Technical Assistance Input to The Upland Development Programme in Southern Mindanao (UDP)
ALA-97/68

Final Report

W.J.Bradfield, Community-based Infrastructure Specialist

Period Covering November 2002 to February 2003

UDP is a special project of the Government of the Philippines executed by the Department of Agriculture and supported by a grant from the European Union.

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1. ACTIVITIES

The consultant arrived in Davao on the 10th November. The assignment is due for completion on the 24th February, following a break over the Christmas period. During the period prior to Christmas especially, field trips were made to all five relevant provinces, visiting a wide number of projects in various municipalities. The municipalities visited are outlined in the accompanying table. The types of infrastructure projects seen have been not only those supported by UDP, but also the road rehabilitation projects that were funded by the Dept of Agriculture, facilitated by UDP and implemented in most cases by the LGUs. This has been in response to 2 further items in addition to the original TOR and included at the request of the Dept of Agriculture. They relate specifically to the impact and sustainability of the barangay roads rehabilitation programme.

Provinces And Municipalities Visited During Field Visits

Dates	Province	Municipalities
14-15 Nov. 02	Davao Oriental	San Isidro, Mati
20-21 Nov 02	Compostella Valley	New Bataan, Laak
25-26 Nov 02	South Cotabato	Tampakan, Tantagan, Tupi
27 Nov 02	Sarangani	Kiamba, Malungan
28 Nov 02	Davao del Sur	Malita, Magsaysay
4-5 Dec 02	Compostella Valley	Maragusan
11 Dec 02	Davao del Sur	Malalag, Santa Cruz
15 jan 03	Compostella Valley	Maco, Mabini
15-17 Jan 03	Davao Oriental	Banaybanay, Lupon, Caraga, Manay, Tarragona
23 Jan 03	Davao del Sur	Santa Cruz
29 Jan 03	Compostella Valley	Maco
18-19 Feb 03	Davao del Sur	Don Marcellino, Jose Abad Santos

The overall emphasis during the visits to infrastructure projects was to assess the quality of design and construction, as well as impact. More importantly, the likely sustainability and the effectiveness of maintenance regimes being organised and in place. With relatively few of the UDP supported projects actually completed, many on-going and nearly completed ones have also been visited, as well as potential ones in response to queries concerning their design etc.

Discussions were also held in each of the municipalities visited with relevant officials to ascertain LGU policies, procedures and capabilities in relation to investment planning, funding and implementation of rural infrastructure projects. The relevant officials were usually the Municipal Engineer and/or the Municipal Planning and Development Co-

ordinator (MPDC). In a number of cases, where it was possible, a courtesy call was made and discussions held with the Municipal Mayor.

In line with the emphasis placed in the TOR by the Department of Agriculture on the impact and sustainability of the roads programme, a significant number of the DA funded MakaMASA roads were also specifically visited and assessed. Those visited are listed below. A report has been prepared on the roads programme as part of this document (annex 1), including not only the DA funded but also those supported directly by UDP.

D.A. MakaMASA Roads Visited

Province	Municipality	Road
Compostella Valley PPO1	Maco	Mapaang
	Mabini	Cabuyan
	Laak	Crossing Recena-Kibaguio
	Maragusan	Sitio Gemalina
Davao Oriental PPO2	Banaybanay	Pintatagan – Lumad
	Lupon	Don Mariano Marcos- Mangol
	Caraga	Pantoyan – Binaton
	Caraga	San Pedro - Sugabaw
	Manay	Balinaonao – Kalundan
	Tarragona	Maitum - Guibaan – Madian
	Mati	Campo 1 - Licop
	San Isidro	Santo Rosario
Davao del Sur PPO3	Malita	Demoloc-Aglaungan
	Magsaysay	Tagaytay road
	Malalag	Pitu road
	Santa Cruz	Coronon road
	Don Marcellino	Cunalom road
	Jose Abad Santos	Caburan road
Sarangani PPO4	Kiamba	Matayo road
	Malungon	San Roque – Lumabat
South Cotabato PPO5	Tampakan	Danlaq – Palo
	Tantangan	Dumadaliq – El Naf
	Tupi	Sitio Tanting to Sitio Barak

In line with the emphasis on sustainability in the TOR, the clearest requirement identified during the field visits was for strengthening the maintenance regimes of the projects, especially the roads. This includes both the maintenance systems, but also management capacity.

A major activity related to this was therefore pursued for the rest of the period. This was to identify and encourage the emergence of a sustainable and replicable routine road maintenance system, in order to ensure continued benefit from the road rehabilitation programme. A draft methodology for a **labour based routine/ preventative maintenance system** was prepared and presented at four workshops held at municipal level in four provinces. The people invited were: the relevant municipal staff (Mayor, Municipal Engineer, MPDC, MPT, AT); Provincial Engineer; Barangay Captains and Barangay infra committee chairmen of UDP Barangays; UDP provincial staff (PPO Manager, PPO Engineer, TOU Chief, CIDE Specialist).

The input aimed to develop not only appropriate maintenance systems, but also methodologies for raising Barangay Council management capacity, that would benefit all infra maintenance, not just the roads. The output in each case was feedback on appropriate approaches, the identification of a pilot project in each province, as well as the formulation of an action plan to varying degrees. The locations and dates of the four workshops, together with the pilot barangays selected are listed below.

Date	Province	Municipality	Barangay
Jan. 28th 2003	Davao Oriental	San Isidro	Santo Rosario
January 31st	Davao del Sur	Magsaysay	Tagaytay
February 7th	South Cotabato	Tampakan	Palo 19
February 13th	Compostella Valley	Laak	Kilagding

On all the selected sites there is a UDP assisted road rehabilitation, as well as a DA funded MakaMASA road, both already completed. One of the barangays, Santo Rosario, has completed the community endorsement of it's action plan at an IEC meeting, which was attended by the consultant. It has now begun implementation. The others are in the process of community consultation and endorsement.

With the plan to treat these as pilot projects, it is envisaged that there will be UDP cost inputs under the research budget, for example, tools. Until the 2003 Work plan and budget is approved, no inputs can yet be made. A training programme at barangay level has also yet to be implemented, although at Santo Rosario the precise training requirements have been identified . The PPO Engineer, as well as in some cases, the CIDE specialist have been identified as those responsible for monitoring progress.

In the meantime, a simple manual of the essential procedures has been prepared, combined with a trainer's guide for the associated training programmes (annex 2). A short booklet has also been produced as a handout at the workshops, which will continue in the participating municipalities. These are complimented by the more detailed reference manual produced concurrently by the National TA, which also covers all other relevant infrastructure.

Another activity, again in line with enhancing sustainability, was the preparation of a draft of alterations to the Agricultural Infrastructure Support Procedures Manual. This draft therefore encompassed increased emphasis on the screening and maintenance/ sustainability issues in project design and implementation. This has been dispatched to each of the PPO Engineers in the provincial offices, though so far limited comments received. A familiarisation programme would be required at municipal level, emphasising the importance of the maintenance issues. Annex 3 describes this output in more detail.

In line with the visits carried out to the local government administrations, a third output is notes on the funding arrangements of the LGUs (Annex 4). This is together with recommendations, incorporated in section 2, to ensure proper and fair funding for upland infra, as per the TOR.

Visits were made to the Davao offices of relevant projects and organisations to discuss important rural infrastructure issues and obtain information. These were:-

- Agrarian Reform Community Project (ARCP. ADB funded).

- Support to Agrarian reform Communities in Central Mindanao (STARCM. EC funded).
- Rural Road Development Policy Framework (RRDPF. Dept of Interior & Local Government)

A visit was also made (16th Dec. 2002) to project areas of the predecessor to UDP, SMAP, namely Bantol and Banuayan (Marilog district, Davao City). These were programme show-piece areas right from the early stages of the project, where there had been a significant range of infrastructure projects implemented. The aim was to observe the situation of these structures that were now between 6 and 10 years old and learn lessons concerning the sustainability of the structures and maintenance practices.

Contact was made with other related projects, notably the Rural Infrastructure Development Project (RIDP, ADB funded), based in Zamboanga. Feed back was obtained on their experiences so far in organising labor-based maintenance. Also, the ERP CASCADE and CECAP programmes (both EC funded) in Northern Luzon to obtain information on road maintenance related issues and activities addressed by those projects during their lifespans to date.

2. COMMENTARY AND CONCLUSIONS

Certain aspects relevant to the TOR are dealt with below.

Ensuring the capacity of LGUs and communities to implement sustainable infrastructure projects

Overall, the quality of work is reasonable, notably in the case of water systems and footbridges. However, in the case of roads, there is room for improvement and this is discussed in more detail in the report in annex 1.

Concerning maintenance issues, water systems are in a reasonable position as the groups beginning to collect fees and funding repairs, although they are sometimes not being encouraged to set the system up as early as suitable. Preventative maintenance is not taking as prominent a role as it should be, with repairs being carried out when they are required. Footbridges will need funds at regular intervals for maintenance, and these will have to come from the Barangay Councils. The visit to 2 of the footbridges built under SMAP, both now over 6 years old, showed both to be in good condition. The older one at Bantol, Marilog, was in very good condition and this bodes well for the sustainability of this type of infrastructure.

With experience, there can be the capacity to implement sustainable upland infrastructure, but how well this can be realised depends on a number of factors.

- There must be the emphasis within UDP on the capacity building process within the municipal LGUs, ie in order to efficiently design, cost and prepare proposals, as well as implement projects. It is important that the survey, design and bills of quantity are prepared accurately and practically. With projects being implemented by administration, it is possible to ‘muddle through’, taking little notice of the specifications laid down in the original plans and proposal, and this can easily lead to a project not being completed to a fully satisfactory standard. PPO engineers have powers within the terms of the MoAs to insist on higher standards of implementation.

- The community, Purok or Barangay, can get used to the concept that if they want a particular structure, they must be prepared to supply some resources, ie labour. There is evidence that some municipalities are now taking this concept on board and are looking to apply it on a regular basis.

- However much community labour is used, as well as recurrent resources available within the municipality, there will always be a cost element on top, notably for materials. This will always be the limiting factor, however there are funds available on a regular basis, ie in the investment plans of the municipal and provincial governments. A well organised Barangay Council, which identifies it's priorities and prepares it's AIP on time and clearly, as well being prepared to lobby and make it's case clear, is in a better position to gain access to these funds. Examples are those grants at provincial level at the discretion of the Governor, Vice Governor and provincial councillors.

As maintenance is such a crucial issue in sustainability, this can be more clearly addressed throughout a project design and implementation. The project proposals especially still have some way to go before the maintenance issues of the proposed projects are really thought through. Although the maintenance is not so much an issue with the water projects, it still needs more attention, especially in the timely conducting of maintenance training and formation of the maintenance groups. This is addressed in more detail in annex 3. For roads projects however, it is very much an issue, and as such, has been a major focus of this input. The development of labour-based maintenance systems, especially for roads, increases the capacity of the community to maintain the structures. This is addressed in detail in the pilot projects outlined in annex 2.

The important points therefore in order to ensure sustainable structures:

i. The municipal engineering units must be encouraged to aim to prepare their designs and proposals to an accurate standard with applicable specifications. These should not be deviated from during implementation without good reason.
ii. All unskilled labour, as well as some skilled labour where possible, should be provided by the recipients.
iii. Emphasis should be placed on the capacity building of the Barangay Councils, in order that they are able to produce effectively prioritised budgets and investment plans. Also so that they gain the ability to make their requirements known at municipal and provincial level and be able to properly prioritise later maintenance requirements.
iv. The setting up of effective maintenance regimes must be fully addressed.

Solutions to ensure proper and fair funding of upland infrastructure

Detailed notes are provided in annex 4 on the LGU funding systems and methods of funding infrastructure projects. The major recommendations concerning this are (some already outlined above):

i. The Barangays must be assisted to effectively prioritise their requirements and resources, as well as prepare accurate budgets and AIPs. They must also prepare these in a timely fashion and furnish them with the municipal LGU, where they can be a factor in MLGU planning.
ii. Capacity building among the barangay leadership should also encourage them to form closer liaison with the municipal and provincial LGUs, in order to make their priorities known and better access available funds. Clearly prepared AIPs also assist with this.

iii. The capacity building must also equip the Barangay Council to manage its fund usage more efficiently

iv. As well as more efficient allocation and management of funds, Barangay Councils can also look to increasing income by generating it from particular infra, in order to cover maintenance costs. For water supply projects, this is well developed. However, this can be developed for roads, especially introducing a toll fee system. This is addressed in more detail in annex 2.

v. The municipalities usually make machinery available for periodic maintenance either on a reduced rate basis, or with the barangay covering running expenses, by covering fuel and oil and drivers allowances. The machinery is often available at weekends. The municipal engineer must be encouraged to estimate likely requirements on a annual basis as realistically as possible, but effective allocation of funds by the Barangay Council should ensure that cost constraints are minimised.

The above points show that capacity building for Barangay Councils is a significant issue and proposals are included in annex 2, specifically related to the road maintenance programme, but relevant throughout.

Other Relevant Comments

The selection criteria should be fully reconsidered and updated, especially, for example, where footbridges are appropriate.

The project implementation process is very drawn out, with few projects completed. The major hold-up is often the supply of materials, with the LGU procurement process appearing to be very long winded.

3. OVERALL RECOMMENDATIONS

1. **The labor-based routine road maintenance pilot programme,** begun during this input, should continue as it is fundamental to the sustainability of a major component in the infrastructure programme. The capacity building component included in this should be followed through as this is also crucial to the wider success of infrastructure funding and management within the barangay.

   One more programme of awareness at municipal level and identification of a pilot project remains to be conducted, this time in Sarangani province.

   Monitoring and supervision of progress must be conscientiously carried out in the four pilot sites identified so far. No associated training programmes have been carried out yet, although a draft Trainers Guide has been produced. Therefore experience will need to be gained here.

   Ideally, the concept can be transferred with ease to other UDP barangays in a municipality, such that it can be conducted prior to completion/inauguration of the road rehabilitation project. The procedure is already set up for introducing it to other municipalities and for this, the overhead acetates and hand-out booklet are prepared. The acetates can be translated and converted to flip charts. The process for setting-up and implementation is set out in the booklet (Labor-based Routine/Preventative Road Maintenance: Outline of Procedures & Trainers Guide)

Now the pilot programme has started, the momentum should be sustained. It must be emphasised that to implement this pilot programme successfully will require a sustained input in monitoring and supervision. Not many other programmes have attempted to address the issue in quite such a determined fashion and there is therefore a poor record of sustainable road maintenance at barangay level throughout the Philippines. Therefore there are few definite known parameters already in place.

2. The maintenance regimes are generally more sustainable in the case of the water projects. However, there is a need for increased emphasis on addressing aspects of the whole project preparation and implementation process, in order to improve sustainability throughout. Specific recommendations have been produced on this in annex 3, but it remains to be properly imparted. Especially, there is a need for it to be imparted in a sustained way to the concerned municipal level staff.

3. An extension of point (2) above, is the programme aim of capacity building among the municipal engineering units. They must be given encouragement to prepare technical proposals to a high standard, as well as execute project implementation as effectively as possible. The programme must be looking towards optimising the quality of the engineering documentation with close support during preparation, as well as checking it properly at the approval stages, ie TPRG and PRC. The PPO Engineer, as well as the PMO based staff must play a greater role in this. The AIS co-ordinator should have access to proposals prior to attending TPRG meetings.

4. Allied to point (3) above, There must be close support in improving quality of construction, especially some roads. The PPO engineer must supply this and has the authority. It must be ensured that all the necessary inputs are available. For example, if necessary equipment is missing from the municipal unit fleet, provision must be included in the proposal for hiring it. The secondment to the programme of provincial engineers in a couple of provinces should assist with the aim of overall closer supervision.

5. More specific recommendations, especially related to roads, are included in the individual reports attached to this main report.

Overall List Of UDP Projects Visited by Provinces and Municipality

Dates	Province	Municipality	Project
14-15/11/02	Davao Oriental	San Isidro	Dungga Road Rehab. 2-60-521-01-16
	" "	Mati	Taquibo spring development 2-60-521-01-026
	" "	"	Binagyahan Spring, Sainz 2-60-520-01-015
	" "	"	Likop spring, Sainz 2-60-521-01-023
15/1/03	" "	Banaybanay	Pintatagan purok 8 & 2 spring. 2-60-521-01-003
20-21/11/02	Compostella Valley	New Bataan	Mayo/Mamada steel footbridges. 1-60-521-01-032
5/12/02		" "	Ma'a suspended cable bridge.1-60-521-02-025
20-21/11/02	" "	Laak	Pigayonan Road Improvement.1-60-521-01-002
			Tenublag Suspended footbridge.1-60-521-01-006
4/12/02	" "	Maragusan	Sitio Gemalina water system.1-60-521-01-007
	" "	"	Durian/Magkawayan road rehab. 1-60-521-02-028
15/1/03	" "	Maco	Purok 4 & 5 Water System rehab. Mapaang.1-60-521-01-020
	" "	"	Purok 3 Road rehab. Mapaang.1-60-521-01-018.
29/1/03	" "	"	Purok 1 Road Rehab. Mapaang. 1-60-521-02-026
25-26/11/02	South Cotabato	Tampakan	Upper Balisan road rehab. 5-60-521-01-092
	" "	"	Bong Lawaan road rehab. 5-60-521-01-090
	" "	"	Purok III water system. 5-60-521-01-028
			Erosion Control, Purok III. 5-60-521-01-095
	" "	Tantagan	Upper & Lower Matimos road network rehab.5-60-521-01-033
	" "	"	Lower Matimos spring devlpmt. 5-60-521-01-089
	" "	Tupi	Lateel road access rehab. 5-60-521-01-088
	" "	"	Kablon trail. 5-60-521-00-001
27/11/02	Sarangani	Kiamba	Centro water system rehab. 4-60-521-01-013
	"	Malungan	Katipunan water system rehab. 4-60-521-01-058
	"	"	Liyang water system rehab. 4-60-521-01-064
28/11/02	Davao del Sur	Malita	Kisongot footbridges I & II. 3-60-521-01-027/032
	" " "	"	Proposed hanging footbridges, (3-60-521-02-012/3/4)
28/11/02	" "	Magsaysay	Tagaytay road improvement. 3-60-521-01-015
11/12/02	" "	Malalag	Banayaw foottrail improvement. 3-60-521-01-023
	" "	Santa Cruz	Siliducan box culvert, 3-60-521-02-035
23/1/03	" "	" "	Dioloy concrete footrail. 3-60-521-02-002
		" "	Balalan–Dioloy spring devlpmt. 3-60-521-02-001

TERMS OF REFERENCE

The Consultants main task will be:

- To study a number of sample municipalities where projects have been or are implemented (at least one per province), assess the quality of work including the design, determine if the followed approach is sustainable and affordable for stakeholders and determine the LGUs and communities capacity to facilitate the implementation of sustainable upland infrastructure including the timing of projects for inclusion into the LGU's annual investment plans.

  Based on this investigation recommend to the LGUs/Communities/UDP possible ways and means on how to ensure sustainable projects. Such recommendations can take the shape of a manual for future reference in the UDP model

- Conduct an in-depth investigation regarding LGU financing of infra projects, determine how fund allocation is prioritised and come up with creative and sustainable solutions that will ensure proper and fair funding for upland infra for the present as well as for the future.

- Thoroughly study possible, feasible and labour intensive maintenance and repair schemes owned by the communities benefiting from the projects and draft manuals in this respect that can be used for replication elsewhere as UDP model.

Furthermore the consultant will:

- Assess the effectiveness of the road program strategy and particular road selection in contributing to the development strategy of UDP.

- Review and assess the sustainability of impact of road program strategy within UDP's development strategy, given the limitations of resources faced by the LGUs and recommend measures to increase sustainability of impact.

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ANNEX 1

THE STATUS OF THE BARANGAY ROADS REHABILITATION PROGRAMME CARRIED OUT UNDER THE AUSPICES OF UDP

W.J.Bradfield, Community-based Infrastructure Specialist

UDP is a special project of the Government of the Philippines executed by the Department of Agriculture and supported by a grant from the European Union.

THE STATUS OF THE BARANGAY ROADS REHABILITATION PROGRAMME CARRIED OUT UNDER THE AUSPICES OF UDP

This report is prepared in the line with specific items of the TOR set out below:

1. Assess the effectiveness of the road program strategy and particular road selection in contributing to the development strategy of UDP

2. Review and assess the sustainability of impact of the roads program strategy within UDP's development strategy, given the limitations of resources faced by the LGUs and recommend measures to increase sustainability of impact

These 2 items are addressed separately within the various sections of this report. Field visits were made between November 2002 and February 2003 to a significant number of road rehabilitation projects and a list of those visited is attached, together with comments on each of them

1. EFFECTIVENESS OF THE ROAD STRATEGY

1.1. Background

The rural access road programme within the UDP project areas includes also trails and footbridges, as well as road rehabilitation itself. The roads programme itself can be divided into two components.

1. Those directly supported by UDP and in each case, implemented by the municipal government units.
2. Those directly funded by the Department of Agriculture. These were identified by the LGUs and are either inside, or support the UDP project areas. The majority are being implemented through the municipal LGUs, though a number have been implemented by DA itself, via directly awarded contracts. In this situation, those with LGU involvement were the minority.

1.1.1 UDP supported Roads.

Table 1 shows the relevant data concerning the UDP roads programme to date. 17 projects are in various stages of implementation, varying from PRC approved to completion, though only two are actually officially complete. The total projected distance of these projects is 38.5 km, serving 2053 direct households. The eventual programme-wide target, according to the GWP, is 200 km.

These roads have been identified in the Community Watershed Plans of the recipient communities, though implemented not necessarily in the order of priority of each community. The proposals are prepared officially by the communities themselves, with assistance from the LGU municipal project team and the provincial UDP staff. In reality, the latter two take on a larger burden, especially as much of it would be purely technical.

All the road projects are being implemented by the LGUs through administration, with varying degrees of participation by the beneficiaries. This is often in the form of labour for excavation and construction of the culvert crossings and drainage systems, as well as

tree planting along the shoulders. The relevant UCO/UBA have, to varying extents, assumed responsibility for the completed road, although this is in effect on behalf of the Barangay Council, who remain officially and legally responsible for the road.

1.2. DA funded Roads

Tables 2a & b provide relevant data on this DA funded road programme. Data supplied by DA has been taken as the definite unless otherwise confirmed. These have been divided into two tranches, the first of which is more or less complete, as are a number of projects under the second tranche.

The first tranche totalled P24,663,000 and covered 64 km. In a number of cases, the distances completed were actually longer as the LGUs took it upon themselves to increase the lengths to a road's more natural distance in order to ensure it's effectiveness. This was in effect their equity, as otherwise the cost of a particular section was completely covered by DA funds.

The sums allocated per project/road section tend to be limited (approximately P1 million each), which means that the section funded is either quite short, or restricted to spot treatments etc. A second tranche, totalling P24,864,069, has been allotted covering 31 road sections and these are in various stages of implementation.

Identification has been by the relevant LGUs through the UDP programme and the emphasis has been on rehabilitating roads that would complement and increase the potential of the UDP programme areas. Ideally, these would be the roads that connected the watershed or barangay to the outside, ie to a main road, though roads serving sitios have also been rehabilitated where the situation warranted it. In the provinces of Compostella Valley, Davao del Sur, Sarangani and South Cotabato, these projects have virtually all been implemented by the LGUs through administration. In each case, a MoA was signed between DA, UDP and the relevant LGU, setting out the relevant responsibilities of each party.

However, in Davao Oriental, as well as in the majority of those in ComVal, implementation has been directly organised by DA, through their own selected contractors. The municipal LGUs have in most cases had no involvement. This was due to a past record of unliquidated funds and unsatisfactory implementation of DA funded projects by the LGUs. There is no evidence of MoAs being signed for these.

1.3. The Importance Of The Road Programme.

The specific objectives of UDP are: 'to develop and test a replicable model for sustainable management of the natural resources in the uplands of Region XI and to enable upland communities to address their subsistence needs and to produce new marketable surpluses through sustained market-led production'

Therefore there is a commitment to develop, which cannot happen without improved access of some type, and a community is severely hindered without it. As far as actually assessing selection strategy by potential benefit, there are the formulae/mechanisms for ascertaining the cost benefit, usually the First Year cost benefit, of a road. These tend to take into account likely levels of traffic and travelling costs per kilometre before and after the improvement, in relation to the total cost of the improvement itself. The higher the agricultural potential and the population, the higher the potential benefit.

The DPWH criteria denotes a minimum acceptable First Year Benefit over Cost (FYB/C) as 12%. Many of the settlements would be technically unlikely to qualify within the criteria, especially FYB/C, but the parameters used to calculate are likely to be only assumptions and often circumstancial. Exact crop hectarages are difficult to calculate, although reasonably accurate figures for the number of sacks etc being produced in an area can be reached. What the potential production could be is again an assumption, however, at the moment there is no attempt being made to calculate FYB/C in the project proposals.

The UDP criteria states only that a projected road rehabilitation should benefit no less than 200 households in the watershed, and is often not adhered to in the case of the UDP supported roads. In certain cases however, there would be other indirect users from outside the watershed benefitting from the road. The calculated households on the DA funded projects are much higher as they tend to serve the whole barangay. Cost/km and cost/beneficiary are two other parameters.

Cost/km. An accepted ceiling is P 1 million for the full rehabilitation of a barangay level road and all the road projects so far are significantly less than this. For the UDP supported roads, using the total projected costs, as final real costs are in most cases not known yet, the average is approximately P 650,000/km. For DA 1st tranche roads, it averages approximately P 425,000/km.

Cost/beneficiary household. From the projected costs of UDP roads, the figure is comparatively high, averaging approximately P 14,230/household, while for DA 1st tranche roads, the average is approximately P 4,402/household. The factor that is again relevant here is that the DA funded roads have tended to be those connecting the barangay proper with the outside, and therefore have a much larger catchment area. On the other hand, the UDP roads are more often connecting a sitio to the barangay proper. There is no cost/beneficiary criteria set down, though I understand one province, Compostella Valley, uses P5,000/household

With none of the projects long completed, assessing any increase in economic activity is difficult. The other benefits, notably increased access to social services, is as yet hard to quantify on the wider scale. One overwhelming factor determining the potential of a road, is the degree of accessibility of the approach roads connecting it to the outside, all weather highways etc. A number were definitely hindered in this way.

1.4. Methods of Implementation

As stated, the UDP supported roads and the majority of DA funded roads have been implemented by municipal LGUs. The advantage of this has been that the municipal engineering units gain the opportunity to implement projects within their own areas and are fully conversant with the road for future management and planning purposes. It must be made clear that barangay level roads, once completed, are the responsibility of the barangay councils, not the municipal councils.

The disadvantages are that the municipal engineering units often lack the expertise and experience and closer support and supervision is required in order to take advantage of their opportunity to gain the implementation experience. The municipal engineering units also often lack the full range of equipment to complete the rehabilitation to a high standard. A road roller is most commonly the machine that is not available to them, so that often the road has not been properly compacted.

To counter this specifically, it must also be pointed out that commonly the gradients of these upland roads are too steep for rollers to operate and work efficiently. It is possible to hire equipment from the provincial engineering units, but these are often not available at the optimum times. It must also be pointed out that the quality of other work, such as culvert crossings and drainage work is highly variable.

A number of the contractor implemented DA funded roads, have been very well constructed. However, some of those constructed in Davao Oriental have been poorly implemented to the extent that at least two of them are impassable to vehicles over their full length, while others are certainly not all-weather roads. In these cases the reasons have been:

- Contract supervision appeared to be remote and minimal. Therefore quality had suffered.

- Barangay officials had been put into the position of accepting the works, which is probably technically the correct procedure as the Barangay councils are responsible for barangay roads. However they had been doing this without the necessary technical knowledge and support.

- The Municipal LGUs had not been consulted or involved in the implementation in any way.

- No design drawings or as-built plans have been furnished with the Barangay councils or the Municipal LGUs.

- No attempts had been made to activate mechanisms for ensuring maintenance of the roads.

These roads appear to have been implemented in limbo, with other partners having little awareness or involvement with them. The exceptions are those in Maragusan and Laak (ComVal) and San Isidro (D. Oriental), where there was active LGU involvement, in that the LGUs completed the balance of the natural length of the roads. The lack of a MoA on the contracted roads has meant that the staff attached to the UDP programme have been unsure of their responsibilities and therefore have had little input to these projects during implementation. It also means that the UDP and Municipal engineers would have no legal jurisdiction in monitoring the construction process.

One problem common to all the DA funded projects was that the DA allotment per project was only approximately P 1 million. This meant that it was sometimes spread over a number of kilometres, with therefore reduced input per kilometre leading to reduced quality. In the cases of LGU implemented work, they were more likely to make up the short fall as part of their equity, but with the majority of the contracted projects, this was not the case. One project (Campo 1-Licop, Mati, Davao Oriental) comprises crossing structures with no provision to upgrade the road itself so that it is impassable to vehicles and the benefit not realised.

While the UDP supported roads have included beneficiary involvement, there has been virtually none on the DA roads, there being limited exceptions on 3 of those visited; ie construction of riprap, roadside vegetation control and, thirdly, tree planting.

Beneficiary involvement has the advantage in that it lowers the overall cost to the external sources by demanding a contribution from the community. It also ensures that there is a certain value attached to it by this community. However, unless the beneficiary groups are very well organised, it can lead to delays in work, compounded by seasonal factors. The formation of beneficiary working groups and management experience gained have a value in raising the overall capacity and cohesiveness of the community. This ideally spills over into improved management of the completed structure, the road in this case. On the other hand, roads are also likely to be looked on as public facilities and therefore ultimately more the responsibility of local government than the community.

It is often stated that contractor implemented projects are slow, due to the tendering procedures especially. However, there seem to have been major holdups in the LGU implemented system, most especially during the procurement of materials and the tendering processes required there.

It must be pointed out that many of the roads in these upland area are old logging tracks, usually not built to accepted engineering specifications and this has a bearing on their potential effectiveness without substantial realignment. The slopes can be steep and therefore difficult to repair and compact, as well as being easily damaged and hard to maintain. There is no stated engineering criteria in the project selection process at the moment.

1.5. Alternatives

As far as access from the barangay proper to the outside is concerned, there is no alternative to an all-weather road. The cost benefit analysis will tend to be positive due to the comparatively larger catchment of population and production area. The barangay proper is also the focal point for the delivery of social services.

Access between sitio and barangay proper is more controversial and the cost/benefit ratios are likely to be much less positive, unless it constitutes a through road. Traffic levels will be much less and most likely to be predominantly motor cycle and horse, with some vehicle traffic in the main harvest season. It is debatable if the cost of bringing produce by vehicle between the sitio and barangay proper provides much or if any significant advantage over motor bike or horse. The levels in damage are unlikely to be different except for in the case of the vehicle, the need for double loading would be removed.

It is possible therefore to rehabilitate an old impassable road to a trail at a fraction of the cost required to rehabilitate fully. In these situations however, it is essential to ensure that it is not passable by vehicles, for example by installing single culvert width crossings etc. Otherwise the damage, especially in the wet season, will quickly destroy the value of the work done. It is not in the project brief to open up new roads, therefore what were originally paths and horse tracks can only be upgraded as trails for horses and possibly motorcycles. To attempt to convert them to roads would normally be too expensive.

Another option is spot treatment, meaning the selective repair of the most impassable sections of the road, in order to make it seasonally passable. The likely scenario here however, is that without good management, ie closing the road in wet weather, vehicles will attempt to use it in bad weather and therefore destroy it.

2.0 SUSTAINABILITY OF IMPACT

The important factors to consider in assessing the sustainability of impact are:

1. That the road is constructed to a high standard in the first place;
2. That the mechanisms are in place and potentially operational to ensure sustainability.

The erosive forces in the upland situation can be so much more severe, so the need for these conditions to be met is all the more pressing.

2.1. Standard of the Road.

A well constructed road will withstand the forces of erosion much better and be easier to maintain to a standard on a routine basis. Good construction essentially means:

- The running surface is well shaped and compacted;
- The drainage network is well designed and constructed;
- Crossings over drainage lines are well sited and constructed;
- Peripheral areas where erosion is likely have been addressed with appropriate preventative measures.

As already described in the previous section, the quality of construction has been variable. The commentaries on the roads visited (attached) describe in more detail the individual roads. A common deficiency is lack of compaction of the grade surface. The lower class municipalities especially do not possess a road roller/compactor and do not necessarily hire from the provincial LGU or from the private sector. It is also difficult to compact the steeper sections as the compactor cannot operate in those situations.

The drainage systems generally need to be addressed more conscientiously. Rubble from the grade material is often left blocking the side drains, more turnouts need to be placed and scour checks are often needed in the steeper side ditches.

The fact that the DA funded projects are limited in their individual budgets (approximately P 1 million) means that in some cases, effectiveness and quality are compromised. The full natural length of the road cannot be rehabilitated or the inputs to each section have to be reduced, with a subsequent lowering of finished quality. For example, spot gravelling can leave some sections in wet weather both difficult to traverse, as well as subject to damage by vehicles.

Some erosion prevention measures have been included, but it could be much more and be more conscientiously approached, as in the selection and placing of planting material. The exits from turnouts is a common site where erosion is occurring. It is also acknowledged that there can be conflict over what to plant when private land borders right up to the road.

2.2. Mechanisms to ensure sustainability

Good construction is no excuse for ignoring maintenance. This issue has been addressed in the UDP supported road projects, with varying success. In some, the UCO/UBA have assumed responsibility and are active in routine maintenance, usually vegetation control, while in others there is little activity. Training is a standard stated activity in every proposal, but is not really addressed with any real degree of conscientiousness. There has

also been varying inputs by the communities following completion, notably in erosion control measures such as tree planting on the fragile areas.

On the DA funded roads, there has been no process of mobilising the communities and, on the whole, no maintenance mechanism is in place. In a number of cases, the Barangay council, and even the MLGU have accepted responsibility but activity is minimal. One Barangay (Sto Rosario, San Isidro, Davao Oriental) have taken it upon themselves to plant trees, while another (Tagaytay, Magsaysay, Davao del Sur) has constructed riprap by bayanihan at the instigation of the Municipal Mayor. In the former case especially, the disciplines instilled by the UDP process during the implementation of the UDP assisted road projects in the same barangay has ideally had a beneficial effect on the attitude of the community leadership to the DA road.

It must be noted that a number of Municipal LGUs have contributed considerable counterpart inputs on their own initiative, which bodes well for a future commitment. However, these roads are, in most cases, the responsibility of the Barangay Council.

In the case of the contract implemented DA funded roads in Davao Oriental, the Municipal LGU has not been involved, therefore have no knowledge or necessary commitment to the road. The Barangay Councils have effectively accepted responsibility for the roads by signing the certificate of completion, but have no as-built plans or received any support in preparing themselves for the necessary maintenance.

As is already clear, Barangay Councils are technically responsible for the maintenance of barangay level roads within their particular barangays. On the whole, barangay roads tend not to be maintained on a routine basis, certainly not on an annual basis. Instead, the maintenance is likely to be periodic when more fundamental work is required. This sort of work usually requires some form of heavy equipment, which the barangays themselves cannot provide. There is then a call on the resources of the Municipal, or Provincial, LGU for equipment to be made available, either on a hire basis, or more commonly through the provision of fuel/oil and driver allowances. However the demands on the available equipment is heavy and they are not easily available.

In the majority of cases, the funds for maintenance come entirely from the barangay's 20% Development Fund allocation and some relevant barangays are allocating between P30,000 and P80,000 per year for road maintenance. The total distances of road within individual barangays vary greatly. Some MLGUs allocate grants to barangays for development purposes, and these can be used for road maintenance. Others allocate a certain sum throughout the municipality, but this is more likely to be used for a full rehabilitation. Overall, assistance from the MLGU is not easy to obtain. Grants from other sources are also likely to be for more stand-alone projects like a full rehabilitation.

The situation is therefore tight for the barangays, in that their own available funds are restricted and outside assistance is not readily available. However, with efficient management, the sums available are not insignificant. The UDP approach gives rise to a community commitment, which can play a significant part, though in the case of roads, this is unlikely to be enough on it's own to ensure timely and effective maintenance. A degree of funded work would be necessary and, properly organised, paid labour drawn from the community can carry this out.

3. SUMMARY

3.1. Effectiveness of strategy

The roads connecting the barangay proper with the outside are likely to be essential to the successful development of the watershed. They will also satisfy in most cases the accepted criteria. Access serving sitios only is more debatable and often a good trail of a standard to be passable by motor bike may be a more cost effective. Relevant criteria is either not in place or often not being observed, notably for numbers of beneficiaries in the case of UDP roads.

Quality of work has been variable. Not all the roads, especially the DA funded roads implemented by contract, are passable in all weathers. Increased attention to quality of work, ie shaping and compacting, as well as drainage, would have been beneficial, as would closer support to the Municipal engineering units.

In the case of the DA funded roads, the personnel involved are not always aware of their responsibilities in order to ensure a successful conclusion and quality of finished product. It is sometimes the case that, with limited funds precluding a full rehabilitation, the product was not so satisfactory. In a number of cases LGUs compensated by making up the difference as their counterpart. For some roads, the poor condition of the approach roads connecting them to the outside hinders their effectiveness.

3.2 Sustainability of impact

As stated above, quality of construction is variable and the mechanisms in place for maintenance are not as yet likely to ensure sustainability. Although there has been community involvement in implementation, maintenance systems and a focused approach to maintenance training needs to be developed

In the case of the DA funded roads, there are minimal maintenance arrangements in place. There has also been little community involvement in them.

4.0 RECOMMENDATIONS

4.1 UDP Supported Road Rehabilitation Projects

4.1.1. To improve effectiveness of strategy and selection

i. Ensure that the road to be rehabilitated has been fully prioritised by the relevant community.

ii. For access projects serving sitios only, with smaller beneficiary numbers, consider good trail projects where possible, which can be traversable by motor cycles as well as horses. These are much cheaper and can still move produce efficiently, but must not be such that they are also seasonally usable by vehicles, otherwise they will be quickly destroyed.

iii. Observe the criteria of a minimum of 200 households. Also consider certain cost criteria in selection, notably a ceiling of P1 million/km as well as Cost/ beneficiary, ie a maximum of P8,000/household.

iv. Ensure that each potential road will connect directly to an all-weather approach road, in order that it's potential benefit is not hindered.

4.1.2. To improve sustainability of impact

v. There must be increased support from the PPO engineer in design preparation and supervision of implementation in order to improve quality.

vi. Strengthen the maintenance oriented aspects of the project design and implementation. This is addressed in recommended alterations to the project process (annex 3.)

vii. Although the UCOs/UBAs are often active, it is important that the Barangay Councils are also involved from the beginning, as it is they who are ultimately responsible and would be required to provide necessary funds. This is emphasised also in annex 3

viii. Address more fully the methodology and delivery of the maintenance training programmes. A labour-based routine/preventative road maintenance pilot programme has been started during this input and this should be continued and fine tuned/adapted as necessary with experience. (See Annex 2). It should be incorporated into every future project proposal and implemented as part of the project.

ix. Appropriate hand tools for road maintenance should be included in project proposals and supplied. A list is suggested in annex 2, which does not include tools already widely used within the communities, such as bolos.

Technical Points Relevant to sustainability:

x. When considering limited inputs, ie spot repairs, the result must be an all-weather road. Seasonal roads become damaged again far too easily as vehicles try to use them in unfavourable conditions.

xi. Compaction is very difficult to achieve and maintain on the steeper sections. In these situations concrete tire pads should be considered, (above 10%)

xii. The aggregate containing a wider range of sizes, including a significant proportion of larger ones such as the river gravel/pebbles, has proved more effective in resisting erosion on the steeper slopes, on condition it is properly compacted also. It is appreciated that it is not fully compatible with the current DPWH specifications.

xiii. It must be ensured that the roads are properly shaped and compacted, and that the LGU has access to a compactor. If an LGU does not own one, the hire of one must be costed into the proposal.

xiv. Increased emphasis must be placed on the comprehensive design and effective implementation of the drainage arrangements of each road.

xv. The use of planting material to combat erosion can also be more conscientiously approached. There is a limit as to how well the cut slopes above the road can be stabilised. However, embankments below the road can be addressed and care

should be taken to plant just below the shoulder with suitable species that have uses and will regenerate when cut. Eg leuceana (Ipil-ipil) and glyricidia (Madre de cacao). Otherwise, fruit trees such as mango, which in theory will never be cut down. Armoring the slope surface can also be carried out, for example with kudzo (pueraria) or centro (centrosoma), especially around the turnout outfalls.

4.2 DA Funded MakaMASA Roads

4.2.1. To improve effectiveness of strategy and selection

xvi. Where the proposed road is connecting the barangay proper to the outside, there is no doubt that this is of great benefit in optimising the development and economic potential of the community. Where it is serving a sitio within the barangay, it should be a project prioritised by the relevant community, in order that there should be more likelihood of a community commitment and a maintenance mechanism put in place.

xvii. The criteria outlined in iii, above, should be applied in selection, ie minimum number of households, cost/km and cost/beneficiary.

xviii. Ensure that each potential road will connect directly to an all-weather approach road, so that access to markets etc is not hindered.

xix. Ensure that the result will be a fully useable road, and that any proposed inputs by other partners are fully committed. When funds are not enough to complete properly the natural length, there must be counterparting.

xx. Ensure that all personnel involved are aware of their responsibilities under the MoAs, especially in the ongoing monitoring of the project. For the contracted ones, there should be one with UDP and the LGU, which should at least facilitate a certain responsibility for monitoring implementation by the PPO and Municipal Engineers.

4.2.2. To improve sustainability of impact

The points raised above concerning the UDP supported roads are relevant here. Importantly, measures to ensure maintenance must be put in place

xxi. The MoA should include a commitment to maintenance by the MLGU.

xxii. There should be some community input, if only in erosion control, especially on roads serving sitios.

xxiii. The Municipal Project Team or PPO Engineer must implement a routine maintenance training programme (as outline above – Annex 2)

xxiv. The contracted projects should include a MoA with UDP, as well as the Municipal Council. This would ensure improved monitoring of the project, especially from a technical point of view, and give the PPO and Municipal Engineers some official jurisdiction in monitoring/supervision. Plans and programme of works must be available. The increased involvement of the UDP personnel would enable routine maintenance training to be carried out.

TABLE 1. UDP ROAD REHAB. PROJECTS (To date)											
PPO		Project	Km	hh	UDP Cost	LGU Cost	Benefic	Total cost	Cost/km	Cost/hh	
							Cost				
1	1-60-521-01-002	Pig-ayonan Road Imrovement Project	1.2	382	202,598.88	450,964.60	438,300.00	1,091,863.48	909886.2	2858.2814	Completed
1	1-60-521-02-015	Sitio Malig-ot to Pigkutaan Road Improvement	5.8	83	772,704.00	1,220,261.93	282,500.00	2,275,465.93	392321.7	27415.252	Signed
1	1-60-521-02-001	Tenublag Road Improvement	2.8	70	351,400.00	742,394.66	339,950.00	1,433,744.66	512051.7	20482.067	Signed
1	1-60-521-02-016	Sitio Bitaugan Road Improvement	2.5	101	360,578.00	637,929.00	198,950.00	1,197,457.00	478982.8	11856.01	Signed
1	1-60-521-01-018	Purok 3 Road Rehab Project	0.6	40	497,145.00	275,842.00	333,050.00	1,106,037.00	1843395	27650.925	On-going
1	1-60-521-02-026	Purok 1 Road Rehab Project	3.27	40	199,260.00	183,900.00	65,050.00	448,210.00	137067.3	11205.25	PRC approved
1	1-60-521-02-028	Magkawayan and Durian Road Rehabilitation	1.62	71	388,615.00	1,104,355.00	156,700.00	1,649,670.00	1018315	23234.789	Signed
2	2-60-521-01-016	Road Rehabilitation	1.28	96	420,541.00	327,406.00		747,947.00	584333.6	7791.1146	Completed
3	3-60-521-01-015	Brgy. Tagaytay Road Improvement	2.1	88	604,387.00	381,955.00	358,640.00	1,344,982.00	640467.6	15283.886	On-going
3	3-60-521-02-004	Two Way Concrete Tire Path	1.04	132	605,494.97	340,702.88	394,800.00	1,340,997.85	1289421	10159.075	Signed
3	3-60-521-02-025	Banayao Box Culvert			385,200.00			385,200.00			PRC approved
3	3-60-521-02-035	Saliducon Box Culvert		68	249,641.15	132,770.00	161,400.00	543,811.15	#DIV/0!	7997.2228	Signed
4	4-60-521-01-037	Road Rehabilitation of Sitio Kyumad	1.5	79	421,575.00	182,184.00	314,125.00	917,884.00	611922.7	11618.785	On-going
5	5-60-521-01-092	Sitio Garciano-Sitio Upper Balisan Farm Road Rehabilitation Network	3.63	83	508,637.00	597,842.90	72,500.00	1,178,979.90	325056.5	14204.577	On-going
5	5-60-521-01-090	Sitio Bong Lawaan Farm Road Rehabilitation	1.3	32	159,298.36	249,380.25	18,250.00	426,928.61	328406.6	13341.519	Completed
5	5-60-521-02-003	Farm-to-Market Road Rehabilitation	4.08	362	316,787.64	245,904.00	80,560.00	643,251.64	157659.7	1776.9382	Signed
5	5-60-521-01-033	Sitio Upper Matimos-Sitio Lower Matimos Farm Road Network Rehabilitation	3.53	82	753,794.34	663,470.00	51,090.53	1,468,354.87	415964.6	17906.767	On-going
5	5-60-521-01-088	Farm Road Access Rehabilitation	1.3	244	251,473.43	125,473.43	150,250.93	527,197.79	405536.8	2160.6467	Completed
		TOTAL	38	2053	7,449,130.77	7,862,735.65	3,416,116.46	18727982.88			

TABLE 2A

DA MakaMASA Roads, 1st Tranche. Cost Analysis

PPO	Title	Municipality	L	W	Benif'c	Cost	Input	Status	Cost/km	Cost/
			km	m	hh	P				Benefic
1	Sitio Gemelina to Boundary of Brgy Aguacan Road	Maragusan	1.2	4.0	400	1,000,000.00	Rehab.	completed	833333.33	2,500.00
1	Crossing Recena to Kibaguio Road	Laak	3.2	4.0	500	1,839,771.00	Rehab.	completed	574928.44	3,679.54
1	Cabuyoan road	Mabini	3	4.0	200	972,632.30	Rehab.	completed	324210.77	4,863.16
1	Mapaang Road	Maco	1.5	4.0	200	539,554.60	Rehab.	on-going	359703.07	2,697.77
2	Pintatagan - Lumad Road	Banaybanay	6.16	4.0	573	936,120.80	Rehab.	completed	151967.66	1,633.72
2	Mahanub Road	Baganga	1.5	4.0	506	1,190,558.00	Rehab.	Suspended	793705.33	2,352.88
2	Pantoyan-Binaton	Caraga	2	4.0	562	1,079,216.14	Rehab.	on-going	539608.07	1,920.31
2	Don Mariano Marcos - Mangol Road	Lupon	4	4.0	396	1,428,979.00	Rehab.	Completed	357244.75	3,608.53
2	Bandera-Rizal Road	Manay	1.7	6.0	235	899,933.00	Rehab.	completed	529372.35	3,829.50
2	Camp1 - Licop	Mati	5.1	4.0	423	1,024,962.50	Rehab.	completed	200973.04	2,423.08
2	Sto. Rosario Road	San Isidro	2.1	4.0	311	976,003.56	Rehab.	completed	464763.6	3,138.28
2	Sanbagny-batobato	Tarragona	3	4.0	218	1,000,000.00	Rehab.	on-going	333333.33	4,587.16
3	Coronon Rd	Sta. Cruz	2.5	4.0	280	900,000.00	Rehab.	on-going	360000	3,214.29
3	Tagaytay Rd	Magsaysay	3	4.0	243	916,000.00	Drainage structure	on-going	305333.33	3,769.55
3	Pitu Rd	Malalag	3	4.0	300	970,000.00	Rehab.	completed	323333.33	3,233.33
3	Demoloc-Aglaungan	Malita	1.3	4.0	392	1,440,214.00	Rehab.	on-going	1107856.9	3,674.02
3	Cunalom Rd	Don Marc.	1.6	4.0	230	916,000.00	Rehab.	on-going	572500	3,982.61
3	Caburan Rd	J'se A'd S'tos	3	4.0	333	781,000.00	Rehab.	on-going	260333.33	2,345.35
4	San roque-Lumabat	Malungon	4.6	6.0	154	1,151,340.00	Rehab.	completed	250291.3	7,476.23
4	Lagandang Road	Maitum	2 box	6.0	59	1,596,652.00	Drainage structure	completed	#VALUE!	27,061.90
4	Malayo Road	Kiamba	3	6.0	76	952,229.00	Rehab.	completed	317409.67	12,529.33
5	Glandang-Palo3	Tupi	1.7	4.0	203	867,717.00	Rehab.	on-going	510421.76	4,274.47
5	Danlag-Palo Road	Tampakan	2	4.0	260	842,356.30	Rehab.	on-going	421178.15	3,239.83
5	Dumadalig-El Naf	Tantangan	3.7	4.0	540	441,517.80	Rehab.	completed	119329.14	817.63

TABLE 2b

DA MakaMASA Roads. 2nd Tranche. Status as at Sept 30th 2002

PPO	Province	Brgy	Section	Allocated	To date	Remarks
				[P]	[P]	
2	Baganga	Upper Mikit	Malilong-Magtunod	950000	950000	Complete
2	Caraga	Pantoyan	Binaton-Pantoyan	200000	200000	Complete
2	Caraga	San Pedro	Badjohan-Sugabao	1100000	715000	65% complete
2	Cateel	Abijod	San Raphael Rd	800000	800000	completed
2	Tarragona	Tubaon	Guibaan-Madian	900000		For construct'n
2	Manay	Cayawan	Cayawan-New Bagsak	925000	286750	31% complete
2	Lupon	Don Mar. Marcos	Don Mar.Marcos-Mangol	382600		Extra works
2	Lupon	Calapagan	Sampaguita-Mabuhay	955000		For construct'n
2	San Isidro	Lapu-Lapu	Centro-Santo Nino	650000		For construct'n
2	San Isidro	Maag	Maag-Kape	1200000		For construct'n
2	San Isidro	Sto Rosario	Graveling	200000	200000	Completed
4	Kiamba	Maligang	Centro-Malaya	950000	950000	Completed
4	Kiamba	Nalus	Nalus-Taldas Bukay ii	918000		For construct'n
4	Maasim	Nomoh	Prk4-malaklong	1100000		For bidding
4	Maasim	Tahakaya	Libi-Langang	1200000		
4	Maitum	Zion	Kambuakay-Zion	650000		
4	Malungon	Panamin	Panamin rd	650000		For Construct'n
4	Malapatan	Kinam	Kinam-Kitulag	650000		For Construct'n
5	Tampakan	Albagan	Dalia katipunan-Vismin	918367	275510	30% complete
5	Tupi	Acmonan	Datalta-Tinago	755102	226531	On-going
5	Tantagan	Poblacion	Tanting-Barak	450000	135000	On-going
1	New Bataan	Cabinuangan	Calamakan rd	1200000		For bidding
1	Maragusan	Cambagang	Sitio Sankis	1800000		For bidding
1	Pantukan	Kingking	Tibangon-Diak	1000000		
3	Magsaysay	Maibo	Gambin-Maguling	1000000	300000	On-going
3	Sta Cruz	Zone II		807000		
3	Don Marcellino	Lapuan	Lapuan Rd	621600		For construct'n
3	Jse Ad Santos	Caburan small	Caburan Small rd	666400		
3	Malalag	Ibo	Ibo Rd	504400		For construct'n
3	Malita	Pinalpalan	Pinalpalan rd	760000		
				24864069	5038791	

List of DA Funded Road Rehabilitation Projects Visited

Date	Province	Municipality	Road
14/11/02	Davao Oriental	San Isidro	Sto. Rosario road.
15/11/02	" "	Mati	Campo 1 – Licop Road
21/11/02	Compostella Valley	Laak	Crossing Recena to Kibaguio
25/11/02	South Cotabato	Tampakan	Danlaq – Palo Road
26/11/02	" "	Tantagan	Dumadaliq – El Naf road
26/11/02	" "	Tupi	Sitio Tanting to sitio Barak road
27/11/02	Sarangani	Kiamba	Matayo road
27/11/02	"	Malungon	San Roque – Lumabat road
28/11/02	Davao del Sur	Malita	Demoloc-Aglaungan road
28/11/02	" "	Magsaysay	Tagaytay road
11/12/02	" "	Malalag	Pitu road
11/12/02	" "	Santa Cruz	Coronon road
18/2/03	" "	Jse Abad Santos	Caburan road
19/2/03	" "	Don Marcellino	Cunalom Road
4/12/02	Compostella Valley	Maragusan	Sitio Gemelina.
15/1/03	" "	Maco	Mapaang Road
15/1/03	" "	Mabini	Cabuyoan Road
15/1/03	Davao Oriental	Banaybanay	Pintatagan – Lumad Road
16/1/03	" "	Lupon	Don Mariano Marcos – Mangol road
16/1/03	" "	Caraga	Pantoyan – Binaton Road.
16/1/03	" "	Caraga	San Pedro - Sugabaw Road.
17/1/03	" "	Manay	Balinaonao – Kalundan Road.
17/1/03	" "	Tarragona	Maitum - Guibaan – Madian road

UDP Road Rehabilitation Projects Visited

Province	Municipality	Project
Davao Oriental	San Isidro	Dungga Road Rehab. 2-60-521-01-16
Compostella Valley	Laak	Pigayonan Road Improvement.1-60-521-01-002
	Maragusan	Durian/Magkawayan road rehab. 1-60-521-02-028
	Maco	Purok 3 Road rehab. Mapaang.1-60-521-01-018.
	Maco	Purok 1 Road Rehab. Mapaang. 1-60-521-02-026
South Cotabato	Tampakan	Upper Balisan road rehab. 5-60-521-01-092
	"	Bong Lawaan road rehab. 5-60-521-01-090
	Tantagan	Upper & Lower Matimos road network rehab.5-60-521-01-033
	Tupi	Lateel road access rehab. 5-60-521-01-088
Davao del Sur	Magsaysay	Tagaytay road improvement. 3-60-521-01-015

BRIEF COMMENTS ON ROADS PROJECTS VISITED

1. DA Funded Roads

PPO1 COMPOSTELLA VALLEY

Crossing Recena to Kibaguio. Laak, Date visited – 20th December 2002
(3.2 km. P1,839,771.)

This has been completed 1 year & is in reasonable condition. However numerous carabao sleds are being used on it & this does not bode well. The initial DA supported distance was carried out by contract & extended a further 7 km by the LGU under their own initiative in order to reach another barangay (UDP 4th barangay). The potential area served by this road is large. Cross bunds have been placed in the steeper sections to minimise erosion to the crown.

In one re-entering bend, there is no provision for the storm flow reaching the road & the embankment side was being incised. A simple drift and/or spillway would have been beneficial. A significant stream cuts the road, which is fordable by vehicles but a problem for motorcycles and people.

No maintenance has taken place so far and there is no specific system in place. The road is the responsibility of the barangay.*[Note- Bgy maintenance reported as carried out in Jan.)*

Sitio Gemelina. Maragusan, Date visited – 4th December 2002
(1.2 km. P904,946.)

A 3.2 km stretch, connecting the barangay to the main road. The first 2 km was rehabilitated by the province while a box culvert and the remaining 1.2 km closest to the barangay was carried out by contractor under the direct supervision of DA. The DA funded section is well shaped and compacted, with no erosion and effective grass growth along the edges. The LGU section on the other hand is not as well shaped & starting to wash out in the steeper sections.

The UCO chairman stated that the community has carried out maintenance, notably grass cutting at the verges. The community input at implementation was clearing the route at construction.

There is an original access to the barangay from the main road, which is of a similar distance, but significantly steeper & in poor condition in places. We were informed that the community prefer & strongly requested the new route and the cost of repairing the original one would be higher than the rehabilitation of the new one. This is questionable but certainly the newer one would be easier to maintain.

The access serves over 55 households in a high potential area.

Mapaang Road, Maco Date visited- 15th January 2003
(1.5 Km. Budget – P539.554.)

This is not completed (approximately 40%) and is being carried out through administration by the Municipal engineering unit. So far dozing and some gravel surfacing, carried out 6 months ago, with significant further gravel surfacing still to do. 7 culvert crossings constructed but only 2 of them with headwalls so far. There is one steep drainage crossing that should be addressed, ideally with a concrete drift, otherwise embankment erosion could take place. We were informed that only P160,000 (presumably the 30% initial release) has been spent so far and the reason for the delay is that further funds are still to arrive. It is understood that the remaining funds have now been forwarded. The approach road connecting the road to a main road is reasonable.

Cabuyoan Road, Mabini Date visited – 15th January 2003
(1.2 km. P936,566.)

This was completed by contract and is well built, being well compacted with adequate drainage arrangements. There is an appropriately constructed drift crossing a steep drainage line. The road continues on after the DA supported section and a culvert crossing, together with certain amount of gravel surfacing has been implemented. The barangay council has accepted responsibility for maintenance but some landslips remain to be removed. This road serves 34 households (according to records). The approach road is reasonable.

PPO2 DAVAO ORIENTAL

Sto. Rosario road. San Isidro. Date visited-14th November 2002
(3.5 Km. P976,003 + P200,000.)

This road connects 1 sitio. A good running surface, gravelled, shaped & compacted, with no significant erosion on the crown. The drainage system was not eroded or blocked. There had been some landslips, and we were informed by the barangay captain that the barangay council had offered fuel if the Municipality would send the machinery to remedy it.

Although the project was totally contracted, there had been recent planting along the embankments with glyricidia, as a bayanihan input by the community. There was no Municipal involvement, except in the initial identification, as DA supervised the contract directly. The maintenance of the road is now the responsibility of the barangay council, who are aware of the fact.

The area is not one of high agricultural potential.

Campo 1 – Licop Road. Mati. Date visited – 15th November 2002
(5.1 km. P870,125.)

This project consists of crossing structures, notably a double barrel box culvert, a drift (Irish bridge), together with ring culverts. The road itself serves 2 sitios.

The box culvert is poorly sited, being at a point close to a bend in the river, where the bank will be liable to erosion, and a vehicle or motorcycle is forced to make a sharp turn

after descending the slope before going on the bridge. The drift is already eroded badly at both ends.

The project was again implemented by contractor and supervised by DA, with minimal LGU involvement. The track itself is in poor condition. Due to land slips, a vehicle cannot travel the whole distance and motor cycles with difficulty, the passengers having to dismount at various times. In these circumstances, the impact of the structures on increased ease of transport is minimal.

Maintenance is technically the responsibility of the barangay, but none is being done.

Pintatagan – Lumad Road. Banaybanay Date visited – 15th January 2003
(5 km. P916,981.)

This was completed by contract, though it appears not a DA appointed contractor, but one retained through the mayor. However, it is in very poor condition and required engaging 4 wheel drive to pass sections of it. River stone/gravel has been used as surfacing on approximately 4 km, but there is no compaction. The drainage arrangements have not been properly implemented and, combined with no maintenance, the result is serious damage to the road. The surface is badly rutted and ponded in a number of places. There are places where embankment collapse has occurred, as well as landslips, which have caused serious erosion. There is inadequate covering of culverts and some are already exposed. Headwalls are eroded and one is broken. It is unclear if there was a certificate of completion.

The approach road is good. There appears to be minimal settlement in the service area of the road, certainly not 573 households as stated in the records. We were informed that the settlers would come with the development of the road and the water system, which is presently under construction.

To make the road usable, a lot more than routine maintenance is required. The work will entail clearing of landslips and repairing of eroded embankments, resurfacing and reshaping in many places, as well as compacting. Also repair and covering of culverts.

Don Mariano Marcos – Mangol road. Lupon Date visited – 16th January 2003
(4 km. P1,428,979.)

The main contracted works of this have been completed. The DA budget could not cover a complete rehabilitation, therefore the main work was opening (dozing) and the surface is only partly gravelled. However, it is now deeply rilled in the steeper sections and some culverts have already slipped away down the embankment sides. The last section of approximately 1 km has not yet been done and is to be funded by another, extra works contract under the 2nd tranche (P382,600 allocated). This last section at present is impassable to vehicles, with culverts destroyed and major landslips.

It appears that the Barangay Captain, or his deputy, signed the Certificate of Completion, but they were unavailable at the time of visit. There are no plans furnished with the Barangay Council, nor with the Municipal Engineering Unit, who have no official knowledge of the road project. Until the extra works is carried out, this road is unusable by vehicles.

Pantoyan – Binaton Road. Caraga Date visited – 16th January 2003
(2 km. P1,038,277 + P200,000.)

This was implemented by contract, with a further P200,000 spent on gravelling under the second tranche. We were informed this was actually 3 km but were unable to follow the full course to verify the length as it was impassable when the first steeper section was reached. Approximately 1.7 km surfaced with limestone but not compacted and badly rutted. There had been attempts at side drainage and cross bunds had been constructed on steeper sections to divert the water off. The Barangay Captain had apparently signed the Certificate of Completion in August and The Municipal LGU had no official knowledge of the project. The approach road, officially a provincial road, is poor and badly maintained.

San Pedro - Sugabaw Road. Caraga Date visited – 16th January 2003
(P1,100,000.)

Funded under the second tranche, this serves the UDP second barangay and is also implemented by contract. It is 3 km, surfaced over the whole length with limestone, which is uncompacted, with evident rutting but passable at present. The drainage works are also reasonable at present. There is a reasonable approach road.

Balinaonao – Kalundan Road. Manay Date – 17th January 2003
(1.7 km. P899,933.)

We were unable to visit the road site due to the sustained wet weather making the approach road impassable. However, we were able to carry out discussions with the MTL and the Municipal Engineer. This is apparently a different road to that originally planned and has been rehabilitated by contract. The Municipal engineer confirmed that the LGU has had no official involvement but she has visited the road and it was passable, with the work appearing to be of reasonable quality. The approach road, as we found out, is a problem, though apparently this is to be rehabilitated under the DIDP programme

Cayawan – Bagsak Road. Manay Date – 17th January 2003
(P925,000.)

This is in the process of rehabilitation in the second UDP barangay under the second tranche. Again not visited due to poor access in bad weather.

Maitum - Guibaan – Madian road. Tarragona. Date visited – 17th January 2003
(4.5 km. Budget – P 1,000,000 + P900,000.)

Again, we were informed there were alterations from the road originally planned and this is in 2 sections (2.5 km & 2.0 km), funded under both the first and second tranches. We were hindered from following the full length by a large rockslip. The road is surfaced with large aggregate gravel, which is uncompacted but reasonable at the moment. Some drainage outfalls will need attention if erosion is not to set in. There is a suitably constructed drift across a steep drainage line.

A certificate of acceptance document was produced by the contractor and signed by the Barangay Captain in December 2002. Prior to this, the Barangay Council did carry out a site inspection. We were informed there was a single site visit by the engineer from the

DA regional office. The Municipal engineer has no formal knowledge of the project and no as-built plans seem to be available in the Barangay or Municipality.

PPO3 DAVAO DEL SUR

Demoloc-Aglaungan road. Malita. Date visited -28th November 2002
(1.2 km. P1,440,214.)

Upgraded by the municipal LGU through administration. The gravelled surface is in reasonable condition. No proper crossing structures were included, however 2 small streams include footbridges, which were instigated earlier under the direct UDP project and the actually road crossings had been simply filled with gravel. This has now been washed out, making the total length of road impassable to most vehicles. Another larger stream is easily forded by vehicles in normal conditions and a 40m hanging footbridge has been proposed here under the UDP programme. Overall, the road is connected by approach roads that are in poor condition in places.

There has been no maintenance so far, and there is no specific guarantee by the barangay to maintain the road. If proper benefit is to be gained of the road, the 2 small stream crossings must be repaired. Simple & inexpensive gabion drifts could be a solution.

The potential beneficiary area consists of over 300 households. Traffic on the road at the time of visit was light. It is planned to connect it up with the Lumabat road (also DA funded) coming from Malungan.

Tagaytay road. Magsaysay Date visited – 28th November 2002
(3.1 km. P916,000.)

Still under construction by the LGU through administration. It consists of a bridge and concreting of the steep approaches either side. The bridge itself is virtually complete, apart from riprapping of the upstream side, which is being carried out by bayanihan at the instigation of the Mayor. The approach road is passable, with one wide stream crossing fordable in normal circumstances and which is to be bridged in the near future as a project has been approved under the President's fund. A UDP assisted rehab further up should compliment the improvements and serving 88 households in an area of reasonable agricultural potential.

Pitu road. Malalag Date visited- 11th December 2002
(3.9 km. P970,000.)

1 year old, rehabilitated by administration. A good running surface, well compacted. The LGU hired the equipment they needed privately, which gave them more flexibility. One section of salient curve had no inside drainage & would need to be attended to, however the nature of the base material is soft rock, so not too much of a problem. The LGU is constructing a box culvert as their counterpart input at the beginning of the road. An area of high potential production. It was claimed that the arrival of electricity this year would not have occurred if it wasn't for the road.

Coronon road, Santa Cruz Date visited – 11th December 2002
(2.5 km. P765,000.)

A difficult approach road in places, especially where sunken and acting as a stream line. However, because of the firm rocky base, this is no problem in dry weather. The initial section of the DA road is short (< 1 km), surfaced with heavy river gravel, which is effective except in one steep part, where it is loose and the vehicle needed to engage 4WD to climb. It appeared that the other section was the other side of a rocky stream, which is very difficult for vehicles to cross.

There was busy horse traffic at the time of visit.

Caburan road, Jose Abad Santos. Date visited – 18th February 2003
(1.8 km. P781,000)
This has been extended to a total of 2.5 by the LGU. So far, the route has been dozed, with proper shaping and gravelling still to be done. We were informed that there is still P170,000 still to be spent. The DA records show the road as complete.

The surface as it is now, is already suffering damage, with erosion most obvious at the outfalls of the turnouts. There are some cross berms on the steeper sections, but there outfalls are beginning to erode also.

There is a need to complete the shaping and gravelling as soon as possible. The LGU has no compactor. More cross berms and turnouts on the steep sections would reduce the quantity of water at each one and reduce erosion. Protecting the outfalls with a cover crop such as puero (kudzu) would reduce the erosion there. A problem is that private land borders right up to the verge and cassava, yams etc are being planted there.

The road does not serve clustered sitios, though there are numerous homesteads up in the hills above it. Records show 333 households. Copra production is reasonably intensive in the area. The approach road connecting this one to the poblacion is reasonable.

Cunalom road, Don Marcellino. Date visited – 19th February 2003
(2.8 km. P916000)
Only P270,000 (1st instalment) spent so far. Large river aggregate has been used but no compaction. There are 3 stream crossings. Apart from a couple of places where erosion is occurring on the shoulder, one section bordering a stream bank is being badly eaten into. Building this up with a wall of gabions is suggested, and should be within the available budget.

The road serves an active area put at 270 households, with copra the main output on what viable land there is. The approach road would be difficult in wet weather.

PPO4 SARANGANI

Matayo road. Kiamba Date visited - 27th November 2002
(3 + 1 km. P952,229 + P950,000.)

The initial 3 km section follows predominantly level ground through a copra plantation, before climbing at a reasonably modest gradient. On the level ground, the road is not raised above the surrounding plantation land, making turnouts difficult. As a result, runoff from the slopes, as well as the surrounding area concentrates in the side drains with no escape, therefore significant erosion has taken place at the road sides. More

turnouts on the sloping sections, cut off drains and wider side drains in the level land would be the solution. The cross drainage structures are in reasonable condition.

A second section of 1 km includes a rehabilitated bailey bridge with timber transoms & decking. This road follows a gradual slope through sitio Centro as far as a stream, where an enormous Szopad supported bridge project lies incomplete & apparently abandoned. A track does in fact continue up beside the stream as far as another UDP supported sitio, but this is not always passable to vehicles & the distance is uncertain at the moment.

Both sections are surfaced with larger aggregate river gravel/stone and the rehabilitation was carried out by the municipal LGU under administration. No maintenance has been carried out yet. At the moment the sections effectively serve one sitio of 33 households. An extension could bring in a further sitio, but the distance needs to be ascertained first. The area is of comparatively high agricultural potential. It should be noted that the coarse of both sections is through private land, a copra plantation.

San Roque – Lumabat road. Malungon Date visited – 27th November 2002
(3.0 km. P1,151,340.)

Rehabilitation was completed 1 year ago by the municipal LGU through administration. However, marked rilling and cutting on the steeper sections. More work needs to be done on side drains, turnouts and cross bunding. The section of road is reached by another of comparatively long distance through steep terrain, and which is in very poor condition in places. It is obvious that to maintain a network of road as such, through this sort of terrain, is an extremely heavy commitment and the LGU openly admit as such.

There is one crossing fordable by vehicles and where there is a proposal to construct a footbridge under the UDPprogramme. The surrounding territory is a mature production area, with very noticeable activity by horse transport. The roads combined serve a significant area.

PPO5 SOUTH COTABATO

Danlaq – Palo Road. Tampakan, Date visited – 25th November 2002
(3.0 km. P842,356.)

This was originally a provincial level road, but was never being maintained, & now, after rehabilitation, is to all intense & purposes, a barangay level road. It is cut into the valley side for much of it's length. It was rehabilitated under administration by the municipal LGU, using equipment, notably bulldozer, hired from the provincial government. Since rehabilitation, one section has already been washed out & repaired by the municipal LGU, but other sections are already washing out also in the upper, steeper portion. There is a need for more culverts, as the lengths of the inside side drains are too long in some sections. There are cross bunds on the steeper sections, but these are already being swamped & overtopped. There should be more of them, as well as maintenance of the existing ones. Some land slips have not been cleared up.

Therefore, there is a need for immediate routine and remedial maintenance. The municipal LGU state they will carry out maintenance, but it is not clear if the barangay

are aware of their responsibilities concerning the road. The exact classification of the road needs to be clarified.

This is a road connecting a barangay centre to the main roads, in an area of reasonable agricultural potential, and whose impact can be further enhanced by the improved access for some of the sitios to the barangay proper already in place. The potential impact of the road is therefore high.

Dumadaliq – El Naf road. Tantagan Date visited – 26th November 2002
(3.7 km. P441,517.)

A barangay level road, completed 5 months ago. Work consisted of a full upgrade by the municipal LGU through administration, including surfacing with locally quarried limestone, compaction & construction of culverts.

There is noticeable damage to the running surface from carabao sleds and the steeper sections are already rilled, rutted & the surface material loose. The side drainage is often blocked with limestone rubble and there is erosion around the headwalls of the culverts. There are some smaller land slips and no noticeable tree planting. The road is cut into the valley side for much of it's length. There has been no maintenance since construction. The road serves a sitio of 30+ households in an area of reasonable high potential.

Sitio Tanting to Sitio Barak road. Tupi Date visited – 26th November 2002
(1.8 km. P867,435 allocated; P135,000 spent to date.)

Presently under construction by the LGU through administration. Still being surfaced with limestone & no real attempt yet at perfecting the side drainage. However culverts have been constructed and some are already eroded at the edges of the headwalls.

The road will serve 144 households and an area of reasonable potential

2. UDP Assisted Roads

PPO1 COMPOSTELLA VALLEY

1-60-521-01-002 Pigayonan Road Improvement. Laak

Present condition. Notable erosion in the crown of some of the steeper sections, soft & rutted near the beginning. Grass well established on the verges and crown on some stretches.
Quality of work. Apart from 2 valley crossings, the road well sited along the ridges. Locally quarried aggregate used for gravelling, but effective. Implemented totally by administration. Trench digging for culverts was done mechanically, not by the community.
Maintenance situation. The Barangay has delegated responsibility to the UCO, of which the relevant sitio leader is president. The sitio have carried out routine maintenance 3 times on a bayanihan basis, notably weeding, repair of turnouts & some tree planting. No side ditching or repair of crown. The Barangay has agreed to budget for fuel for 1 grading per year, but this has yet to take place.

Potential/usage/sustainability. Used predominantly by motorcycles, with minimal 4 wheel traffic. It is a reasonably high potential area, combined with the opposite side of the river, where the road ends.
Relevant points. A follow up by the programme on maintenance routines would pay dividends as the group is organised & receptive. The crown in the steeper sections will need regular maintenance, especially has there was no compaction, possibly construction of cross bunds.

1-60 521-02-028 Durian & Magkawayan road rehab. Maragusan

PRC approved. 1.2 km through rolling & steep terrain. 2 crossing points in deep locations, requiring single barrel box culverts and earth fill for the approaches. At present, motorable from Durian as far as the second culvert in dry conditions but the surface is poor. Motor cycles are passing with difficulty and some horses.

It connects Sitio Durian to Sitio Magkawayan. Durian is connected by all-weather track to Gemalina, & hence to the main road by the new DA funded road. This project would connect Magkawayan to that network. However, it is understood that there are plans for a DA funded road to connect Magkawayan directly with another main road access point.

1-60-521-01-018 Purok 3 Road rehab. Mapaang. Maco
Consists of a steep incline and valley crossing before the sitio. 85% complete. Graded but not yet gravelled or side drains cut. 4 culvert crossings constructed by the community, with regular supervision by the MPT. The community is due to riprap the side cut, & the stones are on site.

1-60-521-02-026 Purok 1 Road Rehab. Mapaang. Maco
PRC approved. There are major discrepancies between the drawings and the calculated quantities. The design width of the road is unnecessarily wide, increasing the potential earth to be moved in side cut and embankment.

PPO2 DAVAO ORIENTAL

2-60-521-01-16 Dungga Road Rehab. San Isidro

Present condition. This is not long complete but already markedly rutted in a one or two places and the side drains are eroded in the steeper section at the beginning. The survival rate of the glyricidia planted to stabilise the banks around the culverts is low, with the majority now choked with bindweed.
Quality of work. Reasonable, but having had no gravelling or mechanical compaction, maintenance requirements will be high. The culvert construction is of a passable quality.
Maintenance situation. None of significance has been taking place so far. The Baranguy Captain has plans, which are as yet untested and the funding source not properly considered, ie, he would like the maintenance funds from UDP. The technical maintenance training was comparatively intensive, but does not seem to have had an effect yet.
Potential/usage/sustainability. The original UDP supported section of 1.28 km was extended to 3 km by the LGU. An area of low agricultural potential, with only one or two areas of reasonably intensive agriculture on more level land. Otherwise, very steep slopes. A number of motorcycles in evidence, minimal 4 wheeled vehicles and horses.

Relevant points. The institutional component of the maintenance arrangement is the requirement here.

PPO3 DAVAO DEL SUR

3-60-521-02-035 Siliducan box culvert, Santa Cruz,
Only at stage of initial excavation & setting out. It will compliment a busy access road.

3-60-521-01-015 Tagaytay road improvement, Magsaysay
1.2 km, serving 88 households. Still on-going at the time of visit. Culverts and a box culvert in the process of construction. Grading of the running surface will follow this. The approach road is the DA funded project and therefore reasonable.

PPO5 SOUTH COTABATO

5-60-521-01-092 Upper Balisan road rehab. Tampakan

Present condition. Reasonable. Steep & rolling situation. Some rilling on the crown & gravel starting to wash away in steeper places. A couple of lower places where there is the potential for serious runoff erosion. Culverts still being constructed by the community. The LGU has doubled the distance planned under the UDP programme.
Quality of work. Not compacted, but comparatively large aggregate. Side ditching not really attended to, as the aggregate has spread into it after initial shaping. Community involvement entails the culvert construction & tree planting, which is still to be done.
Maintenance situation. No maintenance training yet. The sitio is taking responsibility but no evidence of activity yet. Stated that the Barangay will help with IRA allocation. No tools provided for maintenance.
Potential/usage/sustainability. 49 households. 2 vehicles/day, plus motorcycles. Very steep terrain with limited agricultural potential.
Relevant points. Mechanical grading of the side drains would be appropriate, spreading the spoil to fill the voids of the large aggregate. Barangay/sitio level maintenance still to be addressed.

5-60-521-01-090 Bong Lawaan road rehab. Tampakan

Present condition. Poor and incomplete, having only been dozed. Significant rilling and gullying, with some landslips and potentially serious embankment erosion in some places. The situation of the road is steep and along ridges, joining the barangay proper to the sitio, approximately 3km. The UDP approved proposal was in fact the first 1.3 km starting from the baranguy proper, this is the steepest & most difficult part. The records state the project to be complete, while it is far from it.
Quality of work. Incomplete, as just dozed 6 months ago. No shaping or gravelling yet. No evident community tree planting. No culverts & apparently side drains/turnouts are not included in the programme of works. It appears also no proper surveying and minimal overall community involvement. A significant amount of work will have to be done again.
Maintenance situation. Nil

Potential & usage/sustainability. 32 household in the sitio and a comparatively long distance. No vehicular traffic of note at present. A trail suitable for motor bikes & horses may have been more appropriate. A reasonably high potential area.
Relevant points. Still much work to be done, although stated as complete. The dozer was available for only a short period of 2 weeks from province in July and the LGU was heavily committed with other work, notably the Upper Balisan road project. **The LGU must continue to be pressed to continue & complete this work before it is totally lost.** [8th Feb. 2003 – gravelling now in progress]

5-60-521-01-033 Upper & Lower Matimos road network rehab. Tantagan

Present condition. Still under construction. The road will consist of a surface of crushed limestone, complimented by concrete tire tracks on the steeper sections. Neither is yet complete. The side drains are not clear of limestone rubble and, although the culverts are constructed, one was already full of sediment, it appeared to be because the outfall was not sufficiently clear. Tree planting is in the proposal, but not started yet.
Quality of work. Construction of the tire paths is reasonable and there are adequate cross joints to strengthen them & avoid erosion channels forming.. The limestone covering so far laid is not yet compacted or shaped. The community input was in the construction of the tire paths and culverts by food for work.
Maintenance situation. Not organised yet.
Potential/usage/sustainability. Large population of approximately 130 households, plus an area of reasonable potential. The project road connects directly to a good main road.
Relevant points. If constructed properly, as they appear to be, tire paths have the potential to address the most erodable sites on the road. However maintenance will still be required to maintain the limestone either side, so that erosion channels are not formed down their side. The drainage situation in the culverts must be addressed as soon as possible before serious damage is done; notably clean them out, clear outfall and clear loose debris from the side drains that is washing into the culverts.

5-60-521-01-088 Lateel road access rehab. Tupi

Present condition.. The project input related to the crossing structures only, which were in good condition, as well as the first section, although the proposal states that a base course will be laid. The road itself could benefit from some maintenance.
Quality of work. Good. The spillway structures appeared to be very effective in their function.
Maintenance situation. The Barangay has assumed responsibility, but no maintenance carried out so far. The road will be in the same situation & needs some maintenance.
Potential/usage/sustainability. 30 households. The design of the spillway structures appears to be appropriate and effective, simpler & cheaper than a concrete drift.
Relevant points. The project proposal referred to provision of sub base material on the road, but there is no evidence of this.

Technical Assistance Input to The Upland Development Programme in Southern Mindanao (UDP)
ALA-97/68

Final Report

ANNEX 2

Labor-based routine/preventative road maintenance (Barangay roads): Developing a sustainable and replicable system. Text of:-

a. **Orientation workshop booklet (Municipal level)**
b. **Outline Of Procedures For Establishment & Trainers Guide**

W.J.Bradfield, Community-based Infrastructure Specialist

LABOR-BASED ROUTINE/PREVENTATIVE ROAD MAINTENANCE

(BARANGAY ROADS)

DEVELOPING A SUSTAINABLE AND REPLICABLE SYSTEM

Orientation Workshop Booklet
(Municipal level)

[4th draft. 14th Feb]

PROCESS OF THE WORKSHOP

1. **Present an overview of 'Sustainable Road Maintenance' and it's importance**

2. **Outline the components and the relevant methodologies for the implementation and funding of labor-based routine road maintenance**

3. **Open forum; Discussion**

4. **Identification of a site and formulation of an action plan, which will be a timetable for development of a maintenance system.**

5. **Agreement on system of reporting and who will be responsible for overall supervision/monitoring of the project.**

6. **Site visit: familiarisation for all of the particular situation of the selected barangay roads.**

LABOR-BASED ROUTINE/PREVENTATIVE MAINTENANCE SYSTEM

COMPONENTS

1. Methodologies for road management and routine maintenance:

- Regular management ie closing in wet weather, adding speed bumps etc
- Routine/preventative maintenance, especially timing and organisation of regular programmes, eg continuous or periodic.
- Periodic maintenance, ie linkages with municipal LGU as well as with PLGU, DPWH etc
- Gain experience of the likely range of maintenance costs/km

2. Appropriate technical maintenance training (Barangay level)

- Control of vegetation
- Maintenance of running surface
- Maintenance of side drains
- Maintenance of culverts, drainage crossings
- Erosion prevention – vegetative/simple structures

3. Strengthen Barangay Council capacity

- General awareness (ie barangay council responsibilities in relation to road maintenance; importance of routine/preventative maintenance, as from periodic; sources of assistance- MLGU, PLGU)
- Likely costs and funds required.
- Possible funding sources
- Methodologies for income generation.
  Eg. Setting up a toll fee system
- Improved planning at barangay level (AIPs).
- Setting up/reactivation of the relevant organisational sub-body
- Basic capacity building eg record keeping (as required)

1. METHODOLOGIES FOR ROAD MANAGEMENT AND ROUTINE/ PREVENTATIVE MAINTENANCE

a. **REGULAR MANAGEMENT. Eg**:

Closing road or fining vehicles in bad weather
Installing speed bumps.
Discouraging damaging practices, ie carabao sleds; wheel chains

b. ROUTINE/PREVENTATIVE MAINTENANCE:

Why it is very important

Tasks involved-

Controlling side vegetation [Monthly]
Filling ruts and potholes [Bi-monthly or after heavy rain]
Clearing and repairing side ditches [Bi-monthly or after heavy rain]
Cleaning and maintaining culverts [Bi-monthly or after heavy rain]
Maintenance of erosion preventive measures (vegetative/simple structures) [Monthly or when necessary]

Types of work arrangement: eg-

1. Bayanihan
2. Regular employees responsible for the length of road or sections of it individually.
3. Pakyaw: Individual or group hire by Barangay council on piecework basis when required.
4. Combination of above.

Managing the work: The planned outputs would vary very much on the conditions and situation of the particular roads.

Tools required: Depends on lengths to be maintained & number of working teams: One possible set (4 man team):-

1 unit wheel barrow
4 units shovels
4 units bolos/scythes
2 units axes
2 units pick/mattock
2 units crow bars/digging bars
2 units steel tampers (or home-made wooden ones)
2 units rakes
(ropes/cable/cleaning rod/bucket – for cleaning culverts)

(Tools owned by Barangay council?)

c. PERIODIC MAINTENANCE:

Tasks- grading [annually?]
Mechanical removal/repair of larger landslips [As required]
Maintenance of larger crossings [as required]

Arrangement with MLGU for equipment (rent/fuel & allowances/free)

d. **LIKELY COSTS**

At present time we have very little experience of what it may cost

An attempt can be made to calculate for the individual types of tasks, then combine. However the results will vary widely according to the situation.

The table below gives a possible scenario, using some assumptions of mandays/km etc.

Labour-based Road Maintenance	**Cost Analysis**						
Task	**Output/md**	**md/km**	**x per yr**	**Daily rate**	**Ann. Cost**	**Km**	**Total cost**
	[m]			**[P]**	**/km [P]**		**[P]**
Vegetative control	200	5	12	80	4800		0
Filling rills, potholes & depressions		5	24	80	9600		0
Clearing/cleaning side ditches	500	2.5	24	80	4800		0
Cleaning/maintaining culverts etc		2	24	80	3840		0
Erosion control		5	12	80	4800		0
TOTAL					**27840**		**0**

A simpler option is a permanent gang; ie 1 man/km, Cost= @ P20,000/km

2. APPROPRIATE TECHNICAL MAINTENANCE TRAINING AT BARANGAY LEVEL

a. Practically based. On-the-job training, initially by PPO & Municipal engineer, with Agricultural technician taking over as he becomes confident.

b. Aimed at the supervisors of the paid laborers/gangs, as well as the paid laborers themselves.

c. Carried out by practical demonstration in the course of general supervision.

d. It is important that the supervisors and workers understand how to do the tasks effectively, especially the drainage systems.

e. Modules are prepared, describing in detail each type of task, especially:
   - Its purpose
   - Where & how to do it
   - How often & when to do it
   - Labour & mandays required
   - Tools required

f. Relevant tasks:
   - Control of vegetation
   - Maintenance of running surface
   - Maintenance of side drains
   - Maintenance of culverts, drainage crossings
   - Erosion prevention – vegetative/simple structures

3. STRENGTHENING BARANGAY COUNCIL CAPACITY

Aspects we must consider

a. **GENERAL AWARENESS**

- Overview of the physical components of a road
- The difference between routine/preventative and periodic maintenance
- Importance of routine/preventative maintenance
- Responsibilities in relation to road maintenance
- Sources of equipment assistance eg MLGU, PLGU

b. **LIKELY COSTS AND FUNDS REQUIRED**

- The frequency of the relevant tasks, the likely costs, therefore funds required

c. **POSSIBLE FUNDING SOURCES**

- Bgy 20% IRA
- Municipal & provincial grants
- Toll fees
- Other funds, ie fees from bgy operated infra eg drying floors; grants from civic organisations

d. **METHODOLOGIES FOR INCOME GENERATION**

- MLGU planning and funding system; how it works.
- Importance of contact/liaison with Municipal government – influencing municipal planning, tapping available funds & assistance
- Methodology for implementing income generating activities, eg toll roads

Setting up a toll fee system - Most suitable situation
Which type of vehicle is to be taxed
Ordinances
How to manage it
Where keep funds

e. **IMPROVED PRIORITISATION & ALLOCATION OF AVAILABLE FUNDS**. Improved planning at barangay level – AIP

- Prioritisation
- Accurate estimates
- Allocation of funds
- Monitoring of expenditure

e. RELEVANT SUB-BODY (Infra Committee):

It's activation and make-up within the barangay council

f. **BASIC CAPACITY BUILDING** (as required)

- eg appropriate record keeping system training

TIMETABLE/ACTION PLAN

SUGGESTED

1. **Deliberations at Purok/UBA/UCO/Barangay Council** levels, culminating in a **GENERAL ASSEMBLY/IEC MEETING** at barangay level. Here, a detailed **action plan and timetable** can be presented and agreed.

The essential items that need to have been addressed are:

i. **SYSTEM OF ROAD MANAGEMENT**: Eg, if and how vehicle traffic will be controlled in bad weather.

ii. **SYSTEM OF MAINTENANCE**.
If a **BAYANIHAN** system is to be used: how this will be allocated among the puroks; what days; who will supervise; what type of work they will do.
For **PAID WORKERS**: The days they will work; What work they will do; How much they will be paid; Who will supervise them.

iii. **FUNDING**: Where the funds will come from to pay the workers; Other funds set aside for road maintenance purposes; How additional funds may be raised.

If a **TOLL FEE** system is to be set up, how it will be organised: What users will be taxed; Rates for each type of user; Where will the gate be placed; What will be the arrangement for managing the gate; In what account will the income be kept.

iv. **TOOLS**: What tools will be required; How will they be paid for; Who will keep and distribute them.

v. **TRAINING**: What training is required; Who will deliver it; In what form will it be delivered; The timetable for it: Eg the training for the workers is likely to be on site, on-the-job and delivered/supervised initially by the municipal or PPO engineer, with the AT possibly taking over as he becomes confident.

2. IMPLEMENTATION

i. Supervision of maintenance work: It must be effective
ii. Implementation of the training programme:
iii. Setting up the income generating system (eg toll fee); Preparing necessary ordinance by Barangay Council; endorsement at Municipal Council level; Necessary awareness/announcement for regular road users; installation of gate.
iv. **Accounting system**: that the income and costs are being clearly recorded.

3. **3. EXTERNAL SUPERVISION**; The responsible person(s) must be identified & reporting system agreed.

THE PARTICULAR TYPES OF TASKS (in detail).

VEGETATION CONTROL

Description:
Cutting of roadside vegetation with handtools within the road right-of-way. Includes proper disposal of cut material by stacking and burning or other approved method. The purpose is to maintain adequate sight distances & prevent obscuring of road signs, prevent clogging of drainage, and maintain roadway appearances.

Hand tools: Crow bar
Bolo/axe/scythe
Wheelbarrow
Rake

Procedure:
1. With hand tools, cut vegetation, grass and tree branches from the area to be cleaned; scythe for grass cutting; bolo/axes and crow bar for bush clearing. Normally, this includes the shoulders, side slopes, ditches, and the area within the right-of-way obscuring the road signs and bridge approaches. The area should be slightly wider at the road intersections and on the inside of curves were sight distance is an important safety factor.
2. Remove material cut from ditches and shoulders and pile outside of ditches using rake and wheelbarrow.
3. After drying, the pile of material should be properly disposed of.

Estimated productivity:
50 – 200 lin.m. of road per man-day (both sides cleaned)-depending on situation

Suggested Frequency : Monthly

Method of undertaking: Suitable for bayanihan

FILLING OF RILLS, POTHOLES, RUTS AND DEPRESSIONS

Description:
Filling isolated potholes and other depressions in unpaved roads with aggregate materials and compacting the patches with hand tampers. The purpose is to prevent the ponding and passage of water and to improve the surface smoothness. Especially important to address are the rills that form on the steeper slopes

Handtools: Wheelbarrow
Shovels
Rakes/spreaders
Tampers
Pickaxe/hoe

Materials: Aggregates

Aggregates are either obtained by excavating soil and gravel along the side of the road using shovel/pickaxe/hoe or taken from gravel sources and spot-dumped on the shoulder. Oversized material should be removed from the aggregate manually.

Procedure:
1. Remove water and soft material from the patch area. This should be done immediately when ponding of water is observed.
2. Clean loose materials from the edges of potholes, making the side of the hole as vertical as possible.
3. Place aggregate in several layers, hand tampering each layer.
4. Rake final layer so the top of the patch is slightly above the surrounding road surface.

Where long rills have formed down the steeper sections, steps 2 – 4 should be followed

Where cross berms have been installed on the steeper sections, these should be repacked, so that the flow of water does not break through and flow down the road.

Estimated productivity:
0.8 cu.m. per man-day; 4.00 cu.m. per crew day

Suggested Frequency : Twice monthly or after heavy rain

Method of undertaking: Experienced paid labour

CLEANING/REPAIRING/RESHAPING SIDE DITCHES

Description:
Cleaning and shaping of roadside ditches, using hand tools, to restore gradients and assure efficient surface water runoff. Includes removal and disposal of debris and waste materials.

Hand tools: Pick/mattock
Axe
Shovel
Wheelbarrow
Tamper

Procedure:
1. Remove rocks, logs and other obstructions from the ditches, such as smaller land slips.
2. Excavate silt or sand to make the bottom of the ditch flat or slightly rounded.
3. Shape the sides of the ditches as flat as possible. This will provide better water flow and minimise future erosion.
4. Dispose of excess materials by spreading it out to fill low areas well clear of the ditch. Do not pile the material or make a ridge along the roadway that prevents surface water from flowing to the ditch.

Estimated productivity;
2 kms per crew day (5 man crew.)

Suggested Frequency : Twice monthly or after heavy rain

Method of undertaking: Experienced paid labour

CLEANING CULVERTS AND OTHER STRUCTURES

Description:
Removing silt and debris from ditches, pipe culverts and from culvert inlets and outlets so as to provide unobstructed flow of water, and making minor repairs of ditch/culvert structures.

Hand tools: Shovels
Buckets
Wheelbarrows
Ropes/cable/cleaning rods

Materials; [minor]

Procedures:
1. Remove logs, limbs, stalks and other obstructions from ditches/culvert inlet.
2. Excavate silt or sand by hand if accessible or a cable is passed through the culvert and a drag or bucket may be pulled through to remove silty materials and debris.
3. If water is available, the silt can be flushed from the culvert in large volumes or at high pressure. The outlet ditch must be cleaned first so the water can flow easily.
4. Patching of minor damage to cracked or broken culverts and headwalls.
5. Severely damaged sections must be reported for replacement or repair.
6. Load away all debris and surplus material and dispose of by approved means.

Estimated productivity:
Depending on conditions and situation.

Suggested Frequency : Twice monthly or when necessary

Method of undertaking: Experienced paid labour

EROSION CONTROL

Description:
Repairing of minor erosion of shoulders, slopes and ditches with hand tools, and correction of conditions which cause erosion. Includes installation and repair of rock riprap, rock ditch lining, ditch checks, headwalls and vegetative control measures. Also the repair of smaller embankment slips, together with other erosion control practices.

Hand tools: Pick/mattock
Shovels
Axe
Wheelbarrow
Ropes

Materials: Rock/boulders
Stakes

Procedures:
1. Repair eroded areas by filling with gravelly soil/boulders well compacted in place.
2. Correct conditions causing erosion, with actions such as:
   - Widening and flattening of ditches;
   - Providing new outlet ditches to reduce concentration of water;
   - Placing and maintaining sods and vegetation over erodable areas;
   - Lining ditch channels with rock;
   - Placing riprap at the ends of culverts and bridges;
   - Constructing series of ditch checks to reduce velocity of water on steep gradients;
   - Repairing smaller embankment slips with stakes, rocks and planting material.

Estimated productivity: 0.5 cu.m. per man-day.

Suggested Frequency : Monthly or when necessary

Method of undertaking: Paid labour and/or bayanihan

LABOR-BASED ROUTINE/PREVENTATIVE ROAD MAINTENANCE

(BARANGAY ROADS)

DEVELOPING A SUSTAINABLE AND REPLICABLE SYSTEM

OUTLINE OF PROCEDURES FOR ESTABLISHMENT

&

TRAINERS GUIDE

[1st draft. 9th Feb.]

LABOR-BASED ROUTINE/PREVENTATIVE ROAD MAINTENANCE SYSTEM

PROCESS FOR IMPLEMENTATION

AIM: The establishment of a labor-based routine/preventative road maintenance system within a UDP assisted barangay. This is ideally prior to completion/inauguration of the road rehabilitation project. *Note: Stage 1 (Awareness workshop) is only necessary where the concept is being introduced to a municipality for the 1st time.*

IDENTIFICATION OF SITES:
Municipalities participating in the UDP programme, where rural road rehabilitation projects have been implemented. Ideally, where there is strong leadership at barangay council level and an active community**.**

1. AWARENESS WORKSHOP

Venue: Municipal hall

Participants:

Municipal Mayor
Municipal Engineer
MPDC
MSO
MPT Leader
AT
Barangay Captains of UDP projects
Chairmen, Barangay Council Infra committees
Provincial Engineer
PPO Manager
PPO TOU Chief
PPO Engineer
PPO CID Specialist

Agenda
(The relevant headings for presentation and discussion are outlined in the overheads, A booklet accompanies it, which can be reproduced and handed out to participants. All the relevant options must be presented for discussion and awareness)

i. Introduction/overview of 'Sustainable Road Maintenance'
ii. Methodologies for 'Road Management And Routine/Preventative Maintenance'

iii. Methods of funding road maintenance and strengthening Barangay Council capacity.
iv. Open forum
v. Identification of site and formulation of an action plan, which will be a timetable for development of a maintenance system
vi. Agreement on system of reporting and who will be responsible for overall supervision/monitoring of the project
vii. Site visit: familiarisation for all of the particular situation of the selected barangay roads.

2. DEVELOPMENT/ENDORSEMENT OF AN ACTION PLAN WITHIN THE BARANGAY.

This should take the form of deliberations at Purok/UBA/UCO/Barangay Council levels before culminating in a **General assembly/IEC meeting** at barangay level. Here, the **detailed action plan and timetable** will be presented and agreed.

This should be attended by the MSO and MPT, but also municipal and PPO engineers.

The essential items that need to have been addressed are:

i. **System of road management**: for example if and how vehicle traffic will be controlled in bad weather.

ii. **System of maintenance**.

Bayanihan: If to be used: how this will be allocated among the puroks; what days; who will supervise; what type of work they will do.

Paid labor: The days they will work; What work they will do; How much they will be paid; Who will supervise them.

iii. **Funding**: Where the funds will come from to pay the workers; Other funds set aside for road maintenance purposes; How additional funds will be raised, if necessary.

If a **Toll fee** system is to be set up, how it will be organised: What users will be taxed; Rates for each type of user; Where will the gate be placed; What will be the arrangement for managing the gate; In what account will the income be kept.

iv. **Tools**: What tools will be required; How will they be paid for; Who will keep and distribute them.

v. **Training**: What training is required; Who will deliver it; In what form will it be delivered; The timetable for it. For example; the training for the workers is likely to be on site, on-the-job and delivered/supervised initially by the municipal or PPO engineer, with the AT possibly taking over as he becomes confident.

3. IMPLEMENTATION

This must be supervised closely in the early stages by the municipal/UDP personnel.

i. **Supervision of maintenance work**: It must be ensured that this is being carried out as effectively as possible, from the point of view of both usefulness and cost.
ii. **Implementation of the training programme**: Most importantly, the on-the-job training for routine maintenance work, again to ensure that it is effective.
iii. **Setting up the income generating system (eg toll fee)**; Preparing necessary ordinance by Barangay Council; endorsement at Municipal Council level; Necessary awareness/announcement for regular road users; installation of gate.
iv. **Accounting system**: Making sure that the income and costs are being clearly recorded.

4. EXTERNAL SUPERVISION/MONITORING

The assigned person, most suitably the municipal or PPO engineer, must continue to monitor progress, especially the effectiveness of the work and the costs/income. The AT can be coached to take over the day to day monitoring/supervisory role.

TRAINERS GUIDE

LABOR-BASED ROUTINE/PREVENTATIVE MAINTENANCE SYSTEM

This guide comprises the three relevant modules for the three sets of players in the process of achieving a sustainable labour-based routine road maintenance system. A technical reference manual has been produced, which supports this.

It must be made clear that much experience still remains to be gained, so this must be regarded as an early edition.

COMPONENTS

1. Barangay Council Infra Committees

Methodologies for road management and routine maintenance:

- Regular management ie closing in wet weather, adding speed bumps etc
- Routine/preventative maintenance, especially timing and organisation of regular programmes, eg continuous or periodic.
- Periodic maintenance,
- Gain experience of the likely range of maintenance costs/km

2. Employed workmen and supervisors

Appropriate technical maintenance training (Barangay level)

- Control of vegetation
- Maintenance of running surface
- Maintenance of side drains
- Maintenance of culverts, drainage crossings
- Erosion prevention – vegetative/simple structures

3. Barangay Councils

Strengthen Barangay Council capacity

- General awareness (ie barangay council responsibilities in relation to road maintenance; importance of routine/preventative maintenance, as from periodic; sources of assistance- MLGU, PLGU)
- Likely costs and funds required.
- Possible funding sources
- Methodologies for income generation. Eg. Setting up a toll fee system
- Improved planning at barangay level (AIPs).
- Setting up/reactivation of the relevant organisational sub-body
- Basic capacity building eg record keeping (as required)

MODULE 1

METHODOLOGIES FOR ROAD MANAGEMENT AND ROUTINE/ PREVENTATIVE MAINTENANCE

PARTICIPANTS – **Barangay Council Infra committee**

KEY RESOURCE PERSON - **Municipal Engineer/PPO Engineer**

VENUE - **Barangay hall**

TIMEFRAME - **½ day (Morning)**

TOPICS

a. **REGULAR MANAGEMENT. Eg-**

Regulations/ordinances prepared by the Barangay Council outlining certain practices: eg:-

- In bad weather, closing the road or imposing fines on vehicles.
- Discouraging damaging practices, ie carabao sleds, wheel chains – imposing fines.

Installing speed bumps to slow vehicle speed.

b. ROUTINE/PREVENTATIVE MAINTENANCE:

- Why it is very important. *[Describe how, if effectively done, this can keep the road in a passable condition, reduce the likelihood of major damage & therefore need for outside assistance in the form of machinery. Allows the upkeep to be within the capacity of the barangay]*

Tasks involved (with likely frequencies)-

Controlling side vegetation [Monthly]
Filling ruts and potholes [Bi-monthly or after heavy rain]
Clearing and repairing side ditches [Bi-monthly or after heavy rain]
Cleaning and maintaining culverts [Bi-monthly or after heavy rain]
Maintenance of erosion preventive measures (vegetative/simple structures) [Monthly or when necessary]

Types of work arrangement: eg-

1. Bayanihan *[For example, each purok responsible for maintenance work on a designated length of the road one day per month]*

2. Regular employees responsible for the length of road or sections of it individually.*[Eg. Regular laborers paid a daily wage by the Barangay Council & assigned tasks daily by a supervisor, or one person responsible for all tasks on a set length of road]*

3. Pakyaw. Individual or group hire by Barangay council on piecework basis when required.*[Eg. Small contracts with groups or individuals to carry out specific tasks at certain times of year]*

4. Combination of above.*[Eg bayanihan being used for the simpler tasks such as vegetation control, while paid labor or pakyaw for others such as drainage maintenance or clearing landslips]*

Managing the work:
The planned outputs would vary very much on the conditions and situation of the particular roads. It will be a matter of experience.

The assignment of supervisors for both bayanihan and laid work must be considered.

Tools required:
Depends on lengths to be maintained and number of working teams: One possible set (for a team of 4 workers):-

1 unit wheel barrow
4 units shovels
4 units bolos/scythes
2 units axes
2 units pick/mattock
2 units crow bars/digging bars
2 units steel tampers (or home-made wooden ones)
2 units rakes
(ropes/cable/cleaning rod/bucket – for cleaning culverts)

[In reality, bolos and axes unlikely to be necessary as the communities have them]

Who will keep and issue tools? *[Likely to be Barangay Council infra committee]*

c. PERIODIC MAINTENANCE:

The most relevant tasks-

Grading *[Frequency – at least annually]*
Mechanical removal/repair of larger landslips *[Freq.: As required]*
Maintenance of larger crossing structures ie bridges, box culverts *[Freq.: as required]*

The likely arrangements with MLGU for use of equipment *[eg rental basis/provision of fuel, oil & driver allowances only/free use]*

d. **LIKELY COSTS**

At present time we have very little experience of what it may cost

An attempt can be made to calculate for the individual types of tasks, then combine. However the results will vary widely according to the situation.

The table below gives a possible scenario, using some assumptions of mandays/km etc.

Labour-based Road Maintenance	**Cost Analysis**						
Task	**Output/md**	**md/km**	**x per yr**	**Daily rate**	**Ann. Cost**	**Km**	**Total cost**
	[m]			**[P]**	**/km [P]**		**[P]**
Vegetative control	200	5	12	80	4800		0
Filling rills, potholes & depressions		5	24	80	9600		0
Clearing/cleaning side ditches	500	2.5	24	80	4800		0
Cleaning/maintaining culverts etc		2	24	80	3840		0
Erosion control		5	12	80	4800		0
TOTAL					**27840**		**0**

A simpler option is a permanent gang; ie 1 man/km, Cost= @ P20,000/km

_____

[A walk/passage along the relevant roads should follow, to point out the maintenance requirements of key places. Either late morning or afternoon]

MODULE 2

APPROPRIATE TECHNICAL MAINTENANCE TRAINING AT BARANGAY LEVEL

PARTICIPANTS – Barangay laborers & supervisors.

KEY PERSONS – PPO & Municipal engineering Unit

VENUE – On-site, on-the-job training

TIMEFRAME – Over 1 or 2 months, in the course of general supervision

a. Practically based. On-the-job training, initially by PPO & Municipal Engineer, with Agricultural Technician taking part and taking over as he becomes confident.

b. Aimed at the supervisors of the paid laborers/gangs, as well as the paid laborers themselves.

c. Carried out by practical demonstration in the course of general supervision.

d. It is important that the supervisors and workers understand how to do the tasks effectively, especially the drainage systems.

e. Modules are attached [Annex 1], describing in detail each type of task, especially:
   - Its purpose
   - Where & how to do it
   - How often & when to do it
   - Labour & mandays required
   - Tools required

f. Relevant tasks:
   - Control of vegetation
   - Maintenance of running surface
   - Maintenance of side drains
   - Maintenance of culverts, drainage crossings
   - Erosion prevention – vegetative/simple structures

MODULE 3

STRENGTHENING BARANGAY COUNCIL CAPACITY

PARTICIPANTS – **Barangay Councillors**
(Especially Infra Committee members)

KEY RESOURCE PERSONS - **PPO/Municipal Engineer**
MPDC
CID Specialist (PPO)

VENUE – **Barangay hall**

TIMEFRAME- **1 day**
(Additional period if record keeping training etc. required)

a. GENERAL AWARENESS
(Resource person – PPO/Municipal engineer)

- **The physical components of a road**. *[Describe the physical components & their functions and importance]*

- **Describe both routine/preventative maintenance and periodic** *[What they are, as well as the differences between them.]*

- **Importance of routine/preventative maintenance**. *[Describe how, if effectively done, this can keep the road in a passable condition, reduce the likelihood of major damage & therefore need for outside assistance in the form of machinery. Allows the upkeep to be within the capacity of the barangay]*

- **Responsibilities in relation to road maintenance**. *[The Barangay Councils are responsible for barangay level roads. The Infra committee specifically responsible for maintaining & managing the road, together with other barangay infra, such as solar dryers]*

- **Sources of equipment assistance** eg MLGU, PLGU *[When equipment is required, ie for grading, where it is available from & on what basis- ie rented or simply supplying fuel/oil & drivers allowance]*

b. LIKELY COSTS AND FUNDS REQUIRED
(Resource person – PPO/Municipal Engineer)

- Depends on the frequency of the relevant tasks and the likely individual and total costs, therefore funds required. At present time we have very little experience of what it may cost.

[The table is a possible scenario, using some assumptions of mandays/km etc for individual types of tasks, then combining. The results will vary widely according to the situation]

A simpler option is a gang of workers engaged on all tasks; ie 1 man/km, Cost= @ P20,000/km

Labour-based Road Maintenance	**Cost Analysis**						
Task	**Output/md**	**md/km**	**x per yr**	**Daily rate**	**Ann. Cost**	**Km**	**Total cost**
	[m]			**[P]**	**/km [P]**		**[P]**
Vegetative control	200	5	12	80	4800		0
Filling rills, potholes & depressions		5	24	80	9600		0
Clearing/cleaning side ditches	500	2.5	24	80	4800		0
Cleaning/maintaining culverts etc		2	24	80	3840		0
Erosion control		5	12	80	4800		0
TOTAL					**27840**		**0**

c. POSSIBLE FUNDING SOURCES
(Resource person – MPDC)

- Barangay IRA (20% Development fund)
- Municipal & provincial grants
- Toll fees
- Other funds, ie fees from baragay operated infra eg drying floors; grants from civic organisations

d. METHODOLOGIES FOR INCOME GENERATION
(Resource person – MPDC)

- Explain MLGU planning and funding system *[Explain how the Municipal AIP is arrived at]*
- Importance of active contact/liaison with Municipal & Provincial government – influencing Municipal planning, tapping available funds & assistance *[Lodging Barangay AIPs on time with MLGU; Being aware of available funds at MLGU & PLGU; Active participation at MLGU & PLGU levels]*
- Methodology for implementing income generating activities, eg toll roads

  Setting up a toll fee system – Main factors:-
  - What is the most suitable situation *[ie the road between Bgy proper and outside. NB. Bgy Council can only collect tolls on roads that they are responsible for]*
  - What should be taxed *[eg Traders & passenger vehicles, skylabs: also by wt of produce]*
  - Ordinances *[Drawn up by Bgy Council, endorsed by Municipal Council]*

- How to manage it *[How to collect fees, fee rates]*
- Where to keep the funds *[Usually in the general fund, possibly in a special account]*

Roads between barangay centre and main road may present different situations as those between sitios and barangay centre, as the potential traffic & income is higher. It should be pointed out that the income generated for one barangay road can be used for the maintenance of all the barangay roads within the barangay

e. **IMPROVED PRIORITISATION & ALLOCATION OF AVAILABLE FUNDS**. **(Resource person – MPDC)**

Improved planning at barangay level – *[Preparing a more useful & effective AIP, as a means of improving activities management within the barangay, but also assisting beneficial planning at MLGU level]*

- Prioritisation of requirements and activities
- Accurate estimates of likely costs
- Optimal allocation of funds
- Timely completion of Barangay AIP *[November of preceding year]*
- Importance of monitoring of expenditure *[Especially to assist future planning]*

f. RELEVANT SUB-BODY (Infra Committee): (Resource person- CID specialist –PPO)

- Who are it's members
- It's responsibilities *[Identifying requirements; Preparation of estimates; management of infra activities, eg road maintenance]*

g. **BASIC CAPACITY BUILDING** (as required) **(Resource person- CID specialist –PPO)**

- eg appropriate record keeping system training *[Good record keeping is important, in order to aid effective planning and use of funds.the abilities of the Barangay treasurer must be assessed]*

ANNEX 1

THE PARTICULAR TYPES OF TASKS (in detail).

VEGETATION CONTROL

Description:
Cutting of roadside vegetation with handtools within the road right-of-way. Includes proper disposal of cut material by stacking and burning or other approved method. The purpose is to maintain adequate sight distances & prevent obscuring of road signs, prevent clogging of drainage, and maintain roadway appearances.

Hand tools: Crow bar
Bolo/axe/scythe
Wheelbarrow
Rake

Procedure:
1. With hand tools, cut vegetation, grass and tree branches from the area to be cleaned; scythe for grass cutting; bolo/axes and crow bar for bush clearing. Normally, this includes the shoulders, side slopes, ditches, and the area within the right-of-way obscuring the road signs and bridge approaches. The area should be slightly wider at the road intersections and on the inside of curves were sight distance is an important safety factor.
2. Remove material cut from ditches and shoulders and pile outside of ditches using rake and wheelbarrow.
3. After drying, the pile of material should be properly disposed of.

Estimated productivity:
50 – 200 lin.m. of road per man-day (both sides cleaned) – Depends on situation

Suggested Frequency : Monthly

Method of undertaking: Suitable for bayanihan

FILLING OF RILLS, POTHOLES, RUTS AND DEPRESSIONS

Description:
Filling isolated potholes and other depressions in unpaved roads with aggregate materials and compacting the patches with hand tampers. The purpose is to prevent the ponding and passage of water and to improve the surface smoothness. Especially important to address are the rills that form on the steeper slopes

Handtools: Wheelbarrow
Shovels
Rakes/spreaders
Tampers
Pickaxe/hoe

Materials: Aggregates

Aggregates are either obtained by excavating soil and gravel along the side of the road using shovel/pickaxe/hoe or taken from gravel sources and spot-dumped on the shoulder. Oversized material should be removed from the aggregate manually.

Procedure:
1. Remove water and soft material from the patch area. This should be done immediately when ponding of water is observed.
2. Clean loose materials from the edges of potholes, making the side of the hole as vertical as possible.
3. Place aggregate in several layers, hand tampering each layer.
4. Rake final layer so the top of the patch is slightly above the surrounding road surface.

Where long rills have formed down the steeper sections, steps 2 – 4 should be followed

Where cross berms have been installed on the steeper sections, these should be repacked, so that the flow of water does not break through and flow down the road.

Estimated productivity:
0.8 cu.m. per man-day; 4.00 cu.m. per crew day

Suggested Frequency : Twice monthly or after heavy rain

Method of undertaking: Experienced paid labour

CLEANING/REPAIRING/RESHAPING SIDE DITCHES

Description:
Cleaning and shaping of roadside ditches, using hand tools, to restore gradients and assure efficient surface water runoff. Includes removal and disposal of debris and waste materials.

Hand tools: Pick/mattock
Axe
Shovel
Wheelbarrow
Tamper

Procedure:
1. Remove rocks, logs and other obstructions from the ditches, such as smaller land slips.
2. Excavate silt or sand to make the bottom of the ditch flat or slightly rounded.
3. Shape the sides of the ditches as flat as possible. This will provide better water flow and minimise future erosion.
4. Dispose of excess materials by spreading it out to fill low areas well clear of the ditch. Do not pile the material or make a ridge along the roadway that prevents surface water from flowing to the ditch.

Estimated productivity;
2 kms per crew day (5 man crew.)

Suggested Frequency : Twice monthly or after heavy rain

Method of undertaking: Experienced paid labour

CLEANING CULVERTS AND OTHER STRUCTURES

Description:
Removing silt and debris from ditches, pipe culverts and from culvert inlets and outlets so as to provide unobstructed flow of water, and making minor repairs of ditch/culvert structures.

Hand tools: Shovels
Buckets
Wheelbarrows
Ropes/cable/cleaning rods

Materials; [minor]

Procedures:
1. Remove logs, limbs, stalks and other obstructions from ditches/culvert inlet.
2. Excavate silt or sand by hand if accessible or a cable is passed through the culvert and a drag or bucket may be pulled through to remove silty materials and debris.
3. If water is available, the silt can be flushed from the culvert in large volumes or at high pressure. The outlet ditch must be cleaned first so the water can flow easily.
4. Patching of minor damage to cracked or broken culverts and headwalls.
5. Severely damaged sections must be reported for replacement or repair.
6. Load away all debris and surplus material and dispose of by approved means.

Estimated productivity:
Depending on conditions and situation.

Suggested Frequency : Twice monthly or when necessary

Method of undertaking: Experienced paid labour

EROSION CONTROL

Description:
Repairing of minor erosion of shoulders, slopes and ditches with hand tools, and correction of conditions which cause erosion. Includes installation and repair of rock riprap, rock ditch lining, ditch checks, headwalls and vegetative control measures. Also the repair of smaller embankment slips, together with other erosion control practices.

Hand tools: Pick/mattock
Shovels
Axe
Wheelbarrow
Ropes

Materials: Rock/boulders
Stakes

Procedures:
1. Repair eroded areas by filling with gravelly soil/boulders well compacted in place.
2. Correct conditions causing erosion, with actions such as:
   - Widening and flattening of ditches;
   - Providing new outlet ditches to reduce concentration of water;
   - Placing and maintaining sods and vegetation over erodable areas;
   - Lining ditch channels with rock;
   - Placing riprap at the ends of culverts and bridges;
   - Constructing series of ditch checks to reduce velocity of water on steep gradients;
   - Repairing smaller embankment slips with stakes, rocks and planting material.

Estimated productivity: 0.5 cu.m. per man-day.

Suggested Frequency : Monthly or when necessary

Method of undertaking: Paid labour and/or bayanihan

Technical Assistance Input to The Upland Development Programme in Southern Mindanao (UDP)
ALA-97/68

Final Report

ANNEX 3

THE INTEGRATION OF MAINTENANCE ORGANISATION & TRAINING ACTIVITIES INTO THE PROJECT DESIGN AND IMPLEMENTATION PROCESS

W.J.Bradfield, Community-based Infrastructure Specialist

ANNEX 3

THE INTEGRATION OF MAINTENANCE ORGANISATION & TRAINING ACTIVITIES INTO THE PROJECT DESIGN AND IMPLEMENTATION PROCESS

BACKGROUND

The long term sustainability of an infrastructure project is the key issue if it is to be considered a success. It is also fully accepted that close community involvement in all stages of the project identification and implementation go along way to ensuring its' sustainability. It is important therefore that the maintenance aspects are considered from the very beginning and preparations for them built into the relevant stages of the project development process.

The important points concerning strengthening the maintenance potential are outlined below. A draft of potential alterations to the AIS Procedures manual is attached, preceded by notes outlining individual alterations.

Though much of the main text of the AIS procedures manual remains the same, adaptations have therefore been made to sections of it, strengthening and clarifying certain stages, not just in relation to maintenance issues, but for wider sustainability issues also where seen as appropriate. Notable is the screening stage, which can be considered the crucial stage where potential obstacles can be identified early. Draft screening forms have been designed, which should help in ensuring all aspects are covered during the screening process. A flow chart has been prepared to aid in clarifying the project development process.

RELEVANT STAGES

1. **At project screening:**

- Make sure all relevant parties are present, (especially the Barangay Council representative in the case of roads & footbridges)
- Full description of the likely completed structure and clearly what the maintenance requirements would be.
- Clarify who will be ultimately responsible for the maintenance. They **must** be present & in agreement. The cost implications must also be made clear.

[infact all people affected by the proposed project, eg landowners adjoining a proposed road project]

[A **Screening Form/Checklist** is useful to make sure all aspects are covered and the project is fully viable]

2. **Preparation of proposal:**

- Ideally proposal prepared so that beneficiaries are directly involved in tasks requiring the same skills as for future maintenance, so as to gain appropriate understanding and skills.
- The future maintenance policy and organisation must be outlined, together with the likely cost and the mechanism for meeting that cost.

3. At pre-implementation meeting:

- Setting up/activation of relevant management sub-body
- Organisation of the groups that could carry on after completion as maintenance teams.

4. During implementation:

- Ensure that the relevant tasks are carried out by the beneficiaries & the skills learnt.
- In short (possibly informal) training sessions, engineers explain the importance of the various components of the system, either road or water system, and of their timely maintenance.

5. At completion/prior to inauguration:

Consolidation training programme:- ie for a roads project: - the components of the labour-based routine maintenance programme directed at the Barangay Council and its infra committee, as well as consolidation of on-the-job training for the relevant workers.

Draft Alterations to the AIS Procedures Manual
(Notes)

The draft alterations are designed to- a/ Increase the emphasis on maintenance/sustainability.
B/ Clarify the flow of the process

The numbering system is slightly altered.

1.0 General Elegibility Criteria and Guidelines. Unchanged

2.0 **Financial considerations** combined into one section

3.0 **Project Process**. This is put into a logical order with flow chart provided.

II. Project screening is expanded and in effect becomes more important. As discussed at the Engineers meeting at PMO (Dec. 12. 2002), draft **Screening/Validation forms** have been prepared for roads and water supply projects and act as a checklist for completing the screening process.

The screening becomes a process of (1) meeting with relevant officials, followed by (2) site visit, and finally by (3) discussion with all proponents and affected persons. The form is designed so that relevant rule-of-thumb calculations can be carried out and conclusions reached before the meeting with all proponents, so that more informed discussion can take place. It will also be clearer at that stage whether the project is viable and all criteria are met, so that no false promises are made.

Once the project has been successfully screened, it should be a viable project (unless circumstances change drastrically). At the TPRG and PRC stages, it should therefore go back only as far as project proposal stage for necessary reworking etc.

IV. Preparation of project proposal:
Project maintenance & sustainability budget: Annex L is provided to assist in making this more realistic.

Final Consultation/Appraisal. The process of checking of the proposal by the MPT and PPO Engineer is emphasised prior to forwarding to the TPRG.

VIII. Pre-implementation: Pre-construction meeting. The importance of this is emphasised.

IX. Implementation: Basically unchanged except for **(iii) Implementation mode**, - 2nd paragraph – more emphasis on providing relevant experience and training to strengthen future maintenance capacity.

X. Final completion and Liability period.: This is clarified, especially the identification and implementation of further training inputs.

XI. Operation & maintenance: Expanded to give emphasis to encouraging effective maintenance.

[Annex B] How to prepare the project proposal: Key notes related to maintenance are added in italics

Annex L. Project maintenance & sustainability budget: An aid to preparing the relevant component of the project proposal effectively and realistically.

[Draft alterations. Feb. 03]

Agriculture Infrastructure Support Project Development Manual

1.0 GENERAL ELIGIBILITY CRITERIA AND GUIDELINES

To encourage community involvement in the project implementation of programme infrastructure component, the Upland Development Program will not implement infrastructure projects nor will it be involved in the identification, planning and design. Instead, the program will accept community-initiated and LGU-assisted infrastructure project proposals for review and approval for funding.

1.1 ELIGIBLE PROJECTS

1.1.1 Grant Assisted Infrastructure with LGU and community contribution

- **Rural access** (Farm to Market Roads and Foot Trails) within the covered barangay.
  - Spot improvement of barangay roads, rehabilitation and construction of side drains, cross drains for efficient run-off water management,
  - Rehabilitation and construction of side drains, cross drains, short overflow bridges and box-culverts, for efficient run-off water management,
  - Rehabilitation and construction of foot trails and foot bridges with a maximum span of 12 meters, or
  - Rehabilitation and construction of cable suspended foot bridges

Trees shall be planted along the sides of the road/trail improved or constructed (3 meters from the shoulder left and right or whenever possible), bridge approaches including the construction of soil conservation structures as required; This activity shall form part of the project.

- **Potable Water Supply**
  - Rehabilitation and construction of shallow and deep wells
  - Improvement, repair, expansion and new construction of gravity driven community water supply facilities

This shall include planting of trees around the spring eye with a minimum radius of 100 meters and along pipelines, and construction of soil conservation structures as required; This activity shall form part of the project.

- **Agri-Water Supply (Irrigation)**
  - Construction of gravity driven piped irrigation system with stream or spring source for orchard or vegetable farm
  - Installation of gravity piped irrigation system on existing Small Water Impounding Projects

This shall include the planting of trees along the stream banks, around springs eye with a minimum radius of 100 meters and around Small Water Impounding Dams; This activity shall form part of the project.

- **Soil Erosion Control Measures to rehabilitate the watershed**

- Slope and gully protection along the sides of farm to market roads and trails/establishment of vegetation that deter soil erosion and construction of soil erosion control structures for slope and gullies
- Reforestation of critical watershed areas
- Construction of stream regulation structures
- Improvement of existing soil erosion control structures and established erosion control vegetation in critical areas (dikes, gabions, ripraps and check dams)
- Planting of permanent trees along road/trail sides and critical section of gullies

1.1.2 Credit-Assisted Infrastructure

- Primary and secondary crop processing facilities, such as community post harvest facilities, farm product or livestock auction houses, mini-markets, warehouses and agri-support infrastructures needed by the other program components. (Proposed Policies on UDP Grant and Credit Assistance to Upland Communities)

1.2 PROJECT SELECTION CRITERIA

1.2.1 Rural Access

- Road will link the sitio's to barangay and market, and the spot improvement will make the road passable all year round.
- The beneficiaries must be communities of not less than 20 households located within the identified watershed.
- The community must be cohesive and willing to provide a share in the cost of the project either in services, cash or other resource. The community is committed to operate and maintain the project upon completion.
- Trails must improve access of beneficiaries in the sitios to the barangay or all weather road must lead to the market
- Foot bridge must shorten the travel time of community resident from the production areas to market and provide safe river crossing for the school children.
- Willingness of the Barangay Chairmen/Council to support the project and endorsing it to the Municipal Government for inclusion in the Municipal Annual Investment Plan, to ensure annual repair and maintenance budget allocation.
- Project must have no right of way problem or conflict
- The identified road project must be included in the Barangay and Municipal Annual Investment Plan to ensure the allocation of LGU repair and maintenance budget

2.2.2 Water Supply

- Community has no access to safe potable water and there is a safe source of water to supply the communities need.
- Existing water supply inadequate and can be upgraded (12 HH/faucet).
- Community must be cohesive, willing to provide a share in the total project cost either in services, resources or finance.
- Community committed and capable to operate and maintain the project upon completion.
- Project is supported by the LGU, Barangay, Municipal and Province)
- Location/site of infrastructure must in public land and no right of way problem or conflict.
- The identified water supply project must be included in the Barangay and Municipal Annual Investment Plan to ensure the allocation of repair and maintenance budget

1.2.3 Agri-Water Supply (Irrigation)

- Farmers into high value crop farming and farms clustered or with common boundary.
- Farmer group must be cohesive and with appropriate land tenure instruments or prospect for land tenure.
- Availability of adequate water source and the distance from source to the service area is not more than 3.0 kilometers
- Project is supported by the LGU, Municipal Agriculture Officer and Provincial Agriculture Office.
- Location of structures must be on public land with no right of way problem or conflict.
- Community committed and capable to operate and maintain the completed project.

1.2.4 Soil Erosion Control Measures

- Erosion damaged slope and gullies identified by farmers during sitio planning or community consultation
- Critical areas along roads, trails, rivers, and springs developed for village water supply facilities identified by the community

2.0 FINANCIAL ARRANGEMENTS FOR PROJECT IMPLEMENTATION

2.1 Cost sharing considerations:

The table below provides a guide to determining the cost shares for the partners in an infrastructure project package. The computation is based on the parameters established in the UDP Financial Agreement. LGU contributions are not limited to cash, but may be services provided. The community input is likely to be in the form of labor and services.

Type of Infrastructure	EC Contribution	LGU Contribution	BGY/CMMTY Contribution
Rural Roads /Bridges /Footbridges	45%	25%	30%
Water Supply	45%	15%	40%
Agri-Water	45%	15%	40%
Trails	20%	*/10%	80%/70%
Erosion prevention	40%	40%	20%
Total Grant Fund	37.50%	22.5%	40%

*Barangay can avail the use of heavy equipment owned by the Provincial/Municipal Government provided they supply the fuel and oil

However, as a matter of policy, the programme would retain flexibility to respond to the infrastructure needs of the 480 communities in 120 barangays located in 30 municipalities in the 5 provinces of Region XI covered by the UDP.

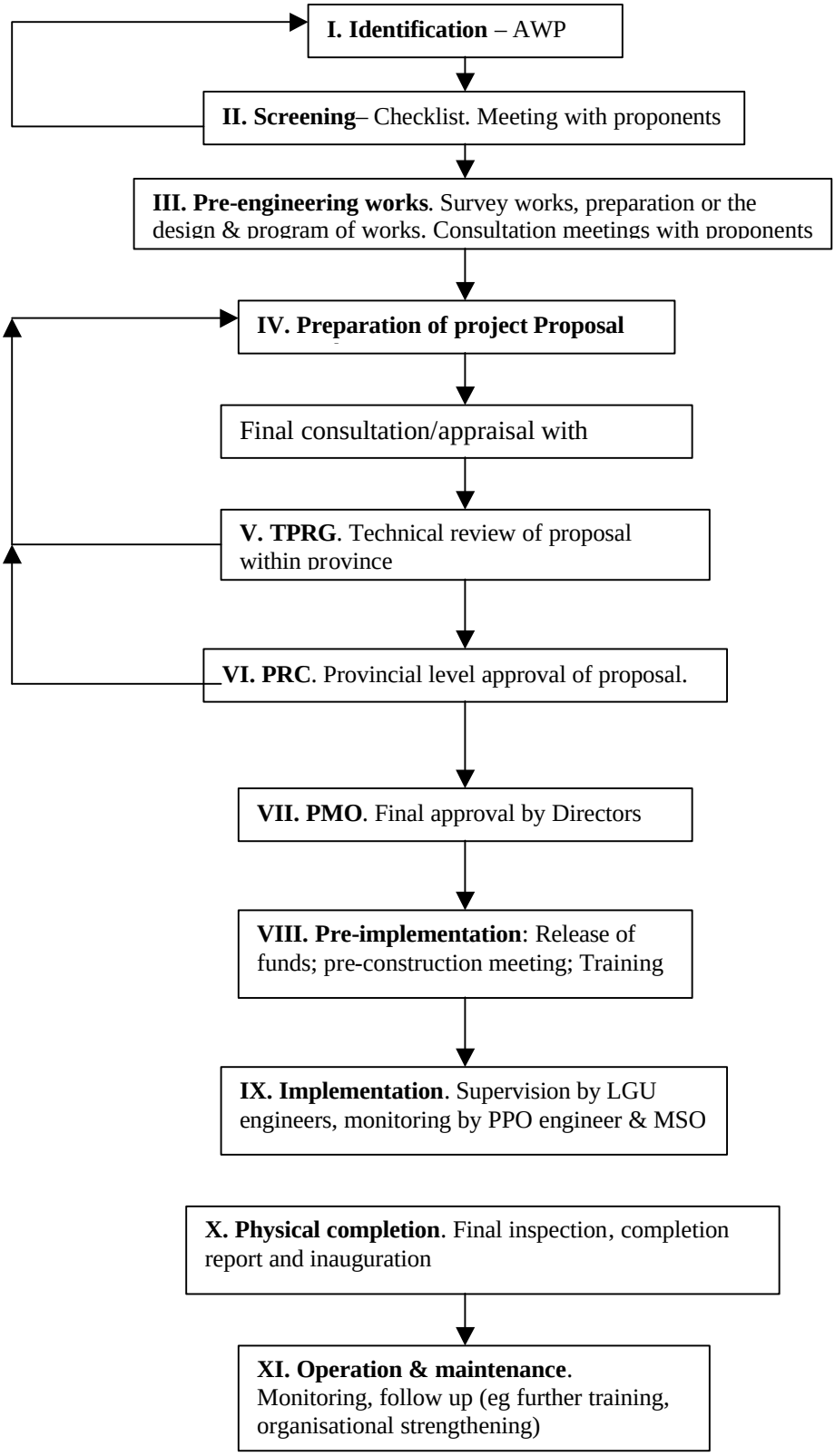
The UDP Program input will comprise materials, fuel and oil (as well as Capacity Building training to the beneficiaries)
The Municipal/barangay LGU inputs comprise machinery and skilled labour, including the technical personnel for training.
The beneficiary input should normally consist of the unskilled labour as a minimum.

Budget allocation for the component program wide is presented in the table below;
[update]

Type of Infrastructure	Total EC Grant Fund	Percentage from Total Budget
Rural Roads/Bridges	Php 34,200,000.00	43%
Water Supply	Php 15,661,000.00	20%
Agri-water Supply (Irrigation)	Php 3,960,000.00	5%
Trails/footbridges	Php 14,784,000.00	19%
Erosion prevention measures	Php 11,396,000.00	14%
Total	Php 80,001,000.00	100%

This community infrastructure project budget allocation shall cover the prioritized communities in the 120 selected Barangays located in 30 Municipalities in the 5 provinces covered by the UDP. (refer to Annex G, List of sitios, Barangays, Municipalities and Provinces covered by the UDP).

Overview of Infrastructure Project Development Process



3.0 PROJECT PROCESS

I. IDENTIFICATION

The potential projects are prioritised as per the relevant community watershed management plan. This is updated annually and the projects for implementation in the following year identified and put forward for inclusion in the annual workplans of the barangay and municipal councils. The inclusion in the municipal AIP is the trigger for the next stage, the screening.

II. PROJECT SCREENING.

This stage determines:-

- The proposed project conforms with the project criteria, as laid down in 1.1 and 1.2.
- The viability of the proposed project from both a physical and sustainable point of view;
- The capability and willingness of the community, Barangay and Municipal government to implement the project.
- That potential obstacles have been removed, ie land donation, rights of way

This is the stage at which the decision is made to go ahead with the project or not. Unless circumstances change drastically, there should be no need for a proposal to be completely rejected at a later stage, only sent back for alterations etc.

Responsible persons: Municipal Project Office
PPO Municipal Support Officer
PPO Engineer

A screening checklist/form is provided **(Screening/Validation form)** for the relevant types of infrastructure, in order to provide a guide for the process and ensure that all aspects are addressed. The team must first of all meet with the P/M/LGU/barangay officials to confirm whether they are **fully aware** of the responsibilities they face**.** These are notably:

- The likely resources, both physical and financial that must be committed to the project;
- That these resources are available;
- What the Repair and Maintenance (R&M) requirements will be and what this will mean in physical and financial inputs:
- How these R&M inputs will be generated.
- Who will be responsible for the operation and maintenance of the structure.

They will visit the site/area, together with the relevant PO leaders and barangay officials to gather relevant technical and social information.

Finally, they should meet with all parties involved with, or affected by the project. This means not only those participating and benefiting from it, but those whose acceptance and co-operation will be required, for example, those whose land borders a potential road project and will be affected by its drainage arrangements.

The screening form is designed so that a preliminary conclusion as to the viability of the potential project can be reached quickly during the site visit and prior to discussions with all the potential beneficiaries.

At the meeting with all the parties, the following points must be made.

- Make sure all relevant parties are present, (especially the barangay council representative in the case of roads & footbridges)
- Full description of the likely completed structure and clearly what the commitments of the beneficiaries will be during implementation and maintenance.
- Again clarify who will be ultimately responsible for the maintenance. They **must** be present & in agreement. The cost implications must also be made clear.

A recommendation is made as to whether to proceed with the project and this is stated at the bottom of the screening form, signed and forwarded to the PPO manager. The proposal preparation can now begin.

III. PRE-ENGINEERING WORKS

This entails the surveying and preparation of the detailed engineering plans, estimates and program of work.

1. Detailed engineering investigations and designs for repair/rehabilitation/ construction shall be carried out in accordance with the DPWH standards and specifications by the LGU-Municipality.

2. A schedule of the detailed engineering activities shall include the following:

    a. Project site investigation
    b. Preparation of design for improvement, rehabilitation and or construction of the project.
    c. Preparation of specifications based on DPWH standard
    d. Preparation of quantity and cost estimates
    e. Preparation of program of work
    f. Preparation of proposed construction schedule, based on the community planting calendar

3. Works under detailed engineering shall include the following:

    a. Design. Standard – DPWH based LGU engineering practice shall be adopted

    b. Detailed engineering technical plans shall be prepared in accordance with the DPWH standard on plans preparation and shall include the following:
        - Site location and development plan
        - Plans for construction and/or plan of existing project indicating the sections to be repaired

- Typical sections and details of infrastructure section for repair or rehabilitation
- Profile and plans of roads, water system and piped irrigation for construction

c. The LGU concerned, particularly the municipal engineer or his staff, shall assist the community in the preparation of the technical plans in accordance with the existing LGU- DPWH standard symbols, plan size, title block and authorized signatories.

d. Quantities – all construction quantities shall be computed to a reasonable accuracy of plus or minus five percent (5%) to avoid variation orders, using the metric units.

e. Program of works – shall be prepared and submitted for approval with a detailed plans and estimates to include the cost for the provision of appropriate repair and maintenance tools on all type of project. [Refer to Annex L] Sample of budget details for roads, water supply (domestic/agricultural use), foot trails and footbridges

f. Training of organized community infrastructure group/beneficiaries in the program covered watershed areas on community project identification, planning, design, construction /rehabilitation, sustainable operation, repair, maintenance and monitoring & evaluation shall be provided within the LGU contribution. The training activity and cost shouldered by the programme, shall be included in the community project implementation program of work and budget.

g. Construction schedule – must be prepared and submitted together with the program of work for approval.

4. Check list of technical/engineering documents for in inclusion in the proposal:
   a. Site development plan.
   b. Plan, detailed sections and elevations.
   c. Program of work showing and identifying the source and amount of equity component.
   d. Derivation of items/unit cost.
   e. Gantt chart (S-Curve) based on farmers planting calendar.

5. Indirect cost factors for Detailed Engineering preparation supervision.

Item	Indirect Cost Factor
1. Pre-engineering cost (LGU Equity)	3% of Direct Cost
2. Engineering Supervision (LGU Equity)	5% of Direct Cost
Total	8% of Direct Cost

6. a. It is recommended that project be designed to be implemented by Administration for efficient fund utilization and to ensure realization of LGU-Community contribution.

b. The inputs by each partner should be within the % criteria range (see section 2.1 above]

c. Plan the allocation of labor so that the beneficiaries have as much opportunity to gain the skills during construction that will be beneficial for maintenance activity.

IV. PREPARATION OF PROJECT PROPOSAL

This stage determines the socio-economic and technical viability of the project proposed by the community, through their written petition and endorsement of the project by the Barangay Council/BDC to the Municipal Government for inclusion to the Municipal Investment Plan. Other Programme Components infrastructure needs addressed by the identified community infrastructure project proposed shall be explained in the project documents.

The project proposal will be prepared by the **community** with assistance from the Municipal Project Team; the conducting of surveys and the preparation of plans, designs, program of works and maintenance and repair schemes through the assistance of the MPT Engineer and Municipal Engineer.

Standard guidelines must be referred to:

- Annex H: FAD Fund releases to LGU's and Monitoring,
- Item No. 2, Proposal Procedure, Annex 2 PMED/AIS Guidelines for Proposal Preparation.

The proposal shall cover the following:

- Location of the project site
  - Project in relation to other infrastructure in the area and its contribution to the UDP objectives.
  - Information on influence area/service area end expected benefit social economic and environmental.
  - Engineering plans, cost estimate and program of work with cost sharing arrangement.
  - Implementation arrangement, construction schedules and fund release schedule, (Annex H)
  - Repair and maintenance scheme/arrangement with LGU-Municipality-Barangay-Sitio with cost budget presented.(See Annex L)
  - Project monitoring and evaluation. (Refer to Annex 2 Proposal Form)

- Attachments:
  - Site location map, showing the community and the project site and other reference point (drawn not to scale).
  - Site deed of donation for private land accepted by the Barangay chairman as authorized through a barangay council resolution in case the site is privately owned.
  - Certification/resolution from the barangay council that the site was designated for the use of the project in case the site is owned by the barangay.

- Community request/petition for the project.
- Certification from the LGU that the projects is not a completion of unfinished project previously funded by a foreign, national or local funding agency.
- Rights of way (certification of no conflict by the barangay captain/council).
- Community resolution on commitment to operate and maintain the completed project

(See Annex M for some standard forms)

Final Consultation/Appraisal

Before the completed document is sent for presentation at the TPRG, The Municipal Project Office together with the PPO Post Harvest Engineer must go through the draft proposal carefully with the proponent community:

- Review the proposal fully with the beneficiaries.
- All technical and social data/parameters must be verified. Necessary alterations can be carried out at this stage.
- All issues must be clarified and necessary solutions identified.
- All proponents and affected persons must be in agreement as to the final proposal.
- All documents must be in order and omissions corrected.
- The end product of the visit should be a solid project concept and plan of implementation where the risks are reduced to the barest minimum.

The completed document can now go forward to the TPRG.

V. TPRG (Technical project Review Group)

This meets at provincial level and comprises:

TOU Chief
PPO Engineer.
Co-ordinator AIS from PMO
Representative from DPWH/NIA (as appropriate)
Relevant LGU engineers
Relevant representative of the proponents.

The TPRG is responsible for reviewing the technical, economic and social aspects of a proposal and ensuring that it meets with all the criteria and conditions laid down by UDP. In such a case, the proposal is endorsed by the TOU Chief and forwarded to the PRC. Endorsement may be conditional on certain amendments being carried out before it reaches the PRC. In cases where the proposal is lacking or technical and budgetary requirements need to be revised, the project proposal dossier shall be returned to the MPT with a letter indicating the actions required before re-submission.

VI. PRC (Project Review Committee)

This also meets at provincial level and comprises:

National or European Co-director, alternating (Chairman)
Project Provincial Manager
PMED Chief, PMO
Representatives from the Provincial Government Units (PAGRO, DPWH, PPDO, DTI, PENRO etc)

Projects are approved. It is in order for conditions to be attached, which must be addressed before the proposal reaches the desk of the Co-Directors. Proposals can be returned to the Municipal LGUs for alterations. It would be unlikely that a proposal would be rejected at this stage.

VII. PMO

The proposal is endorsed by the UDP Co-Directors.

VIII. PRE-IMPLEMENTATION

Project Financing Arrangement

1. Financial Arrangement

The Local Government Unit (Province/Municipal) shall open a separate bank Trust Account as depository for funds coming from the UDP. The LGU will deposit their equity contribution to the above trust account. (Refer to Annex H: Fund releases and monitoring to LGU's)

2. Condition for Fund Release

Upon approval of the Project Documents (detailed engineering plans, specifications, and program of works), the UDP-PMO shall inform the LGU through the Provincial Project Offices to submit the documents required for the initial release of funds to wit:

- LGU-Municipality shall request for fund release through TAMA with Provincial Project Managers endorsement and a copy of Co-Director approved Project Document attached.
- Certification from the provincial/municipal treasurer on the availability of funds for the specified amount of equity contribution and routine maintenance.
- For a detailed UDP fund release and monitoring procedure refer to Annex H, (Fund Releases and Monitoring).

Pre-construction meeting:

- Attended by the MPT, PPO engineer, Barangay officials, all proponents.
- The assigned municipal engineer shall undertake the technical presentation.

The purposes are:

- To present and explain the approved plans/designs and the program of works.
- The organising of the beneficiary body that will be responsible for the structure to manage the beneficiary construction inputs and monitor construction activity.**[The managing unit must be formed at thus stage + work groups organised. These carry on into maintenance after completion]**

The counterpart/equity, implementational arrangements and commitments for the operation and maintenance of the completed infrastructure are to be thoroughly discussed and confirmed during the meeting. Notably:

- The tasks to be carried out by the beneficiaries;
- The working groups and the routines under which they will work.

It is important that the beneficiaries are involved in tasks that will be relevant to them in the maintenance phase and that the groups formed for construction are the ones that continue on into the maintenance phase.

Training needs are to be identified during the meeting, especially those to be conducted before the implementation.

Relevant pre-implementation training.
The primary requirement is likely to be how to manage the implementation of the project:

- Planning work
- Organising the daily work groups
- Keeping records (Daily attendance records, materials in and out)

IX. IMPLEMENTATION

i. General Specifications

The execution of civil works for repair, rehabilitation, construction of the project shall be guided by the appropriate DPWH standard specifications for roads, bridges and water systems and NIA Standard Specifications for piped irrigation.

All works performed and materials furnished shall be in conformity with the approved plans and specifications and in accordance with sound engineering practices.

Plans, dimensions and specifications shall be considered as target values. It is the intention of the specifications for materials and workmanship to be uniform in character and they should conform to the prescribed target values.

In the event that the PPO Post Harvest Engineer finds the materials or workmanship not in conformity with the plans and specifications and this has resulted in unsatisfactory or inferior results, such defective materials shall be removed and inferior workmanship re-done or otherwise prescribed.

All construction work shall be executed in accordance with the approved plans and program of work. The Project Engineer shall endeavor to provide the PMO through the PPO Post Harvest Engineer with details of any necessary major changes in the scope of work, methods of implementation and other revisions in the original plan and obtain its confirmation before proceeding further with the work.

Revision of plans, design and other change in the repair, rehabilitation or construction works shall have strong technical and economic justifications. In no case shall the increase of total project cost reach 5% and such change shall thoroughly be studied.

ii. Implementation Structure

ii.a Engineering Unit (UDP-PMO & PPO), Under the Technical Operations Group of the PMO, the Deputy Director is assisted by the Agri-Infrastructure Support Coordinator with the PPO Post Harvest Engineers as support engineers assigned in the UDP covered provinces. Their function shall be:

Agri-Infrastructure Support Coordinator

- Conduct a thorough evaluation of LGUs to determine their technical, administrative and financial capability to implement infrastructure activities.

- Operational supervision of all PPO Post Harvest Engineers and coordination with LGU technical staff.

- Establish a mechanism and procedure for approving variation orders/change orders and price escalation request from contractors in case the project is contracted.

- Conduct inspection and supervision on all projects, identify problem areas and provide solutions and alternatives.

- **Participate in project reviews, notably TPRG in each province.**

- Review, analyze and evaluate periodic or monthly reports of project implementation and recommend solutions to problems encountered.

- The PMO shall conduct periodic supervision, inspections and monitoring. From this activity the PMO, shall issue site instructions to the Project Engineer through the PPO Post Harvest Engineer, relative to problems identified in the field and the corresponding measures to be made.

Post Harvest Engineers

- Provide technical assistance to the community/MPT Engineer in identifying and preparing projects for rural infrastructure, such as rural access, water supply system, hanging foot bridges and overflows/crossings.

- Conduct site validation/screening for projects identified by the community within the watershed area. This work includes the assessment of LGUs acceptability of project requirements.

- Check, review and evaluate; engineering plans, designs, drawings, construction schedule (bar chart, gantt chart, pert/cpm), S-curve, detailed estimates and program of works submitted by the LGU before recommending it for approval by the TPRG. Otherwise return all documents to the LGU for modifications, corrections and revision as the case may be.

- Prior to any construction works; attend the pre-construction conferences with the community conducted by the LGU-Municipal Engineer. This activity

shall include the planning for community monitoring, maintenance and repair training on completed project maintenance.

- Always attend relevant community project consultations conducted by the LGU as observer.

- Review and submit all monthly physical accomplishment submitted by the LGUs to the PMO.

- Participate in final inspection of all project implemented by the LGUs, as well as the community project operation and maintenance training and completed water system or irrigation projects test runs carried out by the LGUs.

Municipal Project Team

The Municipal Project Team staff is composed of Local Government Unit personnel designated by the Municipal Mayor. The MPT shall be responsible for project implementation. For smooth execution of infrastructure projects, the Municipal Mayor shall designate the Municipal Project Team Engineer to supervising the project implementation. As such he can designate a competent Project Engineer, who shall oversee the day to day project operations.

The LGU shall be responsible for the permits and clearances for building construction, water rights, laboratory analysis for potable water, environmental certificates, quarrying for construction materials and right of way negotiations. This is to include all the related labor costs and processing fees and this shall form part of their share of the project cost.

During work operations the Project Engineer, in coordination with the community leader and staff, shall see to it that all materials, labor, and equipment used during the days operations is reflected in the daily report of the project and in the project logbook. Likewise, weather charts, plans or detailed sections shall be charted and updated in order to have an accurate description of the project status.

The MTL should collate all community project progress reports prepared by the MPT Engineer and submitted to the PMO through the Post Harvest Engineer.

MPT Engineer/Project Engineer:

- Conduct a pre-implementation meeting with community beneficiaries to discuss the construction schedule, responsibilities of the community and project supervision/management with the Post Harvest Engineer. Ensure that the management committee and work groups are formed.

- Undertake and/or supervise the project.

- Ensure that the project implementation is in accordance with the approved plans and specifications.

- Conduct/supervise practical on-site training to the working beneficiaries

- Be directly responsible for the timely completion of the project.

- Prepare daily reports, logbooks, physical accomplishment reports, statement of works accomplished and other related works and submit it to the MPTL.

- Receive and implement site instructions.

- Prepare monthly weather report.

- To be present daily at the project site during the entire project implementation until it is completed or delegate to the foreman when absence.

iii. Implementation Mode

Implementation of projects should be carried out by the LGU through direct Administration to eliminate the time duration required in processing the bidding and awarding of contract and for the project to be cost effective. The Barangay Council infrastructure committee of the beneficiary community shall be required by the MLGU to participate actively in the project implementation monitoring, and to ensure a uniform employment opportunity among the beneficiaries as in the hiring of unskilled and semi-skilled construction workers.

Care should be taken to provide practical opportunities for learning relevant skills, as well as on-the-job training to members of the work teams during construction. In short (possibly informal) training sessions, LGU engineers should explain the importance of the various components of the system, either road or water system, and of their timely maintenance.

4 Monitoring and Reporting System

A monitoring and reporting system shall be installed and implemented for the on-going project works.

Monthly progress report shall be prepared and submitted by MPT to the PMO through the PPO Post Harvest Engineer, copy furnished to the PPO Manager. This should include:

- reports on accomplishments and work progress,
- materials quality control test and results,
- other construction data and information.

X. PHYSICAL COMPLETION AND LIABILITY PERIOD

The works on the repair, rehabilitation or construction shall be considered completed when a final inspection has been made and found to be satisfactorily completed and in accordance to the approved plans and specifications and the project completion certificate has been signed by the persons concerned.

Final acceptability shall be determined from the following:

- That all defects found during inspections as recorded on the field inspection reports have been remedied or corrected.
- All required documents and plans have been prepared and submitted to the PMO through the PPO.
- Pictorials taken before, during and after construction or specific segments of civil works.

It must be ensured that:

- **An active organisation is already managing the operation and maintenance.**
- **Necessary further consolidation training has been identified and is arranged.** This is important and may be either technical and/or managerial (capacity building), as well as being directed at the relevant personnel.

The representatives taking part in the final inspection:
MPT
PMED
PPO
Community leaders

Completion Report

Following the inspection, a completion report shall be prepared by the MPT and submitted to the PMO through the PPO Post Harvest Engineer, copy furnished to and noted by PPO Manager. The preparation of the completion report shall include pictorials taken before, during and after construction. A certification from the community assisted by the PPO Post Harvest Engineer that the project was completed in accordance with plans, specifications, program of work and sound engineering practices. Any deviation from the plan during construction shall be reflected on the original plan or an as-built plan prepared.

When the project has been certified as finally completed by the PMO, then this project shall become totally the responsibility of the community/LGU for operation and maintenance.

XI. OPERATION AND MAINTENANCE

The relevant organisations will have been identified and activated at the pre-construction meeting and will have been managing the implementation. A proper maintenance policy will have been decided during project planning and outlined in the proposal. The relevant organisations for community water supply and agri-water supply are likely to be committees within the Upland Community organisations. For access roads, trails and footbridges, it may the infra committee of the Barangay Council or by the UCO, on behalf of the Barangay Council, who remain ultimately responsible for barangay roads.

Programme infrastructure projects must be included in the annual repair and maintenance budget allocation in the Barangay Annual Investment Plans. In the case of access roads, the limited maintenance budget of the LGU may be augmented through innovative measures such as collection of tolls fee from road users. Relevant ordinances will need to be prepared by the Barangay Council, for endorsement by the Municipal council. The water user organisations may collect monthly contributions from the users to cover

operation and maintenance. Manuals on the organisation and implementation of the operation and maintenance, especially for roads, have been prepared.

[Annex B] **HOW TO PREPARE THE PROJECT PROPOSAL**

1. Rationale

THIS SECTION OF THE PROJECT DOCUMENT SHOULD PRESENT

- THE CURRENT SITUATION IN THE AREA OR SPECIFIC CONDITIONS THAT NECESSITATES THE PROJECT. THE FOLLOWING GUIDE QUESTIONS FOR THIS SECTION ARE AS FOLLOWS:
- WHAT UNDERLYING (CAUSAL) PROBLEM IS THE PROJECT DESIGNED TO SOLVE?
- WHAT OTHER ALTERNATIVE SOLUTIONS WERE EXAMINED BEFORE SELECTING THE SOLUTION OFFERED IN THIS PROJECT?
- WHY IS THIS THE BEST SOLUTION?
- IN ADDITION, SPECIFIC BASE-LINE INFORMATION OR SOCIO-ECONOMIC INFORMATION SHOULD BE INCLUDED IN THIS SECTION.

2. Objectives

THIS SECTION SHOULD GIVE WHAT THE PROJECT AIMS TO ACHIEVE AND WHAT NEEDS TO BE DONE TO ADDRESS THE PROBLEM.

3. Component Results

3.1 CODE – THIS COLUMN PROVIDES THE COMPONENT RESULT CODE STIPULATED IN THE GLOBAL WORKPLAN.

3.2 DESCRIPTION – THE SPECIFIC RESULT IS TO BE TAKEN FROM THE GLOBAL WORKPLAN. DESCRIPTION SHOULD MATCH THE PROJECT.

3.3 KDIs – THE KEY DEVELOPMENT INDICATORS FOR THE PROJECT ARE BASED ON THE INDICATORS IDENTIFIED IN THE LOGICAL FRAMEWORK.

4. Project Outputs:

4.1 Output statement - describes the expected outputs of the project. This should be defined in measurable terms, i.e in terms of quantity, quality, time and location.

4.2 Key Output Indicators To do this, use the Key Output Indicators in which the project has been categorised.

IT MUST BE NOTED THAT THE KOIS ARE A MINIMUM SET OF INDICATORS. IF ANY ADDITIONAL INDICATORS ARE REQUIRED FOR ANY PARTICULAR PROJECT TO BETTER REFLECT THE OUTPUT EFFECTS OF THE PROJECT, THEN THESE SHOULD BE ADDED TO THE MINIMUM SET.

5. EXPECTED BENEFITS AND POSSIBLE ADVERSE EFFECTS

5.1 SOCIAL BENEFITS/EFFECTS

IN THIS SECTION YOU ARE REQUIRED TO IDENTIFY HOW THE PROJECT AFFECTS THE COMMUNITY AS A WHOLE. SPECIFICALLY THE FOLLOWING SHOULD BE HIGHLIGHTED:

- INDIRECT BENEFICIARIES: WHO WILL THESE BE
- CHANGES IN GROUP BEHAVIOUR: HOW THE PROJECT IS LIKELY TO AFFECT THE WAYS IN WHICH PROJECT BENEFICIARIES INTERACT (THROUGH MEETINGS)
- RELATIONSHIP WITH OTHER GROUPS: HOW THE PROJECT IS LIKELY TO AFFECT THE SOCIAL STATUS OF THE TARGETED BENEFICIARIES AND THEIR RELATIONSHIP WITH OTHER GROUPS WHO ARE NOT DIRECTLY BENEFITING FROM THE PROJECT.

5.2 ECONOMIC BENEFITS/EFFECTS:

THIS SUB-SECTION SHOULD PRESENT A ROUGH ESTIMATE OF THE EXPECTED ECONOMIC EFFECTS OF THE PROJECT.

IN ADDITION, AN ASSESSMENT ON HOW THE PROJECT IS LIKELY TO AFFECT THE INCOME AND THE "ECONOMIC RANKING" OF THE INDIVIDUAL BENEFICIARIES RELATIVE TO THE NON-BENEFICIARIES SHOULD BE PRESENTED.

5.3 ENVIRONMENTAL IMPACT:

A description of the environmental impact of the project, be it beneficial or harmful should be presented. The possible impact of the project is to be considered and stated carefully.

6. PROJECT IMPLEMENTATION STRATEGY

IN THIS SECTION, THE PROPOSED WORK TO BE DONE DURING THE PROJECT SHOULD BE DESCRIBED. THE DESCRIPTION SHOULD INCLUDE A BRIEF ACCOUNT OF HOW THE PROJECT INPUTS WILL BE USED AND HOW THE PRINCIPAL ACTIVITIES ARE TO BE PHASED OUT OVER TIME

6.1 PRE-IMPLEMENTATION PHASE: A DESCRIPTION OF THE VARIOUS ACTIVITIES OR WORK TO BE DONE PRIOR TO THE IMPLEMENTATION OF THE PROJECT IS TO BE PRESENTED. .*[NB. PRE-IMPLEMENTATION MEETING:- IN WHICH THE MANAGEMENT BODY IS ACTIVATED & WORK GROUPS FOR CONSTRUCTION & FUTURE MAINTENANCE FORMED]*

6.2 IMPLEMENTATION PHASE: A DESCRIPTION OF THE VARIOUS ACTIVITIES OR WORK TO BE DONE DURING THE IMPLEMENTATION OF THE PROJECT IS TO BE PRESENTED. IN THIS SUB-SECTION DISCUSSION ON THE MANAGEMENT ASPECT OF THE PROJECT SHOULD BE MADE. *[ESP. ON-THE-JOB MAINTENANCE TRAINING]*

7. SUMMARY OF PROJECT IMPLEMENTATION

THIS SECTION LAYS DOWN THE VARIOUS ACTIVITIES, PERSONS OR GROUP(S) RESPONSIBLE FOR EACH ACTIVITY, THE PHASING OF WORK OVER TIME AND THE MILESTONES OF EACH ACTIVITY.

OVERALL PROGRESS OF THE PROJECT IS MEASURED BY THE ACCOMPLISHMENT OF KEY (PRE-DETERMINED) MILESTONES.

ALL OF THESE MILESTONES SHOULD BE ACHIEVED BEFORE THE PROJECT IS COMPLETED. IN ORDER TO ASSESS OVERALL PHYSICAL PROGRESS OF A PROJECT IN PERCENTAGE TERMS, A PERCENTAGE FIGURE IS ASSIGNED TO EACH MILESTONE.

7. MONITORING & EVALUATION MECHANISM

THIS SECTION SHOULD PRESENT WHAT MECHANISM WILL BE IN PLACE IN ORDER FOR THE PROJECT TO BE MONITORED AND EVALUATED. THIS SECTION MAY INCLUDE DETAILS ON WHAT IS TO BE MONITORED, WHO WILL BE RESPONSIBLE FOR MONITORING AND EVALUATION AND THE FREQUENCY OF MONITORING.

MECHANISM FOR M & E SHOULD BE AT THE PROGRAMME / LGU LEVEL AND AT THE COMMUNITY LEVEL.

8. SUSTAINABILITY AND MAINTENANCE MECHANISM

THIS SECTION IS CRUCIAL. IN THIS SECTION, AGREEMENTS AMONG UDP, THE LGU AND THE COMMUNITY ON HOW THE OUTPUTS OF THE PROJECT WILL BE MAINTAINED/SUSTAINED OVER THE NEXT 5 YEARS MUST BE DETAILED. *[THIS MUST BE THE RESULT OF COLLECTIVE DECISIONS BY THE BENEFICIARIES]*

IN ADDITION, ON THE COST OF MAINTAINING THE PROJECT OVER THE NEXT 5 YEARS SHOULD BE PRESENTED. *[THIS MUST BE REALISTIC AND RELATED TO THE MAINTENANCE ARRANGEMENTS THAT HAVE BEEN PLANNED]*

Annex L

Project Maintenance and Sustainability Budget

Project Maintenance & Sustainability Budget										
Item	Funding	Annual	Unit	x pa	Annual cost					
	Source	Sum availbl	Cost		Year 1	Year 2	Year 3	Year 4	Year 5	Total
	Total Annual Cost									

Roads

This consists of basically two cost items:

i. Routine maintenance: mainly labour-based (Filling of potholes; cleaning ditches, turn-outs and culverts; cutting vegetation; controlling erosion). An estimate of the number of man-days per year, multiplied by the daily labourers rate of pay.
ii. Periodic maintenance: mainly machinery based (ie grading; clearing larger landslips). An estimate of the number of days machinery may be needed, multiplied by the daily hire rate.

General figure for annual maintenance per km of barangay road= **[?]**

The funding source is likely to be from the Barangay IRA allotment, Municipal council grant or income from toll fees.

Water systems.

The annual cost items are likely to be:

Routine; - replacing faucets
Periodic; - replacing sections of pipe; concrete repairs.

The funding source is likely be the monthly fees collected from the user households. The annual total can be easily computed.

SCREENING/VALIDATION FORM

RURAL ACCESS (ROAD) PROJECT

GENERAL INFORMATION

Name of group:_____

Name of potential project_____

Location:_____

(*Sitio, Barangay, Municipality, Province)*

The Screening/validation consists of 2 components: Field inspection; Validation meeting

SITE INSPECTION **(Date _____)**

Visit potential site and area to gain wider idea of situation. Collect information, which can be cross checked at validation meeting.

INFORMATION ON EXISTING CROPPING SITUATION

Total area served [Ha]				
Major crops in ARC [+ha]				

CONDITION OF EXISTING ROAD

Present road status : (***All -weather/Seasonal/Pedestrian***)	
Active organized maintenance : *(yes /no)* if yes, ***who / how / when***.	

Months/year when the road is passable											*Specify : **P / NP** (on calendar below)*

TECHNICAL INFORMATIONS :

Length *[km]*				
Type of intervention *[Rehab/Upgrading/Spot repair]*				
Material Source	River	Quarry	Borrow-pit	Other
Distance from the road site to the **source** (in km)				
Material Source location	Within Barangay	Adj. Barangay	Other Barangay	Outside municipality
Existing roadway gradeline (% slope) max				
Road General Topographic ***(plane/sloping/mountain)***				
Soil types along the road ***(sandy/rocky/loam/clay)***				

CRITERIA CHECK

The infrastructure is a specified major priority in the CWP [Y/N]	

The road already exists and is in need of rehabilitation? [Y/N]	
The road is not targeted for improvement within 2 years by other agencies or programmes [Y/N]	
The road will link the sitio's, barangay and market ? [Y/N]	
The planned work will make the road passable all year round? [Y/N]	
The beneficiaries are communities of not less than 200hh located within the identified watershed? [Y/N]	
The community is cohesive & willing to provide a share in the total cost of the project, either in services, cash or other resources? [Y/N]	
The community is committed to operate and maintain the project upon completion? [Y/N]	
The barangay council is willing to support the project & it is included in both the barangay & Municipal AIPs, to ensure annual M&R budget allocation? [Y/N]	
Right of way is assured? Y/N	

Relevant comments_____
_____
_____
_____

Work to be undertaken (Includes proposed & existing structures)

Description	Estimate quantity	Remarks

COMPUTATIONS

N° of Vehicles expected to use the road : Motor bike [per day]	
Light [tricycle,jeep etc]	
Medium [elf, etc]	
Heavy [10W trucks, heavy equip't]	
Estimated total cost?	
Estimated cost/linear meter ?	
Is the cost/linear meter within the criteria? [Y/N] *Maxi: Spot repair = Php 400/lm.; Rehabilitation= Php 800/lm; Upgrading = Php 1000/lm.*	
Likely cost to the LGU	

Potential Beneficiaries	Households benefiting within identified watershed	
	Households benefiting outside identified watershed	
	Total HH's benefiting	
Cost/benefit (ie Cost/HH)=	**Cost within cost/benefit criteria? [Y/N]**	

VALIDATION MEETING *(With PO officials & members, Barangay officials)*

(Agenda; *- Confirm/cross check data collected during walk through.*

- *Discuss practical design options on particular points*

- *Discuss estimated costs*
- *Discuss beneficiaries commitments. NB. Discuss construction + O&M commitments.*
- *Identify which PO responsible*
- *Identify and address potential hazards, e.g. Rights of way, land donation*
- *Identify training/capacity building needs*

Computations calculated before the meeting allow the Engineers to be more specific, especially on likely counterpart inputs)

Comments/ Initial plan of action:_____
_____
_____
_____
_____
_____
_____

Validated by.

_____ _____ _____

_____ _____ _____

Date_____

Attached sketch maps showing following features**:**

1. Road network within identified watershed
2. Proposed road to be rehabilitated (+ potential hazards, stream crossings etc)
3. Households and other existing landmarks
4. Production area

Note . Personnel to take part in the screening/validation:

PO Chairman (or member of potential beneficiaries),
Barangay officials;
Assigned LGU Engineer
PPO Engineer
MSO

SCREENING/VALIDATION FORM

POTABLE WATER SUPPLY PROJECT

GENERAL INFORMATION

Name of group:_____
Name of Potential project_____
Location:_____

(Sitio, Barangay, Municipality, Province)

SITE INSPECTION (Date_____)

Informal session with relevant officials, then walk through,

Information on existing situation

No. of HHs without access to safe water (ie more than 10 minutes walk)	
Total number of HHs in the Project area	
There is an existing Water Users association in place? (Y/N)	

Proposed improvement

Intervention requirement?	Rehabilitation		
	Extension		
	New construction		
Level I or Level II?			

Technical Information:

Water discharge *(in litres/second)*		
Location of water source	Within the barangay	
	Neighbouring municipality	
	Adjacent barangay	
	Other nearby barangays	
There is established permanent vegetation around spring site? [Y/N]		
Situation of catchment area? *(Forested/deforested/denuded)*		
Topographical situation along possible route of main & distribution lines *(Describe)*		
Distances: Estimated total length	Main line	(m)
	Distribution lines	(m)
Gravity flow	Elevation of water sources	(m)
	Elevation of Reservoir	(m)
	Elevation(s) of service area	(m)
The activity likely to cover	Construction of intake box?	
	Construction of Reservoir?	

	Construction of break pressure tank(s)?	(*No.*)
	Construction of Faucet stands?	(*No.)*
	Construction of other items *(Specify*	
Potential obstacles in transmission line *(eg high points, river crossings etc*):		
Other spring sources available/ [Y/N]		
Condition/situation of other springs		

Computations *(Prepare 'Rule of Thumb' calculations below prior to validation meeting)*

The flow is enough for requirements? *(360 litres/HH/day x No. of HHs)*	
Likely cost of System	
Likely cost/HH? *(Maximum = PHp6000/hh)*	
Likely cost to the PO members	
Likely cost to the LGU	

Remarks/Other comments: _____
_____
_____
_____

CRITERIA CHECK *(Consider during walk through. Confirm/cross check at Validation meeting)*

Community has no/limited access to safe potable water? (Y/N)	
There is a safe source of water to supply the community needs? (Y/N)	
The existing water supply is inadequate & can be upgraded (12 hh/faucet? [Y/N]	
The community is cohesive, willing to provide a share in the total project cost either in services, resources or finance? [Y/N]	
The community is committed & capable of operating & maintaining the project upon completion? [Y/N]	
The project is supported by the Barangay, municipal & provincial LGUs? [Y/N]	
The location is on public land with no right of way problems or conflicts? [Y?N]	
The project is included in the Barangay and municipal AIPs, so as to ensure the allocation of repair and maintenance budgets? [Y/N]	

Remarks/Other comments: _____
_____
_____
_____

VALIDATION MEETING *(With PO officials & members, Barangay officials)*

(Agenda; - Confirm/cross check data collected during walk through.

- *Discuss practical design options on particular points*
- *Discuss estimated costs*
- *Discuss beneficiaries commitments. NB. Discuss construction + O&M commitments.*
- *Identify which PO responsible*
- *Identify and address potential hazards, e.g. Rights of way, land donation*
- *Identify training/capacity building needs*

Computations calculated before the meeting allow the Engineers to be more specific, especially on likely counterpart inputs)

Comments/ Initial plan of action:_____
_____
_____
_____
_____
_____
_____

Validated by.

_____ _____ _____

_____ _____ _____

Date_____

Attached sketch maps showing following features**:**

5. Location of proposed source
6. Proximity of hh clusters
7. Pipeline route with approx distances & types of terrain
8. Location of reservoirs & other structures
9. Access and likely obstacles

Note . Personnel to take part in the screening/validation:

PO Chairman (or member of potential beneficiaries),
Barangay officials;
Assigned LGU Engineer
PPO Engineer
MSO

Technical Assistance Input to The Upland Development Programme in Southern Mindanao (UDP)
ALA-97/68

Final Report
ANNEXES 4 & 5

4a. Notes on LGU funding
4b. Notes on LGU approach to road maintenance
4.c Local Government Code. Relevant sections
5. Notes on projects visited (Other than roads)

W.J.Bradfield, Community-based Infrastructure Specialist

ANNEX [4.a]

SYSTEM OF FUNDING ALLOCATIONS IN THE LGUS

(With special relevance to barangay level infrastructure development)

These are notes compiled from discussions with Provincial, Municipal and Barangay level officials, as well as from scrutiny of Annual Investment plans and the Local Government Code.

MUNICIPAL COUNCILS.

Municipal LGUs may or may not have an overall long term investment plan and, if so, this will normally be very much a 'wish list,' with the funding requirements and sources of funding not being very specific. The more specific plan is the Annual Investment plan (AIP), which is normally completed in the preceding November and is based around the Internal Revenue Allotment (IRA). More precisely, the 20% Development fund, the component of it that must be used for development purposes, the other 80% being allocated predominantly to personnel services and general administration.

The IRA is the sum allotted annually to each local government unit by central government as their share of the national internal revenue taxes, and makes up approximately 40% of the national total. All levels of LGU share in this at the rate set out below:

Provinces	-	23%
Cities	-	23%
Municipalities	-	34%
Barangays	-	20%

In turn, the share of each province, city and municipality is determined by a formula encompassing size of population (50% by value), land area (25% by value) and equal sharing (25% by value). For barangays, the formula is based on population (60% by value) and equal sharing (40% by value), with a minimum of P80,000. To access the IRA allotment, each Municipal administration must prepare and submit its annual budget to the Dept of Budget and Management (DBM) for approval.

Municipalities are classified by class, which reflects their relative wealth measured through their tax income, the wealthiest being Class 1, the poorer being classes 4, 5 or 6. There is therefore no direct correlation between Class and IRA amount, but in reality, the municipalities with higher populations and area are likely to have a higher economic turnover than those with smaller populations and/or land area. There are of course exceptions due to particular circumstances. The typical annual allocations of the 20% development fund in 2002 were approximately P12 – 13.5m for 1st class municipalities and between P5.7 and 7.6m for 3rd and 4th class municipalities.

The annual IRA review takes effect in the 1st or 2nd quarter of each financial year, following which there is normally an increase. However, the annual investment programme of each municipality would have been drawn up in the final quarter of the previous year, therefore the budget would be based on the original allocation. A supplemental budget is likely to be produced after the review. IRA funds are paid monthly and not always on time, often leading to cash flow problems for the municipal administration.

Notable other sources of funds, apart from IRA allocations, are revenues from local taxes, business permits etc. These are collected on behalf of the provincial government and the Municipality receives 40% in return. Some complain they do not get their fair share back.

Theoretically, LGUs should also receive an equitable share of the proceeds of the national wealth (ie mining, forestry) derived within their respective areas (40%) [see notes* below]. Again, municipalities complain about the bureacratic accounting required to get their fair share returned and it is therefore not really a factor in the expected income calculations. More importantly, there will be expected funds from externally supported programmes, such as UDP, MRDP & ARCP, and various central government initiatives.

Overall, the other sources of income tend to make up between only 7 and 15 % of the total income, the rest coming from the IRA. The IRA is therefore crucial. The other sources of income are likely to be classified under the General fund and a municipality is under no obligation to spend this on development. Some do actually declare development activities under this fund in their AIPs, but in many cases the funds are swallowed up in administrative costs.

The 20% Development fund has to cover four sectors, notably:

- Social development – (eg peace & order, housing programmes, social services)
- Economic development – (notably counterpart to externally assisted projects like UDP, specific economic programmes)
- Infrastructure development
- Development administration

Occasionally there are other headings replacing some of these, such as General Public Services and Housing and Community Development.

Table 4. Funding of Infrastructure from 20% Development Fund					
2002					
Class	**Municipality**	**20% Dev Fund**	**Infra Budget**		**Debt Servicing**
		[P]	**[P]**	**% of DF**	**% of DF**
3	Tupi	6,027,940.00	1,170,000.00	19.00	55.00
1	Laak	12,352,356.00	1,020,000.00	8.00	
3	Mabini	6,000,000.00	4,207,000.00	70.00	58.00
1	Mati	13,536,287.00	2,650,000.00	20.00	
4	Kiamba	7,180,000.00	2,157,144.00	30.00	
3	Maragusan	7,238,744.00	600,000.00	8.00	28.00
3	San Isidro	5,700,000.00	1,819,973.00	32.00	17.50
2003					
4	Tantangon	5,537,782.00	1,980,000.00	36.00	
3	Tupi	14,714,006.00	3,600,000.00	24.50	21.00
	Pantukan		10,963,822.00		15.00
3	Maragusan	8,547,496.00	3,775,000.00	44.00	
2	New Bataan		14,320,000.00		
1	Laak	12,352,356.00	1,020,000.00	8.00	55.00
3	Mabini	7,352,537.00	4,465,823.00	60.00	23.00

Table 4 provides some statistics concerning infra commitments within MLGUs. The percentage that is normally allocated to infrastructure development can vary between 8 and 35%, except in the case of Mabini (60 – 70%). But this does not really indicate the level of relevant infrastructure activity as much is often placed in the Social and Economic Development budgets and much is often directed to the poblacion itself. One Municipality allocated 70% of its development fund to

Infrastructure in 2002, but only 12% was for actual infra, as 58% went to heavy equipment loan servicing. The table shows that heavy equipment loan servicing often takes a significant portion.

The common items that are placed under the infrastructure heading are listed below:

- Provision of water supplies (both municipal and barangay)
- Maintenance of public facilities, ie plaza and parks, public markets, street lights, municipal and public buildings, public cemeteries.
- Rehabilitation of municipal streets and drainage systems.
- Heavy equipment maintenance rehabilitation
- Debt servicing, ie loan repayments for heavy equipment purchases
- Grants to Barangays for development activities
- Land purchase and development

A number of these are just as likely to be placed under the other budget headings. It is not common to see allocations for the complete funding of farm to market roads outside the Poblacion. Occasionally there are allocations for other barangay level projects such as multipurpose buildings. In the majority of cases the counterpart for UDP and other external assisted projects, such as ARCP and MRDP also comes out of this 20% development fund. Some LGUs choose to place part of the costs, ie labour and fuel, in other sections, in effect therefore making the true allocation on infrastructure higher.

As stated above, Infrastructure activities are also supported by local funds, notably the General fund. For example, in the case of Laak, the General fund is totally for barangay based infrastructure, such as multipurpose buildings and spring development.

The process of preparing the Municipal AIP is such that potential projects will be identified and requested by the various interest groups, including the Barangay Councils. The Municipal Development Council (MDC) is the body responsible for formulating the policies and prioritisation of projects for the AIP, with estimates of funding requirements being prepared by the relevant heads of department. The Municipal Engineer would prepare and submit his estimates for the various tasks, such as road maintenance/rehabilitation. It is then the Finance committee who make the final decisions as to the levels of spending on each item.

The Municipal Engineer technically works out how many kilometres of road he can aim to maintain per year, and the amount required. The calculations may or may not include a figure for barangay roads, depending on the municipal policy towards barangay road maintenance. A municipality that expects the barangays to fully carry the cost of routine and periodic maintenance, will only allocate for municipal roads. Rehabilitations are likely to be funded through municipal funds and the task would be specifically specified in the AIP. Often there is a fixed allocation for each barangay for development projects within the barangay, and the barangay has discretion as to the type of projects, which may include road maintenance. In such a situation, the municipal AIP therefore may not include the specific allocations for road maintenance. The Municipal Engineer often has reasonable flexibility within heading allocations, such as the maintenance fund.

BARANGAY COUNCILS

As already pointed out, the Barangay Councils also have their IRA allotments, again calculated according to the size of their populations and independent of any calculated allotments for the overall municipality. Of the 40% of national total allocated to IRA, barangays receive 20% of that. The formula for calculating the exact amount per barangay is based on population (60% by

value) and equal sharing (40% by value), with a minimum of P80,000. The sum is commonly in the region of P600,000 to 1 million.

The Barangay Councils also must allot 20% to development related activities and therefore possibly for the maintenance of barangay roads. In theory, priorities are set by the Barangay Development Council (BDC), which is made up of interested parties working within the barangay, as well as Sitio leaders. Detailed priority & budget is set by the infrastructure committee, then the final decisions made by the Barangay Council.

Payment of the IRA is conditional upon the barangay lodging its annual budget for approval with the Municipal government. The Councils are also supposed to prepare their own AIPs and furnish them with the Municipal LGU. It seems many do not do this and one municipality, Manay in Davao Oriental, has been carrying out a capacity building programme to encourage barangays to prepare their plans.

It must be noted that Barangay Councils are also due their share of national wealth generated within their boundaries (mining taxes, royalties etc) at the rate of 35% of the 40 %. An example of one receiving this has not been found.

PROVINCIAL LEVEL

The provincial government possesses funds, which are available for direct use on projects at the lower levels. They originate from it's own IRA allotment, as well as from the tax revenues. Provincial governments receive 23% of 40% national total allocated to IRA. The sum per province is calculated according to population (50%), land area (25%) and equal sharing (25%).

Specific projects at barangay level, such as a road rehabilitation, may be funded directly from the 20% development fund allocation of the provincial government. Requests will have gone directly to the province and the allocation will normally be at the discretion of the Governor. There are also allocations to the Vice Governor, as well as to each of the SP members. These funds are available therefore for suitable projects, though there is likely to be a political motive in the decisions over their allocation and are also more likely to be used for more visible stand-alone projects such as rehabilitations. There are also direct grants to the municipalities.

Note *. LGU share in national wealth.

Local Government Code sections 289-293 outline the share of the LGUs in the national wealth derived within their respective areas. They should have a share of 40% of the gross collection derived by the national government for the preceding fiscal year from mining taxes, royalties, forestry and fishery charges etc. They should also have a share, based on the preceding fiscal year from the proceeds derived by any government agency or government controlled corporation engaged in the utilization and development of the national wealth. This is either 1% of gross sales or receipts of the preceding calendar year, or 40% of the taxes, royalties, charges, fees etc.

Where the relevant natural resources are located within the province, the allocation is as such:

Province -	20%
Component City/Municipality -	45%
Barangay -	35%

However, where these natural resources are located in two or more provinces, component cities/municipalities or barangays, their respective shares are computed on the basis of

Population –	70%
Land area -	30%

ANNEX [4.b]

RELEVANT POINTS CONCERNING FUNDING AND IMPLEMENTATION OF BARANGAY ROAD MAINTENANCE

The Barangay Councils are responsible for the upkeep of barangay level roads & they technically have funds available for the purpose, ie the 20% IRA development fund. They may also have other funds, eg road toll fees, dryer fees etc, as well as direct annual grants from the Municipal LGU.

The options for maintenance are:

- Bayanihan
- To fund internally, using local labour
- Pay for equipment from the municipal LGU (or Provincial government), either paying the full rental charge, reduced rent or just paying for fuel, drivers allowances etc.(depending on the municipal policy)
- A combination of 2 or more of the above.

Arrangements for equipment related maintenance.

When equipment is needed to repair/maintain the barangay level roads, the request would be made by the Barangay Council to the municipal LGU for assistance. The municipality would have the equipment, but would normally expect a counterpart input from the barangay from it's 20% IRA development fund allotment, the size of which, the municipal LGU would have knowledge. The barangay may also have other funds, eg road toll fees, dryer fees etc, as well as direct annual grants from the Municipal LGU.

The arrangement is often that the municipal LGU will lend the equipment while the barangay council would provide the fuel, allowances/pay for the drivers and any required casual labour. The equipment is often made available over a weekend, which makes the driver allowance a crucial factor. In other cases, where the municipality is carrying a heavy loan on it's equipment, it will insist on a rental charge, albeit at a reduced rate. In some cases, uncommonly, equipment is given free.

It must be stated that barangay roads are not being maintained on a routine basis, certainly not on an annual basis. Instead, the maintenance tends to be periodic when more fundamental work is required. This sort of work usually requires some form of heavy equipment, which the barangays themselves cannot provide. The available equipment within a municipal engineering unit is normally related to the class of the municipality. 1st and 2nd classes are likely to have the full set, including three or four dump trucks, payloader, backhoe, grader, bulldozer and road roller. The lower class municipalities are unlikely to have a dozer or road roller, as these are not normally required for the majority of routine tasks. There can be marked variations between similar class municipalities, depending on what priority infrastructure is given by the incumbent administration.

When certain equipment is required, the municipal LGU may rely instead on renting them from the Provincial government, who have a significant pool of machinery, but where there is normally also a heavy commitment. This means the periods the machinery is available is very much at a premium, and can lead to co-ordination difficulties for the municipal LGU. Municipalities therefore may also rent from private sources. It must be noted that the LGUs seem to be able to carry out the majority of their projects by

administration, without having to resort to giving the work out to contractors. Construction projects also tend to get priority over maintenance.

The options for funding maintenance:

- From 20% IRA Development fund
- From other sources, eg toll fees and grants from Municipal LGU

Raising of Toll fees:

There is an opportunity for this under the local government code. How effective this will be depends on the location of the road. It is likely to be more lucrative where there is a through road or one leading to somewhere attracting commercial traffic, such as a quarry or a plantation. A road between a sitio & barangay proper will attract little and this will also be very seasonal. If gatekeepers wages are to calculated in, this will make a big difference. It is possible that barangay council members do the gatekeeping voluntarily.

The Barangay Council must draw up an ordinance, stating its policy, and this must be endorsed by the Municipal Council. A Barangay Council can only draw up an ordinance to raise tolls on a road for which it is responsible for maintaining. It is logical to site the toll gate on the busiest road, main access road, leading in and out of the barangay. Vehicles passing through the gate have access to all the barangay roads and the income raised is in theory used for maintaining the whole barangay road network, not just that one road.

There is generally a reluctance to charge private traffic, only commercial, and sometimes only when loaded. For example:

- Light truck -P10 per trip
- passenger vehicle, eg jeepney -P5 per trip
- Motorcycle (skylab) -P2 or 3 per trip (or sometimes per day)
- By quantity of produce, eg 50 centavos/sack of copra

One possibility, which has been voiced although no example of it has been identified, is collecting on a monthly basis from the regular users, thus eliminating the need for a gate keeper and tedious record keeping.

Funds may go into a special fund or the general fund, depending how significant they are. Where it is a special fund, there is likely to be a regulation that there be no withdrawals until the next annual budget is drawn up, which accounts for it.

One of the barangay tolls visited was raising only P3000/month, but for a labour based, routine maintenance system, this could still fund significant man-days

Use of IRA funds (Examples)

Bgy Pantoyan, Caraga (22 km of bgy roads): Total IRA = P900,000. 20%= P180,000. Spends P40,000 on labour based maintenance. Supplies fuel & oil when machinery come, but not every year.

Bgy Madian, Tarragona: Total IRA = P1m. 20% = P200,000. P80,000 on road maintenance.

Bgy Don Mariano Marcos, Lupon. Total IRA= P620,000. 20%= P124,000. Fuel & oil for machines, doing only roads from bgy proper, not sitio roads + some paid labor for maintaining ditches.

ANNEX [4.c]

RELEVANT SECTIONS IN THE LOCAL GOVERNMENT CODE OF 1991, BOOK II (LOCAL TAXATION & FISCAL MATTERS); Chapter 2 (Specific provisions on the taxing and other revenue raising powers of LGUs); Article 4 (Barangays)

Section 155. Toll fees & charges.- The sanggunian concerned may prescribe the terms and conditions and fix the rates for the imposition of toll fees or charges for the use of any public road, pier or wharf, waterway, bridge, ferry or telecommunication system funded and constructed by the local government unit concerned: *Provided,* That no such toll fees or charges shall be collected from officers and enlisted men of the Armed Forces of the Philippines and members of the Philippine National Police on mission, post office personnel delivering mail, physically handicapped, and disabled citizens who are sixty-five (65) years or older.

When public safety and welfare so requires, the sanggunian concerned may discontinue the collection of the tolls, and thereafter the said facility shall be free and open for public use.

Section 152. Scope of taxing powers.- The barangays may levy taxes, fees, and charges, as provided in this article, which shall exclusively accrue to them: *(briefly)*- on stores or retailers, service fees and charges, fees on barangay clearance and other fees and charges on commercial breeding of fighting cocks, cockfights and cockpits, on places of recreation charging admission fees, on billboards, signboards, neon signs, and outdoor advertisements.
[The service fees means charging for use of barangay owned driers etc]

Section 186. Power to levy other taxes, fees or charges. – Local government units may exercise the power to levy taxes, fees or charges on any base or subject not otherwise specifically enumerated herein or taxed under the provisions of the National Internal Revenue Code, as amended, or other applicable laws: *Provided*, that the taxes, fees, or charges shall not be unjust, excessive, oppressive, confiscatory or contrary to declared national policy: *Provided further*, that the ordinance levying such taxes, fees or charges shall not be enacted without any prior public hearing conducted for the purpose.

Section 187. Procedure for Approval and Effectivity of tax Ordinances and Revenue Measures; Mandatory Public Hearings.

Section 188. Publication of Tax Ordinances and Revenue Measures

Section 189. Furnishing of Copies of Tax Ordinances and Revenue Measures.

Section 191. Authority of Local Government Units to Adjust Rates of Tax Ordinances. – Local government units shall have the authority to adjust the tax rates as prescribed herein not oftener than once every five (5) years, but in no case shall adjustment exceed ten percent (10%) of the rates fixed under this code.

ANNEX [5]

COMMENTS ON OTHER UDP ASSISTED PROJECTS VISITED (APART FROM ROADS)

COMPOSTELLA VALLEY PPO1

1-60-521-01-032 Mayo steel suspended footbridge & Mamada steel footbridge. New Bataan

Present condition. Both in good condition
Quality of work. Good. Wider concrete buttressing at the approaches may have been in order, so as to reduce potential erosion, but as yet no sign of any erosion.
Maintenance situation No system in place. A plan to charge motor cycles P1 per crossing. No maintenance training. The barangay council is technically responsible.
Potential & usage/sustainability. Their main usage is during severe flooding, mainly December to March. At time of visit, vehicle access to the communities was adequate and the condition of the earth crossing beside the Mamada bridge implied that notable flooding had not occurred for some time.
Relevant points. Maintenance system not sorted out. It may also be difficult to charge motorcycles for much of the year. Access does not appear to be a problem for much of the year.

1-60-521-01-006 Tenublag Suspended footbridge. Laak

Present condition. Reasonable condition
Quality of work. OK
Maintenance situation. None so far. Barangay has promised to allocate funds when necessary. An original plan to collect tolls have not yet materialised.
Potential/usage/sustainability. It serves at least 15 households directly but many more indirectly. The connecting road to the main highway is accessible by motorcycle, difficult for ordinary vehicles.
Relevant points. The maintenance situation still to be clarified.

1-60-521-01-007 Sitio Gemalina water system. Maragusan

Present condition/Quality of work. Faucet stands well constructed. Reservoir is rough but OK, though the main outlet was leaking. One of the faucet stands low on pressure, due it appears to a significant drop in elevation immediately after it. It is planned to insert an elbow at the point of offtake to act as a break on flow in the main pipe.
Maintenance issues. It is recently finished. The UCO chairman states that the maintenance inspection team has been organised, but no fee collections have started yet. Some maintenance issues, such as the leaking outlet at the reservoir still to be addressed.
Relevant points. Maintenance & final construction issues to be resolved.

1-60-521-02-025 Ma'a suspended cable bridge. New Bataan

Present condition/Quality of work. The main structure is completed, with only the approaches to the structure still to be constructed. The quality is adequate. The masts are well set back from the banks to avoid erosion problems.

Maintenance issues. The Sitio leader stated that they will apply to the barangay for necessary funds for maintenance when necessary.
Potential/usage/sustainability. The structure provides access for all the relevant sitios in the uplands (450+ households) to New Bataan municipal centre. In normal conditions, the river at that point is easily fordable by people, animals, motorcycle & vehicle. However, a major concern was protecting the children at flood times travelling to school etc.

1-60-521-01-020 Purok 4 & 5 Water System rehab. Mapaang. Maco

Working. Collecting P5/hh/month. Regular repair of faucets and one major repair.

PPO2 DAVAO ORIENTAL

2-60-521-01-026 Taquibo spring development. Mati

Present condition. Still being constructed. The spring box, reservoir and one faucet stand are complete and in use. Reasonable condition. The record book shows regular turnout for community labour.
Quality of work**. Adequate. Ferro-cement type tank is a good concept for reducing haulage of materials.**
Maintenance situation**. No arrangements made so far.**
Potential & usage/sustainability. 160 households. The one faucet stand in heavy use.
Relevant points. The system is in heavy use well before completion and before any maintenance arrangements have been made. This potentially increases the difficulty of introducing effective fee collection and maintenance arrangements once the community has got used to free water.
Main problem in construction - haulage of materials to site.

2-60-520-01-015 Binagyahan Spring development, Sainz. Mati.

Present condition. OK. Faucets not leaking.
Quality of work. OK
Maintenance situation. The system has been in use for 6 months, although the formal turnover delayed due to the planting programme around the spring being behind schedule. However there is no fee collection yet. The subcommittee of UCO is responsible and a maintenance crew identified, although there is no active routine established yet.
Potential/usage/sustainability. High usage. The use of locally available type of faucets is important for repair purposes.
Relevant points. M&R routine seems to be reliant on the formal turnover, although the system already in use for 6 months. Hauling was again the major problem in construction.

2-60-521-01-023 Likop spring development, Sainz. Mati

Still in construction stage with no faucets stands or reservoir completed yet. Significant group working at time of visit.

2-60-521-02-039 Potential irrigation project, Santo Rosario. San Isidro

This was visited and the flow rate appeared to be less than the reported 1.5 litres/second. This quantity is hardly adequate for the potential 3 hectares. The collective decision was that the flow rate should be measured again and over a period of time. A holding tank

may need to be designed in to collect the night flow, but how this would affect the financial viability would also have to be assessed.

2-60-521-01-003 Pintatagan Purok 8 & 2 spring development. Banaybanay

A long system with spring & reservoir constructed. Wash stands (10) built but not yet pointed. Very little settlement in the area!?

PPO3 DAVAO DEL SUR

3-60-521-01-027/032 Kisongot footbridges I & II. Malita

Present condition/Quality of work. The metal is rusting in places, otherwise reasonably well constructed.
Maintenance situation. The UCO is responsible for the bridge & will have to apply to the barangay for funds for maintenance, & there is no specific guarantee. No maintenance being carried out at the moment, although does need painting.
Potential/usage/sustainability. The MakaMASA road beside it was upgraded after the footbridge project was already instigated. However, no permanent structures were constructed in the road crossings and the fords are now impassable to many vehicles. Therefore the footbridges are still relevant.
Relevant points. If there is a road beside the potential footbridge, it is essential to ascertain if it is to be upgraded, or not. Otherwise there is a danger that the footbridge could become irrelevant.

Proposed hanging footbridges, Malita LGU (3-60-521-02-012/3/4)

Visited the potential sites of 2 of these. The locations were beside roads, which could well be upgraded in the near future, with the possibility that some sort of dry crossing might be put in. Therefore, again there is the danger that the footbridges could become irrelevant. If no crossings are to be constructed, the beds of the streams are firm, with low banks, so relatively suitable for vehicles, with the footbridges providing crossings for pedestrians & motorbikes.

3-60-521-01-023 Sitio Banayaw foottrail improvement, Malalag,

On–going. A former footpath, not a logging track, suitable only for horses & pedestrians.

3-60-521-02-002 Dioloy concrete footrail. Santa Cruz

Due to bad weather, reached beginning only. If improvements can be made to the main crossing, the approach track is suitable for motor cycle. In steeper situations, narrow concrete paths are a cost effective method of improving all-weather trafficability.

3-60-521-02-001 Balalan – Dioloy spring development. Santa Cruz

On-going. Reservoir in process of construction at time of visit

PPO4 SARANGANI

4-60-521-01-013 Centro water system rehab. Kiamba

Present condition. The project has long been completed. Illegal tapping in the main line was reported & the UCO/UBA have undertaken to formulate a policy on this.
Quality of work. Reasonable
Maintenance situation. UCO is already collecting P5/household/month & a group organised to undertake routine inspection & maintenance.
Potential/usage/sustainability. 33 households with 6 communal faucets
Relevant points. The settlement of the beneficiaries where the project is sited, is within private property (copra estate).

4-60-521-01-058 Katipunan water system rehab. Malungon

Present condition/Quality of work. Completed, reasonable.
Maintenance situation. The group are collecting fees and carrying out inspections & repairs.
Potential/usage/sustainability. 108 households with 4 communal faucets.
Relevant points. Excess water used to supply fishponds & vegetable gardens**.**

4-60-521-01-064 Liyang water system rehab. Malungon

Present condition/Quality of work. Ongoing. So far adequate
Maintenance situation. No maintenance routines or collections organised yet.

PPO5 SOUTH COTABATO

5-60-521-01-028 Purok III water system. Tampakan

Present condition. Finished in September 2002. 2 faucet stands & 2.5 cu.m concrete tank. Good condition. Faucets not leaking.
Quality of work. Reasonable
Maintenance situation. UCO taking responsibility & already collecting P5/household since May. No routine maintenance yet & no maintenance training given yet.
Potential/usage/sustainability. 24 households, sustained usage.
Relevant points. A further input required to insure the maintenance routine.

5-60-521-01-095 Erosion Control, Purok III. Tampakan

Present condition. A gulley stabilisation project in order to protect the track leading to Purok III. However, no noticeable work carried out so far (although stated as 60% complete). Gabion structures are proposed, as well as planting material. It is understood that beneficiary counterpart is the main delaying factor.
Quality of work. Nothing to see so far.
Maintenance situation. N/a
Relevant points. Little noticeable work but stated as 60% complete & a significant proportion of UDP funds liquidated.

5-60-521-01-089 Lower Matimos spring development. Tantagan

Present condition. Reasonable, no leaking faucets. The apron of the faucet stand inspected was in poor condition, looking as though it was original from an earlier system & had not been repaired at the time of installation.
Quality of work. Reasonable, the exception being the apron described above.
Maintenance situation. UCO have organised one major repair when the primary main was damaged. Whether routine inspection is taking place not clear. Households paying P10/month.
Potential/usage/sustainability. 114 households. It is a gravity fed system with standard faucets.

5-60-521-00-001 Trail. Tupi

Present condition/Quality of work. 3 km long & took 1 year to complete on an old logging track, previously just passable to horses. The drainage could be improved in some places and there are a couple of very soft wet spots that could do with packing. It is OK for motorcycles & horses, however a light truck is using it regularly. The culvert is of very simple construction & could do with more adequate covering, especially if vehicles are going to use it. The UDP input was tools & culvert pipes, the LGU provided supervision.
Maintenance situation. Scheduled every Wednesday, being predominantly drainage & vegetation control work. They received training.
Potential/usage/sustainability. 120 households and area of reasonable agricultural potential. Sustainable if maintenance continues and restricted to horses & motorbikes. Vehicles & carabao sleds will severely damage it however. As it is a former logging trail with a reasonable gradient, there is the potential to legitimately upgrade it at some time if the level of production warrants it.
Relevant points. The major issue is if it is to be made usable for vehicles also, with the resulting increased damage, or intended solely for motorcycles & horses.