

MAHAWELI ENTERPRISE DEVELOPMENT

MED/EIED PROJECT

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INVESTMENT IN MAHAWELI INFRASTRUCTURE

by
TEAMS (Pvt) Limited

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Mahaweli Enterprise Development (MED)

The development of the natural and human resources of the Mahaweli river basin is a high priority of the Government of Sri Lanka. The construction of physical infrastructure, the settlement of the land and the formation of the agricultural production base are largely completed. The challenge now is to build a diverse, dynamic economy capable of steadily raising Mahaweli family incomes. In meeting this challenge, the private sector - farmers, entrepreneurs, companies, community groups, non-governmental organizations - has an important role to play.

MED is a project of the Mahaweli Authority of Sri Lanka and the United States Agency for International Development. MED promotes investment and employment generation by the private sector in non-farm economic activities and contract outgrower programs producing diversified crops. MED does this by: (i) developing technical, marketing, financial and other services which assist self-employed individuals, microenterprises and companies to start and improve their businesses; (ii) developing entrepreneur associations and other participatory groups; and (iii) carrying out studies and analyses to improve the frameworks for development in the Mahaweli areas.

The Employment, Investment and Enterprise Development (EIED) Division of the Mahaweli Authority is the MED implementing agency. Technical consultancy is provided by a consortium led by the International Science and Technology Institute, Inc. (ISTI), and including Agroskills, Development Alternatives, Ernst and Young, High Value Horticulture and Sparks Commodities.

PREFACE

This study has been prepared by a group of consultants from TEAMS. It is concerned with the limited investor response in the agribusiness sector in the Mahaweli areas. The consultants based their study on available relevant information, reports of previous studies with regards to promotion of private sector investment through infrastructure development in the areas and responses to questionnaire answered by randomly selected investors. The consultants also personally visited the project areas meeting investors and officials and revised available records in the different offices.

The consultants report that there is an increasing demand for land, provided investors are assured of a source for supply of water. Most investors wish to be able to draw water from irrigation canals. As MASL as a matter of policy does not provide canal water for irrigation to investors, the effective interest of most potential investors is quite limited. The lack of data regarding ground water potential is also a constraint to the investors.

The consultants comment on the long period required prior to obtaining the lease agreement for the land. These delays are partly a matter of policy, as the MASL waits until the investor has actually developed the land, so as to forestall speculation.

A drawback that many investors face is the lack of supply of power to their allotments. The need for electricity to the investors is manifold, e.g. for:

- i. work pumps at times of water stress
- ii. lift irrigation from wells or streams
- iii. working of machinery needed for agribusiness
- iv. security
- v. cold rooms, etc.

The consultants report that many investors are not willing to finance the cost of extension of power lines to their allotment.

The consultants also highlight the lack of telecommunication facility in Systems B, C, G and Kotmale.

Housing is another constraint that is reported. Except in System Uda Walawe, where some form of housing is available, in all other systems this appeared to be a problem for investors, specially in Systems B and C.

This study indicates that other social infrastructure presently available viz. schools, hospitals, postal service, banking facilities, etc. are adequate for the moment and may be reviewed with the expansion of development in these areas.

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1. INTRODUCTION

Mahaweli Development Programme is based on the Master Plan prepared by the UNDP/FAO supported by local expertise for harnessing of resources of Mahaweli, its tributaries and other rivers in North Central Region for irrigation and hydro-power purposes. The assessment was that there would be enough water resources to provide perennial irrigation for 365,000 ha, nearly three fourth of which were uncultivated land at that time, and increase the national power supply by 540 mw. The plan was scheduled to be implemented over 30 years.

The first project, Polgolla diversion project, was started in 1970 and completed in 1976 together with the Bowatenna Project. This provided hydro power development of 40 MW, and improved irrigation facilities to 53,000 ha. in H area. Irrigation facilities were also provided to 2400 ha. of new lands in H area.

Many considerations prompted the Government which came to power in 1977 to attempt to complete as quickly as possible some of the major projects of the Master Plan. Foremost among these considerations was the colossal annual drain of foreign exchange as food imports; equally pressing were the problems of mounting unemployment and the increasing demand for energy. This programme was designed to provide irrigation for 130,000 ha., most of it uncultivated land, and generate an additional 450 MW. of electricity. This Accelerated Mahaweli Programme is the largest national investment project ever undertaken in Sri Lanka.

The Mahaweli Authority of Sri Lanka was established to undertake this massive task. Its original role was to manage the infrastructural projects, the human settlement and the opening up of the area for development. The major part of the programme has been completed. MASL has undertaken the promotion of investment and development of the region through its Employment Investment and Enterprise Division.(EIED).

EIED with assistance from Mahaweli Enterprise Development Project (MED), which is a USAID initiative, supports investors to identify and assess the commercial viability of business opportunities. MED also provides entrepreneurs and firms with technical assistance, marketing support, training and business advisory services.

EIED is concerned about the level of investor response into the Mahaweli Systems although there is strong potential to attract private sector investment. The strongest assets being the availability of land, water and farmers.

1.1 System H

The development programme in System H was the first major integrated development of new lands under the Mahaweli programme. Project area lies within the Kala oya basin about 16 km. south west of the historic town Anuradhapura. The major part (90%) of the project area falls within the Anuradhapura district with some sections falling within the districts of Matale and Kurunegala. The elevation ranges from mean sea level to 182m. The topography is gently undulating and slopes average 1 to 5 %.

The project area covers 42,898 ha. of irrigable land out of which 28,734 ha. are newly developed land.

About 60% of the soils in the area were found to be suitable for the production of high value upland crops while 40% of the soils are valley bottom and are suitable for paddy cultivation. Kalawewa, Kandalama and Dambulu oya are the three schemes coming under the management of MASL. These three schemes are fed by diversion water from Polgolla through Bowatenna scheme.

1.2 System C

System C falls in the dry zone in the Uva, Eastern and the North Central Provinces.

Downstream development in System C involved the development of 69,000 ha. of gross land of which 21,675 ha are irrigable land under MASL (Zone 2 to Zone 6). Development work started in 1981 and the major part of the work has been completed now. System C receives water from the Minipe diversion through Transbasin canal, Ulhitiya and Ratkinda reservoirs. The two main areas of System C are Girandurukotte and Dehiattakandiya Townships falling within the districts of Badulla, Ampara and Polonnaruwa. In addition to the 2 townships, 6 area centers and 12 Village centers have been constructed to provide all necessary social infrastructure and service facilities.

As the System C area before 1980 was sparsely populated with hardly any development, except in Zone 1, there were hardly any road systems. With the downstream development, a major trunk road has been constructed from Mahiyangana to Manampitiya and several market roads have been constructed in System C connecting townships and other service centers. It was found that 44% of the area in System C was suitable for upland high value crops while the balance 56% was suitable for paddy cultivation.

1.3 System B

System B area which is coming under Maduru oya dam, covers a gross area of 135,000 ha of which 62,000 ha are irrigable. Maduru Oya Reservoir receives water from the Mahaweli Diversion at Minipe through Ratkinda Reservoir and its own catchment.

The downstream development in System B has concentrated only on the left bank to irrigate 21,000 ha mainly because of security reasons. Irrigation and social infrastructure development in Zone 1, 2 and 5 in the left bank have been almost completed at present. Main and branch canal system in the entire left bank has been completed with concrete lined sections. The 3 main areas of System B are Welikanda, Aralaganwila and Manampitiya townships. In addition to this, 6 area centers and 4 village centers had been established to accommodate business and commercial interests. The main trunk road from Mahiyangana to Manampitiya passes through Zone 1 of System B. Almost all market roads in Zones 1 and 5 have been constructed to connect townships and other service centers. It was reported that about 20% of the left bank area is suitable for upland high value crops and the balance 80% suitable for paddy cultivation.

1.4 System G

System G is in the dry zone in the North Central Province of Sri Lanka. The project area lies between Elahera Minneriya Yoda Ela (EMYE) and Ambanganga. The works completed under the accelerated Mahaweli Programme are rehabilitation of existing 2500 ha. and development of 2900 ha. of new land. The gross area of the System G is 10,900 ha. The main township is at Bakamuna in Polonnaruwa district. All necessary irrigation and social infrastructure have been provided with the Accelerated Mahaweli Programme. The main road from Naula to Giritale is passing through the system.

1.5 Uda Walawe

Uda Walawe, a special project under MASL, falls within the provinces of Sabaragamuwa, Southern and Uva. The project is about 160 km. South East of Colombo. This region is linked to Colombo by two main roads, one along the coast via, Matara/Galle and other via Ratnapura. The irrigable extent including the proposed left bank extension is 27,000 ha.

The right bank has 12,300 ha. of irrigable land and consists of five blocks viz Embilipitiya, Chandrikawewa, Murawasihena, Binkama and Angunukolapelessa. In the left bank the developed area is only 5150 ha. and consist of two blocks, Kiribbanwewa and Suriyawewa. A rehabilitation programme for the right bank irrigation and social infrastructure development is being carried out by the Mahaweli Authority with assistance from the Asian Development Bank.

1.6 Kotmale

Kotmale dam site is at Kadadora located about 6.5 km upstream of the confluence of Kotmale oya with Mahaweli ganga. The project head works lie on the right bank of the Mahaweli ganga and partly in the Kandy district and partly in the Nuwara Eliya district. Access to main project can be through two routes. One is from the new access road constructed from the Gampola - Nuwara Eliya road. The other is through Ulapare - Pussellawa road. The crest elevation of the dam is at 706.5 m.

2. BACKGROUND TO THE STUDY

This study is confined to exploring possibilities of promoting investments in the Mahaweli Systems for large scale commercial farming. This survey, therefore, had to identify the potential now available to investors and the necessary infrastructure that will have to be provided to attract large scale investors for the cultivation of export oriented high value crops and other profitable enterprises.

2.1 Scope of Work

The study commenced on 10th December 1992.

2.1.1 Terms of Reference.

1. Determine the basic infrastructure that the Mahaweli should have to be able to attract private investment.
2. Ascertain in detail, the infrastructure facilities presently available to investors in each of the projects and identify major gaps.
3. Recommend specific infrastructure investments that are required by Mahaweli or the private sector over the medium term. The infrastructure investments could in some cases be made by the private sector.
4. Recommend specific short term infrastructure needs of specific proposed private investment projects and estimate the cost.
5. Suggest policy reforms or any other measures that would encourage investment in the Mahaweli including private sector investment in infrastructure.

2.2 Methodology of Work

The Terms of Reference lists 7 objectives for the study. At the inception of the study, the consultants had a useful and lengthy discussion with the client on the methodology and the tasks to be performed in the execution of the study as given below.

Task 1 - Project Mobilization and Preliminary Review

Task 2 - Review previous studies and available information relevant to the promotion of private sector investment to the infrastructure development in Mahaweli areas.

- Task 3** - Detailed investigations on present and potential investors, their infrastructure requirements and actual availability.
- Task 4** - Deriving conclusions on available infrastructure facilities to investors, their requirements and major gaps.
- Task 5** - Identification of the most viable strategy for filling gaps in infrastructure facilities
- Task 6** - Deriving recommendations on short term and medium term infrastructure investments and necessary policy reforms.
- Task 7** - Preparation and presentation of the Draft Final and Final Report.

2.3 Project Mobilization

Consultants had their first meeting on the 10th of December 1992 with the client. They spent few days consulting relevant officials of the Mahaweli Enterprise Development Project and Employment Investment and Enterprise Development Division in Colombo. They met large and medium scale investors in Colombo and gathered information regarding their major constraints and possible solutions to them through a questionnaire. A specimen of the questionnaire is annexed at the end of this report. They interviewed the investors in the Mahaweli Systems C, G, H, B, Kotmale and Uda Walawe special project together with Resident Project Managers, Deputy Project Manager, Block Managers and EIED officials. Consultants were afforded necessary assistance and details required from the EIED field officers, from available records in different sub offices.

Consultants were able to meet medium and large investors at sites and gathered information regarding cropping patterns and reviewed the crops grown especially for the export market. Consultants also gathered information about the outgrower systems adopted specially in Systems C and B and the views of investors on the availability of irrigation water for their crops from the Mahaweli systems.

Consultants visited Kotmale and were of the view that the potential for tourism was very bright. The main constraint being the delay in the lease of the land.

3. BASIC INFRASTRUCTURE THAT SHOULD BE AVAILABLE TO ATTRACT PRIVATE INVESTMENTS.

3.1 Land

The table given below shows the extent of crops cultivated in the commercial farms from the information gathered by us as at December 1992.

This could be classified under the following:

Crops Cultivated	ha
Grapes & Mixed Crops	135
Fruits & Mixed Crops	211
Gherkins & Mixed Crops	125
Bananas & Cash Crops	111.4
Jjoba	100
Oil Seeds	60
Silk Yarn	38
Fruits	23
Fruits, Cash Crops & Livestock	16
Citrus & Vegetables	16
Medicinal Herbs	13
Vegetables	10
Rattan	10
Feldspar Extraction	2.35
Perennial Crops	14

	884.75
	===

The land available for lease for private investors being 5110 ha, it is seen that only 884.75 ha. had been taken over by private investors, which is only 17.3% of the land available.

Since most of the land available for investors falls within the well drained RBE soil category, the cultivation of high value export oriented crops under irrigation should prove to be a successful venture and therefore, should attract more investors. Presumably, the delays in the process of obtaining the land may be one main reason which is keeping away many likely investors from coming forward.

Many investors already in the project area complained that their lease agreements have still not being issued to them. Then, there is the case of Sunfrost (Pvt) Ltd, who are engaged in gherkin cultivation in System B - even they have yet to get the lease agreement finalized. This is the case with many investors and it appeared that only two investors have

so far got their lease agreements, out of over 20 investors who have already commenced cultivations in the lands already allotted to them.

In the absence of the lease agreements, the investors are not in a position to obtain their credit facilities from banks. This is a major constraint and unless the issue of the lease agreement is streamlined and settled without delay, prospective investors will be reluctant to embark on large scale commercial ventures.

It was observed that in certain blocks with large extents of land, access by vehicle to the land to be allocated in most systems was also a constraint. Investors were not in a position to see for themselves the terrain and other features of the land, they were going to be offered. It will be an incentive, if the land to be leased could be demarcated and access to these lands cleared to form jeep tracks, cart tracks so that a potential investor could inspect the land before hand. It is also necessary to provide the investor with the blocked out flat plan of the area showing the lands available for lease.

The delay in the issue of lease agreements should be avoided to the barest minimum to encourage major investments to be made and facilitate the obtaining of credit from banks. This will help the commencement of the projects early and the benefit of employment to the people of the area. The lease is now given on an annual basis and renewable when satisfactory progress is shown. Under this scheme the banks are reluctant to give loans. There should be a guarantee from the State that the lease will not be terminated if the lessee has developed the land. This will again help the investors to obtain the necessary credit for further expansion of their business ventures.

The delay presently experienced by MASL in granting the lease, appears to be due in part to the shortage of surveyors. Hence survey plans are not available for obtaining approval of the lease. This apparently is one of the reasons for the undue delay in the granting of lease agreements. This lapse has a serious effect on the policy advocated by the MASL to promote private investments in the project areas, and therefore, has to be remedied as early as possible. MASL should explore the possibility of requesting the Survey Department to temporarily set up a survey unit in the MASL comprising of a team of surveyors, specially to expedite work in connection with survey plans necessary for lease.

Investment in the Mahaweli infrastructure will depend on how effectively the Mahaweli can attract potential investors both local and foreign, therefore, delays in the lease of the land to the investor will tantamount to an economic loss to the country.

This obstacle can be overcome. Now that private surveyors may be employed with the approval of the Surveyor General for work in Mahaweli Systems, this facility will ease the long protracted delays in surveys. We cannot forget the fact that avenues for opening up commercial enterprises are being offered in neighbouring countries as well.

The lands alienated for large scale commercial farming, that is, allotments in extent more than one hectare or 2.5 acres are given under the State (Crown) Lands Ordinance. They are offered under two conditions:-

1. by long term lease, 10 to 50 years - generally 30 years (two have been issued).
2. by grants, which is a sale of the land (none have been issued).

Lands offered under long term lease is handled by the MASL and they have decided to charge 6% of the market value as the annual lease value for the property as at date of alienation plus an annual increase of 10% of the lease value to be paid as an annual lease rent. However, the total annual increase over the years should have a maximum limit.

In the case of alienation by grant, the process is simplified. One has to pay the market value of the land. After receipt of payment, the grant documents are prepared and submitted to His Excellency the President for approval. The market value will be determined by the Chief Valuer, and could vary from Rs.9,000/- to Rs.20,000/- per ha depending on the land, its location and availability of water.

Lands have been earmarked for industrial parks in the town centers and this too is given on the above two basis and price depending on the market value.

The common complaint was the delay in the preparation of the survey plans. Encroachments into other allotments was one problem. This had arisen as a result of the correct boundaries not being pointed to the surveyors.

The procedure adopted at present is as follows:

Once an investor is alienated a block of land, the RPM has to send up a survey requisition to the Surveyor General. He will then detail this work to his surveyors and also keep a check on the progress made. Once the allotted land is blocked out and the lease diagram is prepared, this is handed over to the RPM and the boundary pickets pointed out in the field. The MASL then gets the Chief Valuer for the valuation of the land and once this is done the lease documents are prepared.

If all these procedures could be streamlined and the allottee handed over his documents within 3 months from the date of inspection of the land, there is bound to be a greater interest shown by the investor. This should be the objective of the MASL.

3.2 Water

The most important infrastructure constraint, as far as production is concerned, is an assured supply or availability of year round water for irrigation. This constraint is critical for the production of all varieties of crops.

An investor of high value crops who is prepared to invest large sums of money on commercial farming of export oriented crops, should be reasonably sure of the availability of water year round. He should be sure of the daily availability and should be in a position to use the water whenever he requires it. Hence the customary rotational practices may not be an answer to the water requirement of crops he intends cultivating, if he is to depend on the existing irrigation systems with the settler farmers as his outgrowers. The possibility of providing year round irrigation for crop production is a another study that has to be examined.

It was clearly evident, that private investors were reluctant to spend large sums of money on site specific feasibility studies unless they are clear in their minds that water is available throughout the year and that the operation of the on-farm management is handled by the investors and in case where farmer settlers are their outgrowers, the investors should be consulted in the planning and operation of the system.

Where investors do not have access to Mahaweli irrigation water and that they will have to find their own source of supply the only alternative option available will be to resort to lift irrigation. This will have to be either sprinkler or drip irrigation, for which the cost of installation and maintenance is high. These irrigation methods, have their own advantages, in that crops that require adequate on-farm irrigation could be successfully grown without wastage of water. These systems could be operated by pumping from shallow dug wells or deep tube wells or from nearby drainage canals or streams.

Since, soils suitable for a wide variety of crops like gherkins, baby corn, sweet corn, tomatoes, melons are to be found in the Mahaweli Systems, there should be no difficulty in the successful cultivation of selected crops. Then there are the drought resistant perennial crops like cashew, mangoes, pineapples, banana and several other varieties of fruits which could be grown with minimum irrigation water. These could be supplied with the necessary water to maintain the moisture content in the soil around the plants by sprinkler or drip irrigation.

It was observed that pilot projects using sprinkler irrigation had been undertaken in System B for nurseries and a mulberry cultivation project by Star Silk Company, a private investor in Uda Walawe. These pilot projects have so far shown good results but the extents under cultivation have not been increased due to the high cost of installation and maintenance.

The present approximate cost of installing a sprinkler or drip irrigation system will be approximately Rs.250,000 per ha. while the maintenance cost will be mostly for

replacements for the pumps and sprinkler when necessary. The wages of an operator and one labour who could manage the O&M of three pumping units serving about 10 to 15 ha, will approximately cost Rs.6,000 per month. The TEAMS Study on Possibility of Year Round Irrigation in Mahaweli Systems - February 1993 covers this subject in detail and has been quoted extensively.

Since, investors will not have access to Mahaweli irrigation water and will have to find their own source of supply, it will be an incentive to the investors if MASL could drill a few tube wells in the areas earmarked for leasing, and provide the details of the drill logs, some pump test run to determine recovery rates and the water table data of the area.

It was revealed that it has cost approximately Rs.125,000/- for a private entrepreneur to dig trial tube wells in his 20 ha. block in Uda Walawe.

An added incentive will be if MASL could also advise the investor the suitable methods of irrigation to be adopted and the possible crops that could be grown in the land. This will help the investor to get an idea of the initial investments he will have to make to commence his enterprise.

The crops selected for cultivation should match with the crop recommendation of the Department of Agriculture and the crop water requirements based on their recommendations.

The crop water requirement for paddy is around 1.6 to 2.5m whilst for other high value field crops it will be in the range of 1.2 to 1.5m.

3.2.1 Year Round Irrigation Water Availability

The second most important production constraint is the non-availability of year round irrigation water in the Mahaweli region. This constraint is a critical one for all varieties and production schedule options for most varieties of crops. This is called "365 day irrigation" constraint because for these products not only does year-round water need to be available, its daily availability needs to be under the control of the producer, the standard rotational periods are not satisfactory supply arrangements for these crops. Irrigation availability on a daily basis year round is a sine-qua-non for large investment in any of these products, and an informed investor would not proceed even to expend significant sums on site specific feasibility analysis until the solution to this constraint was clearly possible.

The difficulty of obtaining year round, daily available irrigation water from the Mahaweli region arises from two companion problems. The first is that the Mahaweli irrigation systems were designed and are currently being managed to provide seasonal irrigation principally on paddy rotation schedules. This would permit certain of the selected short season export crops to survive during one or

two crop cycles each year such as gherkins, tomatoes and melons and allow for approximately a 90 day marketing season. Some permanent crops are drought resistant and could likely survive from year to year and produce some short season exportable fruit with minimal irrigation support from shallow wells when Mahaweli irrigation was not available. These crops include some specialty bananas, mangoes, cashews and even under some circumstances, pineapple. Seasonal irrigation would however substantially reduce the profitability and commercial viability of these products.

Two possible solutions might be examined to solve this important problem. The first might be to allow small farmer cooperatives to exercise their basic rights in "dead storage" as a kind of backup insurance to keep their permanent crops alive during the non paddy season. Even under drought situations this use is consistent with the Mahaweli policy which is to give the settlers the final rights to the last drop of water (dead storage) in the reservoirs to keep their families, animals and permanent crops alive.

The second option would be to develop groundwater through shallow dug-wells or deep tube wells. During most of the year the water table in many Mahaweli areas appears to be high enough that shallow "dugwells" could be a practical method of obtaining farmer controlled daily reliable supplies of water. The team did not examine the hydrological feasibility of deep tube wells and the existence or non existence of deep aquifers in the region.

(See TEAMS report to MED on Year Round Irrigation February 1993).

3.3 Power

This has proved to be a major constraint. The lack of power supply to farms is a handicap most investors will be faced with. Power supply at farms will be necessary for the running of machinery necessary for irrigation, processing, cooling, etc. Source of power supply to the land will have to be provided if investors are to be attracted. Most investors will not be in a position to obtain their supply from the main grid due to the high cost.

Investors will look forward to using pumps for irrigation purposes from wells during the drought period. This will not be possible unless electricity is available. Protection against wild elephants and security lighting too will not be possible without electricity. This is a constraint for many likely investors.

The possibility of setting up cold chain by large scale investors at their farms will be an added advantage to these investors if three phase electricity is available at site. It will be worth an exercise to investigate the feasibility of providing electricity at convenient locations in the proposed allotments so that investors as a group could make arrangements

to get their supply from these proposed locations. This will prompt most of the likely investors to come into the Mahaweli Systems for the production of high value crops.

A reliable supply of electricity at a competitive price is one of the criteria that attract foreign investor into this country. It also makes our own products competitive in the world markets, and for the internal consumers, it keeps the cost of living down.

Electricity is widely used in agricultural industries to power a great variety of mechanisms and directly in production process, cooling, packaging, for transportation and domestic purposes.

We must realize that other countries in the region are also offering very attractive terms to attract foreign investment, and therefore, mindful that lack of power or unreliable electricity supply with steadily increasing electricity prices will not only deter foreign investors coming into the country but would also shift some of the established ventures out of this country.

If we are to attract investors and expect rapid agricultural and industrial development as a key to economic growth, then the availability of power is one of the secrets.

The alternative will be the need for investors to install their own expensive diesel generators, which is very unlikely considering the cost one has to incur.

The supply of electricity, therefore, should be considered as one of the main investments in the Mahaweli Infrastructure.

3.4 Irrigation Methods

It will be useful to the investor, if he is given basic information on the potentially available water in the land he is to select. Advice too could be given in the selection of the suitable method of irrigation he could adopt depending on the terrain of the land and the possible crops that could be grown based on soil characteristics.

An approximate cost analysis for the recommended irrigation method and crops to be grown will assist the investor in the selection of the land and the likely investment he will have to incur to make his project viable.

Since, the lands available are uplands, lift irrigation will have to be adopted to supplement direct rain water use. Lift irrigation will have to be pumped from dug wells or tube wells or from drainage canals or nearby streams.

The selection of an irrigation method is based on technical feasibility and cost. Surface or gravity irrigation is the cheapest to install, but where conditions do not permit gravity irrigation, the selection of drip or trickle irrigation or sprinkler irrigation has to be

resorted to. This is so, specially in the case of high value cash crops where there may be an economic justification as well.

The main advantage of drip or sprinkler irrigation is the control of water application and the possibility of applying according to the crop water requirement. Evaporation and percolation is reduced to a minimum. The cost of installation and its maintenance is high, but the advantages are considerable.

MASL is trying out as pilot projects drip, sprinkler and mist sprinkler irrigation in its nurseries in System B. This has been found to be effective and working satisfactorily.

The very fact that drip and sprinkler irrigation has become an established practice in many countries, indicates that the high cost factor can be outweighed by the many advantages the systems offers.

The approximate costs for installing of drip or sprinkler irrigation system will be around Rs.250,000 per ha, excluding the cost incurred for the water. The maintenance cost will be around Rs.6,000 per month for an unit covering 10 to 15 ha. This excludes cost of spares and replacements for the drip or sprinkler units.

3.5 Telecommunication

The lack of telecommunication, telex and fax facilities was another draw back for big investors. Even communication between the several offices in the system too was lacking. As a result one has to shuttle from one office to another to get things done.

Even if these facilities cannot be immediately provided to various sites, it will be an incentive for entrepreneurs if a centrally located building complex in a town in the project area could be provided with telephones and rooms which could be rented out by investors to maintain their own telex and fax machines. This will attract large scale investors both foreign and local.

The setting up of agency post offices with direct dialling facilities could be also considered in the satellite towns in the systems. Cellular telephone facilities is another prospect that should be looked into.

The study reveals that there was no proper telecommunication systems in Systems B, C, G and Kotmale. Only a limited number of telephones are available in government office and private business places in towns. The existing Multi Access System installed at Polonnaruwa exchange had been tapped to capacity and provisions for further telephones are not available. Telephone connections to Girandurukotte through the exchange at Badulla is also working at full capacity. The possibility of providing telephones can only be solved if an additional "Multi Access System" could be installed at Polonnaruwa costing in the range of Rs. 35 million including sub stations to be installed at System C and B for

around 300 connections. The next alternative is the provision of radio telephone directly from Polonnaruwa exchange. This will entail an initial deposit of Rs. 50,000 and an annual rental of Rs. 10,000/= in addition to telephone calls. The cost for individual telephone connections from cable net work from the closest sub station will cost anything from Rs. 13,000/= to Rs. 50,000/= depending on the aerial distance from the sub station.

The situation in System H and Uda Walawe appeared to be better and Sri Lanka Telecom were prepared to install additional telephone facilities if requests were made.

Another possibility exists, where High Frequency Link System could be installed for point to point communication. The installation of these transmitters will require the permission of the Director General of Telecommunication to obtain a frequency wave length to operate this system. In addition it will be necessary to obtain security clearance from the Ministry of Defence & National Security.

3.6 Training Research, Production and Post Harvest Technology

Most projects will not be of lasting benefit if they do not include training of beneficiaries in agricultural techniques, management and soil protection measures. Farmers and personnel working for private investors should be encouraged to undergo training and even compensated for their time, for training is vital and is the most difficult constraint faced in production, post harvest handling, cooling and packaging.

Crop production largely depends on management and not so much on water. Trained personnel will control and manage the system to achieve maximum production. Therefore, training in production, though the average Sri Lankan farmer is relatively intelligent and traditionally familiar with farming practices, along with training in Post Harvest Technology will be an added advantage.

Training, undoubtedly will vary widely by crop. For instance post harvest technology of strawberry where shelf life is only 8 to 12 days maximum, and where a few minutes delay in cooling or slight mishandling of the fruit can make a big difference to the viability of business. In the case of melons, though it has a long shelf life, it will not be profitable to airfreight, but post harvest technology is needed even if it is to be shipped. Similarly training in post harvest handling, cooling and packaging will vary for gherkins, corns, tomatoes, mangoes, pineapples, banana, vegetable export crops, etc.

It will, therefore, be very necessary that an appropriate training curriculum be prepared and technology transferred to the farmers and employees of investors. This training will have its desired results if a part of the training could be done on-the-job. This is best done by getting crop specific groups together and training them on-the-job with packing facilities and adequate cooling facilities being made available. The training could be made very effective by employing qualified and dynamic Agricultural Extension Officers to

regularly visit the projects and assist the farmers and investors with necessary advice in the field.

A part of the cost of training could be borne by the private investors while MASL could contribute a substantial financial subsidy for training. The success of this training will benefit not only the present but also the future investors.

Training of farmers and the personnel working for private investors, in production, post harvest handling, cooling and packing, at a central training center with facilities for having on-the-job training, will be an asset and encourage the private investors. The Agriculture Department or the ARTI could be coopted to organize this training course, since the above processes will vary by crop. This training can also include basic knowledge in soil classification, detection of plant diseases and remedial measures that will be necessary.

Research should be an additional arm of the training programme. The need for a research unit was strongly felt with new technologies been introduced.

The MASL should explore the possibility of setting up a Research Management Unit to develop a capacity for identifying research needs, getting the research carried out and making use of the results obtained. This unit should comprise of personnel from the Irrigation, Agriculture, Agrarian Services Departments and MASL for developing new technologies for irrigation, production, harvesting, cooling and packaging. Research should give priority to the production of seed material which is now imported for most of the export crops grown. This could save not only foreign exchange but also help develop a strain of seed material that will suit our conditions. Research should also develop irrigation methods where the optimum use of water to derive maximum benefits can be achieved.

Cold chains comprise of pre cooling facilities, refrigerated transport, cool rooms and other post-harvest technologies to handle, processes, pack, store and transport perishable commodities. The MASL has taken the lead in introducing integrated cold chains. The EIED assisted by USAID has launched a Pre-Investment Programme to assist cold chain investors in Uda Walawe and the Mahaweli Systems. A cold chain is already in operation in System B with USAID assistance.

3.7 Roads in Mahaweli Systems

A development project such as envisaged in the Mahaweli Systems must necessarily have a good network of roads and highways. In the project areas there should be an internal network of market roads distributed throughout the area and connected to one or more important main roads to enable goods and services to be transported to the project areas and more important for produce from the project areas to be transported to cities and townships within the island and abroad.

The market roads to be preferably tarred and consisting of 'C' class distributory roads together with 'D' and 'E' class access roads, and capable of handling heavy vehicles and containerized cargo. The trunk roads to be 'A' or 'B' class and also capable of handling heavy vehicles and containerized cargo.

Roads in Sri Lanka are built and maintained mainly by the Road Development Authority (RDA). The RDA has five classes of roads, namely A, B, C, D and E. The A class roads are the national highways linking the main centers of the country, the district centers.

In some instances roads with very high traffic demand serving densely populated areas are included in this class. The B class roads are, primarily provincial roads which serve each province only and connect towns or population centers in the districts in the vicinity or to A class roads. The C class roads are distributory while D and E classes are access roads.

3.8 Transport

This is another constraint most investors will have to face till such time their farms become productive and profitable. Private organizations with lorries, containers and refrigerated truck facilities could be encouraged to handle haulage from the farm to domestic as well as international markets.

Means of Transport - containers (including refrigerated containers) and cold chain that would include facilities for hydro-cooling, cold storage and refrigerated transport of fruits and vegetables for export market will be another essential infrastructure.

3.9 Financial Infrastructure - Constraints for Production and Export

Many of the medium and small scale investors seek funding for their development projects. Banks have branches in these areas, but the decision on funding is taken at head office. The criteria for lending appears to be very strict, since there were complaints about non availability of loan capital.

3.10 Institutional Infrastructure

EIED, gives support and expert advice to Mahaweli investors at all stages from identifying potential joint venture partners to information and research on crops and markets, to on the ground assistance during start up and operation.

3.10.1 The laws in Sri Lanka provide for two incentive regimes viz.

- i. A general incentive regime under the Inland Revenue Act and other tax-related laws.

- ii. A special incentive regime under the Board of Investment of Sri Lanka (BOI) Law.

The incentives and concessions under the general incentive regime are applicable to all investments, whether foreign or domestic. The source of these incentives and concession is the Inland Revenue Act and other related laws.

Under the Special Incentive Regime the law empowers BOI to grant, special packages of incentives to enterprises, which meet BOI criteria. Such enterprises are of two types viz. Area enterprises located within the geographical area known as the area of Authority under law and other enterprises located outside such area is known as Licensed enterprises. There are no special incentives for Mahaweli areas.

3.10.2 Present System of Marketing and Constraints:

In the present marketing system obtaining in the various zones of the Mahaweli scheme, the private marketing channels play a predominant role. Collecting agents and traders buy up various food crops from the farmers, transfer them in their lorries to commission agents who pay the lorry hire and other handling charges. These are sold in turn to retailers at wholesale prices and the proceeds are remitted to suppliers after deducting wholesaler's commission which is approximately 10%. These commission agents or wholesalers generally finance both the suppliers and the farmers.

There are also a large number of small scale farm gate collectors operating in the marketing areas going from farm gate to farm gate collecting whatever crops they could procure and deliver them to wholesale units.

Government agencies such as the Paddy Marketing Board, Markfed and Co-operatives also purchase items such as paddy from collecting agents or groups of farmers. The C.W.E. also has an infrastructure to procure goods from Mahaweli areas and is the major collector of dried chillies within the Mahaweli region.

In general, subsidiary food crops that are harvested in Mahaweli areas are rarely sorted and graded at the farm level due to lack of on-farm storage, other facilities such as packaging materials, finance and even know-how.

Some farmers dry the crops without concern for the minimum requirement of proper storage or drainage and pack them in gunny bags for disposal to outside markets.

Even perishable items like fresh fruits and vegetables which are now grown in large quantities are similarly packed in gunnies causing serious spoilage and

damage to the contents on arrival at the point of sale. This aspect has serious consequences both to the producer as well as to the trader. The trader however, usually overcomes this difficulty by deducting the cost of spoilage and charging it to the supplier. This in turn reduces the farm gate price to sometimes uneconomic levels, for example, vegetables that fetch Rs.16/- per kilo in the market would hardly fetch Rs.3/- per kilo at farm gate.

3.10.3 The Need for Adding Value for Produce in Mahaweli Regions

As noted above the produce that is harvested penetrates into national markets or to factories outside the Mahaweli region without any processing being done within the region and transported in crude forms of packaging for the mere purpose of transport. For example, large quantities of fruits are transferred in gunnies by middleman who buy the harvest by the tree yielding hardly 2 to 3 cents per fruit to the farmer that would fetch Rs.5/- to 8/- in the city. Items such as subsidiary food crops, pulses and vegetables are also subject to similar marketing situations with substantial possibilities available within the resources of the Mahaweli region to upgrade their condition to be suitable for entry into the shelves of sophisticated markets.

The proposal of establishing the small enterprise development centers that will help farmers or other collecting agents to use the facilities installed in these units using labour available in the region together with other material such as packaging material from the region itself to add value to these products should be considered in conjunction with the need to upgrade these products. As an example it is possible to use farm waste such as paddy straw, appropriately pulped using basic technology to manufacture cartons and packaging material on a cottage industry basis to pack perishable foods and vegetables such as tomatoes in the same manner as how european fruits such as apples and jaffa oranges come to Sri Lankan markets all the way from european farms.

Similarly items produced such as dried chillies can be packed in polytene sashes in various degrees of grinding as it is presently done by the Ceylon Tobacco Company. A further extension of this would be to manufacture upto standards required by the Sri Lanka Bureau of Standards of various culinary preparations, such as curry mate marketed in the city using the facilities in the small enterprise development centers. These facilities could also produce cordials, jams and chutneys by use of the fruits and produce that are properly matured.

Even milled rice sorted and graded could be packed in sashes of two to ten kilos after grading according to quality specifications. These processing strategies have to be carried out not by the individual producer himself as his land holding and produce is too small to justify year round processing capabilities but by entrepreneur grades of collectors that would have to be identified with either

sufficient resources or financial inputs given by other agencies or groups of people willing to undertake such activities with the assurance of marketing possibilities. The key to the entire operation is based on the assurance of marketing possibilities which will then result in a chain reaction of entrepreneurs coming forward with the know-how and willingness to undertake such processes, financiers or financial institutions coming forward to fund those entrepreneurs and farmers coming forward to supply the raw material. This will also encourage secondary services such as the manufacture of packaging material, transport agents, bridging financiers, to smoothen the process of commercial and trading activity. However the key to all this, it must be emphasized once again is an identified buyer of the produce that comes out in such added value condition.

3.10.4 Intermediate Industry

There exists a vacuum in the Mahaweli areas for intermediate processing of farm produce, for example, there have been three occasions where production outstripped available demand causing severe loss to Mahaweli investors in the case of;

- (a) Tomato production
- (b) Big onion production and
- (c) Presently vegetable production

This problem where production far outstripped the demand during the season which necessitated the Government in the case of big onions to stop imports, adversely affecting both the producer during the harvest season where prices fell below cost of production and the consumer where prices went up exorbitantly as imports were not recommenced during the off-season. The answer to this problem obviously was to find a method of stretching the shelf life of these products from season to off-season. This could be done in several ways such as:

- (a) Refrigeration
- (b) Dehydration
- (c) Canning and/or converting to processed product form such as tomato puree in case of tomatoes, pickle or cooked onions in the case of big onions and frozen potato chips or mashed potatoes in the case of potatoes. This by itself would create opportunities for investors to come into Mahaweli.

The absence of such infrastructure creates a chicken and egg situation where the farmers are reluctant to produce due to bad experiences they have had of over production and investors are reluctant to create facilities to absorb such agricultural produce for fear that the farmers will not produce adequate quantities to keep these facilities utilized year round at break-even capacity levels. One

solution to this problem may be to create these facilities successfully operated and selling it off to private sector investors.

3.11 Social Infrastructure

During our visits to Uda Walawe, we noticed that project officers employed by investor companies have no social activity outside their working environment. This encourages them to use every opportunity they have to go back to their villages to visit their families because their stay within the project areas is on a bachelor/boarder basis. We also noticed that the Mahaweli officers attached to the various project divisions have their own sports centers, circuit bungalows and social network which exclude the officers and other employees attached to investor companies in the region. It may be worthwhile including some suggestions where the Mahaweli authorities can make arrangements to include the employees and investors also as members of this social infrastructure, which will help to knit together a social life style for the officers working in these projects. May be the Mahaweli can consciously provide some infrastructure facilities and have a budget for this purpose.

3.11.1 Housing

Lack of basic housing facilities near townships for the farm managers and assistants of the investors was another problem that needed attention.

Requirement for housing is for simple type accommodation, since most of the investors are only keeping their farm managers or co-ordinators on the land. This group requires housing near the main towns.

In Embilipitiya, housing is available. A three bed roomed house could be leased between Rs.3,000 - 5,000/- per month. In Girandurukotte and Dehiattakandiya housing is not readily available. In Kotmale area some housing is available.

In the new townships, areas should be earmarked for providing housing and land alienated for this purpose. This could be done on the same basis as land alienation for industries, agriculture, and Tourism.

It is best that MASL locates at least one hectare of land near townships with provision for electricity and water supply, so that investors could be offered blocks of land (say 20 perches) in these sites to build their own houses.

Priority should be given in townships in System B e.g. at Aralaganwila and Manampitiya and in System C at Dehiattakandiya and Girandurukotte.

In a one ha land between 12 and 15 houses could be built leaving room for roads and common amenities.

Property developers will be willing to come in and invest in the construction and sale of houses but will be reluctant to invest in roads, electricity and water supply. These have to be provided by MASL.

Assuming a one ha block with provision for 12 houses, a shopping complex and playground, the approximate cost will be as follows:

Clearing of site and landscaping	Rs	10,000.00
1/2 km metalled and tarred road with side drains @ Rs 540,000/- per km	Rs	270,000.00
1/2 km electricity and LT lines @ Rs 2,000,000/- per km	Rs	1,000,000.00
Water supply scheme including well, pump, overhead tanks, and pipelines	Item	Rs 200,000.00
	Total	Rs 1,480,000.00
	Say	Rs 1,500,000.00

The developer will have to attend to the sewerage system and the telecommunication if necessary, by the occupier.

3.11.2 Education

Primary, secondary and in some town centers senior schools are functioning. This in any case will not be a serious problem, since most of the senior staff of the investors would be outsiders.

3.11.3 Hospitals

A fair number of divisional and sub divisional health centers have been established in all these systems. Base hospitals are also available in the main towns. These facilities are adequate for the present staff that will be engaged on the farm. Most of the senior staff will be outsiders to the area.

3.11.4 Post Office

Post offices and sub post offices are functioning within the system and satisfies the needs of the settlers. The problem faced by the investors is the lack of a reliable telephone system. Constant breakdown of the communication system even in the post offices is a common feature. The main problem is the delay in the delivery of letters. A quicker and improved delivery system must be evolved.

3.11.5 Labour

In regard to the availability of unskilled labour, no action is necessary. As for skilled labour, it is suggested that agro based industries should specify their needs on a five year basis so that training could be given through technical colleges to suit the industry's needs.

Another deficiency noticed was inadequate access to labour in the project areas particularly during paddy harvest seasons. This could be eliminated by providing labour banks at each project office where investors could seek labour resources and workers looking for paid employment could register themselves at these offices. This would be a part of the required infrastructure in the Mahaweli to service investors.

4. INFRASTRUCTURE FACILITIES PRESENTLY AVAILABLE TO INVESTORS AND THE MAJOR GAPS

4.1 System B

Unlike in the other systems investors in System B have been provided with irrigation turnout to their farm land. This outlet is from the distributory canal with a control gate. During the water issue period investors can get water from the canal, but field canals within the farm to be constructed by the investor himself. Consultants visited several farms in System B and found some farms progressing quite satisfactorily.

Sunfrost, is the only company well established for a number of years in the system at present. Road network within the system is satisfactory. Major trunk road from Mahiyangana through Dehiattakandiya continues up to Manampitiya.

Almost all market roads have been constructed. Access to farms are from distributory canals and these roads need strengthening in order to get heavy vehicles to the farms.

Sunfrost (Pvt) Ltd. is cultivating gherkin in the allotment given to them at Ellawela area. They have their brine yard also at the same place. The major problem encountered here is non availability of power supply. For the processing factory they require 3 phase power supply. Ceylon Electricity Board has estimated the cost for 1/2 km of high tension line, step down transformer and low tension lines as Rs. 1.2 million and an investor is not in a position to invest such a large sum for electricity.

Telecommunication is the other major constraint they face. They have to go about 35 km to get a telephone call to their Colombo office. Polonnaruwa is the nearest town where telephone facilities are available. Like in Dehiattakandiya here too, radio telephones are available only in Mahaweli offices. Investors have no access to these telephones. This is a common problem to all investors in System B.

Sunfrost has about 400 outgrowers to grow gherkins.

CIC is the other major investor working in System B. They grow baby corn for the export market. The present labour force working with them is about 70 per day. CIC does five crops per year. They make use of the cold chain facilities available in System B. CIC has indicated that they will have their own cold room facilities if three phase electricity is made available to their farm.

They are planning to grow green chillies as well for the export market. About 1/2 km of power lines has to be extended from Kalukele hamlet center in order to get power supply.

Denvonel Export (Pvt) Ltd. is one of the major investors who is cultivating banana in Pelatiyawa area for the export market. This farm is located very close to the main road.

The access to the farm is very poor and this need urgent improvements. A ramp will have to be provided here in order to get heavy vehicles. The other major problem faced is security and elephant damage. If electricity is available here, they intend to have security lights and electric fencing to prevent elephant damage. Because of the security and terrorist problem in this area, they cannot station a permanent labour force here. They have made a request to the authorities to issue licenses for use of shot guns, but have had no response upto now.

Many investors, here face drainage problems during Maha season. This was chiefly due to the lack of adequate secondary drainage canals in between paddy farms and in the allotments given to investors. These drainage canals will have to be improved either by the MASL or by the farmer organizations. Investors themselves can also improve the drainage canals within their allotments.

In order to get electricity to the allotments given to private investors Low Tension lines have to be extended in all the service centers as given below.

Ellawela	-	about 8 km
Kalukele	-	about 5 km
Bandaragala	-	about 1 km (transformer capacity also to be increased)
Pelatiyawa	-	about 2 km
Maha Ulpotha	-	about 3 km
Maguldamana	-	no electricity available here. New transformer and LT Lines to be provided to the hamlet center. When investor request, the lines can be extended.

Consultants visited the following allotments during their visit to System B.

Ameen Enterprises	Lot 36
Kapila Groups	Lot 21
S.K. Kumara Earthmovers	Lot 24
Wijesooriya	Lot 42
Sapukotana	Lot 53

Lot No. 46, 47 - abandoned.

4.1.1 Ameen Enterprises:

Crops cultivated here are vegetables and mangos. This investor has not shown satisfactory progress up to now. They have constructed their own housing within the farm.

4.1.2 Kapila Group:

Present cultivation is red onions. They have grown lime as a permanent crop. Progress shown by the investor is not satisfactory. They have constructed their own housing.

4.1.3 S.K. Kumara Earthmovers:

Progress shown in the farm is not satisfactory. Present cultivation is banana on a small scale.

4.1.4 Wijesooriya:

Present cultivation is chilli and banana on a small scale. The progress shown so far is not satisfactory.

4.1.5 Sapukotana:

Progress shown by the investor is not satisfactory. This is due to the sub surface drainage problem in the farm. This problem may be due to water seepage from the distributory canal.

This investor also has the problem of the lack of telecommunication and power as faced by the other investors in other systems.

4.1.6 Industrial Parks

The area earmarked for the industrial parks at Welikanda has only been fenced and internal roads formed. This work had been stopped in 1989 due to insurgent activities.

None of the facilities like power, water, telecommunication, housing or security are available. It was observed that activity has yet to commence.

4.1.7 General

Details of social infrastructure facilities available in the system are given below.

**SOCIAL INFRASTRUCTURE FACILITIES SYSTEM B (LB)
(END OCTOBER, 1992)**

Type	System-B (LB)	
	Tar.	Act.
Primary	120	40
Junior Secondary	20	20
Senior Secondary	16	7
Divisional Health Center	3	3
Sub Div. Health Center	14	3
Gramodaya Health Center	20	17
Ayurvedic Dispensary	8	4
Dispensary (Private)	44	44
Post Office	5	2
Sub Post Office	24	19
Post boxes	136	51
Co-op(Small Scale)	60	46
Co-op(Large Scale)	-	-
Co-op (Complex)	1	1
People's Bank	2	2
Bank of Ceylon	1	1
National Savings Bank	-	-
Hatton National Bank	-	-
Rural Banks	8	1
Houses	18509	14420
Wells	18509	5836
Tube Wells	459	347
Development Center	1	1
Town Center	3	3
Unit Mgt. Center (HC)	75	65
Village Center	10	5
Area Center/Block Management Center	9	8
Police station	3	3

Source : MEA

4.1.8 The Major Shortcomings are as Follows:

1. Lack of power to use pumps for irrigation from dug wells during drought, and the inability to mechanize the farming processes in production and post harvest technology.
2. Communication facilities is very essential for big time investors.
3. Delay in granting loans due to delay in obtaining lease agreement.

4.2 System C

Out of seven investors in this system five are continuing their farms at present. Aitken Spence and Volanka have abandoned the sites. Forbes Agricultural Services (FAS), Informatics (Pvt) Ltd, CTC and other private investors are continuing their activities in the system. Forbes Agricultural Services (Pvt) Ltd is one of the major investors in the system and the consultants visited their brine yard at Divulapelessa. At present about 4.0 ha of land is cultivated with gherkins, bell pepper, papaw and lime. They cultivate bell pepper on an experimental basis. The main source of water is from a drainage stream. During normal cultivation seasons water is available in this drainage canal. The other water sources are Mahaweli ganga, and Ulhitiya oya which are far away from the farm. During periods of water shortage in the drainage canal, FAS intends to extract ground water from a dug well. The Major constraint here is electricity to run the electric pumps. Presently electricity supply is available only at their brine yard. A further 3 km of 3 phase line has to be extended to the farm.

FAS has outgrowers in about 280 ha of land during each yala season. There are no outgrowers during other periods of the year as there is no irrigation water available in the canals. However Forbes have outgrowers outside the Mahaweli area during this period. Forbes Agricultural Services (Pvt) Ltd has been provided with two store buildings at Divulapelessa on a rental basis.

Road network is satisfactory in the system. Major trunk road from Mahiyangana to Manampitiya and almost all market roads within the system are complete. Few market roads have to be metalled and tarred. Another major constraint to the investors in System C is telecommunication. Investors in Zone 2 have to come to Girandurukotte post office to get a telephone call to their Head Office in Colombo or to any of their dealers. Since telephone facility is limited, they have to go to private shops to get their telephone calls.

Most of these calls are of a secretive nature and investors entertain the fear that information will be available to their competitors. In the case of investors around Dehiattakandiya, there are no communication facilities as at Girandurukotte. There are a few radio telephones available at Mahaweli Authority offices but investors have no access to these facilities. There is no separate telephone exchange in System C. Calls come through Polonnaruwa exchange.

This exchange is working at full capacity and without expanding and improving this exchange the entire System C will suffer. Telephone facilities to Dehiattakandiya is not possible without expanding Polonnaruwa exchange. Their other major problem is housing for their senior staff. This problem is common to all investors in the system.

Electricity is not a major problem in the system. High tension lines run along the main trunk road from Mahiyangana to Aralaganwila. Almost all the service centers have been provided with electricity supply. Extensions to the existing power lines will have to be done in order to get power supply to the commercial lands. It was observed during the field visits that extensions to all commercial lands are within 4 km range from the existing power lines at the nearest service center. Power supply is required for pumping from wells, security, lighting, processing centers, cold storage, setting up of sprinkler irrigation systems, electric fencing to protect crops from wild elephants etc.

The lengths of Low Tension lines necessary to extend power supply to investors are given below.

Investors / Lot Nos	Extension of LT line (3 phase)
Forbes Agricultural Services	3 km
Lot No 3	4 km
Lot No 9	3 km
Lot No 9A	3 km
Lot No 10	3 km
Lot No 1	2 km
Lot No 4A	1 km

4.2.1 Industrial Parks

Both in Girandurukotte and Dehiattakandiya industrial parks, internal roads, storm water drains and power supply are available. A limited supply of water is available at both these parks. In Girandurukotte a limited supply of about 8,000 gal/day is expected to be pumped from a well. This is hardly sufficient since the yield from this well is about 6,000 gal/day. Action has been taken to construct a 20,000 gallon capacity water supply scheme for the project. Tenders have been finalized and work has yet to commence.

In Dehiattakandiya too a limited supply of about 10,000 gal/day is provided from the town supply. This is unreliable and insufficient too.

Action has been taken to construct a 30,000 gallon capacity water supply scheme, and the work is not complete with the intake to be constructed from a nearby tank.

Telecommunication is a problem. EIED has paid for a telephone connection for its office and security complex but it has still not been installed. The two existing garment factories, one in Dehiattakandiya and the other at Girandurukotte, and a light scale engineering industry have obtained their phones.

Housing was also a constraint faced by many investors.

The following investors had already commenced work in the parks.

Girandurukotte

1. 1 No. big garment factory
2. 1 No. medium scale engineering
3. 2 No. large scale engineering industries and
4. 3 No. small scale high engineering industries.

Dehiattakandiya

1. 1 No. big garment factory
2. 1 No. medium scale engineering industries.
3. 1 No. small scale engineering industries.

4.2.2 Labour

Investor have to face labour problems during the harvesting period of the cultivation seasons.

4.2.3 General

Details of social infrastructure facilities available in the system are given below.

SOCIAL INFRASTRUCTURE FACILITIES SYSTEM C (END OCTOBER, 1992)

TYPE	System-C	
	Tar.	Act.
Primary	58	45
Junior Secondary	24	45
Senior Secondary	2	2
Divisional Health Center	2	2
Sub Div. Health Center	9	9
Gramodaya Health Center	49	30
Ayurvedic Dispensary	10	4
Dispensary (Private)	-	-
Post Office	3	3
Sub Post Office	26	15
Post boxes	79	47
Co-op(Small Scale)	70	33
Co-op (Complex)	-	-
People's Bank	2	1
Bank of Ceylon	2	2
National Savings Bank	-	-
Rural Banks	7	2
Houses	21558	20028
Wells	21558	8522
Tube Wells	25	23
Development Center	1	1
Town Center	2	2
Unit Mgt.Center (HC)	83	69
Village Center	19	13
Area Center/Block	-	-
Management Center	9	9
Police station	2	2

Source : MEA

4.2.3 Systems B and C - Roads

The earlier access to Systems B and C is from Kandy through the Kandy-Mahiyangana road which lies to the left of the Mahaweli ganga. This road is from Kandy to Mahiyangana via Moragahamulla, Hunasgiriya and Hasalaka.

A 24.4 kilometer main road has been constructed from Tennekumbura to Moragahamulla on the left bank of the Victoria reservoir to replace the section of the existing Kandy-Mahiyangana road which has been submerged. Beyond this point though classified as an A class road the Kandy-Mahiyangana route is narrow and not suited for heavy and fast traffic. Moragahamulla to Hunasgiriya has not only very steep grades but is narrow and winding. Considerable difficulty is experienced when two vehicles attempt to cross each other and therefore a fair amount of time is spent in traversing this section. After this section lies the 17 hairpin bends and a descent from about 3500 ft. MSL. to about 325 ft. MSL takes place up to Hasalaka. In this section also there is delay to vehicles while negotiating the difficult bends, specially those goods and public transport vehicles. The heavy vehicles have to stop for passing. The section Hasalaka to Mahiyangana has been improved and is in good order. The distance from Kandy to Mahiyangana through these hair pin bends is 68 km.

This route takes about 2 1/2 hours for a car journey from Kandy to Mahiyangana and about 3 1/2 hours for a heavy vehicle. Besides the long travel time, high vehicle operating costs, the route has very low safety standards.

There are three new main roads which run through System C and B. namely;

1. Mahiyangana to Manampitiya 67 km
2. Manampitiya to Maha Oya 64 km
3. Dehiattakandiya to Aralaganwila 19 km

These roads have a platform width of 7.9 meters, pavement width of 5.5 meters and 1.20 meter wide shoulders. They have been designed and built to carry heavy and fast traffic.

The new roads have been built from Mahiyangana to Girandurukotte a distance of 17 km, Girandurukotte to Dehiattakandiya 13 km and from Dehiattakandiya to Manampitiya 37 km, making the distance from Kandy to Girandurukotte through the hair pin bends a total of 85 km.

Besides these there are 145 kilometers of market roads and 430 kilometers of hamlet roads in System C and 161 kilometers of market roads and 322 kilometers of hamlet roads in System B serving the village and area centers.

Kandy-Girandurukotte New Mahaweli RB Road

Yet another Kandy - Girandurukotte new Mahaweli RB road has been built to link Kandy to the center of System B and C by a highway on the right bank of the Mahaweli ganga utilizing some of the access roads. The distance from Kandy to Girandurukotte will be 118 Km.

The advantages of this road are;

1. To enable rapid transport of produce from Systems C and B to Colombo, Kandy, Nuwara Eliya, Badulla and Ampara.
2. To link Kandy which is an educational, cultural, commercial and financial center with Girandurukotte.
3. To enable social interaction of the settlers and investors in Systems C and B with their homelands in and around Kandy, Nuwara Eliya and Colombo.
4. To link the project area to the downstream development areas (Systems C and B) and connect them to the main highway network by a modern A class route for rapid transit to other parts of the country.

The highway has been designed to A class standard, has a formation width of 9.0 meters and a carriageway of 6.5 meters. It is built to a specification to carry fast and heavy traffic.

On the Kandy-Hasalaka-Mahiyangana road the average speed is about 35 km/hr. but on the new route it may exceed 65 km/hr. which therefore cuts the time taken by about half.

4.2.4 Major Gaps

1. Non availability of year round water. Most of the earlier investors were of the view that water would be made available either through gravity or lift irrigation.

They are reluctant to investigate the possibility of the availability of ground water due to the high cost involved.

Even basic data such as the level of the water table in the land is not available to them.

2. Investor cannot resort to pumping from dug wells or streams due to the non-availability of power supply at source of water.

Non availability of water during canal closure is experienced by the outgrowers since water issue are based on seasonal irrigation. Here again pumping from dug wells is not possible due to lack of power, during water shortage.

3. The lack of telecommunication facilities to the investor is a serious draw back and has effected production in the farm.
4. Lack of easy funding facilities due to delay in lease agreement.

4.3 System H

4.3.1 Lot No.6 (170 ha).

The only investor now working in System H is M/S C.W. Mackie & Company. They have started their farm recently on a 20 ha. block. This is in lot No.6 (160 ha). The main source of water is ground water. Power supply is available about 1 km away.

No telephone facilities are available here, but direct dialling facilities are now available at Nochchiyagama town which is about 7 Km away.

4.3.2 Lot No.2 (70 ha).

The major problem here is water. This land is above the branch canal. Power lines run about 2 km. away. Road needs improvements to take heavy vehicles to the land. Telephone facilities are not available (closest is 5 km away).

4.3.3 Lot No. 3 (160 ha).

50% of the area has been reserved for a youth village. Electricity is available 1/2 km away. Only source of water for the cultivation is ground water. Road system is satisfactory. Drinking water is available from tube wells around this area. It is learnt that the water table is about 150 ft. below ground level.

4.3.4 Lot No. 5

Road system is satisfactory. Power line is running about 2 km away. The only source of water is ground water. No telephone facilities close to the allotment.

4.3.5 Lot No. 11

Cancelled

4.3.6 Lot No.17

Cancelled

4.3.7 Industrial Park Tambuttegama

Roads metalled and tarred. Three phase power supply and drinking water supply are available. A water supply scheme for industrial purposes is proposed. No waste disposal yard provided. Housing is a problem for the investors.

Telephone facilities are available at Tambuttegama Township.

Road system in system H is in good condition for container transport.

4.3.8 General

Social infrastructure facilities in the systems are given below.

SOCIAL INFRASTRUCTURE FACILITIES SYSTEM II (END OCTOBER, 1992)

TYPE	System-II	
	Tar.	Act.
Primary	17	17
Junior Secondary	50	50
Senior Secondary	21	21
Divisional Health Center	4	4
Sub Div. Health Center	5	5
Gramodaya Health Center	40	58
Ayurvedic Dispensary	5	9
Dispensary (Private)	-	-
Post Office	8	8
Sub Post Office	26	26
Post boxes	90	90
Co-op(Small Scale)	30	30
Co-op(Large Scale)	29	29
Co-op (Complex)	5	5
People's Bank	8	8
Bank of Ceylon	8	7
National Savings Bank	2	2
Hatton National Bank	1	1
Rural Banks	7	7
Houses	26192	23922
Wells	8746	9169
Tube Wells	282	162
Development Center	2	2
Town Center	8	8
Unit Mgt. Center (HC)	51	30
Village Center	-	-
Area Center/Block		
Management Center	10	8
Police station	7	7

Source : MEA

4.3.8 The major gaps in this system are as follows:

1. Non availability of an assured supply of water. Investors have to depend on ground water. Ground water exploration has not been carried out, but farmers are of the view that water is available within a depth of 150 ft. judging by the tube wells provided in the area for drinking water.
2. Power lines are in close proximity and if it could be made available at the farm, the investors will be encouraged to come in.
3. Credit facilities to investors have to be streamlined and given without much delay. Lease documents should be considered as security for granting of the loan.

4.4 System G

In System G only two allotments are available for major investors. ie. Diyabeduma Farm and Attanakadawala Farm.

4.4.1 Diyabeduma Farm (extent 8 ha)

This is an abandoned farm. Water is available in Elahera Giritale Yoda ela during water issue period. ID's approval is necessary for tapping this. 3 phase electricity is available at the farm. No telephone facilities available.

4.4.2 Attanakadawala Farm (5 ha)

This farm belongs to MEA now. Three no. quarters, two store buildings, two temporary sheds with half walls and two wells are available at site. Water is also available at site. LT 3 phase electricity is available at the farm. No telephone facilities.

4.4.3 Industrial Park (Attanakadawala)

All roads are gravel roads. Electricity is not available at the moment. According to EIED Manager, payment has been made to CEB for construction of power lines. Over head tank has been proposed. Two investors have constructed tube wells here. Land is not available at Bakamuna, hence they have shifted to Attanakadawala.

The main trunk road from Naula to Giritale passes through System G and this cannot be used for container transport. The width of the road is not sufficient. At least the section from Bakamuna to Giritale has to be widened and improved to transport containers. The other constraint is that no telephone facilities are

available either at Diyabeduma or Attanakadawala. Limited telephone facilities are available at Bakamuna town. Main passenger transport service is very poor.

4.4.4 General

Details of social infrastructure facilities in the system are given below.

SOCIAL INFRASTRUCTURE FACILITIES SYSTEM G (END OCTOBER, 1992)

TYPE	System-G	
	Tar.	Act.
Primary	10	10
Junior Secondary	10	10
Senior Secondary	4	4
Divisional Health Center	1	1
Sub Div. Health Center	2	2
Gramodaya Health Center	10	10
Ayurvedic Dispensary	2	2
Dispensary (Private)	-	-
Post Office	1	1
Sub Post Office	10	10
Post boxes	16	16
Co-op(Small Scale)	17	17
Co-op(Large Scale)	1	1
Co-op (Complex)	-	-
People's Bank	1	1
Bank of Ceylon	1	1
National Savings Bank	-	-
Rural Banks	3	2
Houses	3395	2590
Wells	2015	109
Tube Wells	163	163
Development Center	2	-
Town Center	1	1
Unit Mgt. Center (HC)	25	14
Village Center	-	-
Area Center/Block		
Management Center	1	1
Police station	1	1

Source : MEA

4.4.5 The major constraints are as follows:

1. Likely investors were under the impression that water would be available at the farm either through lift or gravity irrigation. Problems have arisen since, water will not be made available from the irrigation system. Ground water resources have not been explored nor are data available regarding the water table in the area. Investors are reluctant to invest on ground water feasibility studies. There no investors at present. The solution will be for the MASL or EIED to dig trial tube wells and provide the necessary basic data to the probable investors, in the land to be allocated.
2. Communication is a major problem and this need to be looked into.
3. Road net work to be improved for heavy traffic and passenger transport system to be strengthened.

4.5 Uda Walawe

The major constraint faced by the investors in Uda Walawe area is water. Water cannot be supplied from the canal system as there is a shortage of water even to the irrigable lands given to the farmers. At present about 12,300 ha. have been developed under Uda Walawe tank both in right bank and left bank. Further extension of 9400 ha. under left bank will be undertaken within the next few years. As informed by the Resident Project Manager of the system, 40% crop diversification is necessary by 1994 in order to supply irrigation water to the left bank extension. The present cultivation in Maha season is mainly paddy. The water usage is very high in upper reaches of main canal. This is mainly due to the paddy cultivation in well drained soils. There is a severe water shortage at Angunukolapelessa area. This area is at the end of the right bank canal. Block Manager - Angunukolapelessa informed that about 1000 ha. out of 2600 is not cultivated due to water shortage. RPM stated that 1400 ha. of banana cultivation has been done in the irrigable area. The soil in this area is suitable for Embul banana. He stated that the average profit from one hectare is about Rs.245,000/= (about Rs. 100,000/= per acre).

The Deputy Manager EIED stated that many investors have informed their dissatisfaction due to the water shortage. Ground water is the only source of water for the investors. Star Silk (Pvt) Ltd has been supplied with D canal water for the mulberry cultivation at Murawasihena. Farmers in the area have protested against this and MIEA has reduced the issues to them. They cannot maintain the cultivated extent of 26 ha. now and hence reduced it to 13.8 ha.

Green Finger's (Pvt) Ltd, Heron (Pvt) Ltd. and Agri Lanka are the other firms who have shown their dissatisfaction due to the water shortage. Heron (Pvt) Ltd. has done investigation for ground water availability and found that the yield was very low in their 20 ha. block.

EIED Manager stated that the area allocated to private investors close to Embilipitiya are suitable for light engineering work, food processing work, etc. as other infrastructure like pipe borne water supply, electricity and good road system is available to investors. Private houses too are available at Embilipitiya if investors wish to rent them out.

Telecommunication facilities are available in Embilipitiya and Angunukolapelessa area. Other social infrastructure facilities like hospitals, schools, post offices and town center are available in the project area.

Consultants visited the following locations during their inspections and the present position is given below:

Block Manager Angunukolapelessa informed us that one office building is available here and that can be rented out to a private investor.

4.5.1 Lot No: 1 (40 ha.) - [Embilipitiya Block]

Power supply is available in this location. Land has been cleared by chena cultivators and is in shrub jungle now. Road system is good. Water is the main constraint here. No data available on ground water. Housing facilities is also lacking.

4.5.2 Lot No: 2 (20 ha.) - [Embilipitiya Block]

Power supply is not available in this location. About 3 km of power lines to be extended to get power to this land. Road system is good. There is a small village tank close to this location. Farmers will not allow pumping of water from this tank. Villagers informed that there are no shallow wells in this location even to ascertain the approximate depth of the ground water table. Housing facilities too are lacking in this area.

4.5.3 Lot No: 8 (200 ha.) - [Embilipitiya Block]

As in the other lots no information is available with regards to ground water. No source of water close to this location. Road system is good here. Power supply is available in this location. No housing facilities in the area.

4.5.4 Lot No: 4 (50 ha.) - [Angunukolapelessa Block]

Power supply is not available in this location. High tension lines are going along the main road. About 3 km of LT lines to be extended and a transformer to be installed here. No surface water source is available. No data is available on ground water table. The road system is satisfactory. No housing facilities in this location.

4.5.5 Lot No: 5 (200 ha.) - [Angunukolapelessa Block]

Housing, office and storing facilities are available here. These stores buildings need repair. Electricity is available here. Water can be pumped if permission is obtained, from an adjacent tank which receives drainage water from paddy fields. It was reported that the area under the tank is outside the Mahaweli and about 65.6 ha. of paddy is cultivated. Management of this 65.6 ha. is by the Department of Agrarian Services. Road system is good here.

4.5.6 Star Silk (Pvt) Ltd. - [Murawasihena Block]

Mulberry is being cultivated in this land. Aitken Spence is running this farm. Irrigation water is available here. However, due to protests made by farmers in the area, MEA has curtailed the water supply. Electricity and housing are available. The major problem here is telecommunication. Investors have started a sprinkler irrigation project for about 14 ha and this is working satisfactorily. Water is pumped from the D canal.

4.5.7 Industrial Parks

The former concrete yard of the RVDB had been purchased by MASL and converted into an industrial park. This is being successfully operated. Facilities like water and power are available but telecommunication and housing are a constraints.

9 investors have started operations and nearly 100 youths of this area are being employed.

3 gem cutting and jewellery industries mainly working on sub contract for export firms.

2 light engineering industries.

1 producing gearlinks and this other making of cycle seats.

4.5.8**General**

Details of social infrastructure facilities available in the System are given below.

**SOCIAL INFRASTRUCTURE FACILITIES UDA WALAWE
(END OCTOBER, 1992)**

TYPE	Uda Walawe	
	Tar.	Act.
Primary	8	8
Junior Secondary	34	34
Senior Secondary	11	11
Divisional Health Center	3	3
Sub Div. Health Center	4	1
Gramodaya Health Center	44	44
Ayurvedic Dispensary	-	3
Dispensary (Private)	-	-
Post Office	4	4
Sub Post Office	23	23
Post boxes	11	11
Co-op(Small Scale)	45	45
Co-op(Large Scale)	-	-
Co-op (Complex)	1	1
People's Bank	4	4
Bank of Ceylon	1	1
National Savings Bank	1	1
Hatton National Bank	-	-
Rural Banks	7	7
Houses	25302	21090
Wells	3519	3518
Tube Wells	270	269
Development Center	2	2
Town Center	1	1
Unit Mgt.Center (HC)	66	50
Village Center	-	-
Area Center/Block		
Management Center	7	7
Police station	5	5

Source : MEA

4.5.9 The major gaps in this system are as follows:

1. Lack of an assured supply of water to the farms throughout the year.
Details of groundwater potential and data on the water table in the land is not available.
2. Power at the farm is another constraint that discourages the private investor.
3. Lack of communication facilities is another major draw back for the big investor.
4. Slow process taken in the granting of credit due to delay in lease agreement.

4.6 Kotmale

11 plots have been demarcated for development by the private sector investors. Out of this, part of block 8, has been divided for handing over to Bahira Farms for a poultry project, the balance is being used by the police for a horse breeding station. Bahira have still not been placed in position.

In addition to the above plots, a 10 ha. area has been given to Mr. Jayathilake for livestock farming, and pasture cultivation has started although no animals have been brought to the land.

These plots have no irrigation facilities and depend on rain. These are remnants of acquired estate land after alienation to small holders and re-settlement of villages from inundated areas of the Kotmale reservoir and victims of land slides.

Although there is no irrigation provided to these lands, they have streams flowing within their boundaries or in close proximity.

The roadways are in good order except for the last stretch of road, access to land varying from 0.4 km. to 0.8 km. which are old plantation roads, now neglected. Whilst these roads are transversible by 4 wheel vehicles, they would need improvements to sustain regular traffic.

Most of the lands have electricity virtually to the site. Proximity of settlement ensure availability of labour. A survey reveals that there are many under-employed youth who await an opportunity to work.

Proximity of old settlements provides post office with telephone and telegraphic facilities.

These lands are at an elevation of 608 - 1275 meters. The climate is very salubrious. There is rainfall for 8 months of the year. There are facilities to develop small reservoirs to store water during the drought.

These lands are ideal for horticulture, vegetable farming and they are also suited for livestock.

It would appear that no awards have been made of the applications received. If adequate publicity is given there should be no dearth of applications since there are a number of vegetable farmers who are starved of land in the Nuwara Eliya and Welimada areas and the climatic conditions are ideal for this type of cultivation.

The Kotmale EIED - Deputy Manager and staff have the right attitudes towards private sector investments. The only restraining factor is the delay in deciding suitable developers.

On the tourism side, it was noted that 3 sites have been selected for hotel projects. These sites are;

(i) Kotmale

On the left bank of the Kotmale reservoir at Tispane/Kirimatiyawa below the main road. Nearest town and district - Gampola, 26 km. away. Tourist attractions are reservoir, landscape and mild temperature. Access 6 1/2 km from the Kotmale dam on the LB of the reservoir. Approximate extent 2 ha. Proposed development - 50 roomed hotel. Approximate cost Rs.50 million.

(ii) System/Kotmale

Left bank of Kotmale reservoir, the footpath along the disused stone quarry taking off the main road at the dam. Nearest town and district - Gampola, 26 km. away. Tourist attractions reservoir, landscape and mild temperature. Access 3 1/2 km. from the Kotmale dam, could be approached along the footpath taking off from the Kotmale/Tispane road above. Approximate extent 2 ha. Proposed development 50 roomed hotel. approx. cost Rs. 50 million.

(iii) Kadadora Kotmale

The site is situated 2.6 km from Gampola Maswela main road over looking the Kotmale reservoir. Location - Kadadora Kotmale, nearest town and district

Gampola, distance 16 km away. Tourist attractions reservoir, landscape and climate. Access - it is about 2.6 km from 11/5 culvert on the Gampola - Maswela road. Approx. extent 2.5 ha. Proposed development 50 roomed hotel. Approx. cost Rs. 50-60 million. The site can be developed into a 50-100 roomed hotel as there is a short fall of rooms in the hill country region.

Although these tourist hotel projects have been identified, no demarcation has been done by the Authorities nor has a decision been made to make available these lands. The local officers have not been advised of the status of these Projects, even the exact location is not known.

It was also observed that these sites are not easily accessible and the road would have to be made to provide access. Provision for electricity and telecommunication facilities would also be necessary.

Preliminary work to be done by the authorities in regard to hotel development are as follows:

- demarcate the land
- offer to developers
- award the land to the developers for hotels.

4.6.1 General

Since this is an old existing town, facilities for schooling, divisional hospitals, health centers, private dispensaries, Post Offices and Banking facilities are available within reach of the inhabitants.

4.6.2 Systems G, H, Uda Walawe and Kotmale Roads

These systems are essentially in existing irrigation settlements. The existing road net work is in a fairly good condition. Transport to township road and rail were available. New roads in System H connecting the town centers and service centers have been constructed and heavy vehicular traffic is passable on these roads.

In System G, the main road passing through Naula - Giritale and the road network connecting service centers have also been improved. These roads however needs widening for container cargo transport.

The road network in Uda Walawe is satisfactory and is not a hinderance for transport of produce.

In Kotmale to the roads are in good order. A circular road around the reservoir has been built providing investors with access to the major towns. However some

access road going through old plantation areas have been neglected. These roads need improvement for heavy vehicular haulage.

4.6.3 The major gaps are as follows:

1. Valuation of the land is always done after the developer has been identified. This is not satisfactory since the developer should be in a position to know the cost of the venture before he is in a position to make a formal contract. The present system leads to delays and frustration. Therefore, it would be desirable to value the land on an area basis and allocate after joint inspection.
2. The present system of giving the land on an initial 2 year lease, followed by a 30 year lease does not raise any objection from the potential Investors. However, delays in completing the transaction can cause greater frustration.
3. In the case of hotels, the need to go through a preliminary 2 year lease period should be dispensed with and a 50 year lease should be granted due to the extensive capital expenditure involved and longer gestation period.
4. Improving the telecommunication network is essential.

5. INFRASTRUCTURE INVESTMENTS REQUIRED BY MAHAWELI OR PRIVATE SECTOR OVER THE SHORT AND MEDIUM TERM

System B

The main constraints faced by investors are land for housing electricity and telecommunication. If these could be made available, even shortage of water encountered for irrigation too could be overcome by pumping from wells since availability of water is seasonal.

MASL could use its good offices in expediting the installation of power and telecommunication. We suggest that MASL makes a strong recommendation to Sri Lanka Telecom to implement the extension of the exchange and complete all work within the next six months. This will be an incentive to investors. The cost of improving the telecommunication services will be approximately Rs. 35 million for Systems B and C.

The survey revealed that even those who have been allocated the land are reluctant to invest large sums of money due to the tenure of the land being only for one year with the provision of extending it annually. This uncertainty is a constraint that prevents even investors having land near to the power lines from obtaining the electricity required. For eg. Sunfrost Ltd a large scale investor, whose land is only 600 yards away from the closest transformer, is reluctant to invest in power for improving his land for pumping of water and for domestic use many of the other big investors are of this same opinion. Land should be provided for housing in a centrally located area where power and telecommunication could be made easily available.

SPECIFIC SHORT TERM INFRASTRUCTURE NEEDS OF SPECIFIC PRIVATE INVESTMENT PROJECTS AND COST ESTIMATES

System	Name and Lot No	Extent of Land (Ha)	Proposed Investment	Infrastructure needs	Cost
B	Sunfrost Lot No 9 and 55 Block 102	20	Land for housing for staff	0.5 Ha land with facilities for housing	Rs 750,000
B	C.I.C. Lot 25 to 27 Block 102	27	Land for housing for staff	0.5 Ha land with facilities for housing	Rs 750,000
C	Forbes Agri Services Divulapelessa Zone 2	26	Land for housing for staff	0.5 Ha land with facilities for housing	Rs 750,000
II	Mackie & Co Block Helebawa	20	For pumping ground water	Power and land for housing	Rs.3,250,000/-

The extension of power lines will also benefit the other small scale investors and the villagers through which the power lines run.

System C

Lot 9- Block No 201 - Zone 02 - 360 ha

Power is available at site on Mahiyangana - Padiyatalawa Road. It is recommended that the HT line coming from Girandurukotte towards Padiyatalawa be extended to join with the Padiyatalawa - Mahiyangana Road. This will be approximately 8 km. The cost will be around Rs. 20 million. This facility if provided will serve both lots 9 and 10 totalling 860 Ha and will benefit the villagers residing in close proximity to this road for their domestic purposes. There is also all the possibilities that community development like cottage industries and social, cultural and religious activities too will develop.

Telecommunication

At present is available only at the Mahiyangana post office. The lack of telecommunication at site is a big constraint. Facilities must be provided through the Polonnaruwa exchange. This has to be expanded by Sri Lanka Telecom. If this additional multi access system is installed this will serve both Systems C and B.

Water

The availability of water is a prerequisite for any investor. He should be given at least the probable ground water availability data by the MASL. It is recommended that one trial bore hole be carried out in every 50 ha lot to determine the availability of water. It is best that this test be carried out during the dry season. These data will give the investor an idea of the possibilities of water available to suit the investment to be made. The approximate cost of a trial bore hole including recharge rate will be Rs. 150,000 therefore, for 8 such wells in lot 9 will cost Rs.1,200,000.

Jeep tracks for future roads

It is recommended that 10 jeep tracks be opened up in lot 9 starting from the Girandurukotte - Padiyatalawa road. Each of these roads will be 8 feet wide and an average length of 3 km. The cost will be approximately Rs. 3200/= per km. The total cost for this exercise will be around Rs. 10,000/=. This will help the investor to inspect the sites for selection.

Summary of Approximate Cost

Power	-	Rs. 20,000,000.00
Telecommunication (for Systems C and B)	-	Rs. 35,000,000.00
Water for trial tube wells	-	Rs. 1,200,000.00
Land - for Jeep track	-	Rs. 10,000.00

Presuming that the total cost for power and telecommunication will be met by the respective organizations, the pro-rate cost per ha for provision of tube wells and jeep tracks will be Rs. 3,400/= which is a reasonable amount that could be met by MASL.

Lot 10 - Block 201 - Zone 2 - 500 ha

Power

If the HT line as proposed for lot 9 is extended up to Mahiyangana Padiyatalawa road, there will be power for lot 10. All facilities that will accrue to lot 9 will also apply to this lot.

Telecommunication

If the facility as recommended for lot 9 is implemented. This will serve lot 10 as well.

Water

We recommend 12 trial bore holes with test runs be done in lot 10. The details made available to the investors. The total cost for the 12 Trial bore holes will be Rs. 1,800,000/=.

Jeep tracks for future roads

Based on the recommendations made for lot 9. It will be necessary to provide for at least 40 km of 8 ft wide Jeep tracks. The total cost will be Rs. 128,000/=.

Summary

Assuming power and telecommunications costs are met by the respective organizations, the cost to be met by MASL will be as follows:

Water - trial tube wells	Rs. 1,800,000.00
Land for jeep tracks	Rs. 128,000.00

	Rs. 1,928,000.00

The pro-rate per ha will be Rs. 3856.00 for provision of tube wells and jeep tracks.

Lot No. 2 - Block 601 - Zone 6 - 193.54 ha

Power

Power is available 1 km away, and it is recommended that the line be extended to the site. This will approximately cost Rs. 2.5 million. This power supply will benefit the villages and uplift the socio-economic life of them.

Telecommunication

If the Polonnaruwa exchange is rehabilitated and the multi access system provided, this will benefit all investors in lot No. 2.

Water

We recommend that 4 trial bore holes with test runs be done in this lot. The data made available to investors. The total cost for the 4 bore holes will Rs. 600,000/=.

Jeep Tracks for Future Roads

We recommend that 15 km of 8 ft wide jeep tracks be provided for inspection purposes. The total cost will be Rs. 48,000/=.

Summary

Water- trial tube wells	Rs.600,000.00
Jeep Track	Rs. 48,000.00

	Rs.648,000.00

The pro-rate will be Rs. 3348/= per ha.

It is not recommended that lots bordering the stream reservations be given out to investors. Priority should be to start work on lots 2,9 and 10 on the jeep tracks and investigation for ground water. Based on the above assumptions for large lots a tabulated form is provided for the smaller lots.

INFRASTRUCTURE INVESTMENTS REQUIRED BY MAHAWELE OVER THE MEDIUM TERM - SYSTEM 'C'

Description	Extent of land (ha)	Power	Telecom	Water Investigation
Lot No 1 Block No. 302 Zone No. 3 Hamlet Center Medagama	30	By Investor	By SL Telecom	1 No Bore Hole Rs 150,000
Lot No 3 Block No. 205 Zone No. 2 Hamlet Center Rotalawela	50	By Investor	By SL Telecom	1 No Bore Hole Rs. 150,000

**INFRASTRUCTURE INVESTMENTS REQUIRED BY MAHAWELI OVER THE
MEDIUM TERM - SYSTEM 'II'**

Lot No., Block No. and Zone	Extent of Land (Ha)	Power by	Telecom by	Water Investigation by MASL
Lot - 2 Block - Tambuttegama Zone - H4	70	1 km CEB/MASL 5 million	Investor	2 bore holes Rs.300,000/-
Lot - 6 Block - Nochchiyagama Zone - H5	170	1/2 km CEB/MASL 7.5 million	Investor	3 bore holes Rs.450,000/-

SYSTEM - UDA WALAWE - MEDIUM TERM

Lot No., Block No. and Zone	Extent of Land (Ha)	Power by	Telecom by	Water Investigation by MASL Bore Holes (Rs)	Jeep tracks for Inspection by MASL (Rs)
Lot No - 3 Block - Binkama	350	CEB/MAS L 1 km 2.5 million	SLTC	7 Bore Holes 1050,000/-	30 km 100,000/-
Lot No - 8 Block - Chandrikawewa	200	CEB/MAS L 1 km 2.5 million	SLTC		
Lot No - 5 Block - Angunukolapelessa	200	CEB/MAS L 1 km 2.5 million	SLTC	4 Bore Holes 600,000/-	15 km 50,000/-
Lot No - 6 Block - Kiribbanwewa	200	investor	SLTC	4 Bore Holes 600,000/-	15 km 50,000/-

The priority would be to carry out the work on the jeep tracks and the water investigations to be made available to the investors and the investment for power could depend on the nature of the investments proposed.

SYSTEM - KOTMALE - MEDIUM TERM

An mentioned in this report in para 4.6 the 3 specific total projects proposed will require the following infrastructure investments which cannot be expected from the investor are as follows:

Lot No. 1 Block - Tispane - extent 9.7 ha

Power requirements for 2 km cost	Rs. 5,000,000/-
Improvements to public access roads 6 1/2 km @ 550,000/- per km	Rs. 3,575,000/-

Lot No. 2 - Block Tispane - extent 7.3 ha

Power requirements for 2 km cost	Rs. 5,000,000/-
Improvements to public access roads 3 1/2 km @ 550,000/- per km	Rs. 1,925,000/-

Lot No. 11 - Block - Peacock Hill - extent 9.7 ha

Improvements to Public access roads 2.6 km @ 550,000/- per km	Rs. 1,430,000/-
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The rest of the lots in Kotmale System available for investors are mostly hilly land from acquired estate land, with scattered rock outcrops, which are suitable for intensive fruits, vegetable farming and pasture.

These lots need no additional infrastructure investments to attract investors. The survey revealed that there are enough local traders who are prepared to invest in horticulture and the constraint is lack of land.

It is recommended that MASL gives more publicity to attract this category of people, who are already in this agro trade and are looking out for land to expand their cultivation.

Water will not be a constraint in this system and the climatic conditions are ideal for the above type of cultivations.

The telephones at the Kotmale post office should be available for investors who find it extremely difficult to obtain their calls due to frequent breakdowns. Action should be taken to install more effective telephone communication systems in the Kotmale area.

5.1 Recommendations for Infrastructure Investments

Issues	Constraints	Solutions
1. Essential data regarding the Land, its water potential, etc. are not available to investors.	1.1 Lack of information on ground water.	1.1 Carry out trial runs to determine recharge rate and depth of water table.
2. Non availability of electric power for agriculture industry and domestic use.	2.1 Lack of 1 phase and 3 phase power lines in close proximity to the allotments	2.1 Facilitate provision of 3 phase HT lines with transformers by CEB along main roads to serve the large blocks of land reserved for investors.
3. Non availability of telephone facility to investors.	3.1 Telephone exchanges are not capable of handling the increased demand for telephones within the Mahaweli areas.	<p>3.1a Ensure that Telecom improves the exchange serving the Mahaweli area by additional capacity. There is demand for at least 300 connections in Systems B and C at present.</p> <p>3.1b Provide centrally located buildings in the town ships to be rented out to investors where they can install telephone, fax, telex facilities.</p>
4. Inadequate housing.	4.1 Company staff cannot reside comfortably; reinvestment in housing not possible.	4.1 Draw up a list of land available including their locations to sell or lease out to investors and for property developers.

Issues	Constraints	Solution
5. Inadequate infrastructure facilities in industrial parks.	5.1 Delays in providing pipe borne water, power, telecommunication waster disposal facilities at the Industrial Parks.	5.1 Complete minimum infrastructure facilities such as electricity, water, telecommunication, housing.
6. Blocked out plans of the lands to be allocated are not available and not accessible to investors.	6.1 Investors find it difficult to inspect and select the land since blocked out plans of the land available to investors have not been prepared by MASL.	6.1 Provide access by way of jeep tracks in large extents of land to enable those interested to inspect the property.
	6.2 Lack of sufficient surveyors to carry out the necessary ground surveys.	6.2a Appoint private surveyors to carry out the work with the approval of the Survey Department.
	6.3 Delays in completion of surveys.	6.2b Explore setting up of a survey unit at MASL. 6.3 Impress on Survey Department to expedite surveys and to carry out work on a priority basis.

6. CONCLUSIONS & SUGGESTIONS FOR POLICY REFORMS

6.1 Conclusions

This study has established the fact that there is to a great degree a considerable lack of basic infrastructure that is very essential to attract private investors to come into the Mahaweli systems in spite of the fact that there is potential for viable enterprises.

Though there is a vast expanse of land available in the Mahaweli systems and Uda Walawe area ideally suited for the commercial cultivation of a variety of crops that have a demand in the export market, large scale investors are reluctant to invest vast sums of money specially because of the fear they entertain that an year round availability of water is in doubt.

The intention of the EIED is that the entrepreneurs will find their own source of water supply. This will mean that the investors will have to adopt methods of lift irrigation for their crops. This is possible only by pumping water from tube wells or nearby streams. Most entrepreneurs are reluctant to spend a fair amount of money for this feasibility study unless they are aware of at least the likely water table in their allotments and approximate yield from the tube wells. This problem could be overcome if the EIED is in a position to give these details to prospective entrepreneurs.

The lack of power at their allotment sites was another constraint that would have discouraged many large scale foreign and local investors. The consultants felt that this constraint could be easily overcome by the authorities providing the necessary infrastructure for the provision of electricity at the allotments. It is agreed that profitable large export oriented commercial ventures cannot be undertaken without electricity being available at site. This is essential for working of water pumps, processing plant, canning, cooling, etc.

For a business venture to be successfully carried out telecommunication with their dealers and principals both abroad and within the country is considered a vital link. It is common knowledge that business transactions specially pricing and marketing is done confidentially, therefore, availability of telephones, is the only answer to this problem.

This constraint too can be overcome if MASL or donor agencies step in to fund the improvements and extensions to the existing telephone exchange catering to the systems.

Though land is available to the entrepreneurs the delay experienced by many in getting the lease agreement has also to some extent discouraged both large and medium scale entrepreneurs. The faster this problem is sorted out the more will be the employment generation.

One important factor that should be borne in mind by MASL is that in selecting allottees, due recognition must be given to investors who have the financial resources as well as the agricultural background to carry out their ventures. If this is not adhered to, there is the possibility of the allotment been abandoned after the land has been denuded.

Once the necessary infrastructure is available and the agri-business and agro based industries starts functioning the thrust of the EIED in generating employment specially to the second generation will be fulfilled.

6.2 Suggestions for Policy Reforms

Issue	Constraints	Solutions
1. Lease agreement period for land.	1.1 Investors are given the land on a one year permit which is extended depending on the progress made with long term lease issued only if progress is satisfactory.	1.1 Permit lease agreements initially for a five year period and then extend upto thirty years or give on outright grant depending on progress.
		1.2 Lease land for housing for investors for two years and consider for outright grant on completion of house within two years.
		1.3 Sell land for tourism on an outright grant due to the high investment and the long gestation period.
2. Water	2.1 Non availability of water for cultivation.	2.1 Permit investors to have their own dug wells or tube wells near streams, drainage canals.

REFERENCES

1. Teams (Pvt) Ltd Report on Possibility of Year Round Irrigation in Mahaweli Systems. Feb. 1993.
2. Teams (Pvt) Ltd Report on Census of Mahaweli Enterprises Dec. 1992.
3. Teams (Pvt) Ltd Report on Investment Potential in Mahaweli Opinion Survey of Medium and Large Scale enterprises Dec. 1992.
4. Cold Chains - Investment Opportunities in the Mahaweli Areas -MED/EIED Feb. 1993.

Specimen of Letter & Questionnaire Sent to Investors in the Systems.

22nd December, 92.

Dear Sir/s,

INVESTMENT IN MAHAWELI INFRASTRUCTURE

We have been given the name of your firm as an Investor in the Mahaweli investment area by Employment Investment and Enterprise Development (EIED) Division of MASL.

EIED is much concerned about the infrastructure requirements necessary for your investment and for new investors coming into Mahaweli areas. They have entrusted us with an assignment to determine the basic infrastructure that Mahaweli should have to be able to attract private investment and to recommend specific infrastructure investments that are required by Mahaweli or the private sector.

In order to accomplish this task we require your cooperation to inform us of your basic infrastructure requirements. A brief questionnaire is enclosed herewith for the purpose.

The infrastructure we are looking into are in areas such as land, water, manpower, institutional infrastructure, financial facilities, transport, power, communication, social infrastructure, housing, security, etc.

Please return this questionnaire as early as possible.

Thank you for your cooperation.

Yours truly,

D.G. Athukorala
Team Leader
TEAMS (Pvt) Ltd.

QUESTIONNAIRE

Please tick against your choice and make a brief comment. To improve your entrepreneurship do you require

Transport

Roads

- | | |
|--|-----|
| Gravel roads | [] |
| Tarred roads | [] |
| To widen roads | [] |
| To straighten roads | [] |
| Enable road to carry containerized cargo | [] |
| Container terminals | [] |
| Strengthen bridges, culverts | [] |
| Road drains | [] |
| Availability of buses | [] |
| Nearest railway station | [] |

Communication

- | | |
|---|-----|
| Telephones | [] |
| Telex, fax | [] |
| Distance from nearest telephone line (in miles) | [] |

Water Availability

From irrigation canal []

From stream []

From shallow wells []

From tube wells []

Have you made any
bore hole investigations []
(if so give briefly the results)

Housing

Do you require housing for your staff?
If so state number of houses required for

Senior staff

Minor staff

Are you prepared to

buy the house Yes/No

rent the house Yes/No

Education Do you have schooling for your employees children
within the area? Yes/No

Health Are medical facilities available
in the area? Yes/No

Security Do you require security in the area,
if so give details

Recreational facilities

Markets Are your products marketed in the area or outside

**Input
Materials** Available in the area Yes/No

Financial Suggestions or improvements.

Institutional Suggestions or improvements for contact with Mahaweli Authorities.

Others

Remarks

Name of Firm

Telephone No.

Address

.....

.....

System

Block

Lot

.....
Signature

MED/EIED PUBLICATIONS AVAILABLE

Local Market for Pickled Products (December 1990)

Non Farm Small Scale Enterprise Credit on Selected Mahaweli Systems, Geoffrey Peters and M.W. Panditha (December 1990)

Crop Profiles - Spices, Herbs and Aromatics, L. Denzil Phillips (July 1991)

Study of the Tourism Development in the Uda Walawe (July 1991)

Potential for Silver Skin Onions in the Mahaweli, Walter Nueberg (August 1991)

Nursery Development of Papaya and Mango, Papaya Growers' Guide and Technical Notes for Business Plan for Mixed Fruit Cultivation Investment, Ben Hatfield (November 1991)

Dehydrated Fruit Processing Opportunities and Trends in Sri Lanka, Wanchai Somchit, (November 1991)

An Evaluation of the Entrepreneur Development Programmes, Dr. Susan Exo and Hina Shah, (December 1991)

Aromatics PIP Interim Report on Trials Establishment, Dr Thomas Davies (December 1991)

Agro-Business Financing Review, Dennis De Santis (December 1991)

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Field Manual for Processing Tomatoes, Peter Florance (March 1992)

Processing Tomato Trials in Mahaweli System H, Peter Florance (March 1992)

Processing Tomato Trials in Mahaweli System C, Peter Florance (March 1992)

Dried Fruit Processing in the Mahaweli, Dr. Kamal Hyder (September 1992)

Feasibility Study on Commercial Potential of Snake Venoms in Mahaweli Systems, Anslem de Silva, (January 1993)

Census of Mahaweli Enterprises and Employment (January 1993)

Most publications are priced at Rs.100/-. The publications are available at the MED Office at 8th Floor, Unity Plaza, Colombo 4. (inquiries, Ph. 508682-4)

An EIED publication entitled - "Information Available for the Mahaweli Investor", is also available at the MED Office.

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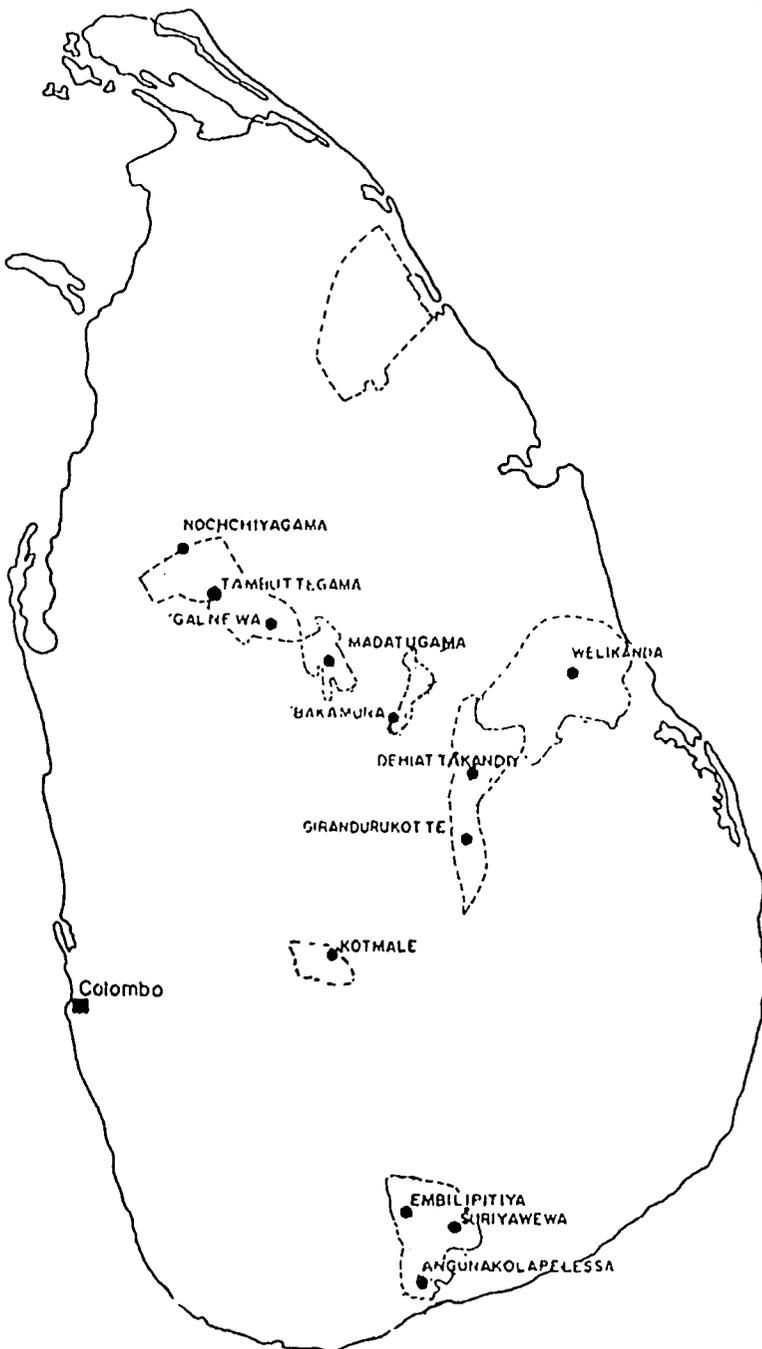
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