# **TABLE OF CONTENTS**

**FEB 98** 

	O1	Mission	
	O2	Goals	
	O3	Background	
	O4	Application	
	O5	Target Audience	
	O6	Purpose	
	07	Manual Framework	
	O8	Implementation	
	O9	Best Practice and Ecologically Sustainable Development	
	O10	Legislative Basis	
	O11	Evaluation and Review	
PAR	ТА	CONTEXT OF THE REGION	FEB 98
	A1	Wet Tropics Region	
	A2	Great Barrier Reef Marine Park	
	A3	Regional Climate	
PAR	ТΒ	CONTEXT OF THE ROADS	FEB 98
PAR	<b>T B</b> B1	CONTEXT OF THE ROADS Values	FEB 98
PAR	<b>ТВ</b> В1 В2	CONTEXT OF THE ROADS Values Main Roads Environmental Commitments	FEB 98
PAR	<b>T B</b> B1 B2 B3	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments	FEB 98
PAR PAR	TB B1 B2 B3 TC	CONTEXT OF THE ROADS Values Main Roads Environmental Commitments Other Road Managers Commitments ROAD MANAGEMENT PROCESS	FEB 98 FEB 98
PAR PAR	T B B1 B2 B3 T C C1	CONTEXT OF THE ROADS Values Main Roads Environmental Commitments Other Road Managers Commitments ROAD MANAGEMENT PROCESS Road Management Processes	FEB 98 FEB 98
<u>PAR</u>	T B B1 B2 B3 T C C1 C2	CONTEXT OF THE ROADS         Values       Main Roads Environmental Commitments         Other Road Managers Commitments       Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes       Environmental Processes in the Concept Phase	FEB 98 FEB 98
<u>PAR</u>	T B B1 B2 B3 T C C1 C2 C3	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase	FEB 98 FEB 98
<u>PAR</u>	T B B1 B2 B3 T C C1 C2 C3 C4	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase	FEB 98 FEB 98
<u>PAR</u>	T B B1 B2 B3 T C C1 C2 C3 C4 C5	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase         Environmental Management During the Construction Phase	FEB 98
<u>PAR</u>	T B B1 B2 B3 T C C1 C2 C3 C4 C5 C6	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase         Environmental Management During the Construction Phase         Environmental Management in the Operational Phase	FEB 98
PAR PAR	T B B1 B2 B3 T C C1 C2 C3 C4 C5 C6 C7	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments <b>ROAD MANAGEMENT PROCESS</b> Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase         Environmental Management During the Construction Phase         Environmental Management in the Operational Phase         Auditing	FEB 98
PAR PAR	T B B1 B2 B3 T C C1 C2 C3 C4 C5 C6 C7 T D	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase         Environmental Management During the Construction Phase         Environmental Management in the Operational Phase         Auditing         PLANNING	FEB 98 FEB 98
PAR PAR	T B B1 B2 B3 T C C1 C2 C3 C4 C5 C6 C7 T D D1	CONTEXT OF THE ROADS         Values         Main Roads Environmental Commitments         Other Road Managers Commitments         ROAD MANAGEMENT PROCESS         Road Management Processes         Environmental Processes in the Concept Phase         Environmental Processes in the Planning and Preliminary Design Phase         Environmental Management in the Detailed Design Phase         Environmental Management During the Construction Phase         Environmental Management in the Operational Phase         Auditing         PLANNING         Planning	FEB 98 FEB 98

- D3 Conservation Context
- D4 Community Context
- D5 Transport Context

# PART E INTEGRATED DESIGN

- E1 Integrated Design
- E2 Design Process
- E3 Design Elements
- E4 Design for Construction
- E5 Design for Maintenance

## PART F CONSTRUCTION

- F1 Construction
- F2 Construction Process
- F3 Construction Procedures

## PART G OPERATION & MAINTENANCE

- G1 Operation and Maintenance
- G2 Operation and Maintenance Process
- G3 Operation and Maintenance Procedures
- G4 Emergency Procedures

#### APPENDICES

- 1 Key Stakeholders in the Wet Tropics
- 2 Road Engineering Manuals and Guidelines
- 3 Relevant Legislation and Government Policies
- 4 Undesirable Plants of the Wet Tropics
- 5 Concept Plans

#### GLOSSARY

## BIBLIOGRAPHY

**FEB 98** 

**FEB 98** 

FEB 98

**FEB 98** 

**FEB 98** 

# TABLES

PART A	
Table 1:	Mean Monthly Rainfall for Selected Locations
PART D	
Table 2:	Road Types and Function
Table 3:	Road Types and Design Vehicles
Table 4:	Radius of Curves for Design Speed and Terrain
Table 5:	Design Speeds
Table 6:	Generalised Design Widths
Table 7:	Grades
Table 8:	Cross Section Suitability
Table 9:	Overtaking Lane Requirements
Table 10:	Drainage Techniques
PART E	
Table 11:	Erosion Control Techniques
Table 12:	Sediment Control Techniques
Table 13:	Fauna Crossing Techniques
Table 14:	Scenic Lookout Arrangements
PART F	
Table 15:	Revegetation Techniques
Table 16:	Hydromulching
Table 17:	Soil Protective Blankets
Table 18:	Application Rates for Hydromulching

# FIGURES

PART A				
Figure 1:	Wet Tropics Biogeographical Region			
Figure 2:	Northern and Peninsula District Map			
PART C				
Figure 3:	Main Roads Environmental Management Process			
Figure 4:	Main Roads Infrastructure Delivery			
PART D				
Figure 5:	Forest Types of the Bioregion			
Figure 6:	Fish Ladders in Culverts			
Figure 7:	Habitat Integrity			
Figure 8:	Riparian Habitat			
Figure 9:	Tree Scars and Carving			
Figure 10:	Cultural Heritage - Bridges			
Figure 11:	Cultural Heritage - Mine Ruins			
Figure 12:	Catchment Integrity and Drainage			
Figure 13:	Landscape Values			
Figure 14:	Plan For Rehabilitation			
Figure 15:	Consider Alternative Options			
Figure 16:	Planning For Presentation			
Figure 17:	Road Function and Vehicle Type Conflicts			
Figure 18:	Planning Environmental Elements			
Figure 19:	Planning Response to Environmental Elements			
Figure 20:	Speed Environment			
Figure 21:	Providing Line of Sight			
PART E				
Figure 22:	Minimise Disturbance			
Figure 23:	Drainage on Unsealed Roads			
Figure 24:	Unsealed Roads - Table Drains			
Figure 25:	Permanent Erosion and Sediment Control			
Figure 26:	Unsealed Roads - Culvert Outwash			
Figure 27:	Design to Minimise Clearing			
Figure 28:	Fauna Crossing in Culvert			
Figure 29:	Avoid Landscape Modification			
Figure 30:	Fauna Management			
Figure 31:	Fauna Culvert			

## PART E

- Figure 32: Canopy Bridge
- Figure 33: Cassowary Crossing Protection
- Figure 34: Design for Presentation
- Figure 35: Access for Presentation
- Figure 36: Avoid Landform Modification
- Figure 37: Coincidence Of Vertical And Horizontal Curves
- Figure 38: Clearing Widths (High Volume High Speed Roads in Closed Forest)
- Figure 39: Clearing Widths (Low Volume-High Speed)
- Figure 40: Clearing Widths
- Figure 41: Avoid Vertical Curves
- Figure 42: Batter Options
- Figure 43: Roadside Signage

#### PART F

- Figure 44: Revegetation Techniques
- Figure 45: Minimising Clearing
- Figure 46: Disposal of Material
- Figure 47: Topsoil Storage
- Figure 48: Cellular Confinement
- Figure 49: Temporary Sediment Control
- Figure 50: Vegetation Management
- Figure 51: Matting Types
- Figure 52: Batter Preparation
- Figure 53: Planting Techniques

### PART G

Figure 54: Consider Maintenance Impacts