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TIM: Infrastructure Sectors Capacity Development

Prepared by the Maunsell Limited in association with
New Zealand Institute of Highway Technology

For the Asian Development Bank

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Asian Development Bank



TA 4609 - TIM Infrastructure Sectors Capacity Development Project Component 2 - Final Report

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Component 2 - Final Report

TA 4609 - TIM

Prepared for

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Executive Summary

Maunsell Ltd in association with the New Zealand Institute of Highway Technology (NZIHT) was awarded a contract by the Asian Development Bank (ADB) for consultancy services for TA No. 4609 – TIM – Infrastructure Sector Capacity Development on 10 March 2006. NZIHT was responsible for the delivery of Component Two of this project, which was the technical training component.

The technical training contained in Component Two of TA 4609 – TIM was aimed specifically at the road sector with the objective of improving local capacity for the long term design, construction and maintenance of the road network in the Democratic Republic of Timor Leste. The principal capacity building to be provided under this component of the TA was a series of targeted short term classroom training courses.

An inception visit to Timor Leste was planned to take place in May 2006 prior to the commencement of training under Component Two. The team to carry out the Training Needs Analysis consisted of the Team Leader/Training Specialist No. 1, Dr Willie Vance and Road Training Specialist No. 2, Mr Ian Anderson. Due to the onset of the civil unrest in Timor Leste in 2006 this inception visit only took place in July 2007. The Team met with the Ministry of Public Works (MPW) and other key stakeholders to discuss the structure and proposed methodology to deliver the required training. As a result of this inception visit NZIHT prepared a Training Plan which was submitted to the Asian Development Bank (ADB) by Maunsell Ltd in August 2007 and was subsequently approved by the ADB the same month.

The approved Training Programme consisted of eight modules of classroom training each of two weeks duration, and was delivered over a period of just less than twelve months with the first module commencing on 24 September 2007 and the eighth module being complete on 29 August 2008.

We have pleasure in presenting our Final Report covering the complete training programme for TA No.4609-TIM – Component Two.

1.0 Introduction

The Training Programme consisted of eight training modules, each of two weeks or ten working days, duration. The training was initially delivered at the University premises in Dili, but after four training modules was transferred to the St Paul II Training Centre, Comora, just outside Dili.

The Training Programme was structured to provide four modules of training on all technical aspects of road design, construction and maintenance. These modules also consisted of topics on soils, aggregates, testing, safety and quality. The remaining four modules covered contract management, administration, leadership and self-improvement.

The programme commenced in September 2007 and was complete at the end of August 2008.

2.0 Details of the Training Programme

Details of the content of each training module together with the delivery dates are set out in the Training Programme attached as Appendix A.

3.0 Training Structure

3.1 Commencement

Training Specialist No. 2, Ian Anderson, arrived in Dili and commenced the presentation of Module 1 on 24 September 2007, as scheduled. Thereafter there was normally a three-week break for the students between modules, except in two cases when Module 2 was postponed due to the occurrence of public holidays within the module period, and an extended break over the Christmas and New Year period. Module 2 was postponed from October 2007 to July 2008.

3.2 Completion

The eighth and final module was complete on 29 August 2008.

3.3 Modules Presented

Module No.	Description	Delivery Date	Lecturer	Venue
1	Road Design and Drainage	24 September – 5 October 2007	Ian Anderson	UNTL University
3	Soils, Aggregates and Testing	3 – 14 December 2007	Ian Anderson	UNTL University
4	Management, Leadership and Self-Improvement	28 January – 8 February 2008	Bruce Thomson	UNTL University
5	Road Construction and Maintenance	3 – 14 March 2008	Ian Anderson	UNTL University
6	Contract Administration	7 – 18 April 2008	Willie Vance	St Paul II Training Centre
7	Safety and Quality	12 – 23 May 2008	Ian Anderson	St Paul II Training Centre
2	The Contracting Process (Postponed from October 2007 to July 2008)	14 – 25 July 2008	Willie Vance	St Paul II Training Centre
8	Contract Management	18 – 29 August 2008	Mike Kier	St Paul II Training Centre

3.4 Module Presentation

All modules were presented in essentially lecture form with the use of PowerPoint and overheads. The Lecturers continuously engaged the participants with questions and discussions in order to gauge their understanding of the subjects and to encourage participation. In the case of the Leadership and Self Improvement module, this was presented using a combination of tutorials, group discussion relating to local conditions, games that reinforced leadership and management, and the sharing of personal experiences. All modules utilised DVDs where appropriate.

3.5 Translation

All material was presented in English with translation being provided as follows :

Modules 1 and 3 – Interpreter Abel De Silva

Modules 2, 4, 5, 6, 7 and 8 – Interpreter Jose Ximenes.

All Lecturers appreciated the assistance and co-operation of both interpreters, with the translation and all aspects of communication.

Initially, for the first three modules the course materials were copied and bound into course books in Dili. This, however, proved to be expensive and in order to save costs NZIHT copied and bound all course material for the remaining five modules in New Zealand and the course material was taken to Timor Leste by the Lecturer.

4.0 Participants

4.1 Participant's Backgrounds

The original concept of the training project was to train Timorese with five years experience and technical qualifications in the areas of road project design, quantification, costing, contract packaging, quality control, construction supervision and contract management. However this did not materialise and the academic standard of the participants was lower than anticipated.

NZIHT was led to believe during the inception visit that the training was to be directed at technicians with practical experience, technical qualifications and construction design/supervision experience. This did not eventuate, with the majority of delegates on the training modules coming from the Material Testing Laboratory, who had little or no practical experience and whose normal employment was not on a construction site. The impact of this on training effectiveness will be discussed later in this report under Section 6.

In general the average class attendance was sixteen (16) and of these the general breakdown of attendees was ten from the Material Testing Laboratory, two supervisors, three assistant supervisors and one surveyor. Whilst the enthusiasm of the students to participate and learn was very evident on each module, the lack of mathematical expertise and construction knowledge in nearly all of the students was a distinct disadvantage.

During the inception visit to Timor Lesté which took place in July 2007 it was proposed by the Ministry of Public Works (MPW) that the private sector should be involved and that a number of delegates from the private sector would attend the training modules. Again this did not eventuate and there was only a maximum of two delegates from the private sector who only attended one or two days during Module No. 1 and did not return to any subsequent training modules. NZIHT is unaware of the reason for the lack of interest to obtain training by the private sector, but it is reasonable to assume that there was insufficient pressure from the MPW (who is the Client of the private sector) to attend and participate in the training being provided. A suggestion how the private sector could be involved in meaningful training in the construction industry will be put forward under Section 9.0 – Future Training Initiatives.

4.2 Attendance

The attendance register for all eight modules is attached as Appendix B.

A total of 62 students attended the training programme albeit some of them attended only one day. Of the 62 students 33 (53%) attended only one module. These students are identified in the top two blocks of Appendix B.

If 'attendance' is defined as a student attending a minimum of 50% of the course days for any individual module, then the average attendance over the eight modules was 16 students per module.

This varied from a high of 20 students on Module 2 to 13 students on Module 1. On the basis of defining attendance as set out above, the attendance on each of the modules was as follows:

- Module 1 13
- Module 3 17
- Module 4 16
- Module 5 17
- Module 6 18
- Module 7 13
- Module 2 20
- Module 8 16.
- Average attendance over eight modules was 16.

With an average attendance of 16 students per module this confirms that only approximately 25% of the students attended at any one time. There appears to be no consistency or pattern as to which modules had better attendance than others. Modules 2 and 6 attracted the highest number of students and Modules 1 and 7 the lowest.

Approximately 70% of delegates on all of the modules worked at the Material Testing Laboratory.

From this summary of attendance, it can be seen that the attendance over the first four modules was extremely sporadic, in that students came and left the courses indiscriminately. For the last four modules from Module 6 onwards the attendance was much more stable, with more or less the same students attending each successive module. The following is evident from the attendance register :

- Of the total of sixty two (62) students who attended some training, fourteen (14) failed to attend at least 50% of the course days on any single module to qualify for an 'attendance' certificate.
- Seven (7) students attended four or less days (out of ten) on Module 1 and never returned to any subsequent modules. Of these five (5) students attended the first day of Module 1 and never returned to the training programme.
- One (1) student attended Module 1 only, three (3) students attended Module 3 only, six (6) students attended Module 4 only, three (3) students attended Module 5 only, three (3) students attended Module 6 only and three (3) students attended Module 2 only and did not attend any other modules.
- Only one (1) student qualified for an attendance certificate on all eight (8) modules.
- Over 50% of the students on the attached register attended one module or less.

5.0 The Venue

The use of the seminar room at the UNTL University initially appeared satisfactory. However, as the programme progressed problems started to appear.

5.1 Facilities

On several occasions the University took back the venue for more important functions. Generally one to two days advance notice was given, together with an alternate venue in close proximity. However, on one occasion there was less than one hour's notice for the required shift.

5.2 Air Conditioning

The lack of air conditioning in the venue meant that windows needed to remain open. The noise of traffic on the nearby busy street proved disruptive. This was a factor that was not fully appreciated when the venue was initially viewed and booked.

5.3 Catering

The catering was arranged by the Faculty of Education (which was responsible for the venue). The catering was excellent although one or two participants suggested more variety in the morning and afternoon snacks. The costs initially appeared reasonable but by the end of Module 4 it became apparent that the price had escalated and was now quite excessive. Uncertainty with the number of attendees made catering difficult, but this was not an excuse in later Modules. The basis for charging was questioned at Dean level but no change was effected.

5.4 Photocopying

The use of the University Publications Centre initially appeared satisfactory for copying, printing and binding. However, in a manner similar to the catering, the cost of printing escalated to unacceptable levels. At one stage (Module 3) we were being charged \$0.70US per page. This was queried, but no refund could be negotiated. For later Modules we photocopied the training material in New Zealand and carried them to Dili. Any additional photocopying was done at a copy centre in the business district of Dili.

5.5 Alternative Venue

A new venue was identified and used for the last four (4) modules. This was the St Paul II Training Centre at Comoro (not far from the airport). This venue is fully equipped and is situated in a very peaceful and quiet area. Despite the lack of air conditioning there are plenty of opening windows and the lack of external noise proved beneficial to the completion of the programme.

5.5.1 Catering

The St Paul II Training Centre which is part of a Convent, supplied catering in a separate dining area and at completely realistic rates.

5.5.2 Location

The location of the venue, being out of town, removes the temptation for staff to 'drop into' the office for a short time.'

5.5.3 Copying Facilities

Copying facilities were sourced from a commercial Xerox facility in the business district of Dili. The rate charged per copy was 5 cents.

6.0 Course Content and Training Effectiveness

6.1 Course Content

The course content for each individual module was developed and prepared by the Module Presenter and covered all the topics set out in the Training Plan. As each course module was scheduled to be delivered over ten working days, it was necessary to assemble a considerable amount of material on the subject matter of each module. The subject material was drawn from a wide variety of existing NZIHT courses which are delivered in New Zealand through short courses to the civil engineering industry and specifically the highway industry. This material was specifically adapted for delivery in Timor Leste. The course material delivered in the Contract Management and Administration modules was derived from the Project Management and Contract Management courses delivered through the NZIHT Diploma in Highway Engineering and the Bachelor of Engineering Technology (Highways) programmes.

The course books were printed in English and the modules delivered in English through a local Timorese interpreter.

At the end of each module the students were given the opportunity to discuss the module with the Lecturer and to obtain further explanation and knowledge concerning any aspect of the module which had just been presented. These sessions normally consisted of the last half day of the module and it was evident from the questions and discussions that the students had obtained a certain degree of knowledge, but in order to cement and improve on this knowledge, it is essential that further training takes place in the foreseeable future. This issue will be addressed later in this report under Section 9.0 – Future Training Initiatives.

6.2 Training Effectiveness

As stated previously a question and answer session was held on the final day of each module with the whole group. This session was intended to ensure that key points covered in each of the training modules had been correctly absorbed. It was evident that in the majority of topics covered in each module there appeared to be a reasonably good grasp of their significance and relevance to the workplace. There were some misconceptions revealed and the opportunity was taken to re-address those issues so that the students left each module with the best possible opportunity of receiving correct and accurate information.

It must be stated that the effectiveness of the training was difficult to gauge due to the language difficulties. In many instances the students were reluctant to inform the Lecturer that they did not understand. In many instances it was also necessary to ensure that the Interpreter had a proper grasp of the subject under discussion in order to convey the relevant information to the student.

The training content and effectiveness can be summarised as follows:

6.2.1 Road Design and Drainage – Module 1

The detailed content of this Module is set out in Appendix A.

This course contained the basic elements of road design with a special emphasis on the role of drainage and maintaining the road in good condition. In discussion with the students it was evident that this module gave the students an awareness of how important drainage was in the maintenance of roads. The students requested site visits, and this was arranged in subsequent modules.

Attendance on Module 1 was very sporadic with only 13 students attending on a regular basis. As 80% of the regular attendees were from the Testing Laboratory this training was not part of their everyday job responsibilities. Our impression was that this training module was not very effective as both the students and the interpreter were settling in.

6.2.2 Soils, Aggregates and Testing – Module 3

The detailed content of this module is set out in Appendix A.

In addition to the content in Appendix A the Lecturer also devoted some time to the subject of stabilisation. In addition there were three practical sessions in the Public Works Laboratory with hands-on participation. This module was received well by the students as the great majority of the students actually worked in the Testing Laboratory, and was useful to them in their everyday workplace.

6.2.3 Management, Leadership and Self Improvement – Module 4

The detailed content of this module is set out in Appendix A.

The students believed that this workshop was important because it assisted them to learn to develop themselves as effective leaders and managers in the workplace now and in the future. They concluded that the presentation was good and should be continued in the future. It was interesting to note that the students believed that their actual leaders/seniors at work should attend this type of training to improve their leadership performance in their respective work places.

6.2.4 Road Construction and Maintenance – Module 5

The detailed content of this module is set out in Appendix A.

Attendance had now stabilised at around 16 students with approximately 13 students attending every day. As requested in Module 1, a site visit was arranged to a highway project towards the end of the training module. During this site visit, the Lecturer took a series of digital photographs and used these photographs as the basis for classroom discussion after the site visit. During this module, the Lecturer also re-visited the topics covered in Module 1 and Module 3 and thus it was now evident that the students were beginning to grasp the fundamentals of road design, construction and maintenance. As a result of this grasp of the fundamentals, it was evident that the training was now becoming more effective.

6.2.5 Contract Administration – Module 6

The content of this module is set out in Appendix A.

This module was held at the new training venue at St Paul II Convent at Comoro, Dili.

There was an average attendance of 18 students on this module, which was better than previous modules, but only comprised of 5 site personnel, being 2 supervisors and 3 assistant supervisors. It must be concluded that this training was not effective initially as the students attending this training module had absolutely no experience of contracts and the principles of profit and loss. The students received the content of the module very well, but it was evident that this was new 'territory' for these students and it would take further training in this area to make it more effective.

6.2.6 Safety and Quality – Module 7

The detailed content of this module is as set out in Appendix A.

This was the final module presented under the Technical Programme concerning the design, construction and maintenance of roads. The emphasis on this module was on safety and quality on construction sites. The Lecturer took this opportunity to not only discuss the aspects of safety and quality but also to review some of the technical issues raised in the other three technical modules. The comment from the students was that more senior staff should be attending the training modules as it was difficult for this group to convince their seniors where changes should be made. There was also a request to relate the actual construction work to laboratory testing, which is understandable considering the great majority of the students came from the Materials Laboratory. There was also a request that the final two modules should continue to be on contract management and administration.

After a slow start and sporadic attendance on the first three modules, the Lecturer on the technical aspects was of the opinion that the training had been well received and that the students now had a basic concept of how to design, construct and maintain roads, even though this was not part of their daily occupation.

6.2.7 The Contracting Process – Module 2

The detailed content of this module is set out in Appendix A.

This module was the best attended module of the training programme with 20 students being present on a regular basis. We can only conclude that the students having had an introduction to contract administration and management in Module 6 were keen to continue this training and to obtain as much knowledge as possible concerning the contracting process. As it was the same Lecturer who delivered Module 6 earlier he was able to re-visit basic principles from Module 6 and introduce in detail the tendering process. The students had no knowledge of how the tender process was carried out and the contractual obligations. On completion of the module, the students had a good grasp of the concept of profit and loss and how a tender was structured and the principle of going out to public tender in order to obtain a competitive price. While not completely comfortable with the contracting process, it was evident that the students had absorbed some basic concepts and understood the general process.

6.2.8 Contract Management – Module 8

The detailed content of this module is contained in Appendix A.

The final module of the three Contract Management and Administration modules was delivered by a different Lecturer from the other two and attracted an average of 14 – 16 students per day. Again the majority of these students being the employees at the Material Testing Laboratory. There was no attendance from the private sector on any of the three contract management modules or on the leadership module. NZIHT believes that this is as a result of insufficient pressure being exerted by the Client (PMW) to ensure the attendance of the private sector.

This training module contained a review of fundamentals covered in the previous two Contract Administration modules and also introduced the new concepts of specification and schedule of basis of payment on civil engineering contracts. The Lecturer reported that the response from the students indicated that they had a good grounding in general contract management in terms of conditions of contract, contractor's role, administration roles, budgeting and programming.

7.0 Site Visits / Practical Instruction

On several occasions during the programme participants asked if there could be some practical or on-site presentations. On two occasions during Module 3 the group was taken to the Engineering Laboratory where they were able to examine various construction materials and also to witness a variety of test procedures. Being able to get 'hands on' experience for the examples that had been discussed in the lecture room was appreciated.

During Module 5 a site visit was arranged and the group was taken to a recently completed major highway construction. The site was located approximately 8km East of Dili on the main road to Baucau. There a 150m length of highway had been fully reconstructed, including an asphaltic concrete surfacing.

The group was able to view various aspects of construction and the quality of the material being used together with the adjoining river training activities. The group was then taken to the source of the sub-basecourse (in the river bed upstream of the site). On the return journey stops were made at several places where problems were evident. Throughout this site visit the Lecturer was able to take a number of digital photographs which then provided the basis for group discussion back in the lecture room.

To supplement coverage of aspects of maintenance, a series of digital photos were taken of roads around Dili by the Lecturer over a weekend and when projected through laptop and data projector provided 'real life' examples, resulting in animated discussions.

During Module 8 the students were taken on a site visit which included the Testing Laboratory, a construction site and to monitor some maintenance issues around Dili. The maintenance issues on

existing Dili roads were discussed back in the classroom, especially items such as drainage and pot holes. A general discussion took place around the area of preventive maintenance and it was emphasised to the students who understood that in addition to repairing and maintaining a road it was also essential to address the drainage as water was the prime cause of pavement failures.

8.0 Areas Requiring Attention by Others

8.1 Certificate of Completion

NZIHT has made a proposal to the ADB that a 'Completion' Certificate should be issued to any student for a specific module provided that student has attended at least 50% of the course days for that module.

8.2 Heavy Vehicle Loadings

During Module 1, when discussing pavement design, it appeared that Timor Leste does not have any legislation governing heavy vehicle axle loadings. This perception was reinforced when port activities were viewed. The majority of trucks leaving the port with inbound goods would, by New Zealand standards, be grossly overloaded. This situation will be adding significantly to damage the highway system, but could have disastrous results on structures such as the bridge over the Comora River.

8.3 Maintenance

During Module 5 the perception of most participants was that there was no existing policy for maintenance of the highway system. Some benefits of maintenance management were stressed during the Module as follows:

- Preservation of the highway assets by controlling live loads.
- Prevention of pollution and damage to the freshwater and ocean environments.
- A proper maintenance schedule/programme to carry out maintenance in time to prevent deterioration of the road system.

It is understood that maintenance programming is scheduled in other Technical Assistance Projects.

8.4 Standard Documentation

During the contract management modules, it was often stated that Timor Leste should develop its own Specifications and General Conditions of Contract. This would ensure consistency in the administration and management of maintenance and physical works contracts.

9.0 Future Training Initiatives

As with all training programmes, it is essential that suitable training should continue and preferably within a reasonably short period of time. Although this is widely acknowledged as being essential, it

very seldom happens. It is also preferable to have consistency of training so that any further training follows on from that which has been delivered previously.

The students discussed other effective measures to enable further capacity building within the infrastructure sector. It was suggested by the Lecturer that a practical model may be that the Client (MPW) should design and award reasonably large contracts in monetary terms for roading projects in order to attract interest from the international sector. This will bring large international contractors to Timor Lesté in order to carry out these contracts. It should be a condition of these contracts that a portion of the work (up to say 50%) should be sub-contracted to the private sector from Timor Lesté. The subcontractors will have to be managed and administered by the main contractor. In addition to employing the local contractors, there must also be a condition of the contract that a certain percentage of the contract value must be spent on training initiatives in order to upskill and enhance the technical qualifications of the local contractors. This type of contract will serve several purposes concerning the delivery of more effective training and capacity development for the infrastructure sectors as follows :

- The experienced international contractor acting as the main contractor will employ and train a number of MPW employees who will assist the Main Contractor in supervising the contracts.
- The local contractors will be employed on a contract basis to carry out a proportion of the main contract on a sub-contract basis. This will teach the local contractors construction skills.
- There will be funds available in the main contract in order to carry out ongoing training for both the supervisors from the MPW and for the local contractors to upskill them in the tendering and contracting process.
- If well managed this is a quick and efficient way to upskill local supervisors and contractors.

This model of training has worked successfully in other countries.

The students were enthusiastic about this concept and they expressed a willingness to be involved as they perceived they could obtain supervisor and contracting skills relatively quickly from experienced contractors.

There is no doubt that the students who attended this training would welcome further training, and we set out hereunder some aspects of this future training which have been conveyed to us by the participants.

- The general consensus was that a two-week training module is the most optimum duration.
- Future training should involve more practical applications and more time spent on construction sites. This requires considerable planning and organisation to ensure that the sites are chosen properly and the Client/Consultant/Contractor is involved in any site visit.

- The students expressed a wish for the training material to be in Tetum, but the two main drawbacks, are the cost of translation and the ability to translate the technical material.
- On discussing future training with the students, the following topics were suggested :
 - Survey and set out. A practical course to teach the students how to use survey instruments and set out construction projects.
 - A practical course on how to use the equipment presently available in the Materials Testing Laboratory. The Laboratory has a wide range of sophisticated equipment some of which has not yet been used, and the employees within the Laboratory have not been trained in its use nor have any knowledge of when or how it should be used.
 - Development of English language skills in order to implement more sophisticated management systems.
 - More leadership, management and time management training for the higher level supervisors/managers in order to implement new and change current systems.
 - More training on teamwork, motivation and communication.
 - Additional and a higher level of technical training regarding all aspects of road design, construction and maintenance.
 - Computer training

We would also recommend that a better selection procedure take place to decide which students should attend the different training courses. These selection procedures should categorise the potential students into groups relating to the following:

- Group the students in accordance with their level of existing qualifications.
- Group the students in accordance with their level of existing work experience.
- Group the students in accordance with their existing areas of employment. In other words, the groups could be laboratory employees, design technicians, supervisory roles, surveyors, etc.

The training material could then be structured to accommodate both the experience and level of qualifications of students in order to place them in the same training group.

Although not as economically viable, it is much more productive to lecture to smaller classes containing students with a similar standard of academic ability and interested in obtaining the same knowledge.

It is recommended that in any future training initiatives that a Training Manager/Supervisor should be appointed by the Client – in this case the MPW. This person will be responsible to ensure regular attendance at training and also to interview the students on a regular basis, in their own language, as to the effectiveness of the training from their point of view and how it can be improved.

NZIHT is of the opinion that training should not 'attract' participants but the training topics should be decided by the Employer on the basis of the training needs of its employees. The input of the student is essential in determining the effectiveness of training and this is often not forthcoming between the students and the Lecturer.

It would be beneficial to organise a secondment for one or two of the best students within the New Zealand Transport Agency (NZTA) and/or a large maintenance contractor for three to six months to learn hands-on asset management, inventory highway inspection programmes, etc. Initial discussions with NZTA (formerly Transit NZ) indicate that this could be possible.

NZIHT is prepared to discuss any of the above issues with officials from the Asian Development Bank or the Ministry of Infrastructure as and when required.

10.0 Conclusion

It is acknowledged that the completion of this Training Programme took an additional twelve months over that which was anticipated at the time of the award of the contract. It is also acknowledged that there were some 'teething' problems in the initial modules, but these were resolved quickly. It is pleasing to note that the Training Programme was delivered in accordance with the Training Plan, with the exception of the postponement of Module 2 from October 2007 to July 2008, which was outside the control of all parties.

Overall NZIHT considers the Training Programme to have been a success, and we have no doubt that the students who attended the bulk of the programme have benefited in technical and managerial knowledge, which will be useful in their everyday activities in the workplace.

NZIHT is of the opinion that there is a great need for further training both at the level of the participants in this training programme and at a higher level. NZIHT has made some recommendations in Section 10.0 – Future Training Initiatives.

A matter of concern throughout the programme was the lack of discipline surrounding attendance at the training. As stated in Section 4.0, over 50% of the students (33 out of 62) attended only one module or less. The attendance of the remaining students was also very sporadic. It is strongly recommended that in future programmes a Training Manager is appointed who can monitor attendance and also extract from the students the suitability and quality of the training being provided.

An issue which NZIHT is of the opinion should be addressed is that of resourcing suitable staff, especially in the regions. NZIHT believes that this resource is inadequate for developing a useful inventory of highway assets and maintaining this inventory. Whatever resource is provided needs to be backed up with practical servicing and support. It appears to NZIHT as an outsider to the process

that the present system appears inadequate. This is an area where some technical advice could go a long way.

An option for facilitating the above is to bring in experienced resource from outside Timor Leste to assist with this process. This could be achieved over time if funding structures can be established.

NZIHT found the Training Programme interesting to present, and this was greatly assisted by the willingness of the students to learn. There were some attendees present on the Training Programme who have potential if given the right support.

11.0 Acknowledgements

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- The Department of Infrastructure for assisting with the initial Training Needs Analysis and support during the delivery of all eight modules.
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- The staff of the UNTL University for the facilities for the first four training modules.
- The staff of the St Paul II Training Centre for the facilities for the final four training modules.
- The interpreters, Mr Abel De Silva and Mr Jose Ximenes, for their interpretation skills and their support in many other practical aspects required for the successful delivery of the Training Programme.

Appendix A Training Programme

Appendix A Training Programme

MODULE 1 – ROAD DESIGN AND DRAINAGE

Tutor : Ian Anderson

Course Dates : 24 September – 5 October 2007.

Basic pavement design	Effect of water on :
Sub-base quality	▪ Pavement subgrade
Effect of various layers	▪ Within the pavement
Material quality	▪ Pavement surface
Improve material quality	▪ Road surroundings
Basic wearing surface technology	Basic drainage design
Vehicle capacity	▪ Urban
Load carrying capacity	▪ Rural
Modes of road failure	Subsurface water
Geometric design	Drainage of adjoining areas
Design drawings.	Environmental problems and solutions.

MODULE 2 – THE CONTRACTING PROCESS

Tutor : Willie Vance

Course Dates : 14 July – 25 July 2008 (postponed from October 2007).

Definition of a contract	Tender planning – Client/Engineer
Parties to the contract	Tendering process
Contract General Conditions – FIDIC	Tender documents
Special conditions of contract	Circulation of unit rates for labour, plant and materials
Role of Client and Engineer	Sub-contractors
Role of Contractor	Schedule of quantities
Completion of the contract	Tender evaluation
▪ Practical completion	Tender award.
▪ Defects liability period	
▪ Final certificate.	

MODULE 3 – SOILS, AGGREGATES AND TESTING

Tutor : Ian Anderson

Course Dates : 3 December – 14 December 2007.

Aggregate characteristics

The effect of clay minerals

Clay index

Rock strength

Durability

Strength evaluation

Selecting pavement aggregates

- Low load pavement
- Medium load pavement
- High load pavement
- Control of water.

Quality control

Sampling aggregates

Testing aggregates

Compaction

- Relative compaction
- Specified compaction
- Policy for compaction
- Compaction practice

Soils

- How does soil perform
- Measurement of soil properties
- Measurement of soil strength
- Slope stability.

Practical exercises on site and in the laboratory.

MODULE 4 – MANAGEMENT, LEADERSHIP AND SELF IMPROVEMENT

Tutor : Bruce Thomson

Course Dates : 28 January – 8 February 2008.

Improving performance

Learning

Communication

Expectations of people

The Leader/Manager concept

Delegation

Problem solving and decision making.

Building and maintaining teams

Motivation

Conflict management

Time management

Achieving your goals

Setting and reviewing targets

The theory and practice of leadership.

MODULE 5 – ROAD CONSTRUCTION AND MAINTENANCE

Tutor : Ian Anderson

Course Dates : 3 March – 14 March 2008.

Sub-grade preparation

- Excavation
- Suitability of sub-grade
- Sub-grade improvement

Underground services

Sub-base materials

Base course materials

Preparation for seal

Slopes and gradients.

Road maintenance strategy

Testing of prepared surface prior to sealing

Seal coat options

Stabilisation

Pothole repairs

Edge break

Flushing

Rutting.

MODULE 6 – CONTRACT ADMINISTRATION

Tutor : Willie Vance

Course Dates : 7 April – 18 April 2008.

Contract award

Construction programme

Role of Client/Engineer

Variations

- Difference between an instruction and a variation
- What is a variation ?
- How to issue a variation
- How to value a variation

Schedule of quantities

Increased quantities

Specifications

Site meetings.

Extension of time

- When is an extension of time justified ?
- Programme critical path
- Implications of an extension of time
- Cost of an extension of time

Disputes

Termination of a contract

Payment certificates

Daily records

Tender and construction drawings.

MODULE 7 – SAFETY AND QUALITY

Tutor : Ian Anderson

Course Dates : 12 May – 23 May 2008.

Safety	Quality
<ul style="list-style-type: none">▪ Safe handling of bitumen▪ Site safety plans▪ Responsibility of sub-contractors▪ Hazard identification▪ Protective equipment▪ Road signs▪ Safe use of electrical equipment▪ On-site communications.	<ul style="list-style-type: none">▪ Develop a quality system▪ Training▪ Record keeping▪ Quality records▪ Quality audits▪ Testing for quality
	Survey and set out
	Standard forms.

MODULE 8 – CONTRACT MANAGEMENT

Tutor : Mike Keir

Course Dates : 18 August – 29 August 2008.

Contractor's organisational plans	Managing a business
<ul style="list-style-type: none">▪ Key personnel▪ Construction programme▪ Plant and equipment▪ Drawings/records▪ Plant rates▪ Productivity▪ Cash flow▪ Breakdowns on site▪ Site records and costing▪ Weather▪ Vision and targets▪ Sub-contracting.	<ul style="list-style-type: none">▪ Management plan▪ Supervisor's role▪ Characteristics of good Supervisors▪ Key factors for team success▪ Profit and loss▪ Balance sheet▪ Conducting effective meetings▪ Interim and final payments.

Notes :

1. The Management Training Tutor is Bruce Thomson who is the NZIHT Specialist Tutor in this subject. His CV is attached as Annexure B.
2. If all topics cannot be covered during the course of a module, then it may be carried over to subsequent modules.
3. The course content as set out above may be changed/alterd as a result of experience in presenting previous modules or at the request of the Client.
4. The programme showing the proposed delivery dates is attached as Annexure A.

DURATION OF TRAINING

It is proposed that the training will take place five days a week, Monday to Friday, with a total training duration of six hours per day. A typical training day will be as follows :

8.30 a.m. – 10.00 a.m.	Classroom
10.00 a.m. – 10.30 a.m.	Morning Break for tea/coffee/water
10.30 a.m. – 12 noon	Classroom
12 noon – 1.00 p.m.	Lunch break
1.00 p.m. – 2.30 p.m.	Classroom
2.30 p.m. – 3.00 p.m.	Afternoon break for tea/coffee/water
3.00 p.m. – 4.30 p.m.	Classroom.

On some of the more practical modules the afternoon session may be replaced by an organised site visit or laboratory work.

Appendix B Record of Attendance

