CHAPTER 7

TRAINING AND DEVELOPMENT OF SMALL LABOUR-BASED CONTRACTORS

7.1 Chapter Overview

This chapter reviews the training and development of small labour-based contractors in Namibia. Training planning, preparation and implementation, including other training aspects like selection of trainees, training curriculum, training phases and guidelines are discussed. Evaluation and analysis of the training process and training phases is made and some conclusions are made.

7.2 Background

The second phase of the LBPP was also aimed at developing local small-scale labour-based contractors for road works, and building capacity within DOT for labour-based works. Training objectives were the following (DOT, 1995(4)):

- To establish a cadre of local small-scale contractors capable of undertaking road construction and maintenance works using labour-based methods.
- To create capacity within the DOT to plan, manage and supervise LBW roadworks carried out by private contractors using LBW methods.
- To create capacity to supervise and implement labour-based roadworks contracts through local consultants

The training programme required that selected candidates be led through a training programme that met the requirements of DOT and was appropriate for labour-based works. At that point in time, the development of small-scale contractors in Namibia also fulfilled two secondary objectives. Firstly, from a national policy point of view, this strategy would enhance the participation of entrepreneurs, from the previously disadvantaged population, in road construction and maintenance (MWTC, 1995). Secondly, from the efficiency point of view, there was an identified strategy in the transport sector to outsource the construction and maintenance of

roads as this was seen as a non-core function of Government, and at the same time introduce competition and efficiency in the sector (Mvungi, 2001).

Historically, Namibia has a small civil engineering contracting capacity. The industry is dominated by foreign, mainly South African, contractors. Local contractors are few and weak. These are more visible in the building industry than in the transport sector (ibid). The long-term goal of the training project was to ensure that newly developed and small local contractors grow into self reliant and sustainable business entities that can competitively participate in the construction industry, and reduce the dominance of foreign contractors (DOT, 1995(3)).

The small contractor development scheme was implemented in two phases involving selected trainees from the private sector in phase 1, and from the public sector in phase 2. In the latter case, trainees were selected mainly from among the operational employees of DOT and from within MWTC. The short-term (ST) and long-term (LT) training components were as follows (ILO ASIST/ Intech Beusch, 1996);

- Introductory roadworks courses for contractors (ST).
- Contract and business management courses for contractors (ST).
- Introductory roadworks courses for contractors' site supervisors (ST).
- Awareness seminars and workshops for DOT managers and local consultants in the road sector (ST).
- Local courses for DOT managers for supervision of consultants (LT).
- Local courses for LBW contract supervision for consultants (LT).
- Courses for identified local trainers on LBW methods to build up local training capacity (LT).
- Structured mentorship programme after training phase (LT).
- Refresher courses for development and consolidation (LT).

7.3 The Training Programme

The training programme consisted of four main phases;

- Preparation phase
  - prepare development plan (training curricula, training approach, training material, mentorship plan and trial contracts outline)
  - establish labour-based work methods training manual
  - establish planning and monitoring system
  - develop contract documents and trial contract procedures
  - prepare training material.
- Training implementation phase
- Dummy contract phase
- Trial contract phase

The ILO provided backstopping support services for the training. Within this mandate, the ILO-ASIST carried out a preliminary training needs assessment and assisted in the development of a training programme outline and curricula. Training guidelines consisted of the following main elements;

i) Introduction to labour-based works and contracting
ii) Training planning
iii) Training implementation
iv) Pilot and demonstration projects
v) Training administration and management
vi) Training evaluation

7.4: Training of Small Contractors from the Private Sector

Phase I involved training of selected entrepreneurs from the private sector as small scale labour-based works contractors.

7.4.1 Preparation phase

Activities in this phase consisted of selection of the trainees, training needs assessment and preparation of the training curriculum and facilities.

(i) Selection of trainees

Advertisements were placed in newspapers announcing the proposed training in August 1994, inviting interested and eligible candidates to apply. The main qualifying criteria were Namibian citizenship, entrepreneurship, interest in labour-based works technology training and location in the northern parts of Namibia. Eighteen (18) firms responded to the advertisement, and six (6) were selected for training. The following contractors attended the training:

- Oshakati Building Contractor
- E.H. Construction
- Onadjaba Construction
- Imbamba Construction
- Eino Vilho Construction

Each company nominated four (4) individuals to attend the training programme, including the owner. In total 33 people were admitted for training.

(ii) Training needs assessment and curricula

ILO-ASIST carried out training needs assessment of the selected contractors in November, 1994. It was established that trainees required training in both technical and administrative aspects of labour-based technology (Pets and Byrnes, 1993). Class room training, field attachment and hands on trial contracts were identified as the necessary training inputs. In addition, basic business management training was needed to prepare trainees to venture into the construction business.

The training curriculum was developed with the assistance of the ILO early in 1995, covering all major training activities. Selected training material was compiled mainly from the ILO. It comprised of a mixture of labour-based technology material, general international material for contractor training and

handouts with Namibia specific construction issues, including project specifications, contract documents, technical manual and site reporting systems.

7.4.2 Theoretical training phase

The theoretical training course given to the trainees can be grouped into five (5) categories;

I. Introductory course for contractors (10 days)
II. Discipline course for contractors (15 days)
III. Contract and business management course for contractors (10 days)
IV. Introductory course for site supervisors (10 days)
V. Discipline course for site supervisors (15 days)

Category I courses:
- Basic mathematics and numeracy
- Roads: purpose, terminology and standards
- Appropriate construction and maintenance technology
- Soil mechanics
- Equipment and tools

Category II courses:
- Labour-based construction work
- Road maintenance
- Routine maintenance
- Introduction to contract management

Category III courses:
- Managing finances
- Introduction to planning techniques
- Planning contract activities
- Estimating, tendering, pricing and bidding
- Contract procedures
- Contract documents and specifications
- Insurances
- Labour issues

Category IV courses: Same as Category I courses.
Category V courses: Same as Category II courses.

Training started late in 1995, eight (8) months behind schedule due to the delay in sourcing a suitable trainer. Training was carried out by PROMATRA, a firm sourced from the RSA, with support from Bicon-Namibia. Trainees were taken through theoretical and practical training for a period of four (4) months, and formal training was completed in March 1996 (Bicon Namibia, 1996).

Classroom training for contractors and supervisors was given in two separate classes. Although some of the topics were similar, the training emphasis was different. Contractors were taught contract management, tender pricing, bidding and other management related topics. Supervisors were trained on road building aspects, such as establishing task rates, planning the number of workers required for each task, supervision, reporting on output achieved, etc. Training on site was conducted in joint sessions.

7.4.3. Dummy contract phase.

A dummy contract is a practical training given to trainees where they learn how to perform as contractors, or as contractor's employees. It provides trainee contractors with an opportunity to practically apply the learned construction processes under the supervision and guidance of the training agent.

According to Bicon Namibia, the dummy contract was not carried out fully as originally planned, as contract documentation had not been finalized at that stage. The selection of the road section for the dummy contract was also carried out late (ILO ASIST and Intech Beusch, 2000). The 'dummy contract' phase was therefore subsequently used for skills and site management improvement exercises.

7.4.4 Trial contracts phase

The purpose of trial contracts was to test whether trainees had gained the capability to successfully carry out LBW roadworks independently. This was the most important training stage with a 50% weighting in the training programme assessment. A trial contract master plan was developed by the DOT to regulate the five trial contracts. Detailed contractor packages for the trial contracts, mentorship and assessment procedures were developed in the master plan.

Trial contracts were given to contractors in June 1996. Each contractor was given approximately one kilometre of a road section to construct to gravel standard, under the supervision of a training agent. Each section had a drainage structure to be built, consisting of single or double barrel culverts (Bicon Namibia, 1996). Records show that trainee contractors faced various problems in the execution of the trial contracts. The completion of all sections was delayed for over 8-weeks (ibid). The training was completed late in 1996. The planned and actual start and completion dates for each contractor are shown in the Table 7.1 below.

Table 7.1: Trial Contracts on DR3608: Planned, actual start and completion dates.

Contractor	No of labourers	Planned			Actual	
		Start Date	Compl. Date	Duration	Comp. Date	Delay
Oshakati	150	27.05.96	02.07.96	5 weeks	05.09.96	8 weeks
EH	150	27.05.96	10.07.96	6 weeks	14.09.96	8 weeks
Onandjaba	150	17.06.96	24.07.96	5 weeks	25.09.96	8 weeks
Imbamba	150	24.06.96	27.07.96	4 weeks	02.10.96	10 weeks
Eino Vilho	150	08.07.96	06.08.96	4 weeks	07.10.96	8 weeks

(Source: Bicon Namibia, 1994)

Other aspects of the trial contracts were the following;

(i) Recruitment of labourers

Recruitment of labourers in the trial contracts was done in the same way as previously done for the pilot projects. Headmen in the respective villages within the distance allocated to each contractor were asked to submit a list of potential casual employees, two names per household. A recruitment meeting was then arranged on the same day for all contractors. In the meeting, the Contractor and his assistant conducted the recruitment themselves, with the assistance of a DOT official. Each contractor recruited 150 casual workers initially (ibid).

(ii) Labour wages

Casual labour wages were increased to N$13.50 per task in October 1996. All contractors agreed that they will pay the labourers the same rate of pay per task as previously done on the phase II of the pilot project, i.e. N$13.50 per task. The daily rate for the contractor's supervisors and support staff were determined by the contractors themselves. About N$370 000.00[1] was paid to labourers in the trial contracts. The following table shows the amounts paid to the supervisors, support staff and labourers for each contractor.

Table 7.2: Trial Contracts: Wage amounts paid to employees (Figures in (N$)).

Contractor	Period	Supervisors	Support Staff	Casual Labourers	Total
Oshakati	01/5/96 – 05/9/96	33059.24	9521.92	58454.00	101035.16
EH	27/5/96 – 16/9/96	22058.00	7906.20	53326.50	83290.70
Onandjaba	11/6/96 -26/9/96	10462.00	5235.99	42592.50	58290.49
Imbamba	14/6/96 -04/10/96	22442.90	3720.73	39487.50	65651.13
Eino Vilho	15/6/96 – 31/9/96	22818.50	3865.18	37706.00	64389.68
TOTAL	01/5/96 – 04/10/96	110840.64	30250.02	231566.50	372657.16

(Source: Bicon Namibia, 1994)

[1] At the 1996 exchange rate of IUS$=3.50N$, N$370000 was equivalent to US$105714.30.

(iii) Equipment and tools

Each contractor was provided with a set of basic small tools at no cost, and hired tractors and water trucks from the DOT plant pool. Contractors were charged N$2.00 per day per wheelbarrow hired and N$18.00 per extra mattock or pick handle requested. Table 7.3 below shows the total tractors and water-trucks hours and costs for each contractor, and a summary of basic tools provided is shown in Table 7.4.

Table 7.3: Trial Contracts: Total tractor and water-trucks hours and costs for each contractor.

Contractor	Duration (days)	Tractor Hours	Water-truck Hours	Total Cost (N$)
Oshakati BC	40	1182.92	204.64	79706.09
EH	40	1150.03	223.75	75930.17
Onandjaba	40	863.72	193.92	57265.12
Imbamba	50	812.76	105.90	51022.89
Eino-Vilho	40	509.84	106.00	34767.31
Total		4519.27	834.21	298691.58

(Source: Bicon Namibia, 1994)

Table 7.4: Trial Contracts: Basic tools supplied to contractors

	Oshakati	EH	Onadjaba	Imbamba	Eino Vilho
Mattocks	150	29	80	4	95
Picks	-	123	93	150	85
Shovels	75	75	105	140	110
Spades	75	75	45	10	16
Wheelbarrows*	54	50	35	54	94
Mattock Handles*	10	-	-	-	-
Total	364	352	355	358	400

(Source: Bicon Namibia, 1994)

7.5 Evaluation of Phase I Training Programme

The evaluation of phase 1 training programme is summarized in the following sections. It is based on the project information obtained from various documents, assessments and reports in the course of this study, including the author's own evaluation and analysis.

7.5.1 Analysis of the theoretical training phase

The ILO carried out periodic training reviews. During one such review workshop in March 1996 which was attended by the trainee contractors, DOT, site management, ILO and training consultant, the following shortcomings were identified and analysed.

- Contractors and their supervisors had a limited educational background and generally lacked basic knowledge in numeracy and literacy, the latter mainly regarding reading, writing and speaking English.

- Contractors had not attended all formal training sessions themselves, but had sent their representatives to attend the training.

- Insufficient preparation was made to prepare the contractors to embark on the trial contracts. Consequently, they were not ready to enter into trial contracts.

- The time available for training was not sufficient. Due to the delay in recruiting trainers, the starting date for formal training was moved forward, yet the training phase completion date was left unchanged.

- Equipment and small tools made available to the trainees were not adequate for practical training phases.

To overcome these problems it was decided to subject all trainees to an additional compulsory intensive training session, which specifically addressed the observed training deficiencies. Nevertheless, some trainees did not attend every session.

The performance assessment of trainees for both categories of trainees was undertaken by Bicon Namibia, after the completion of the theoretical training phase. The performance measures for each course subject are shown in the Schedules 7.1-7.4 below for each category subjects.

Schedule 7.1. Category I and II: Introduction and discipline course for contractors

Subject	Performance Measure
1. Basic mathematics and contractor numeracy	• capable of carrying out basic calculations for road works and business management
2. Roads; their purpose, terminology and standards	• aware of the main types of roads in Namibia and use • knowledge of the basic terminology in relation to LBW • knowledge of common engineering rural road standards
3. Appropriate road construction and maintenance technology	• knowledge of choice for road construction and maintenance technology
4. Soil mechanism	• knowledge of the principal soil classifications • knowledge of use of different soils for road works, especially for gravelling • to be capable of interpreting soil and gravel contract specifications • to be capable of carrying out simple file test to select the specified gravel • knowledge of requirements for compaction of material
5. Equipment and tools	• to be aware of the most appropriate equipment and vehicles to be used for l.b. road works • to be capable of planning and organizing for service and maintenance of equipment and vehicles • knowledge of planning and controlling the use of equipment and vehicles • to be aware of the required specifications and numbers of suitable handtools for l.b. road works and how to procure and maintain them
6. Labour-based construction work	• to be capable of planning, implementing and/or controlling these major road construction operations: site organization and support work, construction activities, setting out horizontal and vertical alignment, drainage and erosion control, work productivities, construction of low cost structures and culverts, gravelling activities, site planning and reporting systems
7. Road maintenance	• understand the purpose and needs of road maintenance • knowledge of the basic causes of deterioration of gravel and earth roads • aware of the basic maintenance operations • knowledge of road maintenance priorities • aware of how maintenance requirements are assessed and how maintenance interventions are planned
8. Routine maintenance	• knowledge of basic operational methods of routine maintenance • capable of planning and monitoring routine maintenance • capable of instructing and supervising subordinates • knowledge of routine maintenance operations
9. Introduction to contract management	• capable of establishing productivity rates • knowledge of estimating unit prices for l.b. road work items (introduction)

Schedule 7.2. Category III: Contract and business management course for contractors.

Subject	Performance Measure
1. Managing your finances	• knowledge of controlling costs • knowledge dealing with a variation of contracts • aware of how to deal with the client • capable of measuring completed work • capable of preparing a payment certificate • knowledge of how to approach banks for loans • aware of the legal restrictions and banking laws • able to manage a bank account
2. Introduction to planning techniques	• capable of developing tendering plan
3. Plan contract activities	• able of producing work plans for site operations • able of producing a histogram • capable of monitoring and reporting executed work
4. Estimating, tendering, pricing and bidding	• capable of estimating work quantities • capable of estimating unit rates • capable of preparing a full tender
5. Contract procedures	• knowledge of the tendering • knowledge of contract implementation and measuring • capable of forwarding a bill
6. Contract documents and specifications	• knowledge of contract specifications and details • knowledge of how to impart the specifications to the site staff • knowledge of use of specifications on site
7. Dealing with insurances	• knowledge of which insurances are required for contractors • knowledge of how to deal with insurances companies • to be aware of the limitations of insurances and the laws governing insurances • knowledge of where to get advise about insurance cases
8. Dealing with labour issues	• aware of the governing labour laws • aware of the current labour regulations in Namibia • aware of the role of trade unions and organized labour • aware of the labour security issues

Schedule 7.3: Category IV: Introduction course for site supervisors

Subject	Performance Measure
1. Basic mathematics and contractor numeracy	• capable of carrying out basic calculations for road works and business management
2. Roads; their purpose, terminology and standards	• aware of the main types of roads in Namibia and use • knowledge of the basic terminology in relation to LBW • knowledge of common engineering rural road standards
3. Appropriate road construction and maintenance technology	• knowledge of choice for road construction and maintenance technology
4. Soil mechanism	• knowledge of the principal soil classifications • knowledge of use of different soils for road works, especially for gravelling • capable of interpreting soil and gravel specifications • capable of carrying out simple file test to select the specified gravel • knowledge of requirements for compaction of material
5. Equipment and tools	• aware of the appropriate equipment for l.b. road works • capable of planning and organizing service and maintenance of equipment • knowledge of planning and controlling the use of equipment and vehicles • aware of the specifications and procurement of suitable hand tools for l.b. road works

Schedule 7.4 Category V: Discipline course for site supervisors

Subject	Performance Measure
1. Labour-based construction work	• able of plan, implement and/or control road construction operations
2. Road maintenance	• understand the purpose and needs of road maintenance • knowledge of the basic causes of deterioration of gravel and earth roads • aware of the basic maintenance operations • knowledge of road maintenance priorities • aware of how maintenance requirements are assessed and how maintenance interventions are planned
3. Routine maintenance	• knowledge of basic operational methods of routine maintenance • capable of planning and monitoring routine maintenance • capable of instructing and supervising subordinates • knowledge of routine maintenance operations
4. Introduction to contract management	• capable of establishing productivity rates • knowledge of estimating unit prices for l.b. road work items (introduction)

The overall evaluation of the performance of the trainees in Phase 1 training as performed by the training agent, Bicon Namibia, is shown in Table 7.6 below.

Table 7.6: Performance evaluation of trainees in Phase 1.

Nos.	Trainees	Performance
5	Contractors	Are capable of completing a full labour-based project together with their staff and support.
4	Assistant Contractors	Are capable of carrying out a labour-based project if sufficient mentorship and support is provided.
2	DOT Road Builders	Are capable of carrying out a labour-based contract if sufficient support is provided.
14	Site Supervisors	10 are capable of performing as full site supervisors. 4 are capable to work as assistant site supervisors only.
8	Assistant Site Supervisors	All trainees received intensive training and are now employed by the contractors. Trainees to be further assessed after trial contracts.

(Bicon Namibia, 1996).

In order to analyse and compare performance results obtained by Bicon Namibia among the trainees, scores have been assigned, on a 5-point value scale, to selected performance measures as shown in Table 7.7 below.

Table 7.7: Value scores for phase 1 training programme results

Result	Value Score
1. Understands fully	5
2. Understands	4
3. Capable	3
4. Aware	2
5. Basic understanding	2
6. Limited understanding	1
7. Not fully aware	1
8. Slightly capable	1
9. Is not capable	0
10. Do not understand	0
11. Is not aware	0

The summary of scores using the system above is shown in the following Table 7.8.

Table 7.8: Summary training performance score sheet for trainees in phase 1.

Contractor	Owner Scores	Asst to Owner	Supervisor 1	Supervisor 2	Asst Supervisor 1	Asst Supervisor 2	Total
Oshakati	24	51	14	14	9	9	121
EH	24	27	29	17	9	9	115
Onadjaba	7	54	29	26	9	9	134
Vilho	6	54	23	25	9	9	126
Imbamba	6	52	19	19	9	9	114
DOT			52				

The following conclusions can be drawn from the analysis;

(i) Onadjaba Construction was the best overall trainee, followed by Vilho Construction and Oshakati Building Contractors. Its owner however lacked basic contracting knowledge to a serious extent, and attended less than 50% of the training time and course subjects. The following figures show the overall training performance of contractors (Figure 7.1) and company owners (figure 7.2).

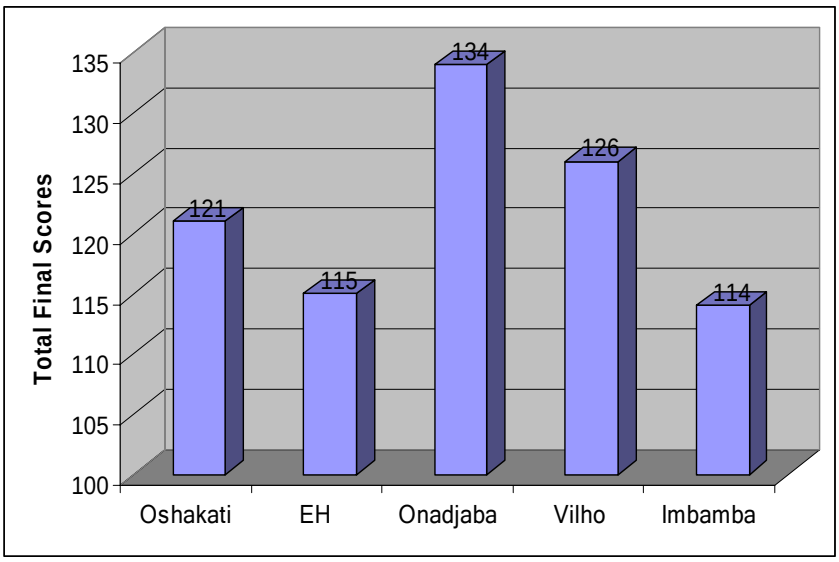

Figure 7.1: Final phase 1 training programme performance by trainee contractors.

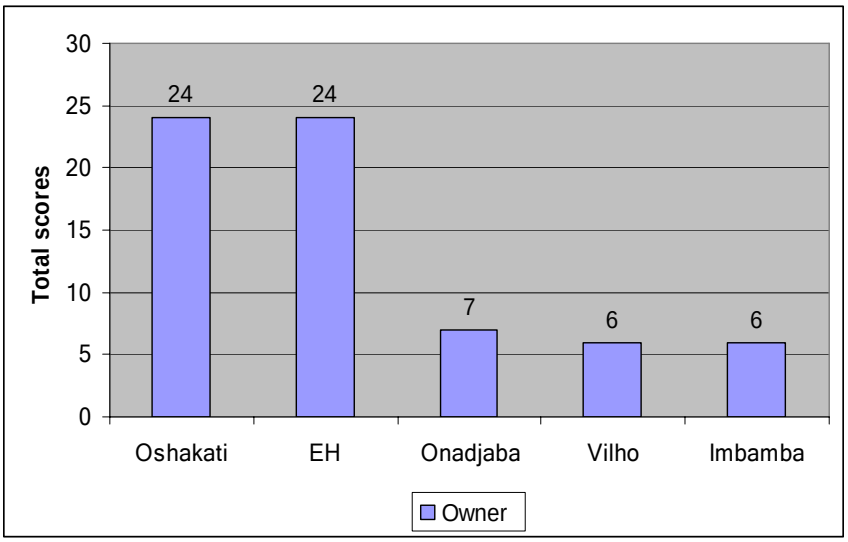

Figure 7.2: The performance of company owners in phase 1 training programme.

(ii) The performance of company owners was lower than their assistants and in some cases lower than their other supervisors. This makes the company owners heavily dependent on their assistants and supervisors who were essentially company employees. The chart below compares the performance.

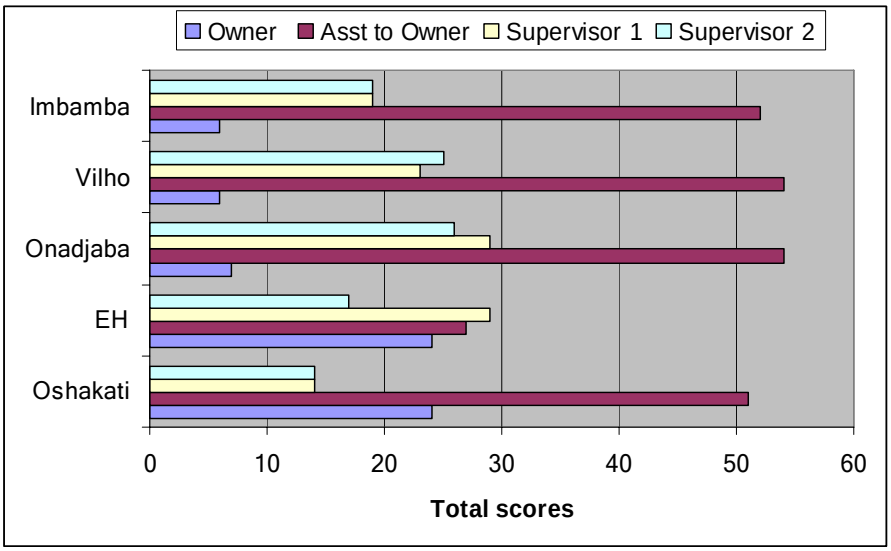

Figure 7.3: Comparison of performance: Company owners' vs supervisors in phase 1.

(iii) The two (2) DOT supervisors performed better than all ten (10) supervisors of private contractors in the training. This is probably because they were generally exposed in roadworks.

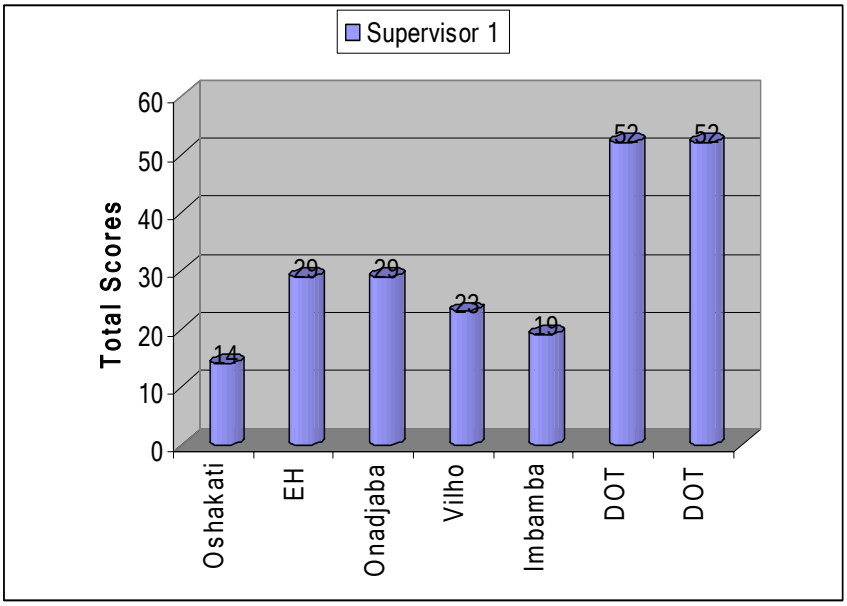

Figure 7.4: Performance of other supervisors: Contractors vs DOT.

7.5.2 Analysis of trial contracts

Except for the data on costs and wages, no other meaningful data was available for the evaluation of productivities, man-days of work and unit costs of construction activities during trial contracts.

Total labour wages paid by Oshakati Building Contractor (OBC) and EH Construction appears to have been higher than those of other contractors. Overall, the total wage bills for OBC and EH were also higher than others. This suggests two things; one is that there could have been a lower incidence of machine utilization by OBC and EH than others, and the second aspect is the possibility that supervision in these two contractors was poor, resulting in higher payments for uncompleted or repeated tasks. Casual labour costs averaged 62% of the total labour costs for all trial contracts. Figure 7.5 shows wages paid by all contractors.

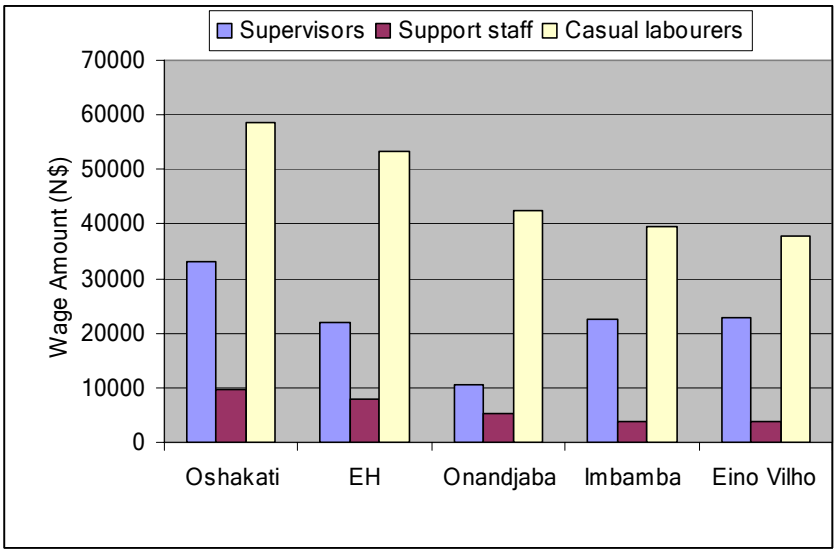

Figure 7.5: Trial Contracts: Wage levels paid to employees

Figure 7.6 below shows the variation of wages for categories of employees for each contractor and the total wage cost per kilometre. The total average unit cost of labour per kilometre achieved was N$67 602.00[2].

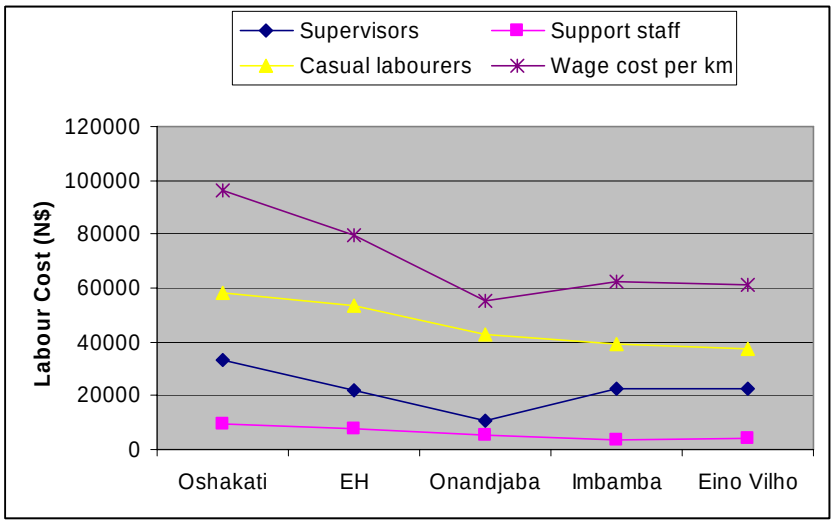

Figure 7.6: Trial Contracts; Wage levels and total unit labour cost.

Machinery used in trial contracts were tractors and water trucks. Equipment was hired wet. Tractors were used for pulling dead weight rollers and trucks hauling compaction water. The total cost of equipment recorded is N$298 691.58 as shown

[2] This was equivalent to US$19315.00 in 1996.

in Table 7.3 above. Figure 7.7 below shows the total equipment costs for contractors. The average machine cost per kilometre was N$56 893.65[3].

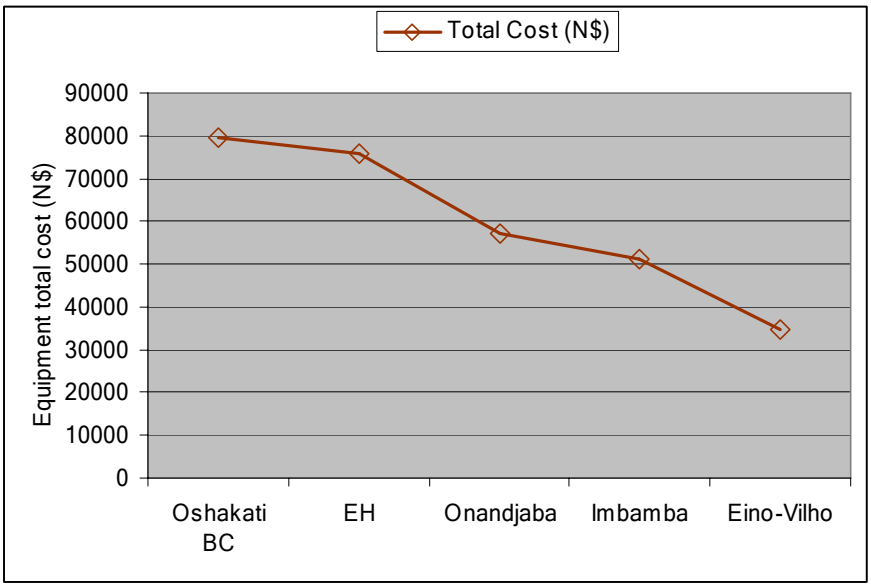

Figure 7.7: Trial contracts: Total equipment costs for contractors.

It is seen from the above figure that OBC utilized more machine hours than other contractors, followed by EH. This also appears to be a case of poor project supervision and site management. Incidences of absence from site for long periods on the part of the company owners are also reported in site minutes. The high level of negligence resulted in higher expenditures. OBC particularly did not make any profit in this contract (Bicon Namibia, 1996(2)).

Additional trial contract costs could not be established. However, since contractors were small, a 20% overhead cost can assumed to cover administrative expenses and the cost of hire of small tools. The total cost per kilometre is then estimated to be around N$150 000.00; i.e. (67602.00 + 56893.65)*1.2. The labour component of the total cost is then about 45%.

Table 7.9 below provides a summary of trial contract details in a tabular form.

[3] This figure was equivalent to US$16255.30 in 1996.

Table 7.9: Trial Contracts: A summary of trial contracts details.

Year	Road No.	Section	Length (km)	Contractor	Consultant	Contract Sum (N$)	Dur (Mth)	Start	Finish	Cost N$/km
1994	DR3608	R&D	12	Bicon Namibia for Training and R&D	Bicon Namibia		16	Apr-92	Aug-95	
1994	DR3608	PT	4	Bicon Namibia for Practical Training	Bicon Namibia		4	Aug-98	Dec-98	
1996	DR3608	1	1.05	Oshakati Building	Bicon Namibia	203 154	5	May-96	Oct-96	193 480
1996	DR3608	2	1.05	EH Construction	Bicon Namibia	209 507	5	May-96	Oct-96	199 530
1996	DR3608	3	1.05	Onandjaba Construction	Bicon Namibia	181 538	5	May-96	Oct-96	172 289
1996	DR3608	4	1.05	Eino Vilho Construction	Bicon Namibia	145 813	5	May-96	Oct-96	138 869
1996	DR3608	5	1.05	Imbamba Construction	Bicon Namibia	168 034	5	May-96	Oct-96	160 323
		Total	21.25			908 046				172 961

(Source: Bicon Namibia, 1994)

7.5.3 Project management and training aspects of Phase 1.

The project management, formal training programme and trial contracts aspects of phase 1 training are discussed below.

(a) Project Management:

i) Management and training agents

- The work produced by the training agents in terms of roads constructed was rated as good. However, with regards to "software" outputs like the development of work methods, preparation of training manuals, planning and reporting procedures, performance was poor (ILO ASIST, Intech Beusch, 2000)

- Contractual correspondence reveals that the contractual obligations between the client (DOT), the training agent (BICON) and the sub-agent (PROMATRA) were insufficiently specified and too loose. This created an atmosphere of uncertainty and creating a room for under-performance.

ii) Capacity in the DOT

Although the GON has expressed commitment to long term labour-intensive infrastructure programme in Namibia, the capacity in public institutions including the DOT, the Roads Authority, local authorities and others for the management of labour-intensive programmes and projects is limited. The same can be said for the private sector.

To a large extent, the capacity of the DOT and consultants to manage and to supervise labour-based works had been increased during the pilot projects. However, DOT (and subsequently the Roads Authority) has not been able to retain this expertise. Six professional engineers, including the national project coordinator, has since left Namibia, the majority leaving in 2004. Considering that capacity in the private sector is also limited, external

expertise and support is again necessary for sustainability and expansion of LBW programmes.

In retrospect, the development of small-scale contractors ought to have been planned to fit into an overall national development programme. This was necessary to ensure that the private sector efficiently performed its supporting role at every milestone of the programme development.

(b) Formal training programme.

i. During the training process, it became apparent that the selected trainees had serious learning limitations, because of their poor educational background and the language barrier. This did not allow most of them to satisfactorily adjust to the required level during the training courses. Consequently, theoretical training had a limited impact on them (ibid).

ii. Although all 5 contractors completed their trial contracts, there were many individual weaknesses. Contractors were not able to operate without their supervisors, not only on site but also in terms of contract management. This meant that if the contractors could not retain their site supervisors then they would not be capable of bidding or undertaking LBW contracts (Bicon, 1996(1)).

iii. It appears that the criteria for the trainee selection process carried out in 1994 did not provide the desired results. The level of competence of the selected trainees was inadequately established or wrongly assessed. No tests to establish the true level of competence of the trainees were carried out by the trainer prior to the training. The training programme was then based on assumptions that did not reflect the trainee's true level of understanding and their real capacity to learn.

iv. Records show that trainees who finally attended the training courses were not necessarily the ones who were originally identified. Some

contractors sent their representatives without them being officially screened, admitted and accepted for the training, while selected company owners hardly ever attended training sessions. Also some of the supervisors who attended the courses were not the same persons who were originally interviewed in 1994. There was no clear training attendance system enforced.

v. The duration of the originally planned training programme was too short and had to be extended by 3 months to accommodate an additional intensive training course. It appears though that even after the additional period, contractors were not fully confident.

vi. The trainer did not prepare a comprehensive training plan at the beginning of the training. This led to an unstructured and confused training program. A training plan developed in haste by the ILO-ASIST to fill the vacuum was late and was not developed with the required care (ibid).

vii. A major problem was that the appointed training agent, Bicon Namibia, had no in-house training capacity and subcontracted the training to PROMATRA. This secondary trainer did not have experience with labour-based road works, and faced problems in adjusting to the specific conditions in Namibia.

(c) Trial Contracts

The analysis of the results of the trial contracts reveals the following, among others;

i. The five contractors who entered the trial contracts stage did not have any equipment required for the construction of roads. They were given the opportunity to hire the required equipment from the DOT pool or from the private market. The hire rates offered by the DOT were significantly lower than the rates which the private market charged, hence all contractors hired

only from the DOT. However, the supply of equipment by the DOT was erratic and unreliable.

ii. The training agent had to fulfil a dual role in the programme, on the one hand as the contract supervisor (representative of the client) and on the other hand as the trainer of the contractors. In such cases, trainees face a problem in identifying the consultant as their true agent and mentor. For the effective provision of mentorship such a dual role creates conflicts.

iii. Cash flow management was one of the major problems among the trainee contractors. Although contractual payments by the client had been reasonably fast, payments of casual labourers were delayed by up to 4 months. According to records, payment certificates were not prepared by the contractors in time. In addition contractors had very limited knowledge of contractual payment and claim procedures, and always waited for assistance from the training agent.

(iv) Project management activities were faced with a number of problems and constraints that hindered the progress of the trial contracts significantly. Among these were problems like;

- a complete technical manual was not ready for use by the contractors during the trial contract period;
- the equipment provided by the DOT was not adequate to source all contractors sufficiently and significant delays were caused due to poor availability;
- contract documentation was considered too complicated and did not adequately consider the limitations of small scale contractors;
- the contractors' awareness of true costs, the right to claim and to handle contract variations was not sufficiently developed by the end of the training period; and
- the mentorship programme to follow after the trial contracts was not timely organized.

7.5.4 Achievements and constraints

The achievements and constraints in phase 1 training programme are summarized in the following schedules (DOT, 1996(1)).

7.5.4.1 Project management

Issues	Achievements	Problems/Constraints
Training Consultant	* overall good result on the ground but ... * gained more exposure in LBW	* incomplete inputs & outputs * contractual obligations and working relations between DoT/Management/Consultant & Subcontractor were too loose * required continuing "external" support
DOT	* demonstrated leadership in lbw in sector and nationally	* very limited personnel capacity * had insufficient staff to monitor work: 5 000 workers +
	* was committed to longer term national labour based programme	* plant/equipment issues * contract procedures (documents, payment) * weak training capacity
Trial contracts	* contractors produced good quality work	* insufficient equipment for all contractors * technical manual produced late * mentorship issue unresolved * construction vs. maintenance focus * short comings in contract documents and procedures * payment system had teething problems * cost effectiveness * trainees poor awareness of costing, "extras" and variations * selection criteria for future trainees needed streamlining

Schedule 7.5: Phase 1 training programme: Project management issues.

7.5.4.2 Formal training

Issues	Achievements	Problems/Constraints
Performance Contractors	* all 5 contractors completed trial contracts, quality achieved was good * 5 contractors trained, 4 performed fairly well or better	* 1 contractor performed poorly * attendance of contractors during course was poor * most contractors performed poorly in: - estimating - planning --> depend on their supervisors * maintenance was not tested as a trial contract ---> performance not known * trial contracts not completed on time * cost overruns involved, but not quantified
Performance Supervisors	* 9 qualified as senior supervisors * 11 qualify as assistant supervisor * skills training was successful	* 2 **not** qualified for snr. supervisors * 4 **not** qualified for asst. supervisors * weak subjects/areas: - planning - payment certificates - technical understanding - mathematics
Identification & Selection	* 6 contactors selected * 26 supervisors selected	* no clear selection procedure was used * no selection tests carried out * limited education background
Training programme (Curricula)	* was kept flexible and based on needs * covered the essential issues	* too short * no time for tender submission & evaluation * started before preparations were carried out * no detailed training needs assessment * training plan was developed too late an not carefully enough
Training aids		* not adequate for adult training
Training material	* basic reference material available	* Namibia specific material not yet fully developed
Dummy contract	* increase of technical skills	* contract documents available but no BoQ, hence no management skills attained
Performance of Training consultant	* finally met formal training objectives	* training consultant (Bicon) had no training experience hence subcontracted * trainer did not easily adjust to Namibian conditions * trainer had no LB road experience

Schedule 7.6: Phase 1 training programme: Formal training issues.

7.5.4.3. Trial contracts

Issues	Achievements	Problems/Constraints
LB Contractors Association	* contractors felt "unified" * contractors became aware of opportunities	* contractors were not registered * strategy details missing
Access to equipment	* work actually done by all contractors	* contractors did not hire from private sector
Equipment usage	* adjustment of equipment charges by DOT	* contractors did not hire from private sector * no work ever done on equipment study
Access to Construction water	* rapid exposure to reality	* contractors believed made to hear burden
Post training support (mentorship) **Comprehension of technical drawings & contracts**	* procedural execution support * work done to good standards	* dual role of consultant * excessive hand-holding of contractors * contractors still depended on mentorship ➢ insufficient funds management & management support ➢ could not yet cost effectively ➢ no real understanding of contract by contractor ➢ no knowledge of contractors cash flow
Contractor's payment obligations	* Government sensitive to needs of small contractors	* insufficient effective interventions * labour not paid on time
Real knowledge of contractors	* caution by DoT & Bicon	* contractors felt underestimated * insufficient info. made available by contractors * insufficient trust by the contractors * availability of required information

Schedule 7.7: Phase 1 training programme: Trial contract issues.

7.5.4.4 Further constraints in phase 1 training.

Progress reports reveal the following further constraints;

i. All parties involved underestimated the amount of work involved in the training programme. For such training to be smooth and successful all training material has to be prepared and agreed upon before training commences.

ii. The time allowed for training was not correctly assessed, and insufficient time was allocated. Sufficient time needs to also be allowed for the tendering and evaluation phase of trial contracts. These aspects were completely overlooked.

iii. The trainer should ideally be present during the trainee selection process and must be familiar with the training material, and the project site. In addition he/she should know the trainees before formal training commences. In the Namibia case, the trainer familiarization time was at the expense of the training time.

iv. The equipment provided by MWTC was not adequate to source all contractors sufficiently, and significant delays were caused due to poor availability.

v. The contract documentation used was considered to be too complicated and did not adequately consider the limitations of small contractors. In addition, the technical manual was not yet ready for use by the time training was completed.

vi. The contractors' awareness of true costs, the right to claim and to handle contract variations was not sufficiently developed by the end of the training.

7.5.4.5. Support to new trained contractors

Of the six original trainees selected, five completed the training. Two were subsequently awarded labour-based roadworks contracts, one as a main contractor and the other as a sub-contractor. Records show that they both failed in their contracts, due to a combination of factors, including indiscipline, and lack of planning and administration skills, despite enormous support and mentorship from the DOT/Roads Authority. The remaining two gained different levels of experience in building works and roads projects, and each has successfully completed a labour-based gravel road project as the main contractor.

In order to support the trained new contractors, tenders for labour-based road works were initially restricted to those contractors who had received formal training. After a while however, it was realized that there was no true competition for the works, and that the unit cost of constructing labour-based roads was rising. The tendering process was then opened for all local small-scale contractors in the market with certain basic requirements. This change saw the emergence of some new contractors in labour-based works. Established medium size conventional contractors also joined the league. In the tenders awarded, some of the new entrants improved and outperformed the trained contractors in terms of quality, cost and general contract management.

The trained contractors are still operating as small scale labour-based contractors, although they show little growth and have capital and capacity problems. No further specific support is provided to them, except for the normal preference given on tenders to all local contractors in the procurement system of the national tender board.

7.6 Phase II: Training of Selected DOT Employees as Small Contractors

Phase II of the training programme started in 1999 aimed at producing more small contractors in labour-based works, including site agents and supervisors. In this phase only trainees from the public sector were admitted. Lessons learned during phase 1 training influenced the formulation, planning and supervision of phase 2.

ILO was again retained by MWTC to oversee the entire training programme. A training consortium, WCE-LSA-HR Consortium, formed by three companies won the training tender. It was required that the training offered by the consortium be accreditable.

7.6.1 Trainee Selection and Training Process

Trainees were selected among the force account teams of DOT and other administrative staff from within the MWTC. Regional engineers and the trainer were involved. Before selection was made, information was disseminated to all road workers of MWTC in the country, and applications were invited from interested and qualifying employees. Grade 8-education level was set as a minimum criterion, together with experience in road works. School certificates were required as proof of the education status. A total of 165 applications were received by MWTC and 65 were selected for training. The selection was also based on the willingness of the employee to be trained and thereafter to become a private contractor, effectively severing public service employment.

Selected trainees were taken though a three-phase training consisting of formal theory, dummy contract and the trial contract. The weighting scale for the three phases was 20%, 30% and 50% respectively (ILO ASIST and Intech Beusch, 2000). A modular career path training system comprising of competence modules in four distinct stages was used for training. This was supplemented with materials covering the specific details of labour-based works technology and operations in Namibia. The whole training consisted of 23 modules. A total of 105 training days were used for the formal theoretical phase (ibid). The theoretical training part was completed in March 2000 after six (6) months, with a 42% pass rate. Thirty five (35) trainees qualified for the dummy contract stage. During the training period, trainees remained in the payroll of the DOT as road maintenance personnel.

The dummy contract was implemented on a 6.5 km long gravel section of a district road DR3614, which was a contract road awarded to the RCC for construction and training. The dummy contract consisted of two parallel practical training components; one for contractors and site agents and other one for site supervisors,

as the two groups were given different training aspects. Site supervisors for example needed to be trained on the day-to-day running of labour-based works construction sites. Where training overlapped, the two groups were combined.

The commercialization of roads in Namibia that took effect at the beginning of April 2000 while training was in progress had a considerable effect on the training process (Mvungi, 2001). Despite assurances from MWTC and DOT, insecurity prevailed in the minds of the trainees as to their future employment status. As a result, after the completion of the theoretical part, many trainees did not come back for practical training. Only twenty one (21) trainees continued with the practical training.

Trial contracts were awarded after the completion of the dummy contracts. Five "companies" were formed for the trial contracts, each one consisting of 1 contract manager, 1 site agent and 3 site supervisors. The "Contractors" were given 2.5 kilometres each on DR3614 to construct. This was the most important training stage with a 50% weighting in the training programme. Trial contracts proceeded for a period of 4 months after the tender period. This period was considered sufficient to enable trainers to test all construction activities on a full representative road section.

Phase 2 training was completed in August 2001, about two (2) years since it was started. Nineteen (19) trainees successfully completed the training. However, only four (4) of these qualified for the small contractors mentorship scheme, and the rest qualified for site agent, road foreman and supervisor positions.

7.6.2. Analysis of Phase II Training Programme

7.6.2.1 The trainer

The decision to appoint a training provider who could offer nationally accredited training in phase 2 training was a correct step to ensure recognition and sustainability of such training in Namibia. Although internal reports show that the

training carried was of good quality, well organized and managed, there were areas of concern.

It was expected that the training consortium had a reasonable experience in similar training of labour-based technology roadworks and the technical know how in relation to road construction. This was not the case. Even after this was realized, there were constraints. As the trainer was sourced through a government tender process; any replacement attempt would have faced lengthy bureaucratic procedures.

7.6.2.2 Selection criteria and procedures:

The trainee selection process for phase 2 training is described in section 7.5.1. Trainees selected were mostly illiterate and had little understanding of the English language. Although applicants had to forward school leaving certificates as a proof of their educational background, it was later realized that a number of trainees had a much lower educational level. Results of the first group of trainees who went through theoretical Training shows that only 3 out of 16 participants had an average pass-mark of 50% for technical competencies (ibid). A further training and support strategy was necessary. Trainee contractors had to be supported by provision of supervisors who are literate and with a better education background. The result of this is that contractors eventually qualified as a team i.e. the company owner and his/her supervisor.

It can be concluded that the selection process used for phase 2 training did not aim at identifying candidates for the three distinct function levels of labour-based roadworks; namely contractors, site agents and site supervisors. This seems to have been as a result of adopting the accredited modular career-path training system, which is based on competency modules. According to this training model, a selection of trainees for the various functions levels could only be done after all trainees had gone through the entire career path of 23 modules. This requirement shows the nature of modular based systems; relatively rigid and do not provide flexibility for the formulation of specific, objective oriented training process. In addition, the chosen approach of training in phase 2 (by sending all candidates

through the entire career path) was eventually used to find out what the potential role and function of each participant could be. It would have been more useful to carry out written tests and interviews with all applicants before admission to the training programme in order to find out who really qualified and had the potential to develop in a particular direction.

7.6.2.3 Training needs assessment (TNA).

A thorough training needs analysis for this type of training is a three-stage analysis consisting of:

- a detailed analysis of the job competencies of the three function levels on which the trainees will have to perform at the end of the training;

- a proper evaluation of the training entry capacity (entry qualification) of the trainees;

- a detailed analysis of the required training needs and content and methodology to bridge the gap between the entry and final competency levels.

The training needs assessment carried out by the trainer was done on the basis of the candidates' information given in the application forms and a training entry test only. According to the trainer's 1st Monthly Report, the trainees were temporarily assigned to the three initial functional positions, pending the completion of the training modules. The results of this approach were unsatisfactory. This assessment was not documented for review and it appears that the MWTC/DOT had no input in its design.

It is considered that the TOR was either not properly understood by the trainer or was not strictly enforced by the client. A comprehensive training need analysis including a selection system and the performance evaluation system was necessary, as the basis to prepare a detailed training plan and curricula. Thereafter, the final formulation and fine-tuning of the training plan together with

the client would have followed. In this way the trainer would have been able to adequately shape the training process during the dummy contract phase.

7.6.2.4 Training plan and programme

A training plan is the basis for a training programme that addresses specific training needs. A training plan is developed after the completion of the training needs assessment. The plan would provide details of the various training events vis a viz objectives, activities, resources required, training programme and important assumptions. However, the methodology submitted by the trainer had no training plan, and apart from a simple bar chart outlining the main training events, no programme was submitted (Ibid).

7.6.2.5 Training material and conduct

The training material for the competency based modular system used by trainer was accredited only provisionally accredited in Namibia, as it was already accredited by the Civil Engineering Industry Training Board (CEITB) and the National Qualification Authority (NQA) in South Africa. In order to address the common shortcoming of accredited materials, the trainer made efforts to enhance the modules with project and job specific material, e.g. use of the typical LBW contract documents, the Namibian Labour Act, standard drawings, etc. This supplementary material was developed together with the participants in the course of the training, and structured in a way that it was relevant to the training required.

Despite of the fact that it was wrong and time wasting to involve trainees in developing training materials, the total amount of material seems to have been at the limit of what trainees could manage to go through in the limited training time.

7.6.2.6 Performance of trainees

The training appears to have been intense and pressurizing to trainers. The theoretical training phase was strained by the amount of material to be absorbed. Module competency tests had to be written almost on a daily basis. In order to

cover all the topics adequately additional classes were organized on weekends. Most of the participants had not been in a classroom for years and found it difficult to adjust to such a tense learning situation. This approach was de-motivating and counter-productive. The performance results of the first group were relatively poor, and this is probably one of the reasons.

The second group of trainees performed slightly better. Some of the reasons for this trend may be that:

- the trainees were more motivated,
- the training had been adjusted to the particular training requirements of the trainees, and
- the second group consisted of more administrative staff who generally have a higher educational background.

Given the above training scenario, it is concluded that;

- It is impossible to develop small contractors if they do not have an appropriate education background.

- The chosen training approach in phase 2 did not fully prepare the trainees for their particular future jobs. Regardless of their educational background, entrepreneurial potential and their ability to develop, all the participants had to go through the full scale of career path training modules. The obvious risk is that some of the trainees "got lost" on the way and, on the other hand, important time which could be utilised to train them for the positions where they actually fit was lost.

- The failure of some of the trainees to make a break in small-scale contracting to-date is related to their lack of awareness of the competitive nature of the industry. Discussion with some participants revealed that their awareness of the potential and risks of entering the private sector was basically non-existent. They were also not made aware of the required competencies, risks, potential and consequences of the three functional

levels of contractor, site agent and site supervisor. This was a serious omission in the training programme.

7.6.2.7 Performance evaluation

In training which involves adults, it is essential that training content, examination procedures, the qualification achieved, and criteria are identified, developed and agreed with all parties concerned prior to the start of the training process. It is absolutely essential that trainees fully understand the system and the consequences in such a training programme. This helps to avoid misunderstandings, to reduce wrong expectations, to justify qualification decisions and to enable those involved to gain an overview of the performance requirements. As such this system forms the backbone of a training programme quality assurance plan. A review of some correspondence and reports in DOT suggests that neither the trainees nor the client was aware of the consequences of the achieved results.

7.6.2.8 Mentorship

One of the lessons learned from the first pilot training programme was the need for a mentorship phase after the training programme ends. The sustainability of small-scale contractors depends to a great deal on an adequate back-up and support for the initial phase of independent contracting. It was essential that a functional long-term mentorship programme was planned and established by the DOT, beginning with a strategy. Engagement of the private sector in this respect was necessary. Although mentorship was considered in the preliminary plan, its achievement was not significant due to capacity limits.

7.6.2.9 Restructuring of the road sector in Namibia

The period of phase II training was also the period of restructuring of the road sector and commercialization of roads in Namibia. The project therefore suffered from lack of focused attention and the uncertainty of the future dispensation in the roads sector, and how labour-based works programmes would be managed. This lack of vision and hope of future opportunities was brought anxiety among trainees.

7.6.2.10 Provision of equipment to trained small contractors

The provision of equipment to trained contractors in Namibia has not been achieved, though mooted at the beginning of the labour-based works programme. Although equipped with knowledge and skills, without any backup equipment support, it extremely difficult for the trained small contractor to execute contracts. In addition it is important for the contractors to own some equipment to satisfy tender conditions normally set up by clients for minimum equipment holding.

Trained small contractors are left with the following options in accessing equipment:

- Hiring from a Government pool
- Hiring from the private sector
- Hire-purchase arrangement
- Direct purchase/sale of equipment.

These options have a number of setbacks. The Government plant and equipment pool no longer exists. There are few private plant hire companies, and mostly hold large and inappropriate equipment for labour-based works. It is also futile to rely on equipment from other contractors. The value of the required basic equipment is beyond the means of the small trained contractors. Loan conditions and terms in commercial banks are also unfavourable to small entrepreneurs. In addition, there is no assurance of a steady workload to manage loan repayments and to get returns on investment.

In order to sustain the small contractors developed and the labour-based works technology programme in Namibia in general, appropriate strategies needs to be developed to address the equipment provision issue.

7 Conclusion

This chapter has discussed in detail the training and development of small-scale labour-based contractors in Namibia. Issues, achievements, problems and constraints have been highlighted and analysed.

The objective of establishing a cadre of domestic small-scale contractors capable of undertaking road construction and maintenance works using labour-based technology methods were met to some extent. In phase 1, 18 candidates were considered and 6 were selected for training as small contractors. Despite performance problems, five (5) small contractors successfully completed the training programme. In phase 2, four (4) contractors were also trained.

The objective of creating capacity within the DOT to plan, manage and supervise LBW roadworks carried out by private contractors was also somehow met. In phase 2, 165 applications from within DOT and MWTC were considered and 65 were admitted for training. Of these 35 qualified for practical training, 21 attended practical training phase and 19 completed training. Of the latter, 4 qualified as small contractors and 15 qualified as supervisors of various categories. The overall pass rate in the phase 2 was a dismal 30%.

Overall 183 trainee candidates were considered, 67 or 37% were selected for training and 24 or 36% completed the training. Nine (9) qualified as small contractors and 15 qualified as supervisors of various categories.

The objective of creating capacity to supervise and implement roadworks contracts through local consultants was not fully achieved. Only one consultant, Bicon Namibia has been intimately and continuously involved in various activities in the LBW programme, including the pilot projects and training of small contractors. The participation of other engineering consulting firms had been limited to particular projects. However this is not considered to be a problem, as consultants can easily adjust to new technology and buy in expertise when needed.

Analysis and a critical evaluation of the small contractors' training process have been undertaken. Evaluation of the important programme training aspects has also been done. It can be concluded that the development of small labour-based contractors in Namibia, considering the time and resources spent on this initiative, was not an entirely successful initiative. More contractors and supervisors could have been developed, if the project was structured and organized in a better way, there was total commitment in the DOT, and the selection and targeting of trainees, including the provision of incentives were reviewed.

The main issues are[4];

(i) Trainee selection process was constrained by absence of trainees with a suitable education background.
(ii) The trainer did not participate in the selection of trainees.
(iii) The training needs assessment was not adequately done to reveal the weakness and needs of trainees.
(iv) Selected company owners hardly attended training sessions.
(v) The training period planned was shortened due to unavailability of trainers on time.
(vi) Trainers were not fully competent in training on labour-based road works, both in theory and practice.
(vii) Training agents did not perform well in the "software outputs".
(viii) The training contract obligations between the parties were seemingly loose.
(ix) Trained contractors had no equipment to rely on for performance of awarded contracts.
(x) The mentorship process was not timely organized.
(xi) The dual role of training agents as trainers and contract supervisors were conflicting.
(xii) Trained contractors had cash management problems in awarded projects and sometimes diverted funds to other ventures.
(xiii) All involved underestimated the amount of work involved in the small contractors training process.
(xiv) The suitability of the training curriculum, materials and conduct raises

[4] These issues are considered to be of equal importance and have not been listed in any order of preference.

questions given the background of trainees.

(xv) Poor training organization resulted in classroom pressure to trainees in phase 2. The majority failed.

(xvi) Restructuring of the DOT and the road sector in Namibia and its timing had a telling effect in the success for the small contractors training programme.

(xvii) The absence of equipment and financing support to developed small contractors renders it very difficult for them to grow beyond sub-contracting level.

In the following chapter, an evaluation of road projects constructed using labour-based works methods in Namibia is undertaken.