

**SEACAP 003**

## **Low Volume Rural Road International Review**

**Presentation  
By  
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## **Review Topics**

Focussed on five areas of direct interest to the principal SEACAP 3 aims

- ❑ The Lao PDR rural transport context
- ❑ International/regional approach to LVRRs
- ❑ The rural transport aims in Lao
- ❑ International relevance to Lao needs
- ❑ The Lao road environments



## Key Terminology

**ToR : Road Task Standards**

### Working Definition

A classification of Low Volume Rural Roads and their geometric design based on the function they have to perform in terms of traffic mix as well as acknowledging the road environment in which they have to operate.



## Key Issues

International and regional research highlighted several key issues

- ❑ Road task or function
- ❑ Definition-classification of LVRRs
- ❑ Road task-road design relationships
- ❑ The road environment

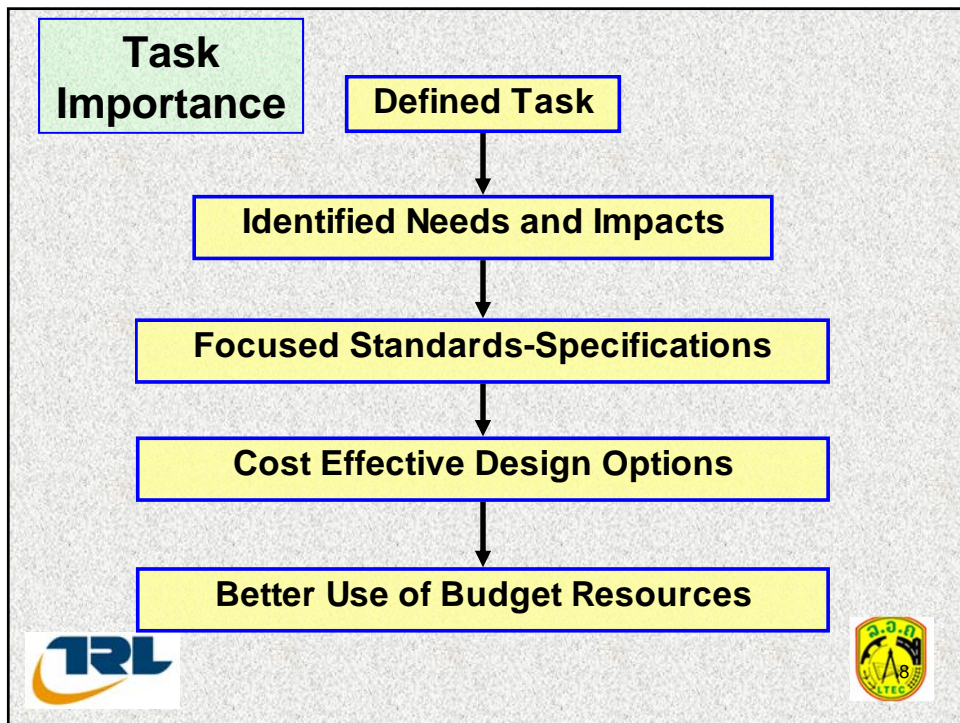


## The Road Task

The overall importance of the **road task** had been highlighted at an early stage in the project development - or the key road functions

- ❑ Provide an agreed level of access (dry weather – all weather)
- ❑ Carry identified types of traffic (including non-vehicular)
- ❑ Have the capacity to deal with determined amounts of traffic
- ❑ Perform satisfactorily with its physical environment





Country-Regions	General
Australia Bangladesh Cambodia India Indonesia Kenya Malawi	SADC Tanzania Thailand USA Vietnam Zimbabwe
Overseas Road Notes (5, 20, 31). World Bank (Basic Access)	

## International LVRR Classification

The review of a range of LVRR standards revealed them to be widely diverse in terms of classification. In fact few examples of overall classification of LVRRs using a broadly based task definition – most based largely on some form of traffic volume (ADT).  
 Exceptions were the USA and Australia

## Example: ARRB - Australia

**All rural low volume roads are deemed to fit into class 5 of the overall roads classification and then sub-divided on the basis of traffic (ADT) into 5 design requirements**



## Australian Rural Roads

Peak ADTs	Service Description	Road Design Elements
Primary > 100 ADT	<ul style="list-style-type: none"> <li>Traffic into and through a region</li> <li>High speeds</li> <li>Large vehicles</li> </ul>	<ul style="list-style-type: none"> <li>All weather</li> <li>2 lane</li> <li>mainly sealed</li> <li>high quality</li> <li>50-80 km/hr</li> <li>CW width = 7 m</li> </ul>
Access track/road < 20 ADT	<ul style="list-style-type: none"> <li>Low use</li> <li>visitor sites</li> <li>seasonally closed?</li> </ul>	<ul style="list-style-type: none"> <li>&lt;20-40 km/hrh</li> <li>single lane</li> <li>local materials</li> <li>dry weather</li> <li>may be 4WD</li> <li>low quality</li> <li>CW width = 4 m</li> </ul>



## Australian Design LVRs

- ❑ Simple to use pavement design charts are provided
- ❑ Covers a wide climate range
- ❑ Permits wide use of different quality sub-base materials
- ❑ But strict specification for base materials (CBR 80%) and minimum thickness 100mm



## Regional Lessons

SEACAP programmes in Vietnam and Cambodia highlighted mis-matches between the standards, designs road tasks and their environment.



Essential to establish and maintain the balance between the task a road is required to undertake and its designed capability



## Key Principle

There is little value and **significant risk** in directly transferring LVRR Standards and Specifications between countries without taking full account of the respective road tasks and road environments.



## Outcomes

No surprise that there was clear need for Lao-specific LVRR classifications and standards to suit the following key task elements:

- Basic all weather access shortfall
- Mixed traffic
- Budget limitations
- Variable road environments



## THE ROAD ENVIRONMENT

HYDROLOGY

PREVAILING CLIMATE

AVAILABLE MATERIALS

TERRAIN GEOLOGY

OPTIMUM OR APPROPRIATE PAVEMENT DESIGN

TRAFFIC AXLE LOADS

SUB-GRADE CONDITIONS

THE "GREEN" ENVIRONMENT

CONSTRUCTION REGIME

MAINTENANCE REGIME



## Classification: Three Key Points

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



## Outcome: Specifications

By necessity, general specifications must cover a very wide range of material types and environments.

As a consequence they are likely to contain significant in-built factors-of-safety.

However, proven specifications drawn-up for specific materials for particular environments need not be so conservative in approach.



## Outcomes

The review did confirm the significance of a number of concepts of which were taken on board in the SEACAP 3 proposals

- ❑ The importance of the road environment
- ❑ Optimum use of local materials
- ❑ Limiting axle loads/traffic leading to a significant saving in pavement strength requirements and hence cost
- ❑ The adoption of an EOD principal both Spot Improvement and Variable longitudinal design



## Key Budget Implications

Money saved on focused layer thickness and possibly on carriageway widths leads to more money available for additional road construction = **more poverty alleviation.**

Rural road designers have a responsibility to design cost-effectively.

**Over design is as equally a fault as under design.**



## Costing

Finally, the review also highlighted the importance of taking into account Whole Life Costs when assessing alternative pavement options.

Associated with this is the need to take account of **actual** maintenance capacity and costs. The review showed this to be of particular importance when considering unsealed surfacing options.



## Thank You

