

FOCUS

ON FOREST ENGINEERING

2009



Forest Roads

Matching Service Level to Design Specification

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SA Forest Road Network

- Approx 15 000km network
- Asset value: R150m+?
- Depreciating
- Requires maintenance and upgrade
- Profitable if operated correctly

- A bit like owning a fleet of aircraft or trucks...



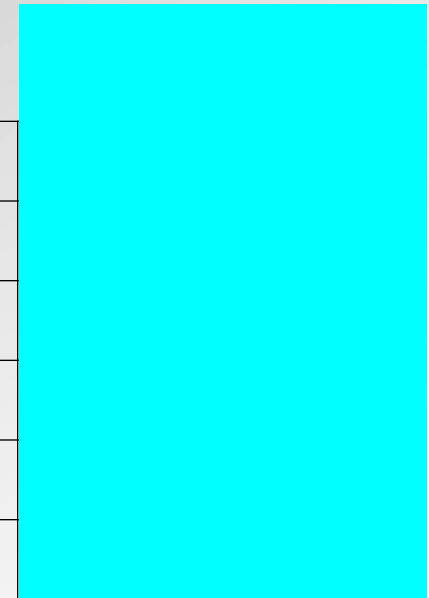
A Tale of Two Asset Classes



Asset 1

Truck / Aircraft Fleet

Detailed Inventory of Asset	Y
Detailed Maintenance Plan in Place	Y
Detailed Inventory of Parts Used	Y
Details of Upgrades Implemented	Y
Detailed Log of Who Did the Work / When	Y
Detailed Log of Who Approved / QC'ed the Work	Y





SA Forest Road Network

- **Knowledge** of the Road network asset is relatively weak
- Ability to make **Really Good Decisions** about road network enhancements is limited.

- Matching **Design Specification** to **Service Level** will improve the effectiveness of our decision making

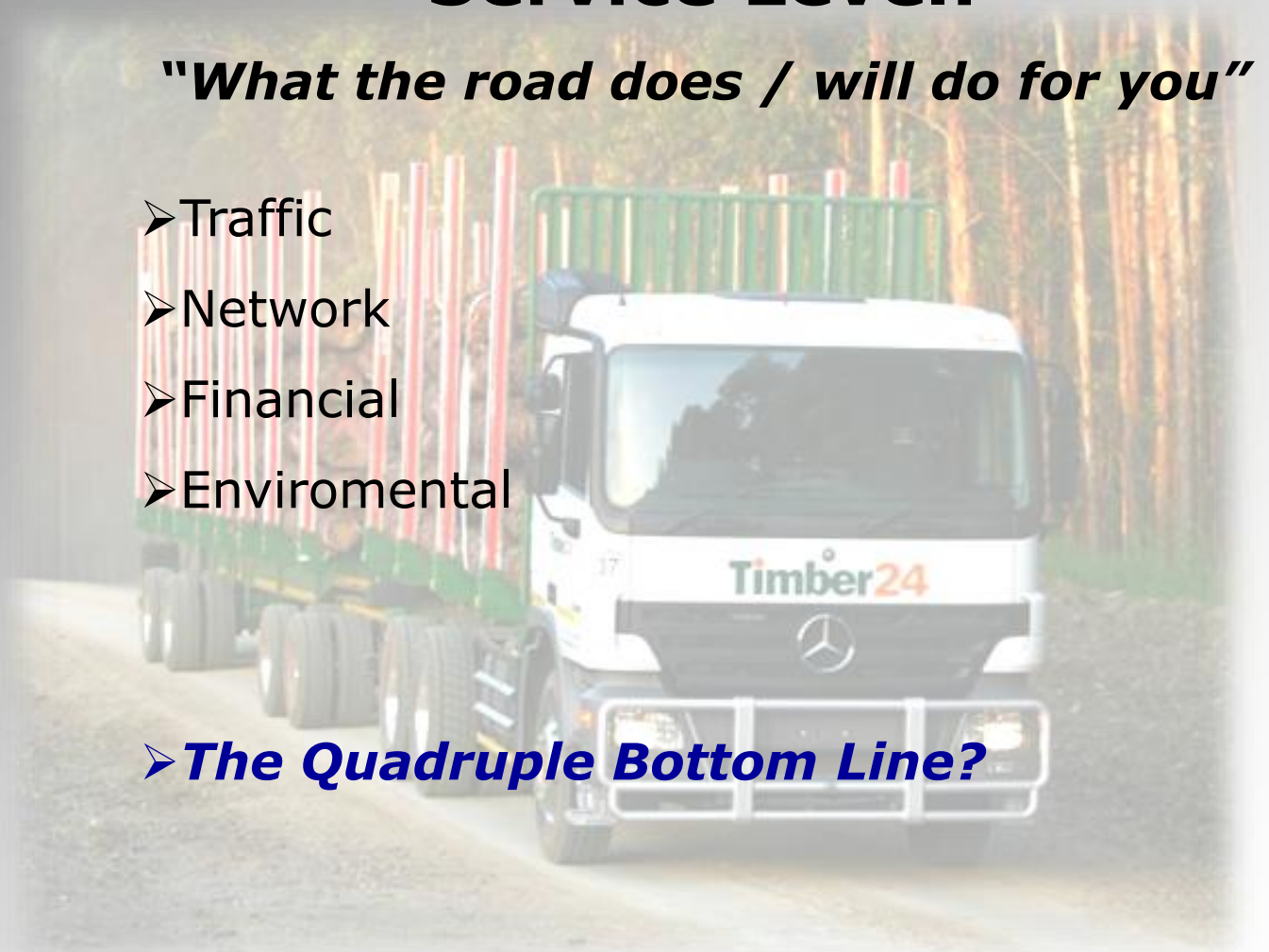


Service Level:

"What the road does / will do for you"

- Traffic
- Network
- Financial
- Enviromental

➤ *The Quadruple Bottom Line?*





Service Level:

"What the road does / will do for you"

➤ Traffic

- No / mass of axle passes,
- Geometry
- Required life span
- Material suitability, Rate of wear
- All weather / wet weather





Service Level:

"What the road does / will do for you"

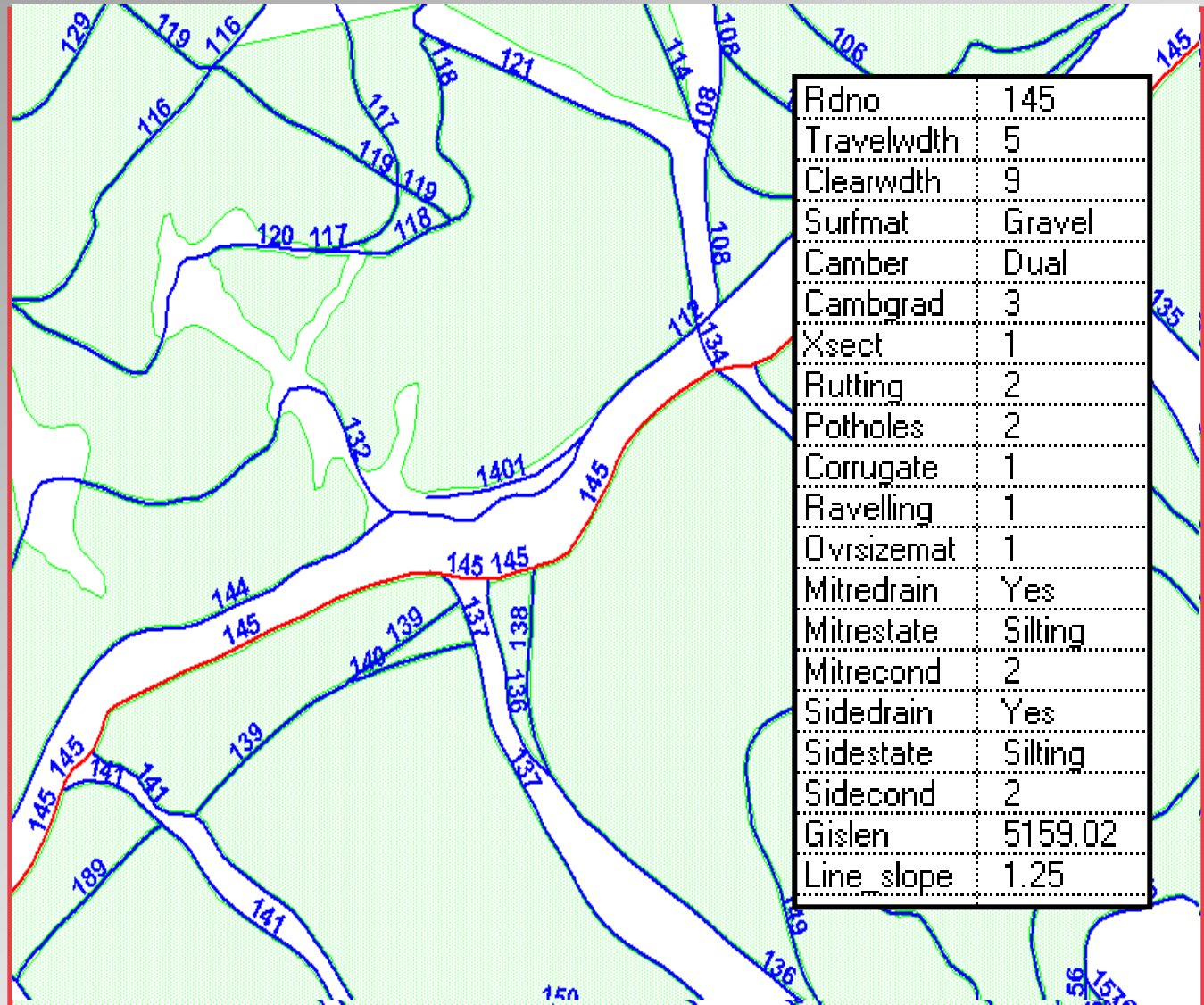
➤ Network

- Where does the road fit into the road network
- What network efficiencies are gained.





ROAD NETWORK





Service Level:

"What the road does / will do for you"

➤ Financial

- Allowable spend to meet:
- IRR,
- Payback Period, and
- ROI hurdles.

➤ Environmental

- Mitigation,
- Authorisation / Compliance



**Match Service Level to
Design Specification by
Optimising:**

Traffic

Network

Financial

Environmental

Constraints / Limits / Considerations



“Standard” Forestry Road

Case Study

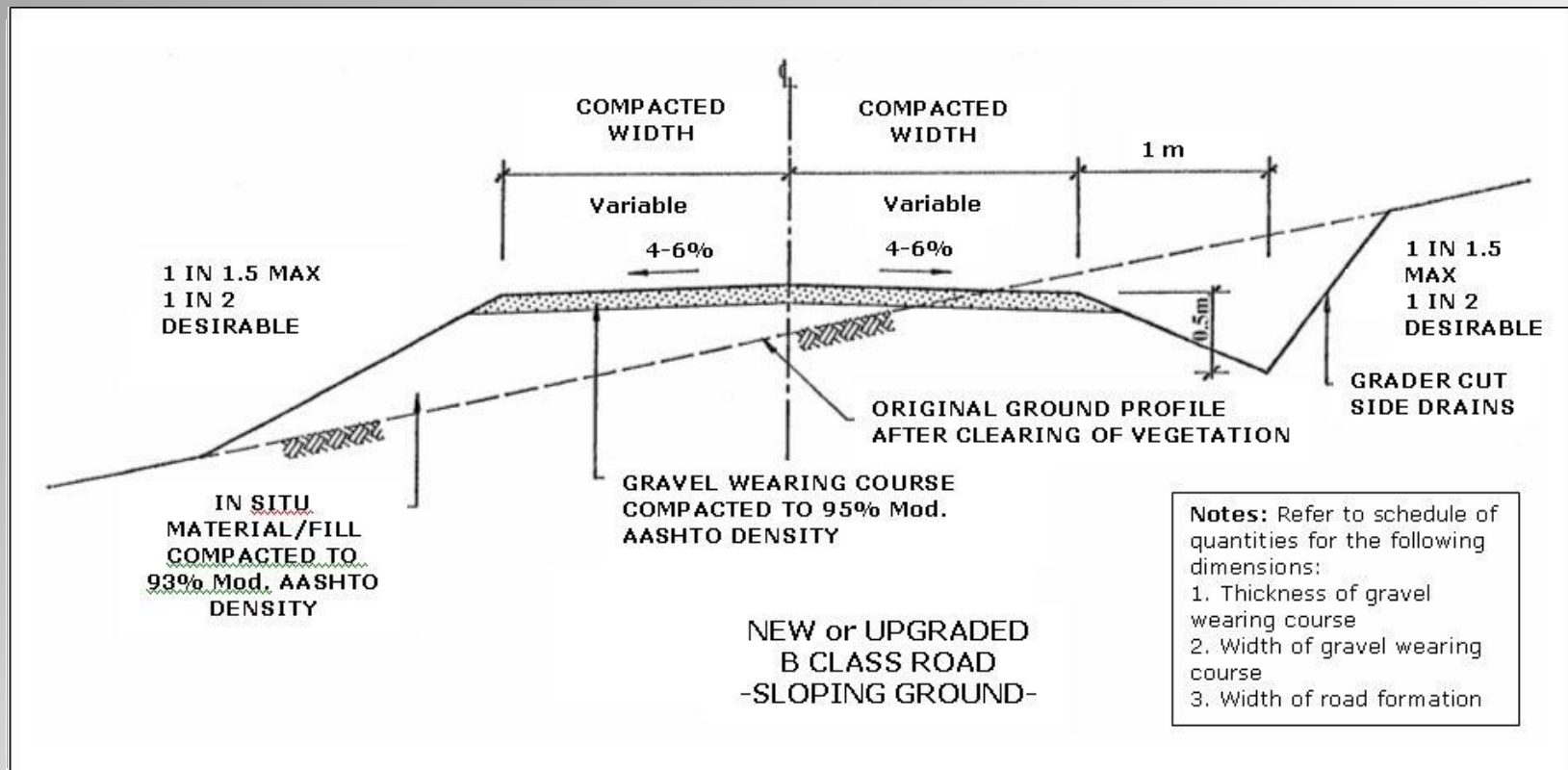
➤ A typical specification / instruction to a roads contractor might go something like:

➤ “4m Wide gravel, 150mm thick, Dual camber. With/out pipes, All weather, Minimise cost”.

➤ “Give me a quote, cheapest guy gets the job”



Typical Cross Sectional Profiles





The Result

- 4m wide, 150mm gravel
- Dual Camber
- Pipes
- All weather
- Minimal cost?





The Result





The Question





More Questions

- Will the road carry the axle passes / tonnage?
- What's the payback period / IRR / ROI?
- Is the road in the right place in the Network?
- Correct Geometry for the vehicles using the road?
- Is the wearing course material suitable?
- Is the compaction up to specification?



**Match Service Level to
Design Specification by**

Optimising:

Traffic

Network

Financial

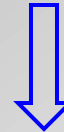
Environmental

Constraints / Limits / Considerations



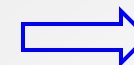
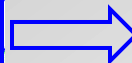
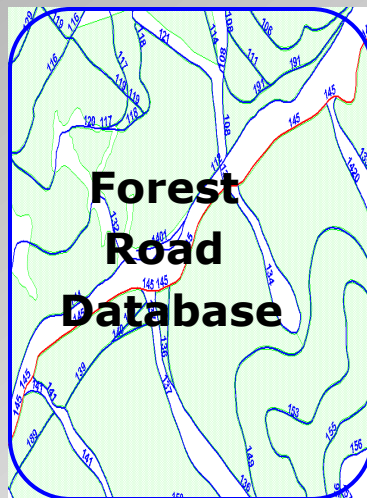
Putting it all Together

**Service
Level**



**Road
Management
System**

**Roading Activities /
Specifications**





Implementation

- Professional Design
 - Specification matched to Service Level
- Environmental Authorisation
- Materials Testing
- Tender Documentation
- Setting out of Works
- Select Contractor
 - Experience / Track Record
 - Plant quality / availability
 - Team
 - Price





Implementation



Designer / Contractor unknown...



Construction Phase





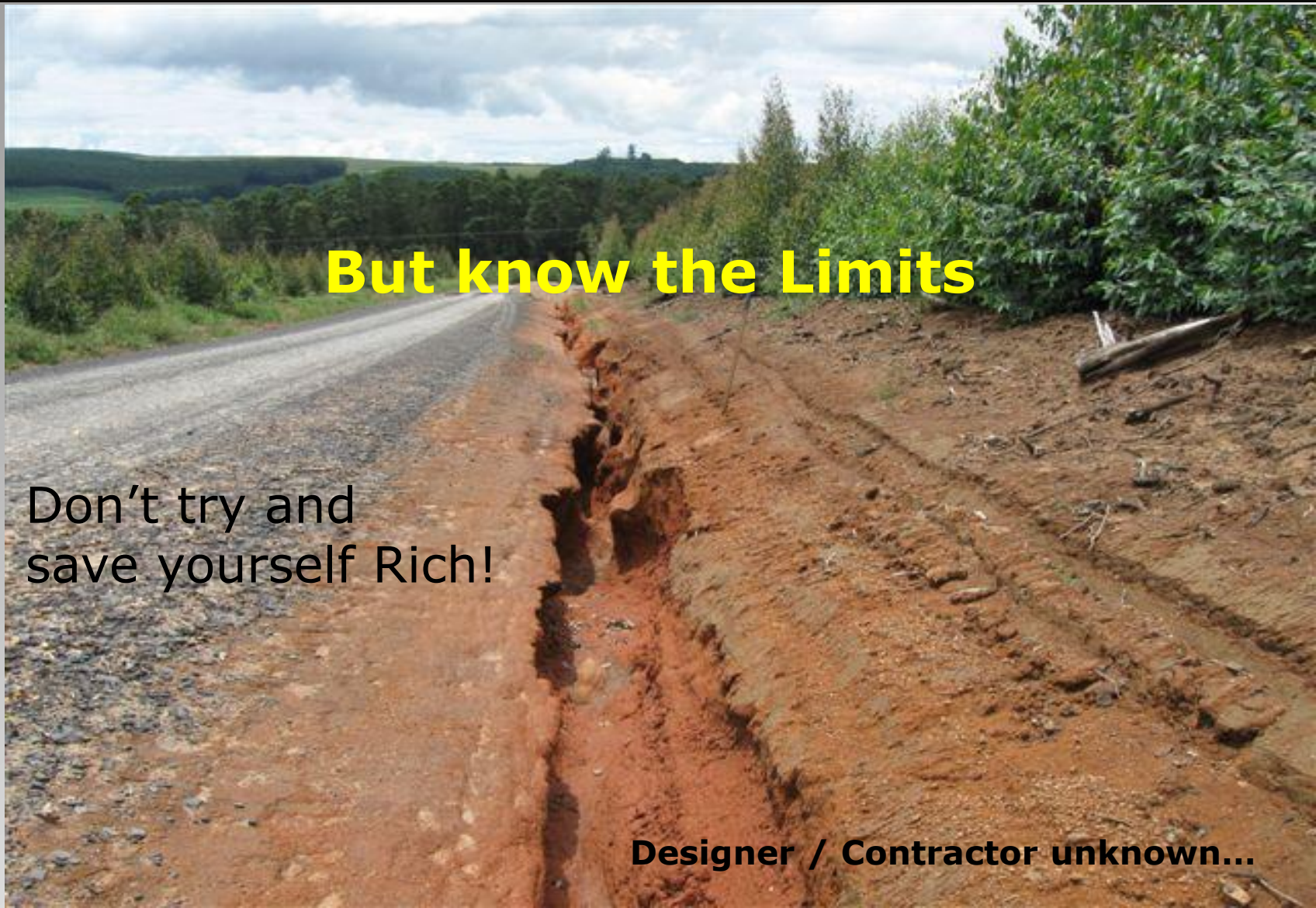
Stretching Your \$\$\$ by Matching Service Level to Specification

- Do you REALLY need an All Weather road?
 - Dry weather roads can be specified with little or no gravel provided insitu material has suitable bearing capacity
- Do you REALLY need 5m wearing course.
 - Reduce width and thickness of gravel wearing course where appropriate. Save 20%+ on wearing course.
- Make your culverts work
 - Increase spacing between pipe culverts by stabilising side drains (grass seeding, bolsters etc.)



Increase Spacings of Pipe Culverts by Stabilizing the Side Drain





But know the Limits

Don't try and
save yourself Rich!

Designer / Contractor unknown...

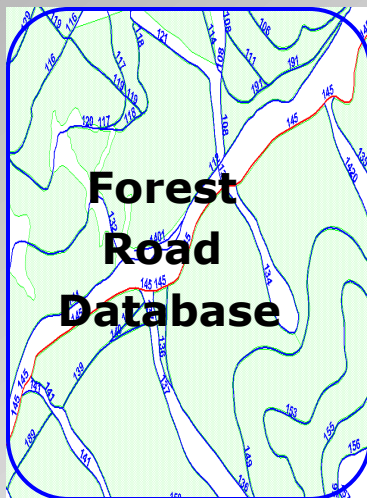


To Summarise

**DEFINE /
OPTIMISE**

**Service
Level**

BUILD & MAINTAIN



**Road
Management
System**

GET IT RIGHT!

**Roading Activities /
Specifications**



The Result

- Roads that do what they were designed to do
 - Development of the Road Network Asset
 - Minimise ad hoc effects
- Develop the Road Network Asset
 - Make your network WORK.
- Roads that MAKE money
 - Meet financial hurdles.
 - Don't need to Starve a Profit into the Business
- Environmental Performance
 - Mitigation
 - Compliance