

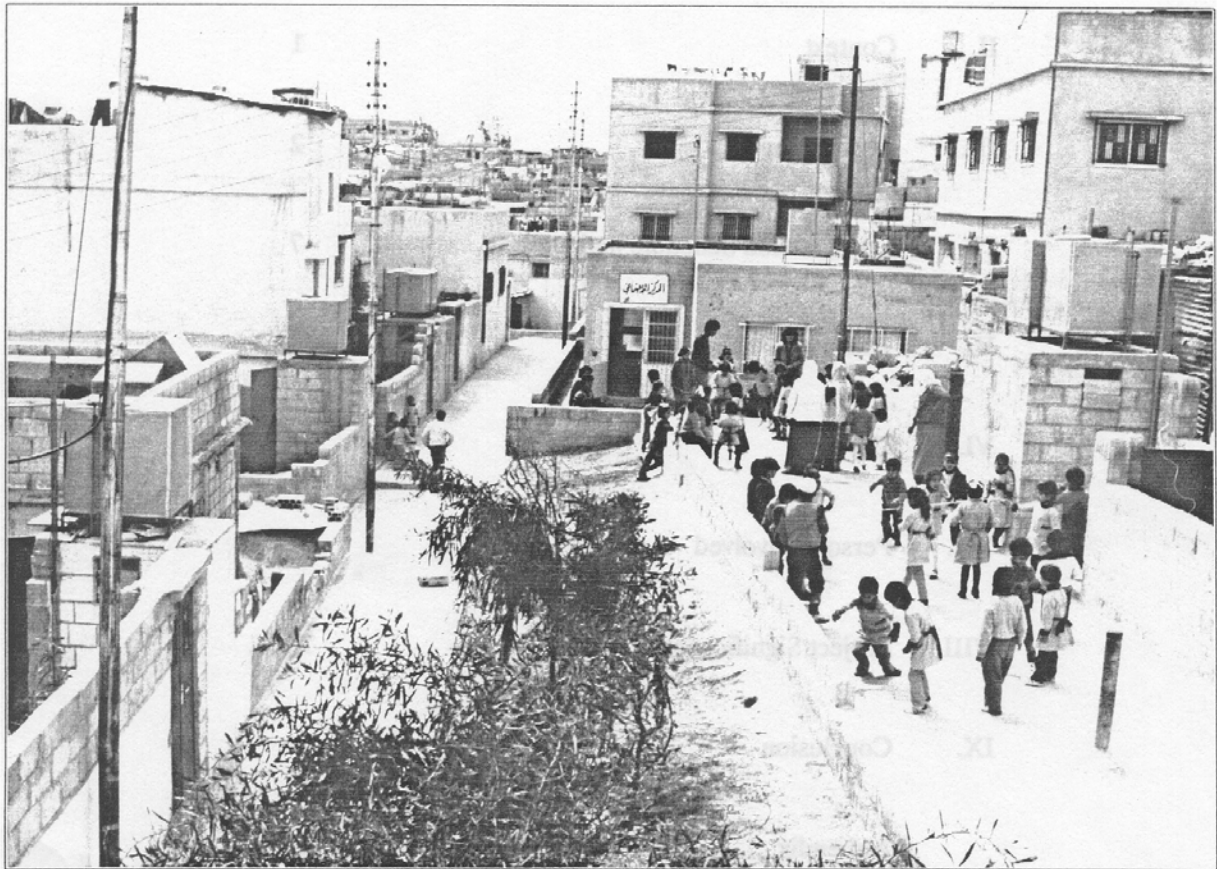


1992 Technical Review Summary
by *Jolyon Leslie*

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East Wahdat Upgrading Programme

Amman, Jordan



Architect

Urban Development Department
Amman, Jordan

Client

Urban Development Department
Amman, Jordan

Completed

1984

I. Introduction

The East Wahdat Upgrading project was undertaken within the scope of the 1980 Urban Development Project of the Government of Jordan. The project aimed to improve living conditions for residents of informal settlements, which at the time comprised about a quarter of all new housing development within the city of Amman. The upgrading of East Wahdat has demonstrated replicable measures that could help to meet growing demands for affordable housing in urban areas of the country. Some 4'000 inhabitants enjoy improved services and living conditions, and the area has seen significant investment in housing construction as a result of granting of tenure to inhabitants. Employment has been created through construction of workshops and shops as part of the scheme, and loans made available for the establishment of small businesses. Community facilities for women and children have been developed in the process of upgrading.

II. Context

a. *Historical Background*

Since the establishment of Amman as the capital in 1922, and the independence of the Hashemite Kingdom of Jordan in 1946, the country has become highly urbanised. Urban growth is the result both of migration from rural areas, and of the influx of refugees from Palestine since 1948, and after the 1967 war with Israel. Up to three quarters of urban residents in Amman are estimated to be of Palestinian origin. More recently, large numbers of ex-patriate Jordanians and Palestinians expelled from the Gulf since 1991 have returned to settle in the city, increasing pressure on housing.

More than 70% of the three million inhabitants of Jordan are estimated to live in urban areas, with two-thirds of these resident in greater Amman. The national population growth rate is 4%, with the urban population growing at a rate of 5%. The result is that Amman has faced problems typically associated with rapid urban growth. High urban land prices, a lack of affordable finance and restrictive regulations had, until the 1970's, denied most low-income urban communities access to adequate permanent shelter. As in many other developing cities, the only option for the urban poor was to build basic shelter on land they did not own. The lack of secure tenure limited investment in services or facilities for these communities, who became increasingly marginalised.

In response to these issues, the first Urban Development Project was formulated - as part of the Jordan Urban project -, with assistance from the World Bank, to address the problems of rapid urban development. The objective was to combine the provision of affordable shelter through sites and services schemes and upgrading with parallel activities in social and economic development, aimed at some 400'000 to 500'000 people in low-income groups. With this in mind, the specific aims of the first Urban Development Project (1980-87) were to:

- develop 3'000 sites and services plots (22'000 inhabitants),
- upgrade four informal settlements (13'000 inhabitants),
- provide assistance for establishment of small businesses,
- provide educational and health services on upgrading sites,
- train staff in management of urban development projects.

The Urban Development Department (UDD) was established in 1980, as an *ad-hoc* agency charged to implement the first Urban Development Project, under the auspices of the Municipality of Amman. A multi-disciplinary organisation, it became the agency responsible for developing appropriate responses to shelter needs for low-income groups. With initial support from consultants, UDD was responsible for the formulation and implementation of upgrading at East Wahdat.

b. *Local Architectural Character*

While there is no unified architectural character to the area, a rich and diverse fabric of housing has been built over steep hillsides, demonstrating the resourcefulness of inhabitants in their use of space. Areas of dense settlement are divided by a network of side streets and alleys between plots of varying sizes and shapes. Homes vary widely in form, size and style, and range from single-storey corrugated iron shacks to four-storey apartment blocks. Land is increasingly used for multiple occupancy buildings. The most common external materials used are concrete blockwork - often painted or plastered - or stone facing. The intensive use of roofs as domestic space, for storage, water tanks and aerials, is one of the strongest visual aspects of the site.

c. *Climatic Conditions*

Amman enjoys a temperate climate. Winter lasts for five months, with an average temperature of 13°C, which can drop below freezing at night. There are occasional light snow falls. Summers are dry, and last from May to September, with an average temperature of 32°C. Diurnal temperature ranges make the use of load-bearing construction desirable to regulate the internal environment during winter and summer.

d. *Site Context*

Access to the site is from Usama Bin Zayd Street which rises from the valley to the east. There are three main vehicular access points to the site from this main road, by means of secondary roads developed under the upgrading project. The northern boundaries of the site are marked by commercial development built during the project. Adjacent to this commercial area, an open area has been landscaped for use by inhabitants of the neighbourhood. This forms a welcome green space in a densely built-up environment.

A dense area of housing to the south and west, the Wahdat refugee camp, is initially difficult to distinguish from the upgraded area. Upon closer inspection, however, this (UNWRA-administered) settlement is apparently much less-developed than the East Wahdat site. Houses share similar construction techniques, but tend to be more modest than those in the upgraded site, rarely rising above two-storey. Investment in compound walls, access paths and social facilities is also limited. As access has not been improved, there is a greater sense of congestion (and waste) in the narrow alleys and streets that divide homes.

e. *Site topography*

Amman is built on a range of hills, and East Wahdat lies on a site that varies in level some 50 m from the highest (southern) point to the main road to the north. Housing, roads and pathways developed during the upgrading exploit the varied topography, with paths following contours or stepped when on steep gradients. Within the site, a gully runs towards the north-east, draining to the green space which lies on the northern boundary.

III. Description

a. *Reasons for the Programme Formulation*

Within the context of the first Urban Development Project, the East Wahdat programme was one of four upgrading projects aimed at improving illegal settlements in Amman.

The East Wahdat site was occupied prior to the project by about 500 families, living in some of the worst conditions in the city. The owner of the land had forbidden the construction of permanent shelter, and this resulted in an assortment of corrugated iron shacks, with no services

on the site. Homes were overcrowded, with an average of 4.2 persons per habitable room, and four out of five families lived in one or two rooms. The average household size was seven persons, with eight out of ten families living in homes of two rooms or less. Population density (310 persons per ha), however, allowed for effective sub-division of the land, and avoided displacement of residents during the upgrading process.

Before the project, water was brought to East Wahdat by trucks, and families relied on pit latrines for sanitation. The site was divided by an open sewer running from the Wahdat refugee camp to the west, which was also used to dump refuse. Infant mortality was 68 per thousand births. Unemployment was rife, with nine out of ten families having only one income-earner, most of whom were casual workers in the nearby vegetable market, or on construction sites. Family incomes were estimated at JOD 40 to 90 (USD 118 to 265) per month.

An assessment of the potential for sustainable upgrading of the site was made by the consultants, who recommended East Wahdat for priority attention. An apparent willingness of the community to pay for upgrading of homes and services was an important factor in this choice.

b. General Objectives

The general objective of the project was to improve living conditions for one of the most marginal urban communities in the city. The emphasis from the inception was one of affordable measures which might be replicable elsewhere. Specific objectives were:

- to provide security to existing residents,
- to avoid displacement of inhabitants of the site,
- to rationalise plot layouts for registration,
- to provide basic services,
- to recover costs of development from inhabitants,
- to provide loans for self-built improvements.

c. Functional Requirements

Functional requirements for the project were broad-ranging, governed by the objectives of that which is sustainable and affordable. In pursuit of these objectives, a number of principles underly the functional aspects of the scheme as built:

- Plot areas and configurations had to match the physical needs of residents for space with their ability to pay for land and services, while taking in to account optimal layouts.
- Rationalisation of the plot layout had to free a proportion of land for sale for housing, to help finance the wider upgrading process.
- Advantage had to be taken of prime locations to develop shop and workshop units for sale at market prices, to provide an element of cross-subsidy within the scheme.
- Provision had to be made for access to all plots on the site *via* pedestrian footpaths, with some vehicular access and parking, while avoiding routes that might cause through traffic.
- Infrastructure (sanitation, water supply, electricity, waste disposal) had to be provided to acceptable technical levels at minimal cost as part of the upgrading process.
- Appropriate community facilities should be provided within the settlement.

d. Project Data

East Wahdat occupies an area of about 8 ha, and lies about 2 km in the south-eastern part of central Amman. The area was originally settled by a total of 5'000 people (473 households in 394

homes), with a variety of plot sizes. Homes were all built of temporary materials, with no services or amenities on the site.

The upgrading programme has made available 524 serviced plots, as well as serviced land for 58 shops and 24 workshops. The area was inhabited by about 427 households in 1985; 98% of residents have access to water, 96% to mains sewerage, and 99% access to electricity supplies. Infant mortality was estimated at 55 per thousand births in 1985. Density of housing is rising with increased investment in construction on the site.

e. Evolution of the Project Concept

The project concept was developed within the overall aims of the first Urban Development Project. The most important principles underlying the approach were (in order of importance judged by the reviewer):

- that project costs be kept as low as possible through stringent design standards and development of a range of options adapted to the revenue of inhabitants, coupled with cross-subsidies from sales;
- that the project be cost-effective and replicable, with as little non-recoverable investment as possible to ensure a sustainable programme for low-income communities;
- that legal tenure be granted to residents to encourage investment in the neighbourhood, thereby increasing the economic security of low-income families who own property;
- that a process of incremental building be encouraged to suit the income of individual households and their spatial needs;
- an emphasis be laid on self-help through the provision of building materials, loans, technical advice, vocational training and basic community facilities for residents.

Based on these principles, technical decisions were made at an early stage of the project after in-depth assessments of costs and cost-recovery. Many on-site decisions were made about detailed aspects of the layout (alignment of pathways, details of stairs) during the construction phase.

Close co-operation between UDD staff and the beneficiaries in both technical and social aspects of the upgrading process have helped to ensure that improvements were appropriate to user needs. Regulations were enforced to guarantee minimum standards where necessary. In some cases, regulations that were aimed at some degree of uniformity of development were subsequently relaxed, in response to experience during the upgrading work. These changes did not affect the technical performance of services or facilities.

Response to Physical Constraints

The project responds to the various physical constraints of the site in a number of different ways. At the planning level, maximum use has been made of the rich site topography to provide appropriate space for housing and amenities. This has had to be reconciled with requirements for services, whose costs were determined by the efficiency of the layout of plots.

Attention has also been paid to the constraints on access to the site, and to individual homes. A system of pedestrian paths serves all parts of the site, with one quarter of homes having direct access to roads. The network of routes has been planned to meet access needs, as well as requirements for communal outdoor space for the inhabitants.

Response to User Requirements

The development of an effective response to user requirements has been one of the principal objectives throughout the project, in terms of appropriate cost limits and an appropriate spatial organisation.

Most technical aspects of intervention were based on the findings of extensive socio-economic surveys carried out at an early stage, in order to determine the feasibility of the upgrading process.

An early response to user requirements was the need to avoid displacement of families from their homes during upgrading. Careful attention was paid to a sequence of re-locating the original house (usually built of temporary materials) to the edge of the plot, to allow for the installation of services and provision of the "service cores" that were built on each plot. Where improvement work required demolition, the UDD gave priority to those affected to be re-allocated plots elsewhere.

During the project, residents were encouraged to make use of technical advice through UDD about construction and design of more permanent homes. A system of modelling was used to design homes together with the prospective "clients". Close contacts developed between UDD staff and the community of East Wahdat also helped to inform decisions about the design of outdoor spaces, and the nature and location of community facilities and services on the site.

UDD continues to assess the impact of the project through surveys (1985, 1989). A study of the sustainability of the upgrading process has been conducted during 1990/1 together with the Unit for Housing and Urbanization of the Harvard University Graduate School of Design, to assess the effect of transformations brought about by development pressures in a number of upgrading areas.

Formal Aspects

The project has set out to address basic shelter needs, and has not on the whole dealt with formal architectural issues.

Landscaping

There has been considerable landscaping and planting as part of the process to improve living conditions in East Wahdat. In many cases, individual householders have landscaped their plots to shade external areas or provide privacy. From the start of the project, the provision of planting in public areas was seen as integral to the scheme. In some cases these plots have been "privatised" to ensure their upkeep until trees are sufficiently well-developed to survive. A sizeable part to the north-east of the site has been developed as a park and planted with trees, although it seems little used at present. Elsewhere, care has been given to create small outdoor spaces along pedestrian routes, to encourage interaction between residents in public areas.

f. Structure, Materials, Technology

Structural System, Materials, Technology

The most common form of structure built by residents of East Wahdat for homes is the reinforced concrete frame, as is prevalent throughout Amman. A demonstration home built by UDD using load-bearing blockwork proved not to be popular amongst prospective house-builders. Most homes built at the early stages of the scheme were of plastered concrete blocks as infill between a reinforced frame. These replaced shelters of corrugated iron, of which there are still a number on sites occupied by the poorest members of the community. Recently, greater numbers of new homes make use of improved finishes on elevations; these include stone facing which is common to middle-income areas of the city.

Services and Site Utilities

The provision of building services has been governed by the link between standards and affordability. Based on studies undertaken at the inception of the project, the following design standards were adopted (in approximate order of realisation):

- as a priority, a sewerage network was laid with connections to each plot. Every household was required to build or pay for a sanitary core unit to provide immediate facilities and connect it to the main sewer;
- water supply network with connections to each plot (water storage tank on the sanitary core unit);
- surfaced footpaths of 2-3 m width, with steps where necessary, linking all plots to roads and open spaces;
- improvement and re-alignment of storm water drainage, with provision of culverts as necessary;
- surfaced roads of 5.5 m width, brought to within 40 m of 70% of plots;
- provision of individual electrical connections to each house, with street and footpath lighting;
- containers for solid waste collection placed on a number of sites accessible by vehicles, to allow for collection;
- construction of a community centre, womens' centre and health centre to serve residents of the site.

g. Origins of Technology, Materials, Labour and Professionals

Technology and Materials

The origins of technology and materials chosen for upgrading were essentially local, as they differ little from those commonly used elsewhere in Amman. Assistance with design and construction issues was an important part of services offered through the project during implementation. UDD staff have been involved in assisting individual households to decide on the most cost-effective way of improving their homes. A system of modelling was used to demonstrate possible spatial layouts to beneficiaries.

Labour

Skills used in buildings of the type constructed in East Wahdat are widely available in Amman. The project based its upgrading concept on maximum use of self - and mutual - help, where families might use their own labour or help each other to re-build homes, in order to keep costs down. This seems to have been an appropriate assumption, especially during the early stages of the project. UDD staff were active in encouraging employment of local craftsmen and labourers for hire on the project, by use of a register to identify those with proven ability to owners.

Professionals (architects, contractors, consultants)

It was decided at an early stage to use the first Urban Development Project as a means of on-the-job training for national professionals involved in issues of managing urban growth. In this respect, the project was essentially carried out by Jordanian staff.

At an early stage a multi-disciplinary team was formed within the Urban Development Department (of the Ministry of Public Works and Housing) of architects, engineers, social scientists, economists, who worked initially under the direction of the Jordanian consultants, Jouzy and Partners with their international associates, Halcrow Fox. An important output of the project

has been the experience provided to young national professionals, who were responsible for most aspects of the project in the field.

The contract for civil engineering works was let after international tender and work was carried out by the China State Construction Company.

IV. Construction Schedule and Costs

a. *History of Project*

The project was conceived within the first Urban Development Project, which covered the period 1980 to 1987. The East Wahdat scheme was identified for priority attention after feasibility studies carried out by consultants between 1978 and 1980. This was followed by the establishment of the Urban Development Department early in 1980. Work on detailed proposals for the site were begun by UDD in June 1980. Field surveys were conducted to specify details of the physical environment, together with registration surveys in October and November 1980, to collect socio-economic data and determine the rights of residents to participate in the scheme.

The layout plan for the site was prepared during 1981, and submitted to the Municipality of Amman and the World Bank for formal approval of development proposals. Loan negotiations were conducted with the Housing Bank and the government in mid-1981. Following approval, UDD began negotiations for purchase of the freehold of the site, which were completed by April 1981. Based on detailed designs, UDD began to enact the new plot layout and begin conveyance of title to individuals in May 1981. Work on perimeter walls and sanitary cores was begun in January 1982, with the first water connections made in August 1982.

At an early stage, the first households allocated plots in the new layout were required to move their shelter on to the new plot, to allow for construction of paths, roads and services. During this phase, UDD staff were involved in technical advice to residents on design of their new homes. On the basis of designs being cleared by UDD, formal licenses were issued for individual construction work to begin. At the same time, a community centre, women's training centre, health care centre and mosque were built on the site in East Wahdat. Most contracted works were completed by June 1984. UDD kept a project office on the site until 1990, in order to maintain contact with the community and provide a platform for follow-up work where needed.

b. *Total costs and sources of finance*

The main sources of finance for East Wahdat were the World Bank (31%), the Government of Jordan (25%) and the Housing Bank (44%).

The total cost of the project was JOD 2'074'521 (or USD 7'053'370) with an average of JOD 2'928 (USD 9'955) per housing unit upgraded or developed. Seventy-five per cent (JOD 1'543'200) is recoverable, with overheads as the principal non-recoverable element. Base costs can be broken down as follows:

Jordanian Dinars	
Land acquisition	633'000
Site preparation	6'900
On site infrastructure	272'400
Off site infrastructure	66'800
On plot development	361'000
Materials/construction loans	40'100
Shops/workshop development	163'300
Community facilities	106'400
Design/supervision	72'000

Project management	150'000	
Technical assistance	39'000	
Subtotal (base costs)		JOD 1'910'900
Maintenance, follow up	163'621	
Total project cost		JOD 2'074'521

USD = JOD 0.29, Jordanian Dinars.

The availability of finance for households in East Wahdat has been an important determinant of the project concept. Seventy-eight per cent (78%) of households in 1990 had a "first commitment loan" mostly from the Housing Bank, to cover the costs of plot charges. Sources of individual finance for construction are varied, and combine personal loans and accumulated savings. Those building homes on infill plots have tended to borrow in the formal financial market, reflecting their (generally higher) incomes. The overall proportion of those who benefit from formal credit is under 30%, limited to families who can rely on stable income.

c. Qualitative Analysis of Costs

While costs are high in comparison to low-income programmes in other developing contexts, the price of upgrading to residents of East Wahdat is low when considered against prevailing costs of housing in the city. This is mainly due to the reliance on self-built techniques for improvements, and the ability of the UDD to negotiate contracts for the project utilities, rather than relying on utilities corporations to undertake the work. Overheads have also been kept to a minimum.

One important aspect of the financial viability of East Wahdat has been affordability, and how households have been able to raise funds for the purchase of plots and construction. The principle of cost-recovery is an important theme throughout the project, with the average monthly payment for development costs at JOD 27 (USD 93) per household. The issue of how households mobilize resources to pay such costs is crucial in the current climate of economic downturn, as incomes decrease for marginal groups. Surveys during 1990 show that most households below the poverty line have responded by reducing expenditure, contracting additional debt or seeking additional income through employment. Middle-income groups have responded by leasing part of the house.

d. Maintenance Costs

Maintenance costs of the project infrastructure are seen to have totalled about JOD 163'621 since project completion in 1984, or an average of JOD 32'725 per annum. This must be considered to be efficient in an infrastructure-intensive project such as this, where services have been kept to basic standards to ensure affordability.

The cost of maintaining utilities and infrastructure is likely to increase with the age of the site, and is the subject of the current assessment of the sustainability of this and other projects. The key issue is how increased densities, coupled with lack of maintenance, can erode the sustainability of improvements and the longer-term conditions of upgraded sites.

V. Technical Assessment

a. Functional Assessment

The project has clearly fulfilled the variety of functional requirements of the users, by adapting to changing needs and aspirations that have developed with time. One indicator of functional success is continuing high rates of investment in housing in the area as a result of changes in tenure.

Upgrading has clearly helped to alleviate overcrowding, which showed a decline between 1981 and 1985 (due to intense building activity in early years of the project) from 4.7 to 3.4 persons per room. Over ninety per cent (90%) of new dwellings have two or three rooms, compared to the high proportion of one or two room homes prior to upgrading. The period since 1985 has seen a gradual improvement of new construction, despite a drop in per capita incomes in line with wider economic difficulties in the country. Most of those wishing to move from the site since its upgrading have cited limited space for development as their motive, indicating that such households can afford larger homes and are not deterred by the costs of housing per se.

Currently almost all homes have direct access to municipal sewerage, water supply and electricity. Survey work carried out on the site during 1990 demonstrated a striking absence of problems with infrastructure, even though some of the standards adopted for development were below the regulation norms.

b. Climatic Performance

The climatic performance of buildings on the site is felt to be adequate for the range of temperatures experienced in Amman. Controls on the plot density and height of individual development has helped to create pleasant outdoor spaces within plots and in public spaces and pathways. This has been enhanced by extensive planting by residents.

c. Choice of Materials, Level of Technology

The project staff had a rôle in advising residents about choices of building form, and materials. In this they were primarily guided by costs in relation to revenue, which appear to have matched the means of most households. It is interesting to note that the one demonstration unit built on the site to serve as a model for those improving their homes has not been copied, and is not considered popular. This might be due to the choice of (inexpensive) load-bearing blockwork for walling. Most families have instead chosen concrete frames, which offers flexibility and is more familiar in the area.

d. Maintenance

The principal problem facing any upgrading site is one of maintenance, as short-term cost savings can become long-term liabilities, and funds need to be found to carry this burden.

Few alterations have been made to infrastructure on the site since its completion. It is perhaps significant that most residents consider UDD responsible for site maintenance and improvements after almost ten years of occupation, and formal hand-over of responsibilities to the municipal and utilities organisations. Despite this, 15% of households asked in 1990 responded that they would participate in endeavours to maintain the site.

On the level of the individual home, those who have invested in improvements are likely to maintain their homes once they have permanent title to the land. This is borne out by the high standard of maintenance seen in most homes on the site.

e. Design Features

During the course of the project, UDD staff imposed restrictions on densification within the site in order to avoid degradation of the environment. As pressure on land increases, the distribution of building heights according to location is important, particularly in a community like East Wahdat with its reliance on pathways for access to many homes. Current regulations permit two-storey structures on plots of less than 250 m², and three-storey structures on larger plots or on slopes in excess of 20%. At the time of upgrading, plot coverage (or floor area ratio) was limited to 70% for plots of less than 100 m², graduated for larger plots up to a maximum of 60% for plots of over 200 m².

These limits have, for the most part, been maintained, with development recorded in 1990 representing only 34% of the potential build-out allowable under the regulations. Currently 62% of homes are single-storey, 34% two-storey and 4% have more than three floors, which represents a significant increase in multi-storey dwellings since 1985. On average, plots with multi-storey buildings are larger, and average 137 m² against the overall average of 126 m². The majority of plots are now close to the 70% coverage, compared to close to 80% in other low-income communities in Amman. Floor area ratios for East Wahdat vary, with an averages between 0.72 (for single-storey) to 1.07 (for multi-storey), compared to 1.8-2.4 elsewhere. To date, average recorded floor area ratios are within standards for the project.

These lower rates of development attest to the vigilance of UDD staff in controlling development of the site. They are important in demonstrating how flexibility to user needs has been matched with concern for the overall quality of the environment.

VI. Users

a. Beneficiaries of the Programme

The upgrading process under the first Urban Development Project of 1980 was targeted at low-income families, mainly of Palestinian origin, living on occupied land, and many of whom lived in temporary shelter. An important issue in assessing the target beneficiaries was family income, which was estimated to range between JOD 40 and 90 (USD 136 to 306) per month at East Wahdat. Of the 4'000 people who benefitted from upgrading at East Wahdat, more than nine out of ten were those who had already settled and built on the site prior to the project. Of the total, 55% of households have re-built their houses, while 35% built new homes on vacant plots within the site.

Others to benefit from the programme are those able to make use of commercial space on the site, and those from neighbouring UNWRA settlements with access to improved facilities (community centre, health centre) and training as part of the project.

The project has continued to serve low-income groups within the community in East Wahdat despite reductions in household income due to wider economic difficulties in the country. This has seen monthly median income drop from JOD 130 (USD 442) in 1985 to JOD 120 (USD 408) during the 1990 survey. It is now estimated that at least 25% of the population are below the poverty line for Amman.

b. Response to the project

The most obvious indicator of response to the project has been a growth in investment in housing in the area. The average number of rooms per household has grown from 1.5 in 1981 to 2.7 in 1990. Initially, "reconstructed" homes (or those re-built on the same plot, with the original family still in place) were the first to expand. This reflects the need for those who bought "infill" plots (those developed for sale) to accumulate capital to cover cost of both land and building. Some of these infill plots are still undeveloped, but the reasons for this are unclear. Most infill plots are now developed to a comparable degree to those reconstructed.

According to a 1990 survey, most residents interviewed (and 70% of women) were pleased with their physical environment. The most positive aspect of improvements was felt to be the widening of streets and paths, with least positive aspects being plot sizes, shape or location. The issue of restrictive building regulations, and limits to change in land use were commonly criticised, often by those wishing to expand their homes. Another frequently-heard dissatisfaction at this stage is payment of interest on loans to banks, which is widely held to be unethical. This issue, which has emerged quite recently, has to some extent been addressed by recent moves to organise payment direct to UDD.

One means of evaluating perceptions of residents towards the environment is to investigate reasons for residents wanting to leave the site. During the 1990 survey, 13% of respondents claimed that they wanted to leave, but gave as reasons the restrictions on growth rather than expense. Given the scale and complexity of interventions on the site, problems indicated by households are minor.

In terms of social development, response to community facilities, training and income-generating activities started under the project have been positive. This is confirmed by the use of the facilities, as indicated by 77% attendance of the health centre, and the community centre used by 39% of residents on a regular basis.

VII. Persons Involved

a. Project Personnel

The project has involved a large number of professionals, with almost twelve years elapsed between the formulation stage and recent surveys to assess the impact of the scheme. For this reason, it is difficult to draw up a comprehensive list of all those involved in East Wahdat from its inception.

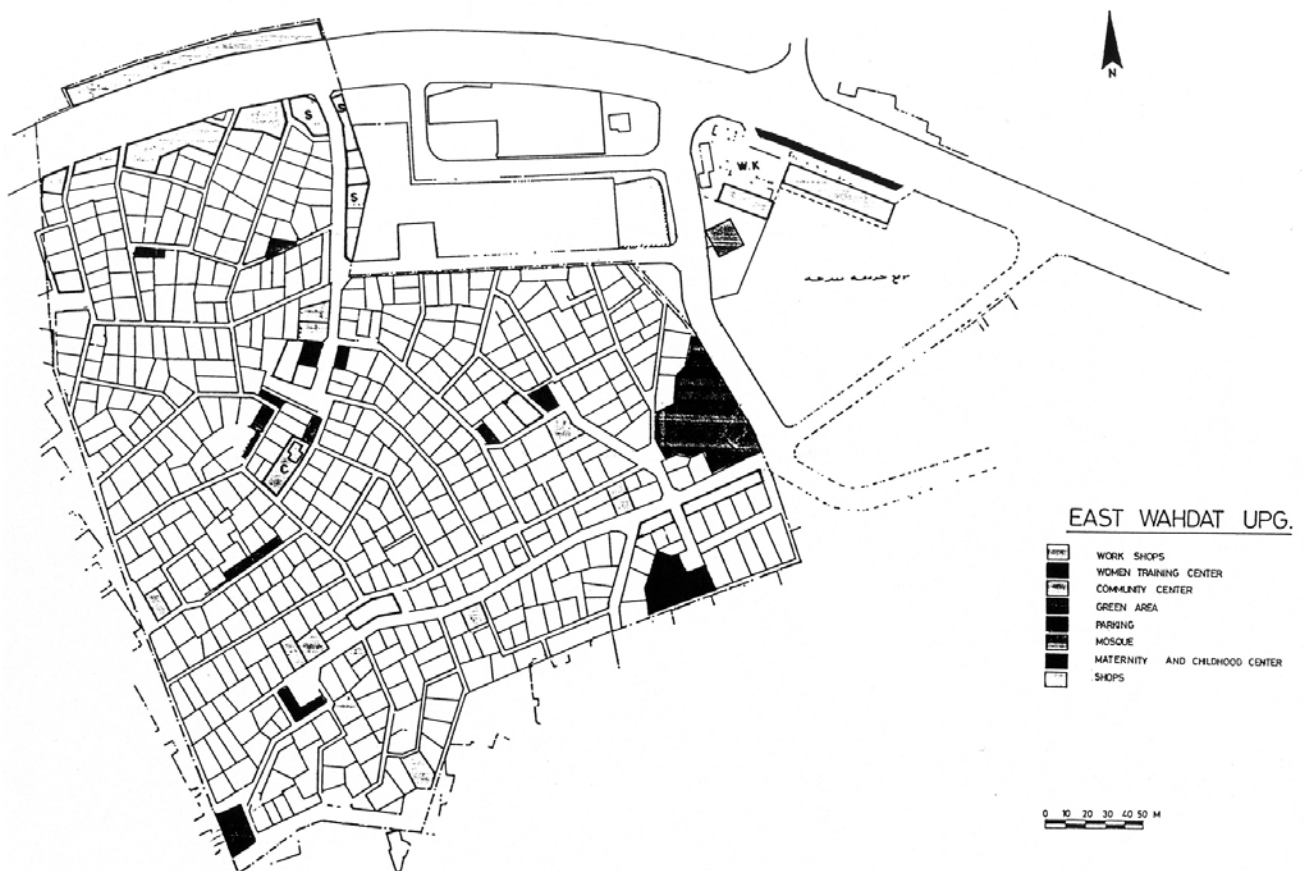
Consultants involved in preparation of feasibility studies for the (then-named) Jordan Urban Project were Jouzy and Partners together with Halcrow Fox and Associates of Amman.

Those involved in this stage of the work included David Walton (Project Director), Roy Brockman (economist), Rifaat Darghouth (architect), Elie Halaby (engineer), Salah Hariri (architect), David Jordan (sociologist). Specialist advice was provided by Mohammed Barhoum (sociology). Roger England (health planning), Najeeb Tleel (public health engineering) and Mick Yaxley (slum upgrading).

Within the Urban Development Department, among those principally responsible for the detailed design and management of the project from 1980 were its Director, Dr. Hisham D. Zagha, Khaled Jayousi and Majid Nabir (design and layout), Jemal Al Dali and Sawsan Daibas (social surveys), Rita Mansour and Nashwa Subh (house designs), Usama Rabeeh (civil engineering), Sahar Al Majali (financial aspects) and Eman E Riyal (marketing).

An important part of the upgrading process has been follow-up surveys to monitor development on the site, which have been carried out, among others, by Leila Bisharat, Magdy Tewfik, Steney Shami and Lucine Taminian. UDD staff currently involved in the study of sustainability of this and other projects include Hidayat Dajany (population affairs), Jamal Ibrahim Al-Dali (community development), Marah Jamal Al-Khayyat and Monah Batayneh (studies), and Ghaleb Khalil Al-Azzeh (social research).

Jolyon Leslie
Amman, May 1992



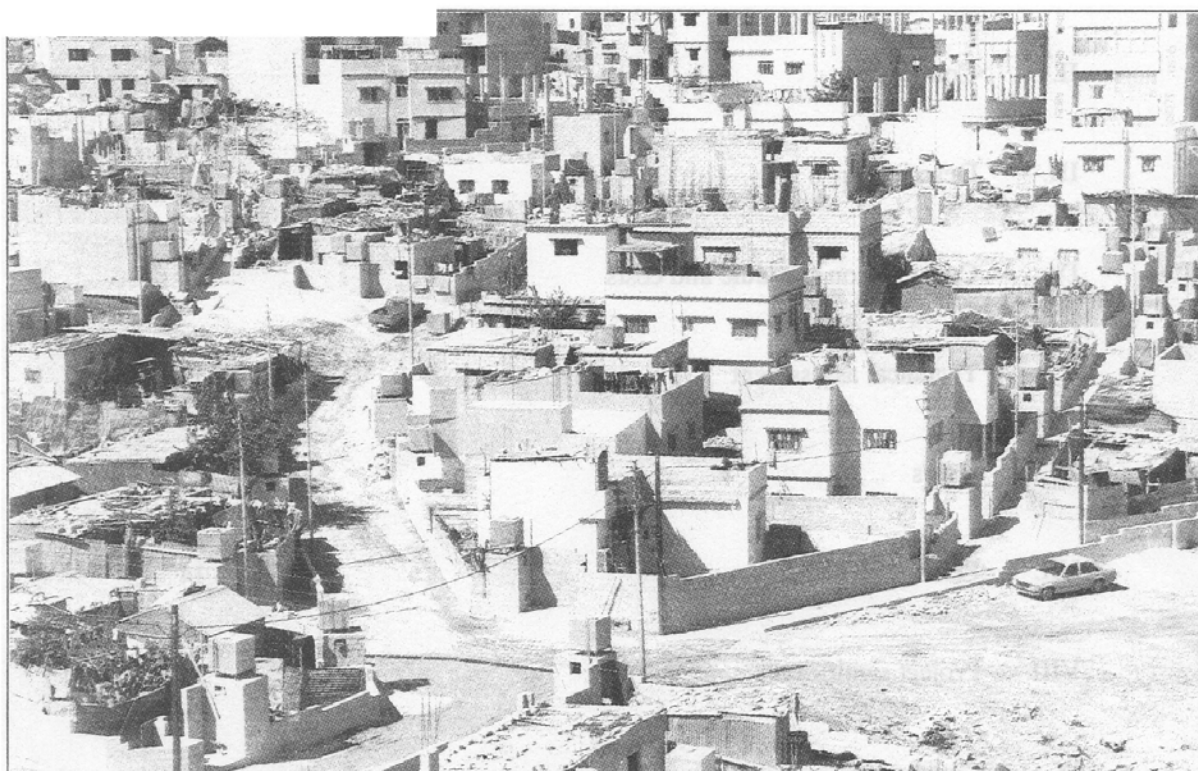


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I. Introduction

a. *The Jordan First Urban Development Project (UDP 1): 1980 to 1986*

Origins of the Plan

The project was undertaken in 1980, with assistance from the World Bank, to tackle the problem of rapid growth of unserviced squatter settlements in Jordan's urban centres, mainly in Amman. The expansion of such settlements is caused by the lack of affordable access to land, finance and technical assistance to the urban poor.

Project Objectives

The objectives of the project were to provide shelter and related infrastructure and community facilities to the lowest income groups at prices they could afford and with the minimum of subsidies so as to ensure replicability. The project was also to provide improvements in productivity among the urban poor through provision of loans to small businesses and vocational and commercial training to their employees.

Project Targets

- Site and services: development of 5'000 plots: to benefit 40'000 persons.
- Upgrading 4 low income settlements: to benefit 15'000 persons.
- Provision of small business assistance, manpower training, vocational training, vocation training for women and health assistance at education facilities at the above sites.
- Development of an Urban Development Department (UDD) and training of its staff, for the management and supervision of UDP 1, and for building up its capacity and capacity for designing and managing similar projects independently in the future.

Appointment of Consultants

To fulfil the objectives of UDP 1 and determine and help achieve its targets, Halcrow Fox and Associates, a British firm, were appointed as consultants, and Jouzy and Partners, as their Jordanian associates.

Funding

The project was funded by the Jordanian Government, the Housing Bank and the World Bank.

b. *The East Wahdat Upgrading Project*

East Wahdat is one of the low-income settlements that has been upgraded as a result of UDP1. Its inhabitants have acquired tenure security, water, sewerage, roads, electricity and health and educational facilities. The upgrading exercise has been carried out by the UDD with direction from the consultants.

II. Context

a. *Historical Background*

Amman is an old Roman settlement. The Roman remains include an impressive amphitheatre, fortifications and archaeological remains at Al Qal'a. However, it was a small settlement when the Emirate of Trans-Jordan was established under a British mandate after the Second World War. It became the capital of the Emirate in 1922, when the capital was moved from Salt. In 1946, after independence, the Emirate became the Hashemite Kingdom of Jordan. The population of Amman increased considerably due to the influx of refugees into the city as a result of the 1948 and 1967 wars with Israel. These refugees were settled in camps near the city centre. These camps expanded to become major squatter settlements. The population of the city in 1980, when the UDP 1 began, was 1.2 million and the present rate of growth is 4.3% per year. About 75% of this population consists of Palestinian refugees or their descendants.

b. *Local Architectural Character*

Underlying Unity of Appearance

Amman has a number of architectural styles belonging to different periods of its recent history and to different income areas. However, there is an underlying unity in all these styles. This is provided by the use of white lime stone as a building material, generally low rise construction (up to 3 floors), and the hills on whose sides this architecture is built. In the low-income settlements, concrete blocks are used with tin sheets for roofing. However, in most cases these houses are also painted white and their facades, like those of most buildings, are undecorated blank walls with openings punched into them. In all cases now stone is only used as cladding because it is far too expensive for structural use in load bearing walls. It is still used for surface treatment in such a big way in spite of its expense, because regulations require it in most middle and upper middle areas of the city. Most of the stone surfaces are chiselled smooth. However, in more recent architecture hammer dressed and rough textures are being used.

Technology of Construction

The structure of almost all architecture in Amman consists of a reinforced concrete frame and floor slab, cast-in-situ in timber or steel forms. The infill walls are of concrete block. External and internal renderings are of sand cement plaster. Flooring in terrazzo is common. The reason for the use of these materials is that aggregates are easily available in the hill torrents and cement is locally manufactured. In upper income groups, doors and door frames are usually of timber and windows of timber or aluminium. However, in poorer settlements, doors and windows are usually of steel with built-in steel grilles for security.

c. *Climatic conditions*

Amman has a Mediterranean climate. The winters, from November to early March, are cold and wet. Temperatures fall below freezing point at night though the average winter temperature is 13 degree centigrade. Summers are dry and hot with major variations between day and night temperatures. The average summer temperature is 32 degree centigrade. Spring, in March and April and Autumn in October and November, are both mild transitional periods.

d. *Immediate Surroundings of the Site*

Location

East Wahdat lies to the North of the Al Wahdat refugee camp. Just North of settlement is the Central Vegetable market, where a sizeable number of its residents work. The old commercial area of the Jabal Al Ashrafiyya is within walking distance.

Approach

From Jabal Amman, the site is approached from Amir Hassan and Al Taj streets onto Usama Bin Zayd Street, off which the settlement lies. This street can also be approached from the East from the Yarmuk Street. Both the major entrances to the site are from the Usama Bin Zayd Street on which the commercial areas of the site are also located along with the mosque and the large park.

Architectural Character and Landscaping

The buildings along the Al Taj and Amir Hassan streets are two or three-storey high and consist mainly of shops on the ground with living quarters above. Most of them are finished with stone and densities are low. However, on the hills, west and north of the site many of the buildings are in cement plaster finish, painted white or off white, and are crowded along the slopes of the hills. Densities here seen to be fairly high. There are few trees on the hills and the green grass, visible at this time of the year, turns brown in summer. Many of the hill sides are crumbling, damaging the houses in the process.

e. *Topography of the Project Site*

From the Usama Bin Zayd Street the site rises sharply to the South and West. Towards the Southern end the highest level is reached which must be about 70 m above the level of the entrance to the site. The area is entirely hilly, with dips and depressions between the hills.

III. **Description**

a. *Conditions that Gave Rise to the Project*

Informal Housing Sector in Amman

In 1979, the population of Amman was 1.2 million, and growing at a rate of 4.3% per year. Most of this growth was being accommodated in expanding squatter colonies and other informal settlements. According to a 1980 survey, 25% of the population in Amman lived in informal settlements without security of tenure, poor infrastructure and degraded environmental conditions.

Earlier Government Policies

The government has viewed the development of uncontrolled informal settlements with concern and has tried to tackle this problem by creating the Housing Corporation (HC) in 1966. Although the HC has developed subsidised housing over the years, it has failed to meet the growing demand for low-cost shelter among the urban poor. The reasons for this failure were high costs of construction, conventional standards, the insufficient number of units developed, and the very large finances required to run such a programme. Consequently the formal sector in Amman could only

provide about 2'200 housing units per year against a yearly requirement of 14'400. Thus, a tactic acceptance by the government of both illegal occupancy of land and disregard of building regulations developed.

The UDP 1

In the late seventies, the government planners felt that unless a new, cost effective and replicable approach was adopted to deal with the housing crisis in Amman, the major part of the city would, over time, turn into a slum. As a result of this decision the government approached the World Bank for technical assistance and advice. The Bank had been active in Jordan earlier in the shelter sector with regard to water and sewerage projects. As a result of this development, Halcrow Fox and Associates, in association with Jouzy and Partners, undertook the preparation of the Identification and Feasibility Study for the UDP 1. This study was undertaken in January 1979 at the request of the Mayor of Amman and completed in the same year in October. In the report, East Wahdat was marked as one of the 5 squatter settlements that were to be upgraded as part of the UDP 1 between 1980 and 1986.

b. General Objectives

The general objectives of the UDP 1 have been summarised in the Introduction. In the specific case of East Wahdat these were:

- Provision of land tenure to the residents of the settlement.
- Provision of water, sewerage, electricity, roads, footpaths, mosques and green areas.
- Arrangement of credit facilities for the residents so that the above may be acquired without subsidies.
- Provision of health and education facilities, vocational training and support to small business activity by involving relevant state departments and their resources in the programme.
- Monitoring the development, and the basis of it making appropriate modifications in implementation and planning strategy. In addition, developing a system of loan recovery so as to make the project replicable on a larger scale.

c. Functional Requirements

Consultant's Brief

To fulfil the objectives of the UDP 1 as a whole, and of the East Wahdat Upgrading Programme in particular, the Consultants had to undertake the following:

- An identification and feasibility study for the project as a whole, so as to identify issues, programmes, organisations to be involved or developed, financial arrangements, credit and repayment criteria and procedures.
- To undertake physical surveys of the East Wahdat site.
- To undertake a socio-economic survey so as to understand the residents.
- To modify existing planning regulations and standards so as to relate them to the physical constraints of the site, the paying capacity of the residents and their way of life.
- Based on the above, to make a master plan for the East Wahdat Upgrading Programme complete with implementation and management procedures.
- To develop monitoring and feedback systems so as to make appropriate modifications in the operations keeping in view the criteria of replicability.
- To develop, through this process, an organisation within the government which can subsequently take over the responsibilities of project design and implementation without foreign assistance.

d. Planning Data

A detailed physical and socio-economic survey of the East Wahdat settlements was undertaken before the upgrading plan was drawn up. A 30% health sample was also included. The survey was designed by the Consultants but carried out by the UDD staff, most of whom were fresh graduates from Jordanian universities. The results of these 1980 surveys, which formed the planning data for this master plan, are given below:

Physical

- Site area

The area of the site was 8.4 ha. For planning purposes a vacant Municipality plot was integrated into the site to increase the area to 9.1 ha.

- Number and Type of Units

The number of housing units were 394 with 473 households living in them. Plot areas varied from 50 to 240 sq m. The houses were made of corrugated metal sheets for both roofs, walls and compound enclosures. These sheets were nailed to irregular timber frames. The owner of the land was a Circassian and he threatened to bulldoze any house that attempted to use concrete, brick or stone for construction. So the houses did not improve. There were 4.2 persons per room in the settlement and 87% of the families lived in 1 or 2 room dwellings (3).

- Services

There were no services at the settlement. 1% of the residents had direct access to water and sewerage and 3% to electricity. Water was carted by donkey drawn containers from the Wahdat refugee camp and waste water flowed into the unpaved streets and down the hill sides. During the rains in winter, conditions became unbearable. People who had electric connections or were able to afford an electric generator, sold electricity to their neighbours. Many used kerosene lamps.

- Health and Educational Facilities

There were no schools or health facilities in the settlement. The residents utilised the UN-RWA facilities at the neighbouring refugee camp.

Socio-economic Data

- Demographic

The population of the settlement was 4'020 in 1980 and the household size was 8.5 persons of whom half were below the age of 15. The infant mortality rate was 68 per thousand.

- Origins

Almost the entire population consisted of Palestinians, the majority of them refugees from the 1967 war and the rest from the 1948 partition of Palestine.

- Economics

90% of the families had only 1 working member. Most of the working population worked at the nearby central vegetable and fruit market or in the construction industry. The average income was JD 68 (US\$ 220).

Conclusion

East Wahdat was the most under-developed area in Amman.

e. *The Development and Implementation of the Master Plan*

Administrative and Planning Decisions for UDP 1

- *Formation of the Urban Development Department (UDD)*

It was decided that a UDD would be set up as the executing agency for the project and that through the process of project execution and management, and through formal and on-site training arranged by the Consultants its capability and capacity would be built up. In addition, it would be in charge of constant monitoring and evaluation of the projects.

- *Funds*

The project was to be funded by the Housing Bank, the Jordanian government and the World Bank. This relationship is defined in the chart on appendix 1.

- *Loan Element*

Land would be purchased from the original owners by the government through negotiations. The cost of land and infrastructure would be paid for by the Housing Bank and would be recovered fully through a non-transferable mortgage from the beneficiaries along with 8.5% interest, except for "hardship cases". The monthly instalment to be paid by the beneficiary for loan repayment would be 33.3% of his income, as declared in the socio-economic survey. In addition, he would pay 10% of the total land and infrastructure cost on allotment of the plot. A period of 15 years would be required for full repayment. In addition to the land and infrastructure loan, separate building material and home improvement loans were to be provided to individual beneficiaries on application by the Housing Bank.

- *Standards*

Standards were relaxed considerably. Road widths were reduced from 12 m to 5 m and the size of footpaths from 4 m to 2 m. The maximum number of plots were to be of 100 sq m. However, 60 sq m plots were permitted and given to those residents who, because of their small incomes, could not afford to pay for larger ones. Similarly, on a 100 sq m plot 70% construction of plot area is permitted on the ground floor. With every 10 sq m increase in plot size, this area is reduced by 1%. There can only be two floors in a house, but for plots of below 100 sq m a third storey of 50% of ground floor area is permitted.

- *Planning Considerations*

The proposed layout of the settlement was to follow the existing pattern except for minor variations necessitated by plot sizes and by circulation and access considerations. This decision was taken so as not to disrupt the lives of the residents during the upgrading process.

- *House Building Permits*

The owner, to build a house would have to obtain a building permit from the UDD, have his house built by a UDD approved contractor, and get a completion certificate when construction was finished. Only those house owners who obtained the completion document would be given an electric connection. Completion was to be given only to those houses which had finished internal and external plastering and were constructed of concrete or stone, with reinforced concrete roof and floor slabs. Some exceptions for "hardship cases" could be made.

- *Sale of Property*

Sale of land or of a house by any beneficiary would be illegal (as the mortgage was non-transferable) until the loan was completely repaid by the owner.

- *Commercial Areas*

It was decided that shops along with houses would be permitted in a few appropriate locations. These would cater to neighbourhood shopping needs and their owners would pay a higher land price. Along the main road, however, it was decided to develop proper commercial areas with shops and workshops. These were to be auctioned and their proceeds would help finance the project.

- *Facilities*

Plots for a health centre, a women's centre, a clinic and a community centre were to be provided in the plan. These were to be developed and operated by the relevant government departments at their own cost.

Plan Implementation

- *Implementation of Planning and Administrative Decisions*

The decisions described above were implemented and on their basis an initial physical plan was worked out.

- *Registration Survey and Interaction with Community*

The registration survey established a close contact between the community and the UDD staff. Due to this interaction the people of East Wahdat developed confidence in the UDD. Discussions took place on the plan between the two and resulted in modifications to it. These modifications redefined the spaces, the plot sizes and the number of plots to be developed. As a result the plan improved considerably. During this period the UDD staff came into contact with the characteristics of this type of work: jealousy and competition among the residents, desire for larger plot sizes, leadership issues and related questions. Tackling these issues successfully was an education for the staff members involved.

- *Tender Documents and Award Contract*

Based on the revised plan, tender documents were prepared and the work for the development of infrastructure was handed over to China State Construction, a local construction firm.

- *Demonstration Unit*

The UDD developed two demonstration units in the settlement on utility plots. One of these houses a children's library and the other the UDD office. The existence of this UDD office in the settlement has been a major factor in the development of the excellent relations that exist between UDD staff and community members. The community has, however, not replicated the demonstration unit for reasons explained later in the text.

- *UDD's Role after Upgrading*

The UDD will look after the settlement till 1990, after which East Wahdat will be handed over to the Amman Municipality. However, the UDD will remain in charge of cost recovery for land and infrastructure till such recovery is complete.

The Physical Development: Description

- *The Layout Plan*

Two motorable roads, 5 m wide, enter the settlement, both from different sections of the Usama Bin Zayed street. They are called Sharia Meen-7 and are linked through a Sharia Meen-9, a road on the Northern periphery of the plot. They culminate in cul-de-sacs in which space for parking has also been provided. Off these roads, additional parking spaces are large, the smallest one being 225 sq m. They also contain the shop houses which cater to the shopping needs of the neighbourhood. The roads and the parking spaces are surfaced. There is an absence of traffic in the settlement and older children play in these areas. From these roads footpaths, 2 m wide, serve the houses. These paths are paved in concrete. Where the slope is steep, they have been stepped and concrete retaining walls were constructed to contain the

hillside. Most of the longer paths follow the contours of the site. As a result one gets a continuous view of the Jabals to the north while one walks in the area. Most of the shorter paths are laid against the contours and link the longer ones. Wherever possible, the Consultant has provided small green patches along the paths. Trees have been planted in them and they break the narrowness of the paths with dramatic effect and provide gathering places for women and smaller children. A large park, with a mosque, is provided at the main approach at the East of the settlement. This open area consists mainly of the vacant plot acquired from the Amman Municipality and part of it of plots that were cleared by the plan. The parks have a lot of trees planted in them and are well maintained. The commercial areas and the workshops on the main road are functional international style buildings and so are the clinic, women's vocational centre and the community centre in the settlement itself.

- *The Utility Core and the Compound Wall*

Along with the provision of infrastructure, the programme also provided for a utility core and a standard front compound wall and gate. The utility core consisted of a latrine (120x90 cm) connected to the sewerage system and a water outlet. It was topped by a galvanised iron water storage tank. The compound wall was 1 m high and had an electric connection pole on it near the gate. Both the compound wall and the core were made of concrete block and the roof of the core was in reinforced concrete. Plans on how the house could be incrementally developed from the utility core were also prepared to assist the owners.

- *The Houses*

There are three distinct levels of development in the settlement. These are:

- *Completed Houses*

Such houses have been finished, complete with electric connections, hot water systems, external and internal rendering. Most of them have demolished their utility core and planted trees in the open space in their compound. Most of these houses have tiled bathrooms and carpeted living rooms. There is considerable variation in the finish of these houses but they all seem to belong to either small entrepreneurs, shopkeepers or people whose family members have been working in the Gulf states. About 30% of the houses belong to this category.

- *Semi-complete Houses*

Most of the houses belong to this category. They are in various stages of completion but it is obvious, from conversing with the owners, that they will eventually complete them and that and that they will be similar to the better houses in the settlement. A number of such houses are not plastered internally, do not have concrete roofs and have retained their utility core. The majority of them do not qualify for electricity and borrow it from their neighbours.

- *Original Shelter*

A small percentage, estimates vary between 2 to 4%, have not constructed or improved their homes because they do not have adequate resources. They continue to live as before. The majority of these are old people, widows or daily labour who work irregularly. (see appendix II for different cases)

People's Response to the Plan: Modifications, Rejections and Additions

- *Layout*

People are generally happy with the layout and consider it an improvement they had never imagined could take place. Except for a car-owner, who could not bring his car to his doorstep, no criticism of the layout was encountered.

- *Utility Core*

Most residents who have completed their houses have demolished their utility core and taken the water tank to the roof. Regarding the core, there is a general feeling among the people that they have paid for something that was unnecessary.

- *Compound Wall*

The 1 m high front wall, provided by the programme, is considered too low by the residents to provide privacy. In almost all houses it has been raised to over 1.5 m and its design has been changed. The UDD had to give in to these changes as they realised that the residents were right on this issue.

- *Demonstration Unit*

- *Rejection of the Plan*

The residents did not adopt the demonstration unit plan or technology. The plan was considered as insufficient for their needs and inappropriate to their way of life. In addition, it could not be replicated everywhere due to the great variety in the shape and size of plots. It is felt by the Reviewer that the rejection of the demonstration unit has resulted in a great variety of house types, individual expression, and a richness that would otherwise have been missing.

- *Rejection of the Technology*

The technology of the demonstration unit was concrete load bearing walls with a reinforced concrete roof slab, cast-in-situ. The residents rejected this in favour of a framed concrete structure with concrete block infill walls, although this increased the cost of construction by about 10 to 20%. The reason for this rejection is the belief of the residents that the framed structure is more durable. Also, they see the use of the framed structure in most upper-income houses.

- *Vertical Expansion*

The regulations specify the height of a house and the UDD project staff deal strictly with bye-law violations. Some people in the settlement have been sent to prison and then released on bail due to constant attempts at illegal construction. However, almost all houses have left starter bars to columns on their roof tops for future vertical expansion. They are confident that they will be able to do this some day. The UDD has also relaxed its regulations and a small "non-permanent" structure to sit under is permitted on the roof top.

- *Use of the Roof Top*

The roofs of the houses in East Wahdat are an important space and are used for a number of activities by the residents. Goats and other domestic animals are housed there; clothes are washed and dried on them; people sit there under a "non-permanent" roof in the evenings and some are used as vegetable gardens.

Formal Aspects of the House

- *Façades*

By and large the façades along the footpaths consist of block compound walls, about 2 m high. Behind these walls are the façades of the houses. These too, for the most part, are a rectangular mass with holes punched into them for doors and windows. Often this surface is broken by projections over the windows or by 15 cm projection of the floor slab beyond the external wall. Although most of the houses, which have been rendered are painted white, off-white or beige, the face of most of these projected elements are painted in blues, oranges or terra-cotta. The general appearance of the settlement, as a result, resembles the piling of hundreds of cubes against the hillside.

- *Decorative Features and Traditional Motifs*

A number of houses have Arabic inscription in beautiful calligraphy just above the entrance door. Some have Quranic verses and many the image of the dome of the rock painted on them. Geometric motifs on doors, steel grilles and concrete screens are common and often they are painted in bright colours to contrast with the pastel shades of the façades.

Other Features

- Water Tanks and Solar Panels

Water tanks on the roof tops and solar panels for water heating are an important feature of the houses. The tanks are of galvanised iron sheets and often have decorative designs or inscriptions written on them.

- Flower Pots

A number of houses have brightly coloured flower pots on the balconies or on window sills. These stand out against the lighter colour or stone cladding or the texture of concrete blocks.

f. Structure, Materials, Technology

Infrastructure

- Roads: 15-20 cm base course with 5 cm asphalt mix topping.
- Footpaths: 10 cm base course with 7 cm concrete topping.
- Drainage system: 400 to 600 mm concrete pipes except on steep slopes where ductile cast iron pipes are used.
- Water supply: galvanised steel pipes of 3" for mains to 1/2" for house connections.
- Retaining walls: in-situ concrete.

Facilities: Community Centre, Vocational Centre and Clinic

- Structure: reinforced concrete frame consisting of pad foundations, plinth beams, columns, roof beams and slab.
- Infill Materials: concrete block walls.
- Rendering and finishes:
 - wall and ceiling finishes: sand cement plaster, finished in plastic internally;
 - flooring: terrazzo;
 - door and door frames: enamel painted timber;
 - windows: steel and/or aluminium.
- Houses: built by the people.

These have been described in preceding paragraphs.

g. Origins of Technology, Materials and Manpower

Technology: commonly used in Amman.

Materials: all produced locally in Jordan except for ductile cast iron pipes.

Labour Force

- Unskilled labour residents of Amman.
- Skilled labour majority of the masons were immigrants from Egypt. However, plumbers, carpenters and electricians were locals of Palestinian origin.

Professionals

- Consultants the planning and design consultants, Halcrow Fox & Associates were British. The supervisory consultants Jouzy & Partners, were Jordanian.

- Contractors:
 - contractors for infrastructure and facilities were the China State Construction, a medium level local firm of contractors;
 - contractors approved by the UDD for house construction were all of Palestinian origin living in Jordan.
- Other (UDD staff): UDD staff, consisting of sociologists, engineers, architects, administrators, social workers, accountants, were all Jordanian, many of Palestinian origin.

IV. Construction Schedule and Costs

a. History of the Project

Identification and Feasibility Study for the UDP1

- | | | |
|----------------|---------|------|
| - Commencement | January | 1979 |
| - Completion | October | 1979 |

<i>Setting up of UDD</i>	late	1980
--------------------------	------	------

Loan Negotiations and Agreement

- | | | |
|---------------------------------------|-------|------|
| - Between Housing Bank and Government | April | 1981 |
| - First Bank disbursement | May | 1981 |

Design

- | | | |
|-----------------------|-----------|------|
| - Design commencement | September | 1980 |
| - Design completion | August | 1981 |

Construction

- | | | |
|----------------|-----------|------|
| - Commencement | September | 1982 |
| - Completion | June | 1984 |

b. Total Costs and Sources of Finance

Total Costs for East Wahdat Upgrading

- | | | | |
|---|------------------------|----|-----------|
| - Land acquisition | | JD | 633'000 |
| - Development cost to contractor
(inclusive of utility core, and compound and retaining walls) | | JD | 600'000 |
| - Community facilities
(non-recoverable costs) | | JD | 102'000 |
| - Overheads | | JD | 280'350 |
| - design | 8% of cost: JD 106'800 | | |
| - project management | 9% of cost: JD 120'150 | | |
| - supervision | 4% of cost: JD 53'400 | | |
| | Total (US\$ 4'345'000) | JD | 1'615'350 |

Sources of Finance

- | | |
|------------------------|-------------|
| - Government of Jordan | 25% of cost |
| - The World Bank | 31% of cost |
| - Housing Bank | 44% of cost |

c. *Qualitative Costs*

Upgrading Costs

- Actual costs per sq m for land and development JD 17.75 (US\$ 48)
- Payments made by the beneficiary for infrastructure development and cost of land JD 15 to 17 per sq m

Building Costs Paid by Owners to UDD Approved Contractors for Constructing their Houses

- Labour costs (materials supplied by owner) JD 6 per sq m
- On turn key basis inclusive of all fixtures and finishes JD 50 per sq m

Maintenance Costs

- *Heating*

In the winter a 10 member family needs 10 litres of kerosene per day for heating. This costs JD 0.7 per day or JD 21 per month. For an average household it amounts to 20% of their earnings.

- *Cooking*

For cooking all the residents use LPG cylinders. The cost of the refill is JD 1'85. Depending on the size of the family, the cylinder lasts between 12 days to 1 month.

- *Hot Water*

A large number of residents use solar panels to heat water and almost all aspire to eventually install such a panel. The cost of the panel is JD 240. However, it can be purchased for JD 280 on monthly instalments of JD 10 per month.

V. **Technical Assessment**

a. *Functional Assessment*

The physical plan of the settlement works well in spite of the relaxation of standards. Given the densities (about 550 per ha) and the low rise construction it has had to cater for, there is a remarkable feeling of openness and freedom. Every house has an easy walkable access to a motorable road (maximum of 700 m), car parking space and neighbourhood shopping. The open area at the entrance of the settlement, which houses the mosque, is largely used by the residents in the evenings. The footpaths, with slopes and steps opening on to the parking lots and small green areas, are interesting play spaces for children. The plan of the settlement shows that the planner had a feel for the contours of the site and has made use of them. However, the community and vocational centre staff complain that their buildings are far too small for the activities that the residents require. Similarly, the doctors at the medical centre feel that the building is wrongly sited. They feel that if it was sited on the main road it would cater more easily to the residents of the neighbouring areas who have now to cover a considerable distance on foot to get here.

b. *Climatic Performance*

The houses have not been designed by the consultants but the bye-laws regulating covered areas, heights and open spaces within the plot, have created a well lit, nicely ventilated and at the same time protective environment.

c. *Choice of Materials; Level of Technology*

The materials used are those that are easily available in Jordan and the technology for upgrading is related to these materials. It has required no sophisticated machinery, exceptional skills or imported manpower for its implementation. In that it is appropriate.

d. *Ageing and Maintenance*

Infrastructure

The infrastructure will, after a period of 20 years, need a much higher level of maintenance than it will in the next few years. This aspect, it is hoped, will be taken care of by the Amman Municipality, which is already recovering taxes from the beneficiaries for this purpose. The Municipality is also in charge of lifting garbage and clearing the streets.

Houses

The houses have been built by the people and they will be maintained by them. They will require regular painting as the external finishes, except for a few stone clad houses, are not of a permanent nature. However, it is felt that there are more serious problems ahead for the settlements. In most areas managed by the municipal authorities there are serious violations of building regulations related to plot ratios and heights which the authorities fail to prevent. So one is forced to ask the question as to what will happen when this settlement is handed over by the UDD to the Amman Municipal Corporation ?

e. *Land Use*

The land use figures for the site are given below:

- Residential (523 units)	71.40% of site area
- Commercial	8.10%
- shops	2.9%
- workshops	5.2%
- Community buildings	1.48%
- Roads footpaths and open areas	19.02%
Total	100%

Compared to what is considered as "ideal" the figures show an exceptionally high %age of residential areas and comparatively smaller circulation spaces, and open areas. However, one does not get this feeling when in the settlement because of the factors discussed earlier.

VI. *Users*

a. *Description of Those Who Benefit from the Project*

Origin

Most of the population is of Palestinian origin from the West Bank and the Gaza Strip and came after the 1967 War. A small section of the residents are refugees from the 1948 partition of Palestine.

Income Levels

Income levels of the population vary from JD 50 (US\$ 135) to over JD 200 (US\$ 540) per month. 10% earn less than JD 50; 27% between JD 51 and 100; and 29% between JD 101 and 150. 22% earn more than JD 200.

Occupations

The majority of employed persons, 51%, work in the services sector or transport industry. 14% are skilled construction workers and 9 unskilled. 4% are technical and professional persons and 5% work as administrators or in clerical positions for government or private businesses. Very few women, 22% of the total in UDP 1 upgrading areas, work for a living.

Female Headed Households

In the upgrading sites for the UDP 1, 11% of household heads were women of which 77% were windows. These households were the most disadvantaged on all the sites as 37% of them earned less than JD 37 and 29% between JD 51 and 100. Many of them have been considered as "hardship cases" by the UDD.

Literacy

22% of male and 88% of female household heads are illiterate. However, 90% males and 85% females between the ages of 15 to 19 have had their primary education. Attendance at school between the ages of 7 and 13 is 95.7 for males and 93.5 for females.

b. Response to the Project

The response of the user to the project is generally one of satisfaction. This can best be judged from the following:

- 51% of the house-owners have taken a house building loan from the Housing Bank in addition to the loan for hand and infrastructure.
- 73% of the owners pay instalments on their loan through the UDD and the rest directly.
- Only 5 to 7% owners default in payment, and no more than 2% regularly.
- when building their houses people often shift to a room in their neighbour's house or put up a tent on their roof or the open section of their plot.
- Many of the owners have borrowed money from relatives or sold their jewellery to finance their house.

VII. Persons involved

a. From the Consultants Team

David Walton, Project Director.

Roy Brockman, Economist.

Raja Jouzy, Co-ordinator of feasibility study.

b. From the UDD

Dr. Hisham Zagha: Director General.

Engineer Khalid Jayousi: Director, Design and Planning.

Sociologist Hidayah Khairi: Director, Population Affairs Directorate.

Engineer Ibrahim Dabbas: Building Control Division.

Engineer Faris Haddad: Building Control Division.

Arif Hasan

Karachi, 10 May 1989