MINISTRY OF COMMUNICATION, TRANSPORT, POST AND CONSTRUCTION

MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

PROGRESS REPORT 4
MAY 2007

SEACAP 03

UNPUBLISHED PROJECT REPORT

UNPUBLISHED PROJECT REPORT

MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

PROGRESS REPORT 4
MAY 2007

Prepared for: Project Record: **SEACAP 03. Mainstreaming Appropriate Local Road Standards and Developing a Strategy for the MCTPC Research Capacity**

CONTENTS

1 Introduction **1**

1.1 General 1
1.2 Contractual Arrangements 1

2 Work Undertaken **2**

2.1 General 2
2.2 Key Meetings 2
2.3 Task Group 1 and 2 2
2.4 Task Group 3 3

3 Staff Resources **6**

4 Programme **6**

5 Key Summary Points **7**

ABBREVIATIONS & ACRONYMS

ACCESS	Microsoft database software
ADT	Average Daily Traffic
ASEAN	Association of South East Asian Nations
BRC	Bamboo Reinforced Concrete
CAFEO	Conference of ASEAN Federation of Engineering Organisations
CBR	California Bearing Ratio
CNCTP	Cambodia National Community of Transport Practitioners
CSA	Crushed Stone Aggregate
CSIR	Council for Scientific and Industrial Research (South Africa)
DBM	Dry Bound Macadam
DBST	Double Bituminous Surface Treatment
DCP	Dynamic Cone Penetrometer
DfID	Department for International Development
DoR	Department of Roads
EDCs	Economically emerging and Developing Countries
ENS	Engineered Natural Surface
esa	equivalent standard axles
EXCEL	Microsoft spreadsheet software
FHWA	Federal Highways Association (US)
FM	Fines Modulus
FWD	Falling Weight Deflectometer
GMSARN	Greater Mekong Sub-region Academic and Research Network
gTKP	global Transport Knowledge Partnership
HDM4	Highway Development and Management Model
HQ	Headquarters
IFG	International Focus Group
IFRTD	International Forum for Rural Transport Development
ILO	International Labour Organisation
IRF	International Road Federation
IRI	International Roughness Index
ITS	Indirect Tensile Strength
Km	kilometre
LCS	Low Cost Surfacing
LRD	Local Roads Division (DoR)
LVRR	Low Volume Rural Road
m	metre(s)

MCTPC	Ministry of Communication, Transport, Post and Construction
mm	Millimetre(s)
MERLIN	**M**achine for **E**valuating **R**oughness using **L**ow-cost **IN**strumentation
MPa	Mega pascals
MoU	Memorandum of Understanding
NUOL	National University of Lao
OM	Operations Manual
ORN	Overseas Road Note
PCU	Passenger Car Unit
Pen Mac	Penetration Macadam
PIARC	World Road Association
PTD	Planning and Technical Division (DoR)
QA	Quality Assurance
RED	Roads Economic Decision Model
Ref.	Reference
RRGAP	Rural Road Gravel Assessment Programme (Vietnam)
RRSR	Rural Road Surfacing Research (Vietnam)
RRST	Rural Road Surfacing Trials (Vietnam)
RTU	Rural Transport Unit
RT1	Rural Transport 1st Project, Vietnam
RT2	Rural Transport 2nd Project, Vietnam
RT3	Rural Transport 3rd Project, Vietnam
SBST	Single Bituminous Surface Treatment
SDC	Swiss Development Cooperation
SEACAP	South East Asia Community Access Programme
SIDA	Swedish International Developments Cooperation Agency
SOE	State Owned Enterprise
TRL	Transport Research Laboratory
UCS	Unconfined Compression Strength
UK	United Kingdom
UNOPS	United Nations Office for Project Services
VN	Vietnam
VOCs	Vehicle Operating Costs
VPD	Vehicles per day
WAN	Wide Area Network
WBM	Water Bound Macadam
WLC	Whole Life Costs

1 Introduction

1.1 General

The SEACAP 3 project is part of the wider South East Asia Community Access Programme (SEACAP), whose strategic theme is 'livelihoods of poor and vulnerable people in South East Asia improved sustainability'. SEACAP 3 will contribute to this overall objective through the development and mainstreaming of local resource-based standards for low volume rural roads. The project seeks to achieve three key outcomes:

- Mainstream appropriate local road standards and specifications into the national road programme,
- Develop an affordable and sustainable strategy for attaining the necessary road (all road categories) research capacity,
- Increase the awareness of good practice experience from this project by disseminating the outcomes at the national, sub-regional and international levels,

This report outlines the work undertaken on the SEACAP 3 project during May 2007; presents a summary of staff resources used and outlines the anticipated programme for the coming month.

1.2 Contractual Arrangements

The Agreements for the project to be undertaken was established under a Memorandum of Understanding (MoU) between the Ministry of Communication, Transport, Post and Construction (MCTPC) on behalf of the Government of Lao PDR and the Department for International Development (DfID), UK. The MoU defines the scope of the project, that it will be undertaken by TRL Limited as the Consultant and implemented under Terms of Reference, and that the Consultant will be appointed by DfID. The MoU also expresses certain Exemptions and Facilities to be provided by MCTPC to the Consultant to facilitate implementation of the project. The MoU was signed on the 16th of October 2006.

Thereafter, TRL provided a comprehensive technical proposal and a financial proposal for carrying out the project to DfID and subsequently entered into a contractual arrangement with DfID. TRL were appointed on 21st of November 2006. The duration of the project is 12 calendar months.

TRL is supported in its undertaking of the project by associate firms and by competent and experienced individual consultants. The principal associate firm is Lao Transport Engineering Consultants (LTEC) who are providing comprehensive local consulting services.

TRL have entered into a contractual agreement with LTEC to provide a total of 68 person months of services over the duration of the project. Forty-Four (44) person months are for engineering and translation services and 24 person months are for administrative, secretarial and coordination services.

The other associate firm is Intech Associates consulting engineers who have worked extensively with TRL on other SEACAP projects in the region. Intech will provide a short-term specialist role on this project similar to that to be provided by the individual consultants.

2 Work Undertaken

2.1 General

The following sections summarise the work undertaken on SEACAP 3 during May 2007. During this month a number of meetings were attended with stakeholders; these are listed in Table.1. Progress on individual Modules is summarised in Table 2.

2.2 Key Meetings

Technical key meetings centred on obtaining further data to enable the team to relate the Lao road environment to other world locations where pavement designs have been prepared for low volume roads, especially those that used low-quality local materials.

The team undertook a meeting at the Department of Meteorology and Hydrology. The Department clarified that synoptic stations had information on evaporation and temperature amongst other variables. A set was obtained for each Province. The data set usually extends for more than 10 years, permitting long term averages to be determined.

Meetings were also held with MCTPC and the staff working on Road Maintenance Project II – Road Transport Management Component. Information on the heavy vehicle configurations in the country were obtained as well as long-term statistics on overloading.

The team responded to a request for a meeting with a World Bank Advisor Rod Strickland. In an informative discussion, the team learned of the sector wide transport project which intends to harmonize International donor support for Lao. The sector project will be 95% road transport. The team advised the WB Specialist of the objectives and work of SEACAP-3 and the importance of providing consistent and appropriate standards for the construction of low volume roads, and the need to try to introduce sealed roads as an alternative to gravel wearing courses, especially where the performance of gravel is poor.

An official progress meeting was held with the SEACAP Coordination Committee. Dr Cook made a summary presentation which formed the basis for subsequent discussion. A summary of the discussions is included as Appendix A to this report and the presentation as Appendix B.

2.3 Task Group 1 and 2

The team have gained a considerable understanding of the project related information available from within Lao, the region and internationally. Much of the work in May has centred on further analysing and synthesising this information.

There are key differences between the situation in Lao and that of other countries and regions where low volumes road guidelines have been published, especially where those guidelines promote the use of marginal materials. Essentially Lao has higher rainfall and lower evaporation such that road subgrades and pavements may be wetter, and therefore weaker in terms of bearing the weight of cumulative traffic loading. Greater confidence in using international work to support the Lao standards can be gained where good quality materials have been used in the uppermost layers of the road, but this can be expensive in many circumstances.

More information will be available when the performance of the trials in the region is known more exactly and, of course, when more is known about the performance of the SEACAP-17 trials which are being built in Lao. Nevertheless, the team are advancing the work by considering not only the available information from elsewhere but also the basic principles of road design and traffic loading for low volume road situations and the basic principles for good performance from both quality and marginal materials. It is anticipated that this approach together with good practice from elsewhere will permit the development of suitable standards for Lao.

In other work the team are developing the concept of the “design vehicle” for any particular low volume road. Using a “design vehicle” pavement design issues such as stresses imposed can be better established, such that the best use of local materials, total pavement cover and appropriate layer quality and thickness can be utilized. It will be appreciated that for roads which terminate (say at a village) rather than those that form a link in the network, the traffic that will need to use that road and the frequency can be established reasonably accurately. The situation is more complex for roads that form links (to other roads).

2.4 Task Group 3

A general research strategy has been identified that gives the DoR a management and mainstreaming role and the NUOL a role to undertake the actual research, possibly in conjunction with provincial engineers.

During May a lengthy and detailed meeting was held with Dr Nhinxay Visane, Head of the Civil Engineering Department of the University of Lao (NUOL). Through helpful discussions, an in-depth history of the research capability at the University was sought, which will assist the team in making an assessment of the support that the University may be able to offer to MCTPC’s applied research projects.

The structure of the university, the research and academic experience of it staff, and its resources to support laboratory field and analytical work are being evaluated in the context of the proposed research strategy.

Date	Organisation	Key Personnel	Comment
8/05	MCTPC WB Heavy vehicle team	Ounheuane Siriamphone, MCTPC Sanong Maniphone (DOT) Sonlay Khanthavivanh.(Heavy Transport Specialist, Vic roads International) Bruno Condello (Senior systems Specialist, Vic Roads International)	Discussed and obtained heavy vehicle configurations and summary weighbridge statistics on overloading. Also seeking esa's for each configuration
09/05	Department of Meteorology and Hydrology	Nikhom Keosavang; Deputy Chief of Cilmate Division	Discussion and obtain climatic statistics for each Province from synoptic stations
15/05	NUOL	Dr Nhinxay Visane	Detailed discussions the capability of NUOL to participate in MCTPC research projects.
16/05	LTEC Laboratories	Khamvilay Sisalith Phong Kham Phongsavanh	1) Regional material types for road construction in Lao 2) LTEC capacity to support practical research projects. 3) Seeking design vehicle configuration and weight for LVRR's (e.g. GAZ66 – rice milling truck)
17/05	World Bank	Rod Strickland :WB Advisor	World Bank: Sector wide transport project and the Tansport plan for future harmonization of Donors
22/05	LRD	Sengadarith Kattignasack	Discussion on status of SEACAP 3 and arrangements for progress meeting
29/05	SEACAP 20	Marcus Rafla; IT Transport	Cooperation links between SC20 and SC3
29/05	LRD/DoR	Laokham Sompeth David Salter SCC Members	SEACAP 3 Progress Meeting

Table 1 Key Meetings

No.	Module Description	Completed	Programme	Activity to End May
Task Group I: Develop Standards and Specifications				
1	Review current situation	80%	90%	Review of documents and extraction of key information continued. Report being drafted
2	Research to fill knowledge gaps	75%	80%	Further identification of national and international key parameters. Matrix being drafted
3	Draft technical standards	15%	10%	Outline principles drafted.
4	Finalise technical standards	0%	0%	No activity this month
Task Group II: Develop a Relevant Training Programme				
5	Training needs assessment	10%	0%	Further initial discussions
6	Training programme elaborated	0%	0%	No activity this month
7	Training course tested and trialled	0%	0%	No activity this month
Task Group III: Develop an Appropriate Research Capability:				
8	Gaps in research capacity identified	95%	100%	Key gaps identified and concept notes drafted
9	Strategy for strengthening research capacity	75%	95%	Outline strategy developed ; requires some further detail
10	Adoption of strategy by MCTPC	10%	0%	SCC accepts strategy in principle
Task Group IV: Initiate Dissemination				
11	Package of materials prepared for dissemination	0%	0%	No activity this month

Table 2 Summary of Module Progress

3 Staff Resources

A summary of the SEACAP 3 staff resources utilised up to the end of May 2007 is presented in the following Table 3.

In late May two Vietnamese road engineering specialists from SEACAP 1 were mobilised. Mr Bach The Dzung will review current Loa road standards in the light of the Vietnam experience. Mr Pham Gia Tuan will look at the relevance of the SEACAP 1 rural road cost model to the SEACAP 3 situation.

Name	Position	Project Time : May 2007
Dr Jasper Cook (TRL)	Team Leader Geotechnical Specialist	19th -31st May
Michael O'Connell (TRL)	Transport and Road Engineering Specialist and Deputy Team Leader	1st – 21st May
Simon Done (TRL)	Training Specialist	No input
Trevor Bradbury (TRL)	Dissemination and IT Specialist	No input
Bach The Dzung (TRL)	Road Engineering Specialist	28-31st May
Pham Gia Tuan (TRL)	Road Engineering Specialist	28-31st May
Bounta Meksavanh (LTEC)	Local Team Leader and Road Engineer Specialist	1st to 31th May
Saysongkham Manodham (LTEC)	Road Engineering Specialist	1st to 31st May
Chittakone Maniphan (LTEC)	Training Support	No input
Mr. Keithiphan Senamahmountry (LTEC)	IT Support	No input
Mr. Bounhom K. (LTEC)	Translator	1st to 31st May
Ms Chandita Ph (LTEC)	Office Management	1st to 31st May
Mr. Thipdavanh V. (LTEC)	Project Coordinator	1st to 31st May

Table 3 Staff Resources May 2007

4 Programme

The current status of SEACAP 3 in relation to the proposed programme is indicated in Appendix C to this report.

Table 2 indicates that the project is generally on target; with the following points to be noted:

- Modules 1 and 2 are shown as being slightly behind schedule mainly because we have delayed the associated workshops until late June/early July to include other modules.

- Modules 3 and 5 are slightly ahead of schedule due to some preparatory work being undertaken.

- Module 9 is slightly behind schedule awaiting some detail on the proposed MCTPC-NUOL arrangements.

5 Key Summary Points

1. Progress is satisfactory on SEACAP 3 and the Coordination Committee is in agreement with the project approach and the general principles of the way forward.
2. Review documents are currently being drafted relating to Modules 1 and Modules 8 and 9.
3. A further meeting is needed to obtain axle-load weight statistics for each configuration.
4. A broadly based workshop has been requested by MCTPC for late June or early July to cover the whole of the project to date.

MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

PROGRESS REPORT 4
May 2007

APPENDIX A

SEACAP COORDINATION COMMITTEE MEETING

SUMMARY NOTES

SEACAP 3 Progress Meeting

29th May 2007:LTEC Offices

Present:

Loakham Sompeth - Chairman SCC
Sengdarith Kattignasack - SCC Member
Chan Bouphalivanh - SCC Member
David Salter (DS) -SEACAP
Khampaseuth Panyanouvong -LRD
Ounheuan Siliamphone - PTD
Bounta M - LTEC
Saysongkham M LTEC
Pham Gia Tuan - TRL
Marcus Rafla -IT Transport
Dr J R Cook (JRC) -TRL
Bach The Dzung - TRL

Dr Cook gave a presentation to the SEACAP Coordination Committee (SCC) covering the progress on SEACAP 3 and outlined a number of key issues to be addressed in the coming months. This presentation was followed by useful discussions centred on the following topics:

LVRR Standards

The **SCC** members agreed in principle with the engineering concepts behind "Function Based" standards that are separated from an administration classification. However there is some unease at how this will be perceived in general by the Ministry.

DS noted that the logic behind Function-Based standards should be part of the project's training element (Module 5).

> ***JRC*** *emphasised the flexibility and logic of this separation but understood the concerns of the SCC. The Commentary accompanying the standards document should clearly explain the reasoning and advantages of the proposals. The training course would include this topic*.

The **SCC** stated the rural roads are not limited to LVRRs and that as the rural economy grows it will be necessary for roads to increase their capacity. In particular there may be an increase in "Special Roads" for some areas. It may be that the Road Law will be revised. The Standards and Specifications should take into account the likelihood of economic growth and consequent increased traffic.

JRC *agreed that rural road Standards and Specifications should be compatible with both current and likely future economic situations and that they should be capable of being integrated within national standards for all roads. However it is was fair to point out that SC3 had a 12 month project period and hence could be concerned only with LVRRs. If a road increased in capacity beyond the LVRR limits then it would automatically move into a higher classification and should be a candidate for suitable upgrading under guidelines governing higher class roads. TRL-LTEC had reviewed the current documents for higher classes of road and had concluded that there was indeed a need for a revision of standards and design approaches for those as well as LVRRs*.

The **Chairman** requested that all the documents gathered together for the project should be catalogued and kept as a resource for further use.

> *TRL-LTEC agreed*

The **SCC** queried the use of axle load limits in the LVRR classification. The DoR was now considering the axle overloading issue very seriously and in consequence the limits had to be appropriate.

> ***JRC*** *agreed that this was a key issue. TRL-LTEC had put forward the axle load limits for discussion. Dzung confirmed that in Vietnam the upper axle load limit for rural roads was 6Tonne; with a 2.5Tonne limit on lower class rural roads. JRC thought these were a suitable guideline to work within as regards the LVRR environment. Axle loads above this took roads outside the LVRR specification-design environment.*

LVRR Specifications

The **SCC** noted that it was essential that the specifications utilised locally available materials as much as possible

> *JRC agreed that this would be a fundamental consideration for the specifications*

The **SCC** noted that amongst the road environment factors to be taken into account there should be a "Road User" factor.

> *JRC said they would take note of this*

Research Strategy

The SCC was in general agreement with the principles outlined by TRL-LTEC, although members made several relevant comments, as follows:

1. There would need to be a clear definition of roles and responsibilities
2. There should be 3 DoR departments involved; PTD, RAD, and PTD
3. The over-riding control of DoR was essential to ensure the practicality of the research
4. The NUOL should have an additional demonstration role
5. The research should be linked into the NUOL courses
6. The NUOL should take advantage of the research to expand their teaching capability.

> *JRC agreed with the above comments and in particular agreed that the proposed research framework needed careful planning in terms of detail. In this respect it would highly beneficial to undertake 1 or 2 small trial research projects to see best how the system could work*

The **Chairman** noted that there was an important element of feedback and growth to be taken into account in the progression of research into a sustainable cycle of Research and Development.

J R Cook

SEACAP 3 Team Leader

31st May 2007

MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

PROGRESS REPORT 4
May 2007

APPENDIX B

SEACAP COORDINATION COMMITTEE MEETING

PRESENTATION

SEACAP 003

Mainstreaming Appropriate Local Standards and Specifications & Developing a Strategy for MCTPC Research Capacity

TRL Ltd

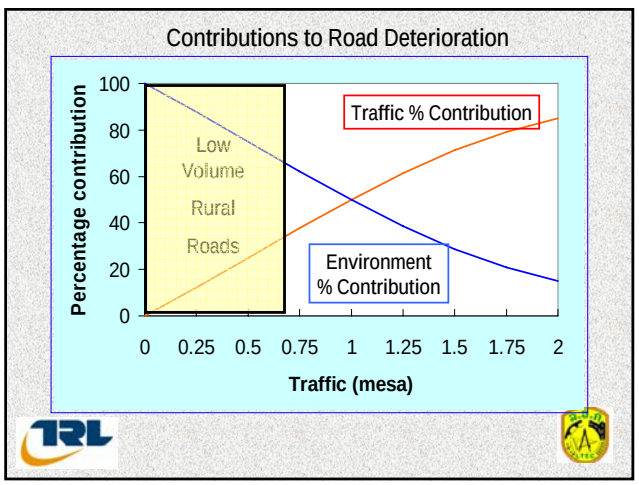
In Association with

LTEC and Intech Associates

LVRR STANDARDS

LVRR Design Classification	LVRR Standard Specifications
VI	Sealed Macadam
VII	Gravel
VIII	Concrete
	etc

Commentary/Guidance Documents



SEACAP 3 Structure

PROJECT COMPONENT 1
Mainstream Appropriate Local Road Technical Standards

TASK GROUP I
Develop Standards and Specifications

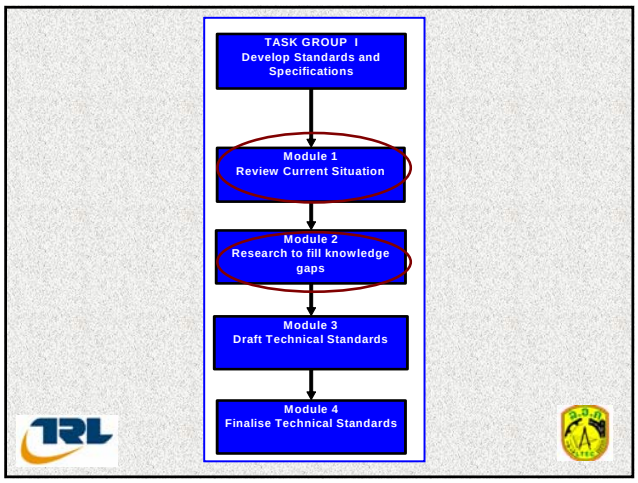
TASK GROUP II
Develop a Relevant Training Program

PROJECT COMPONENT 2
Develop an Affordable and Sustainable Strategy for Attaining the Necessary Research Capacity

TASK GROUP III
Develop an Appropriate Research Capability

PROJECT COMPONENT 3
Disseminate the Project Outcomes at the National, Sub-Regional, and International Levels.

TASK GROUP IV
Initiate Dissemination



Situation Review

Documents reviewed (100+): Including National, Regional and International sources on:

- Rural road standards (Classifications)
- Low volume road specifications
- Road design guidelines/manuals

Summary Tables -1

Classification Source	Classifications	Traffic Function	Terrain	Roadway Width (m)	Design Speed (km/h)	Vertical Gradient %
India						
Vietnam						
Cambodia						
World Bank						
SADC						
Australia						
USA						
Thailand						
ORN 6						
Lao PDR (Current)						

Summary Tables -2

Specification	Vietnam	Cambodia	Lao PDR	Kenya	India	Thailand	Australia	South Africa
Earthwork and gravel pavement layer	C	T	C	C	C	C	C	C
Bituminous emulsion-surface dressing chip seal	T		C	C		C	C	C
Bituminous emulsion-sand seal	T	T	T					C
Otta seals		T	T					C
Gravel sub-base/base	T	T	C	C	C			C
Lime stabilized sub-base/base	T			C	C	C	C	C

C: Mainstream Construction

T: Trial

Classification: Three Key Points

- **Compatible with Lao PDR Road Law**
- **Based firmly on the road function NOT administration**
- **Falling within the Low Volume Rural Road traffic envelope**

General Classifications

1. Predominantly 2-wheeled traffic; very low volume of light 4 wheel vehicles.
2. Low volume mix of 4 wheel and 2 wheel vehicles. No heavy vehicles
3. Low volume 4 and 2 wheel traffic. Occasional heavy vehicle
4. Predominantly low volume 4 and 2 wheel traffic. Significant risk of heavy vehicle traffic

Rural Road Classes

	VI	VII	VIII
ADT	51-100	21-50	<20
Lane	1	1	1
Carriageway (m)	3.50	3.00	2.50
Shoulder (m)	1.25-1.50	0.75-1.25	0.25-0.75
Formation Width (m)	6.00-6.50	4.50-5.50	3.00-4.00

PLUS:- **Axle Load Limit Sub-divisions**

2.5, 6.0 Tonnes

Road Environment: Knowledge Acquisition

Natural factors
- Climate/rainfall
- Hydrology
- Terrain
- Materials availability
- Sub-grade

Imposed factors
- Materials selection
- Traffic mix
- Axle loads
- Construction regime
- Maintenance regime

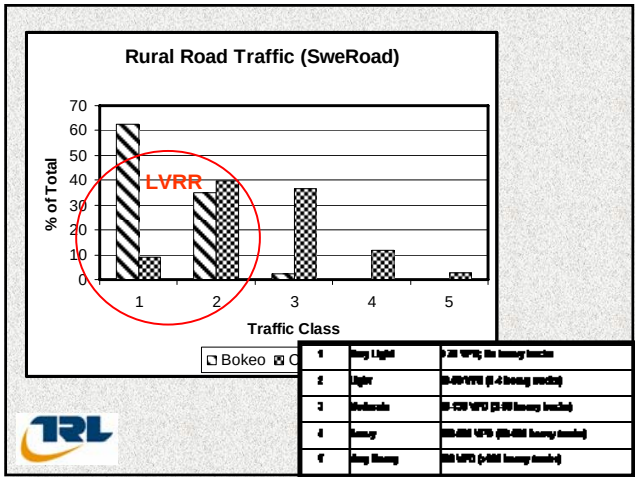
Socio-economic factors
- Whole-life costing
- Health and safety
- Local Employment
- Local Economy

PRoMMs Database

We have used the PRoMMs database of *maintainable* roads to analyse data on:

Road widths	Drainage
Traffic	Surfacing Type
Terrain	Surface Condition

Rainfall Data from DMH



Terrain

Broad divisions currently in use

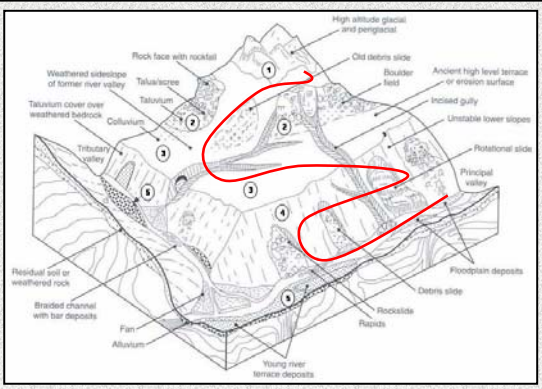
Flat

Rolling Hills

Mountainous

Likely to have a modifying effect on road geometry; eg

Reduced standard in Mountainous Terrain



Terrain-Road Interaction

Matrix Based on Terrain Sub-Units & Gradient

Road Cross Sections (To Be Developed)

Gradient (%)
<1
1-3
3-6
6-9
>9

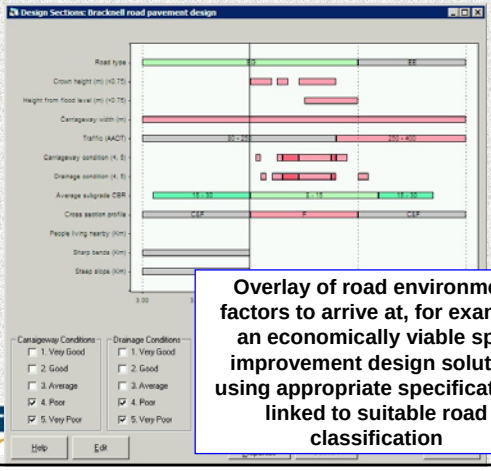
Matrix of Possible Pavement, Earthwork & Drainage Options

Detail Modified by other Road Environment Factors

THE ROAD ENVIRONMENT

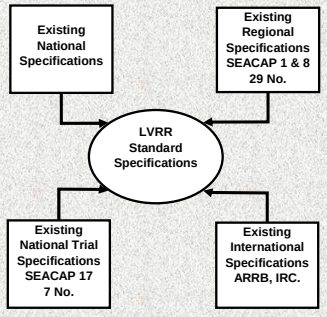
- HYDROLOGY
- PREVAILING CLIMATE
- AVAILABLE MATERIALS
- TERRAIN GEOLOGY
- SUB-GRADE CONDITIONS
- TRAFFIC AXLE LOADS
- THE "GREEN" ENVIRONMENT
- CONSTRUCTION REGIME
- MAINTENANCE REGIME

OPTIMUM OR APPROPRIATE PAVEMENT DESIGN



Overlay of road environment factors to arrive at, for example an economically viable spot improvement design solution using appropriate specifications linked to suitable road classification

LVRR Specifications: Review and Assessment

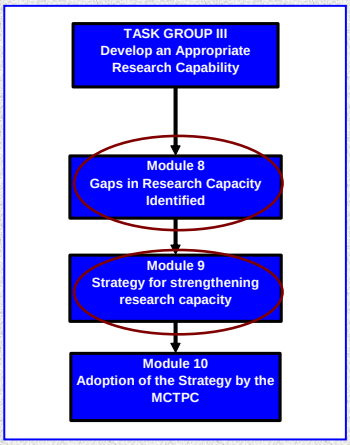


Appropriate Specifications

Appropriate to the road function

Appropriate to available materials

Specifications must to be realistic and achievable – otherwise they are pointless



MCTPC Road Research Activity

Currently little or no research activity or capacity within DoR – previously research has been undertaken through the Planning and Technical Division (PTD).

There is however both a need for a sustainable research capability and an expressed wish at ministerial level.

Principal Research Resources

DoR (PTD)
- Administration
- Strategy
- Mainstreaming

NUoL (Civil Eng)
- Methodologies
- Staff experience
- Equipment/Labs
- Student manpower

DCTPCs
- Local knowledge
- Manpower

Outline Structure

STEERING COMMITTEE

Lead by MCTPC, with NUoL. Identifies research issues; identifies funding; liaison with Donors.

RESEARCH MANAGEMENT UNIT

DoR (PTD): Commissions research contracts; monitors progress; applies and mainstreams outputs.

RESEARCH GROUPS

NUoL(Civil Eng) Leads research teams; undertakes research projects; supplies key specialist input; reports research outcomes to the Research Management Unit.

DCTPCs: Local field support

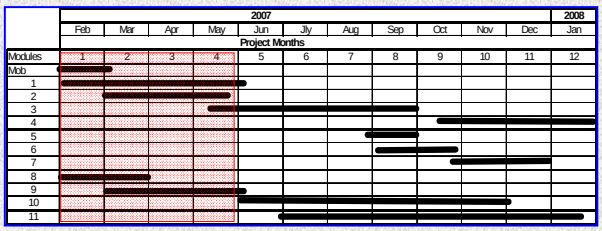
Outline Strategy

Basic Structure Agreed (Temporary Basis)

Trial projects identified and initiated under proposed structure. For example SRSs:
- **Performance of locally adopted sealing options on laterite gravel**
- **Unsealed road performance in Lao PDR**
- **LVRR traffic patterns in Lao PDR**.

Review structure (modify if required) and formally adopt .

SEACAP 3: Programme



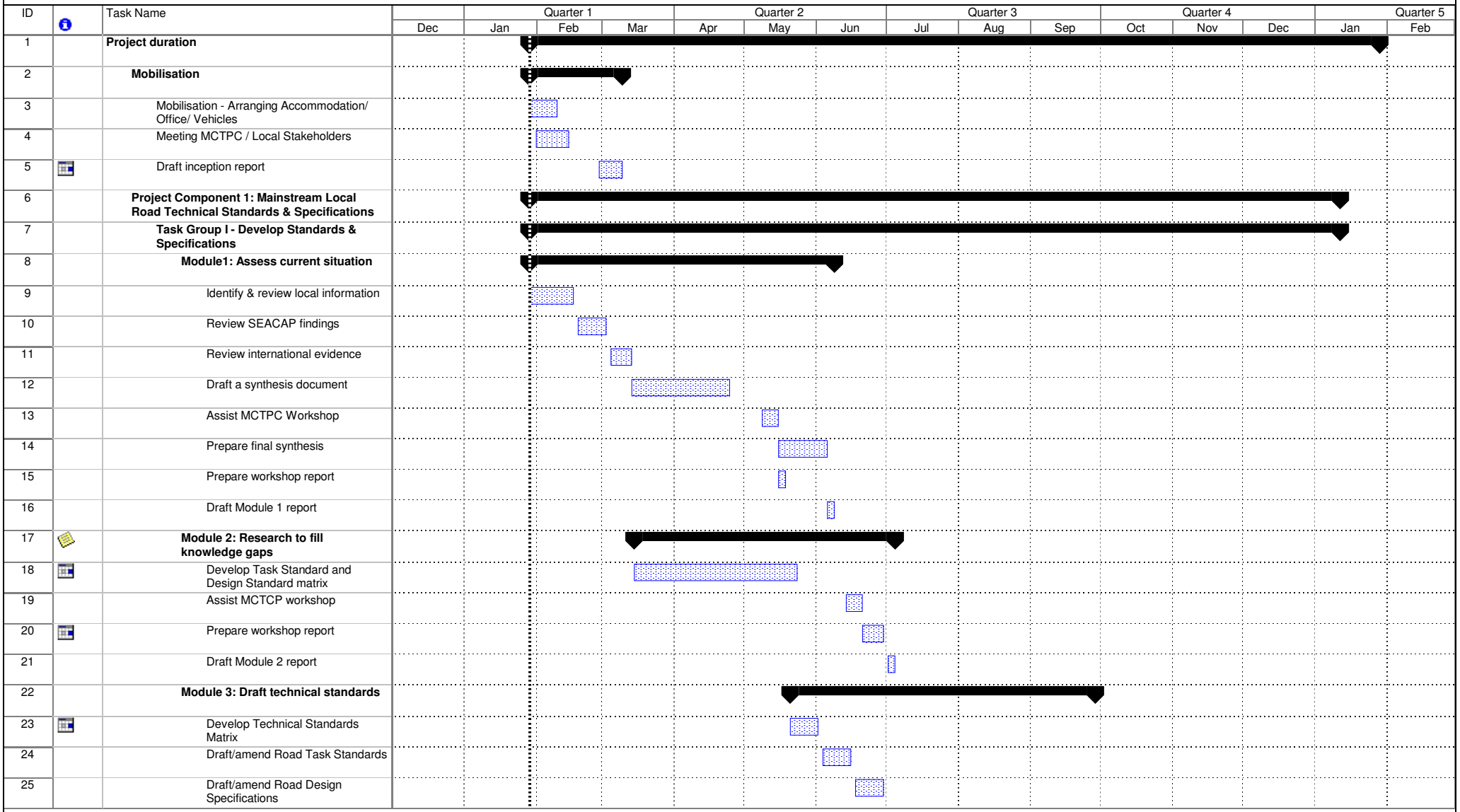
MAINSTREAMING APPROPRIATE LOCAL ROAD STANDARDS AND SPECIFICATIONS AND DEVELOPING A STRATEGY FOR THE MCTPC RESEARCH CAPACITY

PROGRESS REPORT 4
May 2007

APPENDIX C: SEACAP Programme

SEACAP - 3

Mainstreaming appropriate local road standards and specifications & developing strategy for MCTPC research capacity

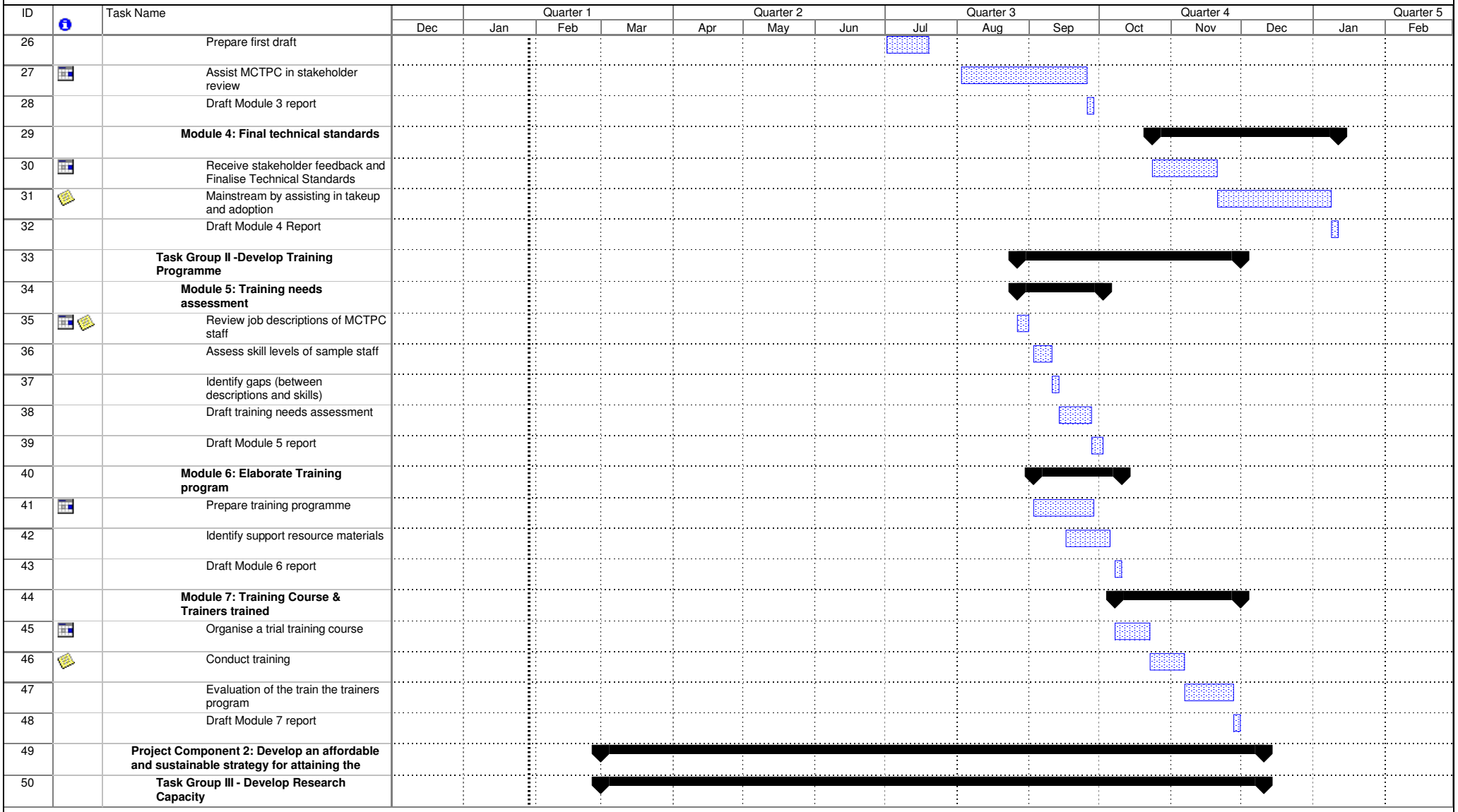


Project: SEACAP 03 - Lao PDR

Task	Summary	Rolled Up Progress	Project Summary		
Progress	Rolled Up Task	Split	Group By Summary		
Milestone	Rolled Up Milestone	External Tasks			

SEACAP - 3

Mainstreaming appropriate local road standards and specifications & developing strategy for MCTPC research capacity

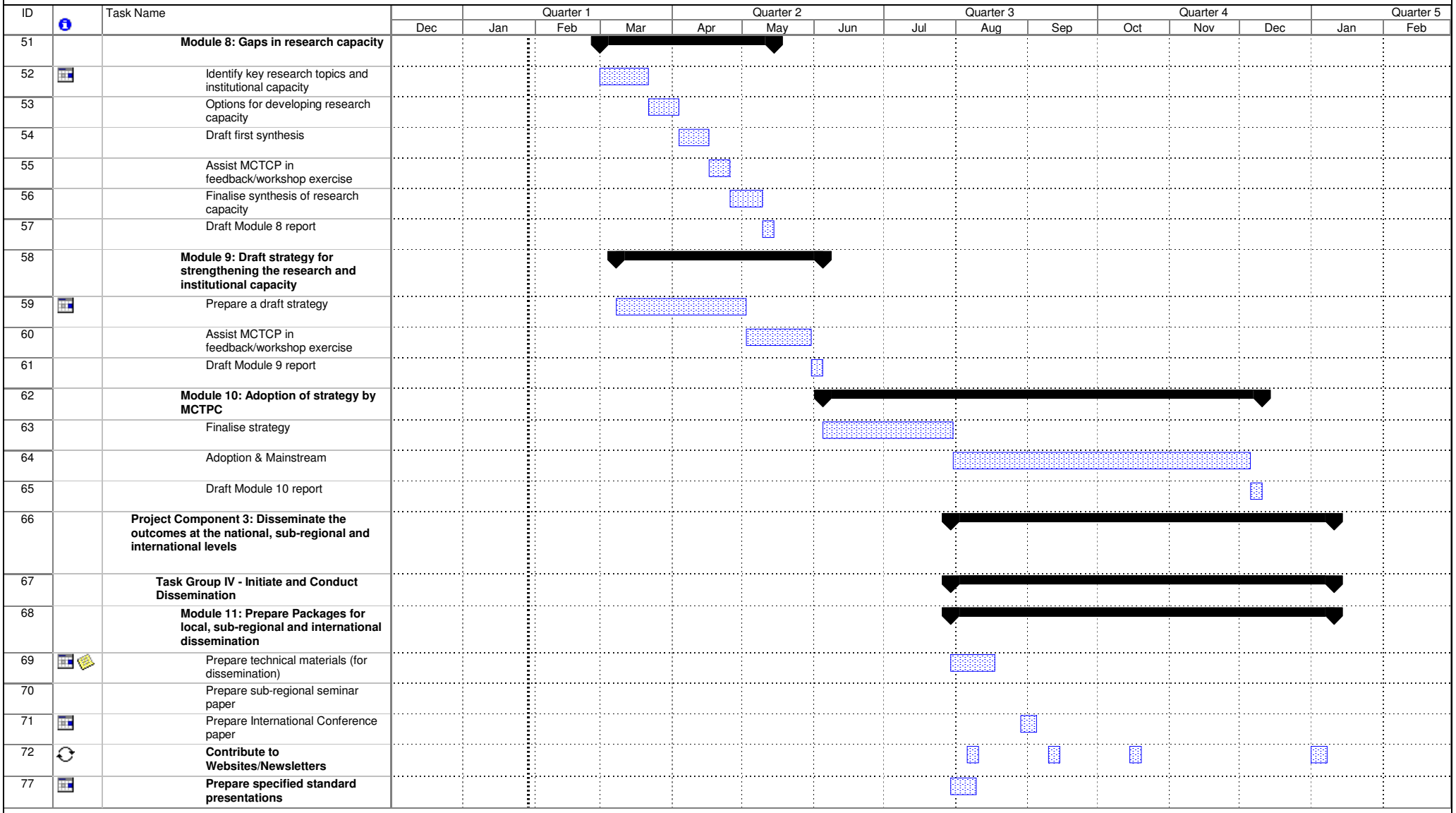


Project: SEACAP 03 - Lao PDR

Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks			

SEACAP - 3

Mainstreaming appropriate local road standards and specifications & developing strategy for MCTPC research capacity

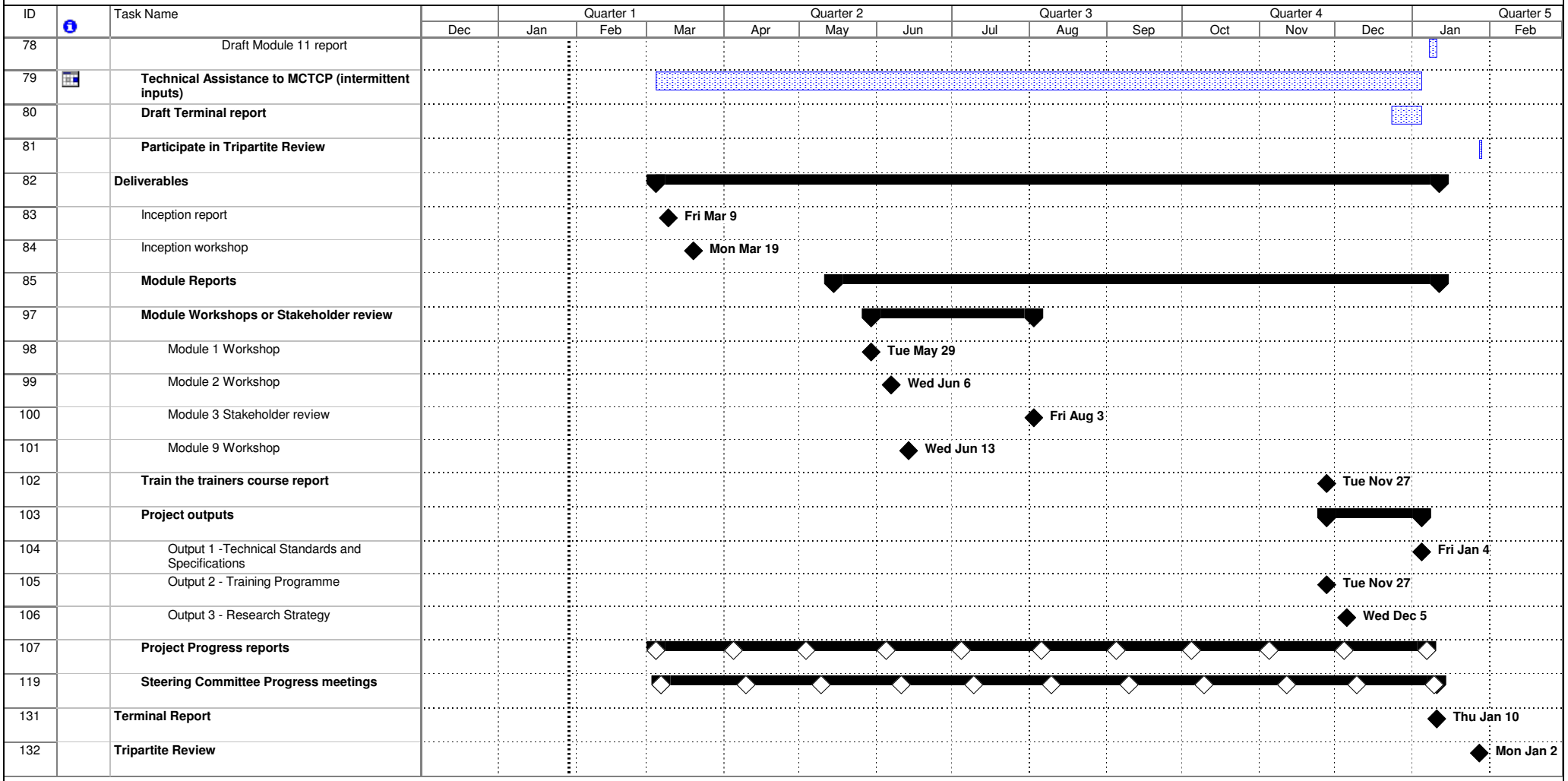


Project: SEACAP 03 - Lao PDR

Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks			

SEACAP - 3

Mainstreaming appropriate local road standards and specifications & developing strategy for MCTPC research capacity



Project: SEACAP 03 - Lao PDR

Task	Summary	Rolled Up Progress	Project Summary		
Progress	Rolled Up Task	Split	Group By Summary		
Milestone	Rolled Up Milestone	External Tasks			

SEACAP-3 Schedule of Staff Inputs

ID	Task Name	Position
1	**Project Duration**	
2	**International**	
3	**J Cook**	**Team Leader Geotechnical Specialist**
14	**M O'Connell**	**Transport and road eng. Spec. & Deputy Team**
20	**S Done**	**Training specialist**
22	**T Bradbury**	**Dissemination expert**
24		
25	**Domestic LTEC**	
26	**Bounta MEKSAVANH**	**Local Team Leader and Road Engineer Specialist**
28	**Saysongkham MANODHAM**	**Road engineering specialist**
30	**Keithiphan SENAMAHMOUNTRY**	**IT Engineer**
32	**Chittakone MANIPHON**	**Junior Engineer**
34	**Thipdavane VONGSAY**	**Project coordinator**
36	**Chanthida PHAPHIBOURN**	**Secretary / Office Manager**
38	**Xoumaitri PANYANOUVONG**	**Translator**
47		
48	**MCTPC Counterpart staff**	
49	**Khampaseuth Panyanouvong (LRD)**	**Civil Engineer (LRD)**
51	**Ounheuan Siliamphone (PTD)**	**Senior Technical Staff (PTD)**
53		
54	**Technical Panel**	
55	**R Petts**	**Quality Assurance**
59	**A Ahmedi**	**Research capacity**
61	**A Beusch**	**Training**
63	**B Dzung**	**SEACAP -Vietnam**
65	**P Tuang**	**SEACAP - Vietnam**
67	**H Kackada**	**SEACAP-Cambodia**