

Light Green Vehicle Project

Truck Utility Lightweight FFR Winch MC2



Presentation to Australian Defence Force

Introduction

Rover Australia have developed a concept Light Green Vehicle (LGV) which demonstrates that a commercial model Land Rover Defender can be cost effectively configured locally to supplement the existing Perentie fleet in the role of a Truck Utility Lightweight FFR Winch MC2.

The presentation shows the features and specifications of the concept vehicle, which have been derived with input from users of Perentie vehicles that operate in roles similar to those envisaged for this vehicle.

The concept vehicle has been developed from the base of a standard diesel manual commercial Land Rover Defender Hard Top which has been locally fitted with military hardware.

This concept can be applied to most Perentie vehicle derivatives using Defender 110 commercial base vehicles to substitute for Perentie 4x4 variants and the Defender 130 vehicle base to substitute for Perentie 6x6 vehicles.

Vehicle Concept

Rover have conceived a low cost substitute GS vehicle based on commercial vehicle platforms. This is in recognition of; fleet liability pressures, high cost of specialist GS vehicles, necessity for any new GS Perentie vehicles to include considerable pattern revision due to component obsolescence. Additionally GS vehicles are not utilised to their full capability for all roles they are required to perform.

Mission Kits are proposed to provide Military features currently only available on a GS vehicle. For economic production the detail application of feature will vary from the Perentie GS configuration and the ultimate performance and durability of the product would not be equal to a GS Perentie vehicle. The prototype FFR vehicle has replicated virtually all features of the equivalent Perentie vehicle, it may be appropriate to delete some capability and cost for a production specification depending on the intended usage of the vehicle.

Current White vehicle ownership patterns show that it is economic to operate commercial vehicles for 2 to 3 years. This is assumed to equally apply to this concept affording the benefits of; Low vehicle maintenance cost, access to vehicle technological developments, minimised durability exposure. The Mission Kit has been engineered to be transferred from vehicle to vehicle to maximise value of the initial purchase. This approach is used by a number of corporations who require modified vehicles, including the Police.

Vehicle support and maintenance would be provided through Rovers network of dealers and existing repair parts arrangements with the ADF. This could be supplemented with direct Army support via a modest conversion programme

from Perentie to LGV based on the considerable similarity in design and feature.

Design Objectives

To demonstrate the LGV concept by producing a 24v FFR vehicle based on the Defender 110 Hard Top with 300 Tdi engine and 5 speed manual gearbox. Additional design objectives were: -

- ◆ Replicate features of equivalent Perentie GS vehicle, with reduced capability where a significant cost penalty occurs.
- ◆ Minimise negative impact on residual value, ease of transfer from vehicle to vehicle.
- ◆ Mission Kit life of 3 vehicle conversions/8 years.
- ◆ Maximise use of Perentie components.
- ◆ New components to be Australian sourced.

Capability Variance to Perentie GS vehicle

A capability compromise is implicit within this concept. The major areas of variance for this derivative are: -

- ◆ Durability to Commercial standards.
- ◆ Radio capacity, 3 ilo 5, 50 amp alternator ilo 100 and 2 ilo 4 batteries.
- ◆ Hardtop body configuration unable to be quickly re-configured to low silhouette.
- ◆ Reduced in-field support infrastructure.

Summary

Rover Australia have demonstrated that it is feasible to supply commercially derived vehicles with the features normally only available in a GS Perentie vehicle. The vehicle offers reduced capability compared with a Perentie GS vehicle at a considerable cost saving providing an interim level product to economically supplement the GS vehicle fleet.

Detail and photographs of the military features are on the following pages



Controls

Standard Military Configuration lighting (normal – reduced – blackout) is provided

Gauges provided include an ammeter and hour meter



Alternator

The vehicle is fitted with a UK MOD NATO specification 50 amp suppressed alternator that is adequate to supply the three radios that can be fitted. A Hand Throttle is also fitted to maintain optimal engine rpm for battery charging.



Rear Interior

Tyre Inflation: A 12-volt electric air compressor with hose is mounted in the rear body

Security Locker: Mounted below the radio frame (Perentie)

CES Tool Bin: A large capacity bin (with map pouch) is mounted on the LHS above the wheelbox



Blackout

Roll down external blackout curtains (Perentie canvas) are fitted on both sides.

These are supplemented with internal curtains of PVC



Chassis Rear

Std NATO towing pintle and trailer plug
(Perentie)

Rear differential cover and convoy light
(Perentie)

Trailer Safety Chain Brackets (Bushranger)

Heli Lift Rings (UK MOD).

Fold up rear step



Bull Bar

Aluminum bull bar incorporating jacking
stations with removable emergency towing
points.

Steering protector bar

Tie down points.

Heli Lift Rings (UK MOD)



FFR Batteries

Two Perentie FFR Batteries on LHS of
body. Hinged flap with slide out battery
tray for easy access (Perentie). Provision
for two extra on RHS.

Four Perentie antenna mounts on rear
body



Cab Roof

Fitted with roof rack of marine ply
construction – to minimise solar load

In addition to the Pioneer tools fitted to the
RHS rear, the roof rack can carry cam
nets/poles

ilEasily accessed by a ladder fitted to the
; rear body



Front Seats

Front seats fully adjustable with head restraints and 3 point harnesses
Seat covers pull on type DPP canvas
Mesh steel cargo barrier fitted behind front seats to protect occupants



Rear Seats

Two man fold up seat in longitudinal position
Lap seat belts
Fold away safety net between seats and radio frames
CES tool bin is fitted with stowage strap for securing packs for admin moves



Communications

Three Raven frames are sub frame mounted behind rear body bulkhead
Internal rear body lighting blue and white lights (Bush Ranger I)
Blackout curtain (roll up) fitted between radio frames and cargo barrier



Vehicle Front

Bonnet cover provides stowage for soft items such as cam nets and webbing
Two unit sign holders fitted to bull bar
Bull bar is fitted with additional side and indicator lights



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Mobility

Front mounted Warn electric winch
9000lb capacity – operated via a remote
cable control which plugs into a grille
mounted plug

Raised air intake - a snorkel is fitted to
maximize filter life under extreme
conditions



Rear Body Exterior

Spare wheel mounted on rear door with
canvas cover

Jerry can holder – one external on LHS
rear body

High mounted stoplight

De-ditching shovel fitted to RHS rear of
body

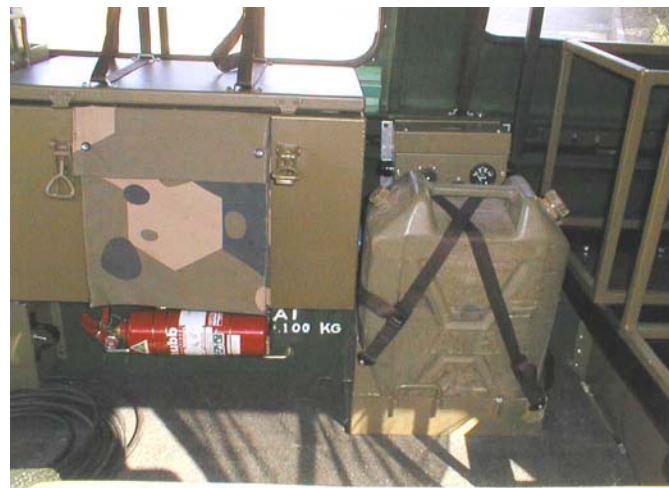


Rear Body Interior

Fire extinguisher 1.5kg dry chemical one
in rear body, one in cab

Power distribution box Perentie type
fitted in same position as in service
vehicles

Jerry can holders – provision for two in
rear body



Cab

Steyr weapon stowage provision for
two in cab and two in rear body

Heater demister and wiper motor –
suppressed Perentie type

Mesh door pockets



SPECIFICATIONS



ENGINE

Type	4 cylinder, turbocharged and intercooled direct injection diesel
Capacity	2495cc
Bore x stroke	90.5 x 97mm
Compression ratio	19.5: 1
Max power	83kw @ 3800rpm
Max torque	265 Nm @ 1800rpm

TRANSMISSION

5 speed manual R380 gearbox	
Transfer box giving permanent four-wheel drive and lockable centre differential	
Transfer ratios	Gear ratios
High 1.411 : 1	1 st 3.692 : 1
Low 3.201 : 1	2 nd 2.132 : 1
Final drive ratio 3.54 : 1	3 rd 1.397 : 1
	4 th 1.000 : 1
	5 th 0.770 : 1
	Rev 3.429 : 1

SUSPENSION

Live beam axles front and rear
Front – Long travel dual rate coil springs and Panhard rod
Rear – Long travel single rate springs and “A” frame

WHEELS

6.50J x 16”

TYRES

Michelin XZL

BRAKES

Power assisted discs (front ventilated)
Handbrake: drum acting on all four wheels via transfer box

STEERING

Power-assisted worm and roller, hydraulic shock absorber 4.0 turns lock to lock
Turning circle: 12.8m

CHASSIS

Box section, ladder configuration. Electrophoretically corrosion-proofed 2mm welded steel

BODY

Panels of lightweight, rust proof aluminium alloy	
Approach angle	50 deg
Departure angle	35 deg
Ramp break-over angle	152 deg

DIMENSIONS

Length	4438mm	Wheelbase	2794mm
Width	1790mm	Track	1525mm
Height	2059mm	Ground Clearance	215mm

WEIGHTS

Unladen mass: 2220kg	Gross vehicle mass	
	Front axle (max)	1200kg 1580kg*
	Rear axle (max)	1850kg 2200kg*
(*optional)	Total	3050kg 3500kg*