Sustainable Housing Planning

Graduation Project
Urban Planning Department

Presented By
Amir Abuaisheh
National Palestinian Housing Policies

Limited Lands And Resources

Their Vision: Sustainable human settlements with appropriate housing for all Palestinian families

Target Group: Middle Class

Where?

In Cities!! Why?!

Costs

30% - 40%
10% - 15%
50%
Spatial protection plan
Natural Reserve
Biodiversity Area
Available Area

Site Selection Process

West Bank Borders

Political Classification
C area
Natural Reserve
Israeli Settlements

Spatial protection plan
Natural Reserve
Biodiversity Area
Available Area

Agriculture
High Agricultural value
Available Area
Archeological Sites

West Bank Valleys

Springs

All Restrictions

Available areas

Restricted Areas

Site Selection Process
Site Selection Process

Taking Land price in consideration

Available areas
State Lands
Built Up Areas
Restricted Areas

Site 1: Arraba
Site 2: Assira Ashamalya
Site 3: Jericho

30 km
### Site Selection Process

**Site 1: Arraba**

#### 11 KM From Jenin

- **Proposed Site**: Arraba
- **Built Up Area**: Jenin
- **Arraba-Jenin Road**: 11 KM

#### Arraba Master Plan

- **Current M-P Boundary**: 250m
- **Previous M-P Boundary**: 1000m
- **Proposed Site**: Not damaging Natural resources

#### Criteria Table

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight (1-5)</th>
<th>Criteria Value</th>
<th>Rank (1-5)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope</td>
<td>3</td>
<td>(25%)</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Transportation</td>
<td>5</td>
<td>---------------</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Distance to a main road</td>
<td>3</td>
<td>1.5 km</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Distance to the nearest community</td>
<td>5</td>
<td>100 m</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Distance to services Schools, Health</td>
<td>3</td>
<td>1 Km</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Infrastructure availability</td>
<td>5</td>
<td>---------------</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Land price</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Not damaging Natural resources</td>
<td>4</td>
<td>---------------</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Security</td>
<td>4</td>
<td>---------------</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>5</td>
<td>---------------</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

**Total**

134/210

#### Land Use

- **State Lands**: Nearly 258 Donums
**Site Selection Process**

**Site 2: Assira Ashamalya**

- **Provisional Site**: Assira Ashamalya
- **Distance from Nablus**: 7 KM

**Master Plan**
- **Roads**: Proposed Site, Assira-Nablus Road
- **Infrastructure**: Proposed Site

**Criteria and Evaluation**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight (1-5)</th>
<th>Criteria Value</th>
<th>Rank (1-5)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope</td>
<td>3</td>
<td>12%</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Transportation</td>
<td>5</td>
<td>---------------</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Distance to a main road</td>
<td>3</td>
<td>1.7 KM</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Distance to the nearest community</td>
<td>5</td>
<td>1.7 KM</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Distance to services School, Health</td>
<td>3</td>
<td>2 KM</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Infrastructure availability</td>
<td>5</td>
<td>---------------</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Land price</td>
<td>5</td>
<td>15 JOD/M²</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Not damaging Natural resources</td>
<td>4</td>
<td>---------------</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Security</td>
<td>4</td>
<td></td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>5</td>
<td></td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

**Total**: 118/210
**Site Selection Process**

**Site 3: Jericho**

- **Jericho Master Plan**
  - **Jericho Master Plan boundary**
  - **Proposed Site**
  - **Built Up Area**

- **1.5 KM From City Center**
  - **Proposed Site**
  - **Built Up Area**
  - **Roads**

- **Proposed Site**
  - **State Lands**
  - **Restricted Area**

**Nearly 245 Donums**

**Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight (1-5)</th>
<th>Criteria Value</th>
<th>Rank (1-5)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope</td>
<td>3</td>
<td>2%</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Transportation</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Distance to a main road</td>
<td>3</td>
<td>350 M</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Distance to the nearest community</td>
<td>5</td>
<td>500 M</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Distance to services Schools, Health</td>
<td>3</td>
<td>0.4 – 1 KM</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Infrastructure availability</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Land price</td>
<td>5</td>
<td>70 JOD/M²</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Not damaging Natural resources</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Security</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total**

124/210
Site Analysis – Land Selection

- Buildings
- Land Border
- Road

258 Donums

50.7 Donums

Selected Site
- Closer to Arraba
- Larger Area
- The other part is used for planting trees

37.7 Donums

Proposed afforestation area

31.3 Donums

Proposed agricultural school

19.4 Donums

Park and Kindergarten
Jenin Governorate

Arraba

Jenin City

Built up area

Project Site

Population 2016

<table>
<thead>
<tr>
<th></th>
<th>Arraba</th>
<th>Qabatiya</th>
<th>Ya'bad</th>
<th>Kufr Ra'i</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12330</td>
<td>23860</td>
<td>16953</td>
<td>9153</td>
<td>62296</td>
</tr>
</tbody>
</table>

Distance

<table>
<thead>
<tr>
<th></th>
<th>Jenin</th>
<th>Ya'bad</th>
<th>Qabatiya</th>
<th>Kufr Ra'i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arraba</td>
<td>11Km</td>
<td>7Km</td>
<td>6Km</td>
<td>6.5Km</td>
</tr>
</tbody>
</table>
## Site Analysis – Political Classifications

The map shows the locations of different areas and settlements, with the project site indicated. The legend includes:
- **C Area**
- **B Area**
- **A Area**
- **Settlements**
- **Built up area**
- **Project Site**

### Table: Area Classification

<table>
<thead>
<tr>
<th>Area</th>
<th>A (Donums)</th>
<th>B (Donums)</th>
<th>C (Donums)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>34.4</td>
<td>16.3</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>Donums</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>68%</td>
<td>34.4</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>32%</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Site Analysis - Topography

Contour Lines

1 km

Master plan boundary
Project Site

Arraba

Elevation
480-520
440-480
400-440
360-400
320-360
280-320
240-280
200-240
180-200

270-280
250-270
230-250
215-230
360-380
340-360
320-340
300-320
300-320

16% Slope
220m

19% Slope
95.8m

6% Slope
196m
Mention for the teachers that there are private clinics.

Arraba entrances

Recreational

Primary School

Mosque

Civil Defence

Health

Kindergarten

Municipality

Police

Pharmacy

Taxi Station

Primary & secondary School

Secondary School

Project Site

Site Analysis – Existing Services

1 km
Service Coverage

**Historical Area**
- Arraba entrances
- Local Market

**Taxi/Bus Station**
- Local Market & Primary School
- Health Service

<table>
<thead>
<tr>
<th>Service</th>
<th>Walkable Distance</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary School</td>
<td>500m</td>
<td>✗</td>
</tr>
<tr>
<td>Secondary School</td>
<td>800m</td>
<td>✓</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>300m</td>
<td>✗</td>
</tr>
<tr>
<td>Health Service</td>
<td>800m</td>
<td>✗</td>
</tr>
<tr>
<td>Mosque</td>
<td>800m</td>
<td>✗</td>
</tr>
<tr>
<td>Local Market</td>
<td>500m</td>
<td>✗</td>
</tr>
<tr>
<td>Police</td>
<td>800m</td>
<td>✓</td>
</tr>
<tr>
<td>Civil Defence</td>
<td>1500m</td>
<td>✓</td>
</tr>
<tr>
<td>Bus/Taxi Station</td>
<td>400m</td>
<td>✗</td>
</tr>
</tbody>
</table>
Site Analysis - Accessibility

- Historical Area
- Schematic Plan Borders
- Project Site
- Distance Line
- Arraba Entrances

Local Market

1.7 KM

3 KM

2.8 KM

1 KM

Site Analysis - Accessibility
Site Analysis – Land use around the site

- Project Land
- Cafeteria
- Kindergarten
- Multi use hall
- Residential Buildings
- Proposed Public water reservoir

Existing condition

Open Areas

Water Well
Playing Area

Swimming Pool

Site Analysis – Arraba Park

13.2 Donums Park

2.5 Donums

Multi Use Hall

Cafeteria

Sustainable Housing
Site Analysis - Views

Kindergarten

- Center Lines
- Agricultural roads
- Bowed Road
- Park
SUSTAINABLE HOUSING

SITE ANALYSIS – NATURAL VEGETATION

Project Site
Rocky Area
Plants

Site Analysis – Natural Vegetation
Site Analysis - Sun Path

Project Site

8:00am

NE wind

North Direction

SW wind

summer sun
winter sun

Project Site
Site Analysis – Sun Path

1:00pm

Summer sun
Winter sun

NE wind
SW wind

North Direction

Project Site
# Proposed Water Reservoir Site Analysis – S.W.O.T

<table>
<thead>
<tr>
<th><strong>Strength</strong></th>
<th><strong>Weakness</strong></th>
<th><strong>Opportunities</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sufficient Area (State Land)</td>
<td>Slope</td>
<td>Adjacent to Public Park</td>
<td>No Public Transportation</td>
</tr>
<tr>
<td>Not Biodiversity Land</td>
<td>Land Shape</td>
<td>Beautiful Spectacle</td>
<td>Close to C Area</td>
</tr>
<tr>
<td>Not High Agricultural Value</td>
<td>No Walkable Primary School</td>
<td>Adjacent to Kindergarten</td>
<td>Accessible From one Road</td>
</tr>
<tr>
<td>Existence of Water Reservoir (For Park Use)</td>
<td>No Walkable Local Market</td>
<td>Electricity Availability</td>
<td></td>
</tr>
<tr>
<td>Proposed Water Reservoir (For Public Use)</td>
<td>No Walkable Health Service</td>
<td>Water Availability</td>
<td></td>
</tr>
<tr>
<td>Location on the Top of a Hill Covered by The Master Plan Good Wind and Sun Exposure</td>
<td>No Sewage Network</td>
<td>Existence of Many Services in Arraba</td>
<td></td>
</tr>
</tbody>
</table>

## Service Coverage
- Civil Defense
- Police
- Mosque
- Secondary School
- Arraba Park
- Master Plan borders
- Contour Lines
- Kindergarten
- Project Site
- Existed Water Reservoir - Park Use
- Arraba Fields
- State Land

---

**Arraba Fields**

**Project Site**

**Arraba Park**

**State Land**

**Civil Defense**

**Police**

**Mosque**

**Secondary School**

**Master Plan borders**

**Service Coverage**

**Contour Lines**

**Kindergarten**

---
### Site Analysis - S.W.O.T

<table>
<thead>
<tr>
<th>Strength</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Sufficient Area - State Land</td>
<td>- Slope</td>
<td>- Adjacent to Public Park</td>
<td>- No Public Transportation</td>
</tr>
<tr>
<td>- Not Biodiversity Land</td>
<td>- Land Shape</td>
<td>- Beautiful Spectacle</td>
<td>- Close to C Area</td>
</tr>
<tr>
<td>- Not High Agricultural Value</td>
<td>- No Walkable Priamry School</td>
<td>- Adjacent to Kindergarten</td>
<td>- Accessible From one Road</td>
</tr>
<tr>
<td>- Existence of Water Reservoir (For Park Use)</td>
<td>- No Walkable Local Market</td>
<td>- Electricity Availability</td>
<td></td>
</tr>
<tr>
<td>- Proposed Water Reservoir (For Public Use)</td>
<td>- No Walkable Health Service</td>
<td>- Water Availability</td>
<td></td>
</tr>
<tr>
<td>- Location on the Top of a Hill Covered by The Master Plan Good Wind and Sun Exposure</td>
<td>- No Sewage Network</td>
<td>- Existence of Many Services in Arraba</td>
<td></td>
</tr>
</tbody>
</table>

### Weakness & Threats

- C Area
- Project Site
- Master Plan borders
- Service Coverage
  - Health
  - Local Market
  - Public Transportation Line
  - Project Access Road
  - Taxi Station
**Sustainable Housing**

Concept Development

Arraba Historical Area

Housing units and shared Space

Traditional Design

Social economic Environmental

Arraba Houses

Arraba fields

green Space

$
Sustainable Housing

Concept Development

Urban Morphology

Project Site

100 m

61.5 Donums

17.3 Donums

2.5 Donums

100 m

200 m

61.5 Donums

17.3 Donums

2.5
<table>
<thead>
<tr>
<th>Floors</th>
<th>Apartments</th>
<th>Area</th>
<th>Parcel</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Floor1" /></td>
<td><img src="image2.png" alt="Apartment1" /></td>
<td>125 m²</td>
<td>550 m²</td>
</tr>
<tr>
<td><img src="image3.png" alt="Floor2" /></td>
<td><img src="image4.png" alt="Apartment2" /></td>
<td>140 m²</td>
<td>600 m²</td>
</tr>
<tr>
<td><img src="image5.png" alt="Floor3" /></td>
<td><img src="image6.png" alt="Apartment3" /></td>
<td>180 m²</td>
<td>500 m²</td>
</tr>
</tbody>
</table>

**Housing**

**Services**

- Primary School: 2000 m²
- Mosque and Clinic: 300 m²
- Commercial Center: 1000 m²
- Bus Station: 300 m²
Sustainable Housing

Parcels and Units

100 m

100 m

100 m
Spaces and Circulation

- Parking Area
- Spaces
- Circulation Corridors

Sustainable Housing

Swimming Pool

Scale: 100 m
Sustainable Housing

Plan Analysis

61.5 Donums

100 m

%

19%

Built up Area

25%

Streets

Total

166 Family

16

96

17

64

6

6

830
Sustainable Housing

Sustainable Design Proposals

Local Construction Materials

Treatment Plant And Sewage System

Solar Cells

Open Spaces

Walkability

Playing Areas
IT'S JUST THE BEGINNING!