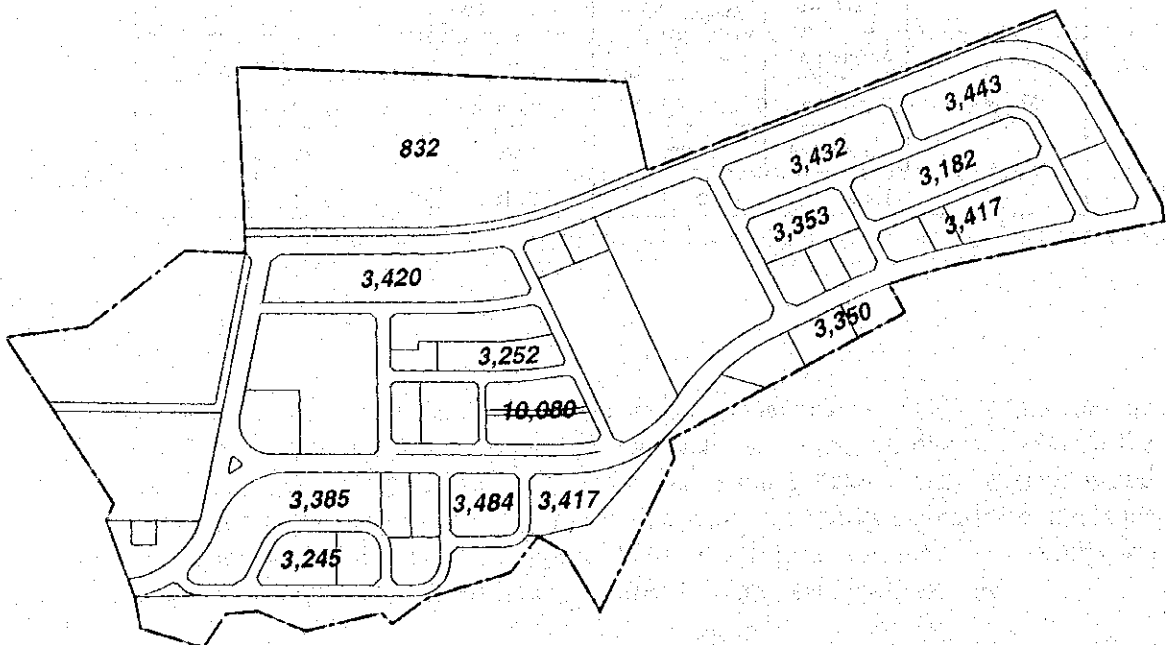
3.3   Replotting Design

1)   Replotting Principle

The replotting design was drafted according to the same method as applied for Kg. Seri Subbing project. In this connection, a similar internal regulation was assumed to be established in the LR committee for this particular purpose. Replotting principles are summarized as below:

(a)   Proportional Valuation Based Replotting Design Method is employed as the key formula to determine the replotted area.

(b)   Since the replotting design is to be formulated based on the project implementation plan, firstly, the commercial area is fixed as financial land and then proceed to the replottings of the private land in compliance with the following policies:

   (i)   Basically, lots are to be replotted to original places or nearby.

   (ii)   To ensure lot availability, replots have enough frontage with rectangular shape.

   (iii)   No financial land is allocated at agricultural land.

2)   Results

The proportional rate was calculated at 1.2776 as shown in Table 3.5. The replotting design modified original lots as shown in Figure 3.12 and allocated new lots and financial land as illustrated in Figure 3.13. All original lots were replotted to the new lots where the entitled prices were reserved and partial lands were tendered to the Implementing Body. These contribution rates are summarized in Table 3.6. The rate of residential land is as high as 70.6 %.

3)   Anticipated Problems

All landowners, except those who have replots of agricultural lands, must shoulder a high contribution. Although the social acceptance toward the contribution derived from the LR project is quite uncertain, the Implementing Body must tackle severe consensus building and tough negotiations. Under such circumstances, the landowners are likely to raise the question of urbanizing their kampung as planned. Provided that many of them demand agricultural land continuously, the block design as well as the alignment of the proposed waterway must be modified.

Table 3.5
Statement on Proportional Rate

					Project Area	451.707 m2
Private Site	"Before" Project		"After" Project		Remarks	
	Basis Area m^2	Total Valuation Index	Area m^2	Total Valuation Index		
Alienated Land	305,226.09	212,867.150	E 131,091.00	F 271.970,486		
Financial Land		-	75,479.00	292.139.494		
Total	A305,226.09	B212,867,150	C206,570,00	D564,109.980		

Average Contribution Rate of Project
$$d = 1 - \frac{E}{A} = 1 - \frac{131,091}{305,226.09} = 0.5705$$

Unit Valuation Index "Before" Project
$$a = \frac{B}{A} = \frac{212,867.150}{305,226.09} = 687.408$$

Unit Valuation Index "After" Project
$$e = \frac{D}{C} = \frac{564,109.980}{206,570.00} = 2730.84$$

Increase Rate of Project
$$y = \frac{e}{a} = \frac{2731}{697} = 3.92$$

Unit Valuation Index of Alienated Land
$$e' = \frac{F}{E} = \frac{271,970.486}{131,091.00} = 2074.67$$

Increase Rate of Alienated Land
$$y' = \frac{e'}{a} = \frac{2,075}{697} = 2.98$$

Proportional Rate of Alienated Land
$$k = \frac{F}{B} = \frac{271,970.486}{212,867.150} = 1,2776$$

Table 3.6
Contribution Rates

Private Land "Before" Project	Private Land After Project		Note
	Land Use	Average Contribution Rate	
Agriculture	Agriculture Residential Commercial	23.62 70.61 -	Financial land
	Total	57.07	

Figure 3.12
Change in Lot Shape Through Replotting
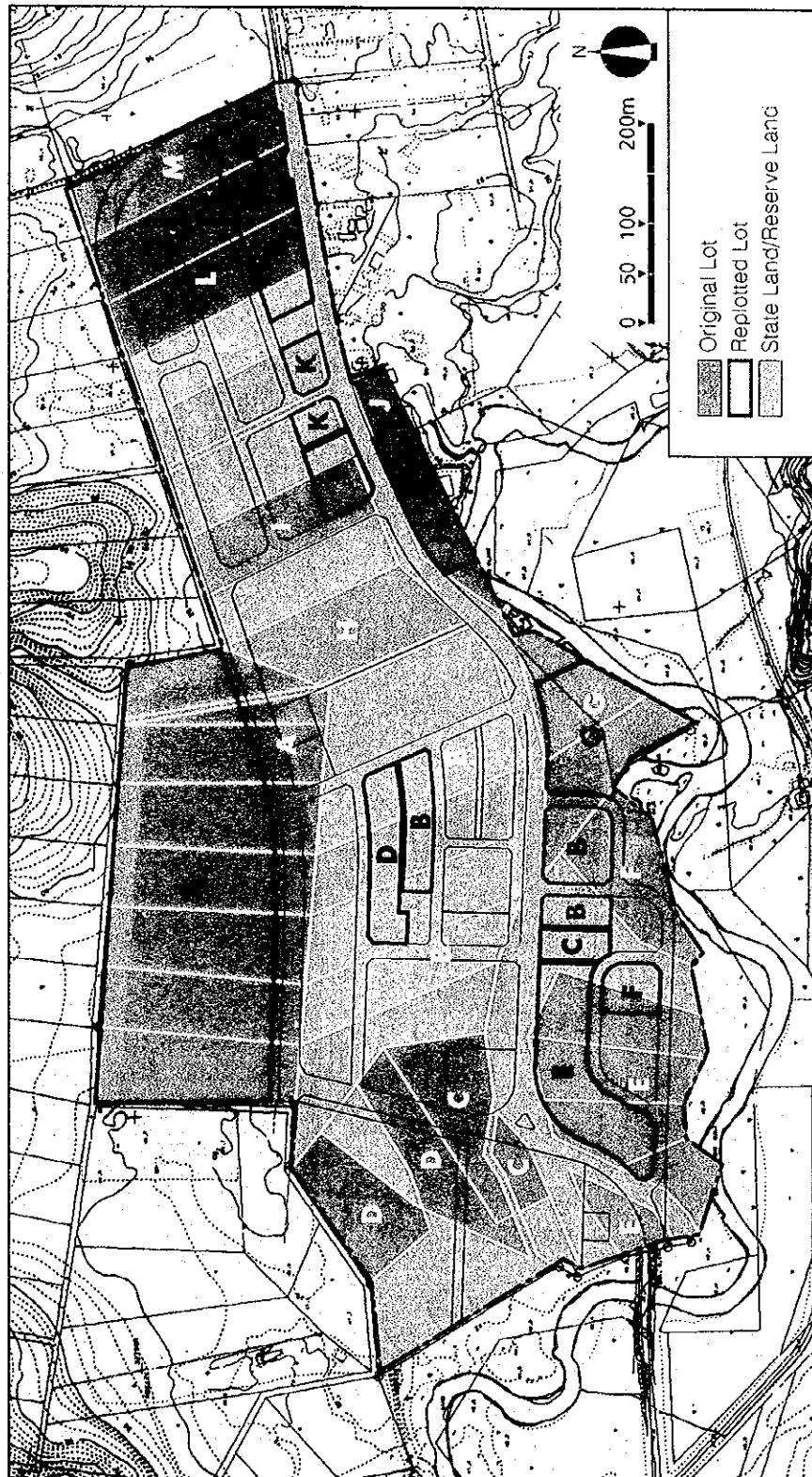
Figure 3.13
Replotting Design in Kg. Kuantan Project Area

Alienated Land
Financial Land
70.0 Contribution Rate

Figure 3.13
Replotting Design in Kg. Kuantan Project Area

Alienated Land
Financial Land
70.0 Contribution Rate
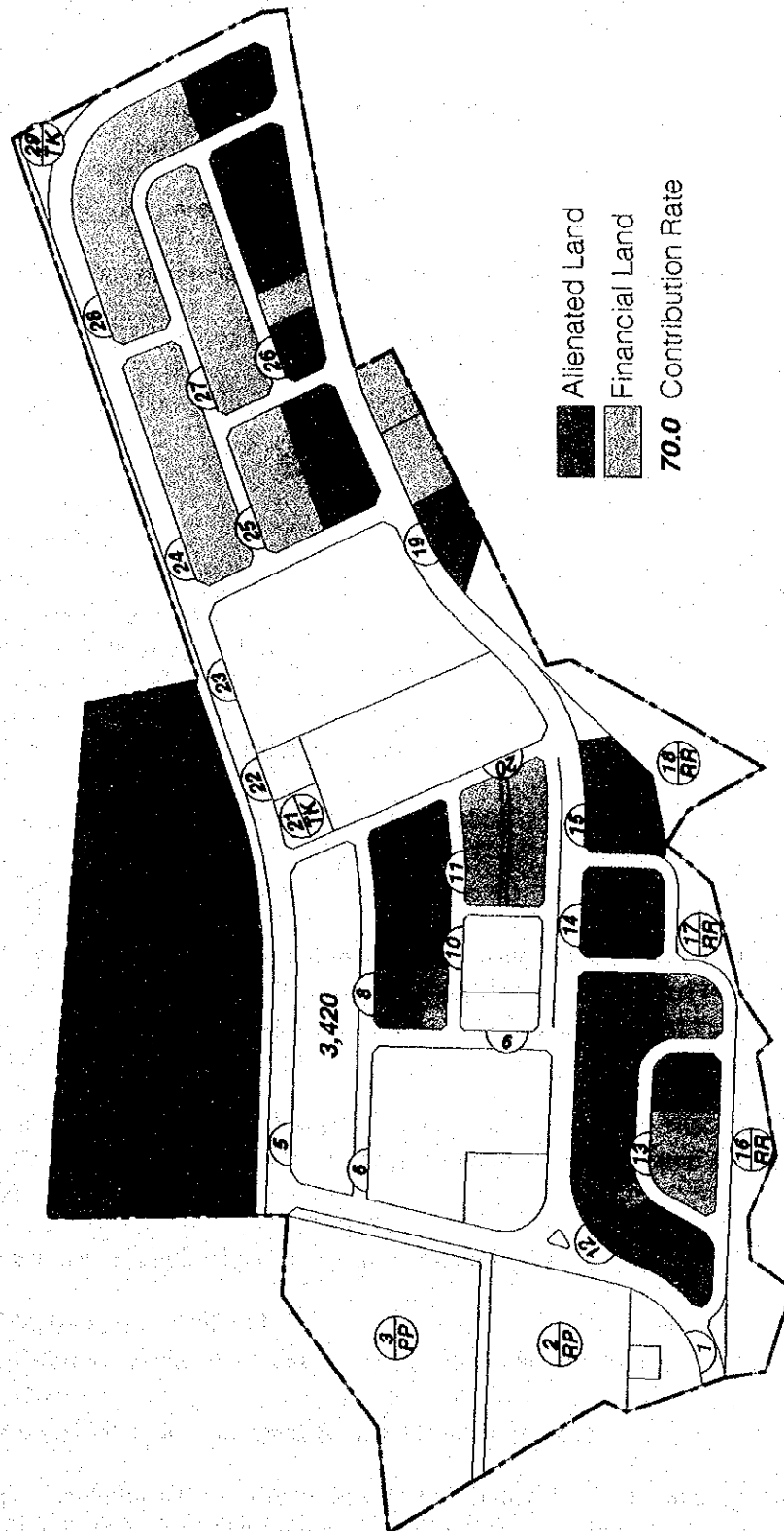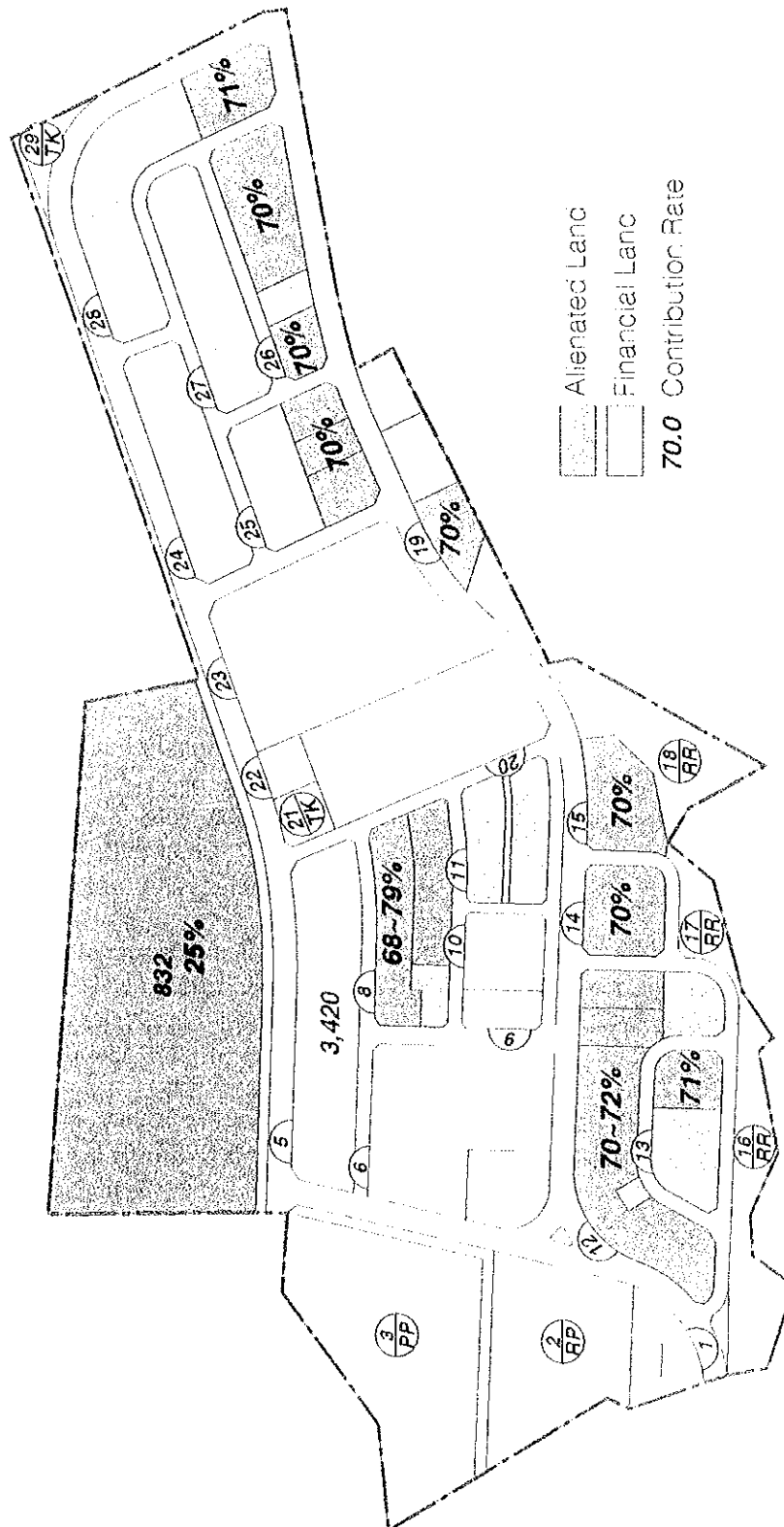
Appendix 1.1
Supplementary Description for Replotting Procedure

(1) Implementing body (IB) provides the opportunity to report unregistered rights for a certain period.

(2) The following two categories are required:

 - existing conditions of inrastructure, utility and community service facilities; and

 - land transaction records and land valuation records.

(3) The internal regulation for land valuation contains the following items:

 - objective
 - definition of terms
 - valuation method
 - roads subject to valuation
 - division of roads by street value
 - street value calculation method
 - indication of street value
 - indicative unit of land value
 - calculation method of land valuation index
 - lot price
 - translation of land value index into monetary value
 - commission of other items
 - commencement of the regulation

(4) The road connecting the most valuable lot prior to the project should be evaluated at an index valued at 1,000. The other roads are to be comparatively determined by the factors within coefficient ranges. A common form is used in calculating the street value "before" project and "after" project (refer to Form 1).

(5) The calculated street values are examined in comparison with the records on land transaction and land valuation. If there is no reasonable relationship found among them, some adjustment is required.

(6) The calculation process of land valuation is outlines as follows:

 - affected factors are identified by lot;
 - the calculated street value is adjusted by the adequate coefficient of the affected factors; and
 - the adjusted street value is expanded into lot vlaue by area.

To facilitate the calculating works, a form has been designed for individual lot valuation "before" project (refer to Form 2) and block valuation "after" project, (refer to Form 3).

(7)   The calculated land value increase rate is examined by appointed valuers. The difference between the calculated one and the planned one in a project implementation plan is an important criterion. In practice, a difference of less than 10% is acceptable.

(8)   In replotting, it is necessary to understand some specific conditions belonging to individual lots. The data for financial land distribution and community service facilities allocation are also collected.

(9)   An internal regulation for replotting design contains the following items:

-       objective
-       basis date for replotting design
-       determination of lot area prior to project
-       replotting design method
-       valuation method
-       location of replot
-       area of replot
-       shape of replot
-       amalgamation or partition in replotting design
-       other matters to be noted
-       commencement of the regulation.

(10)   Form 4 is designed to calculate the proportional rate.

(11)   To calculate the entitled index to a replot, a lot value index "before" project is multiplied by the proportional rate.

(12)   Prior to individual replotting design, the following items are preliminarily examined:

-       location of financial land and community service facilities land;

-       comparison between lot entitled index "before" project and block valuation index "after" project at the same location; and

-       inevitable transfer replots in terms of numbers and distance.

(13)   For provisional replotting, the following documents are considered to be necessary:

-       statement of replotting (refer to Form 5)
-       replotting specification (refer to Form 6)
-       drawing for designation of provisional replotting

Statement On Street Value

Street No.	Width of S.	Condi-tion	Amen-ity	Access -1	Access -2	Access -3	Type of S.	Water Supply	Sewer/ Drain	Total	Street Value

Width of S.   :   Width of Street

Condition   :   Condition of Street
                              (Character, Continuity, etc)

Amenity   :   (Condition of use on building site, Condition of location on
                              building site, etc)

Accessibility   :   (Shopping, Bus Line, Park, School, etc)

Type of S.   :   Type of Street

Sewer/Drain   :   Sewerage / Drainage

Statement on Individual Lot Valuation "Before" Project

Lot No.	Registration of Land Use Category	Registered Area m²	Basis Area m²	Divided		Street No.	Street Value Index	Coefficient Value (%)											Adjusted Street Value Index	Valuation Index	Unit Index	Total Valuation Index	Land-Owner
				No.	Area m²			Category of Land Use	Size	Shape	Terrain	Existing of Utilize Facility	Difference Between Road & Lot	Corner Lot	Land Adjoining to Front and Back Road	Land Not Adjoining to Any Road	Flooding Condition	Total					

Statement on Valuation of Blocks "After" Project

Block No.

Block Area ㎡

Dividend No.	Dividend Area ㎡	Street No.	Street Value Index	Category of Land Use	Calculation for Valuation (%)							Adjusted Street Value Index	Valuation Index	Unit Index	Total Valuation Index	Remarks
					Size	Shape	Terrain	Difference Between Road & Lot	Corner Lot	Land Adjoining to Front & Back Road	Total					
Total																

Statement on Proportional Rate

					Project Area	m2

Private Site	"Before" Project		"After" Project		Remarks
	Basis Area m^2	Total Valuation Index	Area m^2	Total Valuation Index	
Alienated Land			E	F	
Financial Land					
Total	A	B	C	D	

Average Contribution Rate of Project	$d = 1 - \dfrac{E}{A}$
Unit Valuation Index "Before" Project	$a = \dfrac{B}{A}$
Unit Valuation Index "After" Project	$e = \dfrac{D}{C}$
Increase Rate of Project	$y = \dfrac{e}{a}$
Unit Valuation Index of Alienated Land	$e' = \dfrac{F}{E}$
Increase Rate of Alienated Land	$y' = \dfrac{e'}{a}$
Proportional Rate of Alienated Land	$k = \dfrac{F}{B}$

Statement on Replotting Design

Before L/R			After L/R																			Land Owner	No. of Others
Lot No	Land Use Category	Basic Area m²	Entitled Valuation Index	Block No.	Lot No.	Replotting Area m²	Divided		Street No.	Street Value Index	Calculation for Valuation (1)								Adjusted Street Value Index	Valuation Index	Unit Index	Total Valuation Index	Contribution Rate (%)		
							No.	Area m²			Category of Land Use	Size	Shape	Terrain	Difference Between Road & Lot	Corner Lot	Adjoining to Front & Back Road	Total							

Specification of Replot and Balance of Equity

Lot No.	Before L/R					After L/R								Balance of Equity		Land Owner	No. of Others	Remarks
	Registration of Land Use Category	Registered Area (m²)	Basic Area (m²)	Valuation Index	Proportional Ratio	Entitled Valuation Index	Block No.	Lot No.	Land Use	Replotting Area	Contribution Rate	Unit Index	Valuation Index	Collection	Payment			

Appendix 2.1
Internal Regulation for Land Valuation

Article 1. Objective

The regulation is intended to prescribe the method to appraise the alienated land for the land readjustment project at Kg. Seri Subang only in order to ensure the appropriateness and balance of valuation.

Article 2. Definitions of Terms

In the regulation, the following terms are prescribed:

a) Lot: A piece of land that a landowner can use for a certain purpose or to profit from it by way of leasing it out.
b) Street Value: The utility value of a standard residential lot fronting a road at right angle at the middle portion of a block. It is expressed as in index per sq.m.
c) Ranking of Streets: A bigger street value index connotes a higher ranked street in the ranking of streets. In the case of having the same index, a higher rank is given to a street that serves a longer frontage of lots.

Article 3. Valuation Method

In principle, lots are evaluated under the street value method.

Article 4. Roads subject to Valuation

Street values are given to roads that function as a carriageway and a sidewalk with more than 4m width. Besides, some space which enhance lot utility is regarded as quasi road space and subject to valuation.

Article 5. Division of Roads by Street Value

a) In principle, roads are divided by block under one street value.
b) In the case of a similar roadside land use of more than 2 blocks, one street value may apply to the road section over several blocks.

Article 6. Street Value Calculation Method

The formula for street value calculation is as follows:

$$Se = Sb \times \{ 1 + \Sigma (\alpha / 100) \}$$

where:

Se : Each Street Value Index
Sb : Standard Street Value Index (1,000)
α : Coefficient Value by Each Factor

(The adjustment factors and their coefficient values are shown in Table 2.2.)

Article 7.   Indication of Street Value

Street values are represented in terms of index compared with the 1,000 indexes applied to the maximum street value before the project.

Article 8.   Indicative Unit in Land Valuation

a)   Original lots and replots are to be valued in terms of both index (per sq.m) and total index (per lot).
b)   If necessary, several adjoining lots can be regarded as one.

Article 9.   Land Value Calculation Method

A land value index on each lot is to be valued by further adjusting the related street value with adjustment factors as indicated in Table 2.3. Then, the index is multiplied by the area (sq.m.) to obtain the total index on the lot. If there are two roads accessible to one lot, the higher ranked street value is selected.

Article 10.   Lot Price

Lot price is determined by multiplying the total index by the unit price of index.

Article 11.   Translation of Index into Monetary Value

Unit price of index is to be determined as appropriate land price when construction work is almost completed.

Article 12.   Commission of Other Items

Aside from the above, other matters that may arise are to be decided by the Implementing Body in consultation with the LR committee.

Article 13.   Commencement of the Regulation

The regulation will take effect on April 1, 199x.

Appendix 2.2
Draft of Internal Regulation for Replotting Design

Article 1.   Objective

The regulation aims at guiding replotting design works appropriately prepared by the Implementing Body.

Article 2.   Basis Date for Replotting Design

Replotting design works cope with all the lots within the project area as of the approval date of the Project Implementation Plan (hereinafter prescribed as "basis date").

Article 3.   Acreage of Original Lots

The acreage of original lots as of the basis date are to be determined according to the internal regulation for the particular purpose.

Article 4.   Replotting Design Method

Proportional valuation based replotting design method is employed in the project.

Article 5.   Land Valuation Method

Original lots as well as replots in the project area are to be valued according to the internal regulation for the particular purpose.

Article 6.   Location of Replots

a)   In principle, a replot is to be allocated in the original location or close to original location (hereinafter prescribed as "original replotting").
b)   If original replotting cannot be ensured due to development of public facilities or enforcement of a new land use zoning, a replot shall be allocated in another location despite the preceding paragraph.

Article 7.   Acreage of Replots

The acreage of replots to be worked out under the following equation is established as a standard.

$$Ei = Ai \cdot ai\,(1\text{-}d)\,Y\,/\,ei \quad \text{or} \quad Ai \cdot ai \cdot \alpha\,/\,ei$$

where   Ei   : acreage of replot
             ei   : index per sq.m on the replot
             Ai   : acreage of original lot
             ai   : index per sq.m on the original lot
             d   : average contribution rate
             y   : average land utility increase rate
             α : proportional rate

Article 8.   Amalgamation or Partition

a)   In principle, one replot is given to one original lot.
b)   But, if it is considered to be adequate, original lots can be replotted by amalgamation or partition despite the preceding paragraph.

Article 9.   Shape of Replots

a)   In principle, the standard shape of replots is rectangular and with enough frontage.
b)   However, it is not applied to the replots for which other shapes are considered rational and necessary in accordance with the determined block design.

Article 10.   Commission of Other Matters

Besides the above, other matters that may arise are to be decided by the Implementing Body in consultation with the LR committee.

Article 11.   Commencement of the Regulation

The regulation will take effect on April 1, 199x.

JICA