

Design Power

As a basis for comparison the Mini Cooper S has a power to weight ratio of 100W/kg. The least powerful Tesla has a motor power of around 200kw. Assuming around half of this power for a first time build

$$100\text{kW (4x25kW motors)} = 1000\text{kg @ } 100\text{W/kg (e.g. 100W/kg)}$$

Design alternatives

- build a basic frame from scratch without any trim or comfort features. Allows independent suspension and steering. Allows zero turn. Costed components \$6421, finished cost (estimated) ~\$10,000.
- get an old car for like \$500 (+~\$2500 for motors and batteries) and gut it. Small car weighs around 1300kg, removing the motor and un-needed components should bring it down close enough to 1000kg.

The rest of this document establishes outlines a preliminary design for a self-built electric car (option 1).

Design weights and cost

	Weight (kg)	Cost (AUD\$)
Passengers	100	0
Frame	121	2571
Motors	25	1500
Batteries	100	1000
Wheels	200	xxxx
Screen	50	350
Steering and suspension	20	1000
Seats	xxxx	xxxx

Motor suppliers

[Hobbysky 120100 80kv Brushless Motor 25kw Thruster Brushless Dc Outrunner Motor For Electric Paramotor Robot - Buy 80v Motor,Brushless Dc Motor,Outrunner Motor Product on Alibaba.com](#)

[40hp 25kw Outrunner Electric Motorcycle Paraglider Brushless Dc Motor 120100 - Buy 25kw Brushless Motor,Electric Paramotor Brushless Motors,Giant Brushless Motor For Drone Product on Alibaba.com](#)

Battery Suppliers

[Electric Car Battery 72v 200ah 18650 Battery - Buy 72v 200ah Lithium Battery,18650 Lithium Battery,Golf Car Lithium Battery Product on Alibaba.com](#)

[96v 15kw Electric Car Conversion Kit Lithium Battery 300ah 200ah - Buy Electric Car Conversion Kit,96v 300ah 200ah Lithium Battery,96v 15kw Motor Product on Alibaba.com](#)

[China Factory 144v Hybrid Car Battery Hybrid Electric Battery Charger Car Battery For Toyota - Buy Wholesale Global Car Battery 144v Hybrid Prius C 144v Hybrid Car Battery,24v Car Battery Battery Rebuild Car Batter 12v 64ah Dry Car Battery Global Car Battery,30 Kwh 50kwh Lithium Ion Car Battery Ev 75 Kwh Battery Pack 350v For Electric Car 144v 200ah Ev Battery Product on Alibaba.com](#)

[Catl 4s1p 14.8v 150ah Nmc Ev Battery Module For Leaf Battery Electric Car Battery - Buy Electric Car Battery,Car Battery,Battery Car Product on Alibaba.com](#)

Frame & Materials

Base = 2m x 3m

Roof = 2m x 3m

Sides = 3m x 1.5m

Ends = 1.5m x 2m

(20 x 20 x 1.6mm) Galvanised Square Hollow Section

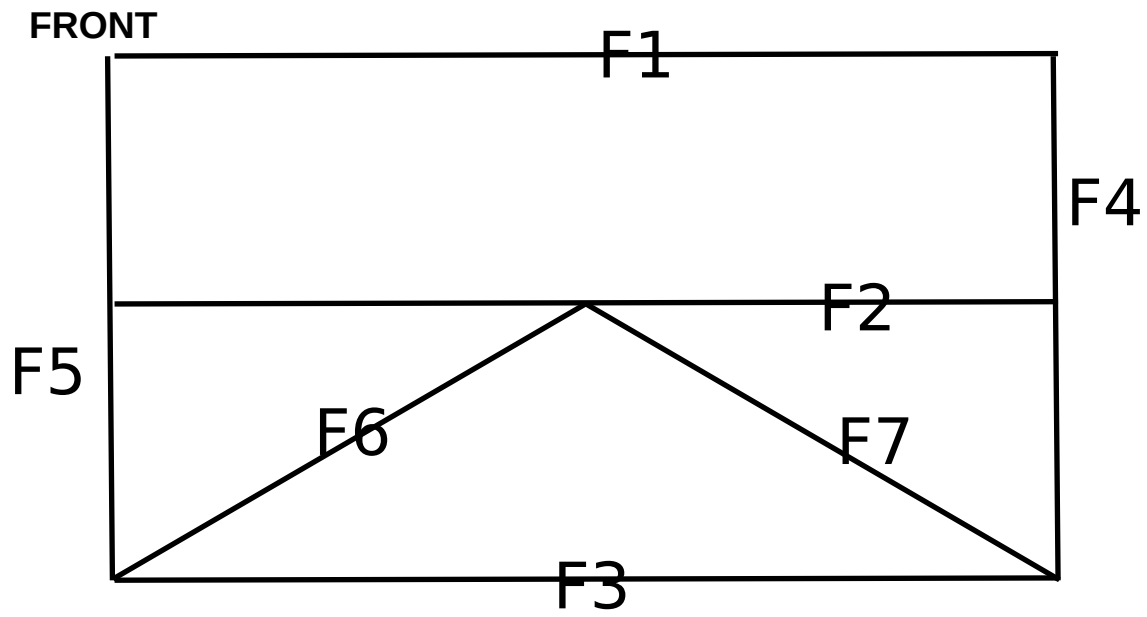
Totals

Steel	131.73 m
Weight	96.27 kg
Cost	1,141.70

0.5 x 900 x 900mm Plain Aluminium Sheet

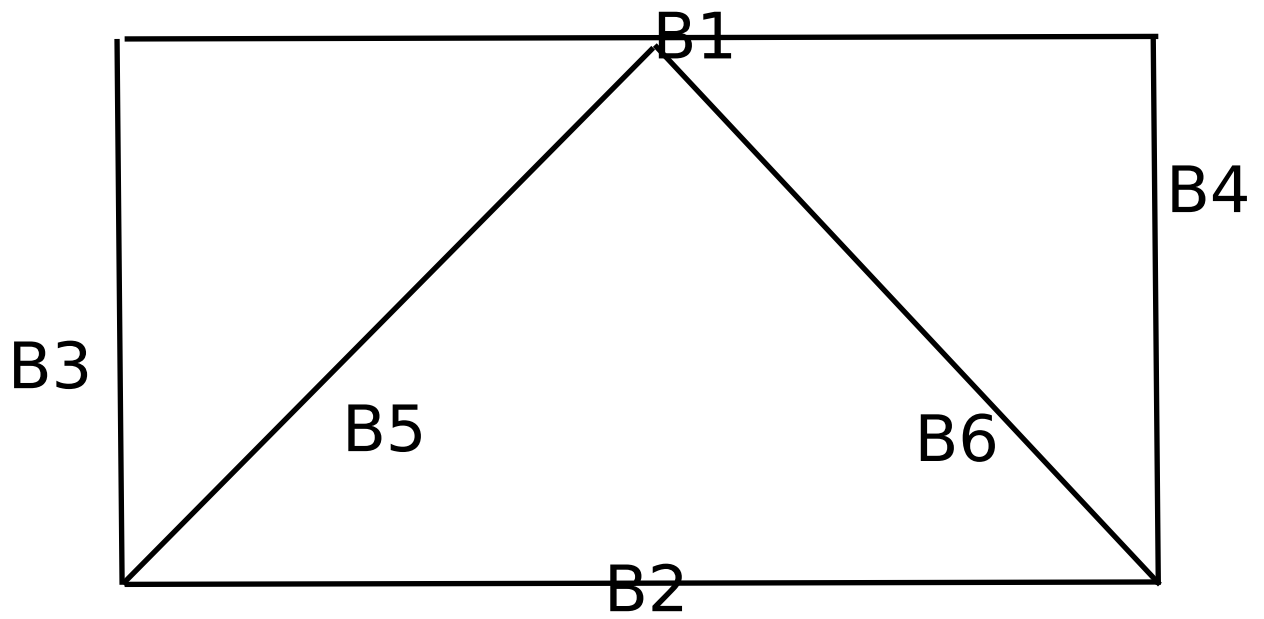
Totals

Aluminium	18m ²
Weight	24.64kg kg
Cost	\$1430



Members	Length
F1	2.00
F2	2.00
F3	2.00
F4	1.50
F5	1.50
F6	1.41
F7	1.41
Total	11.83
Weight	8.64
Cost	102.51

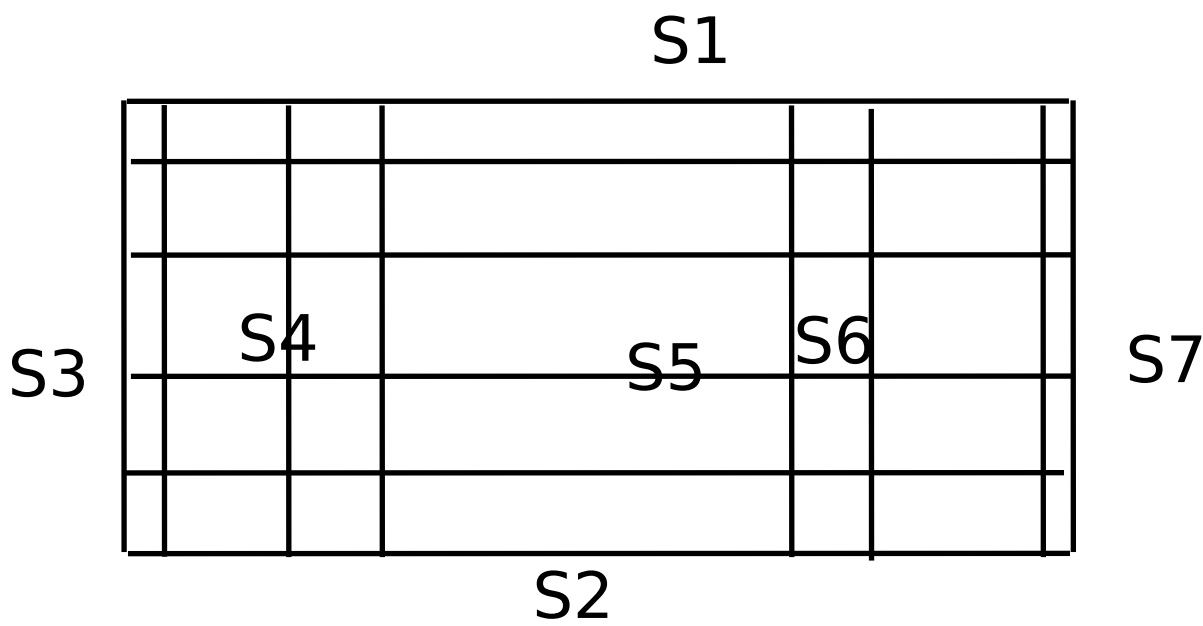
BACK



Members	Length
B1	2.00
B2	2.00
B3	1.50
B4	1.50
B5	1.80
B6	1.80

Total	10.61
Weight	7.75
Cost	91.91

BASE [enumertate members]

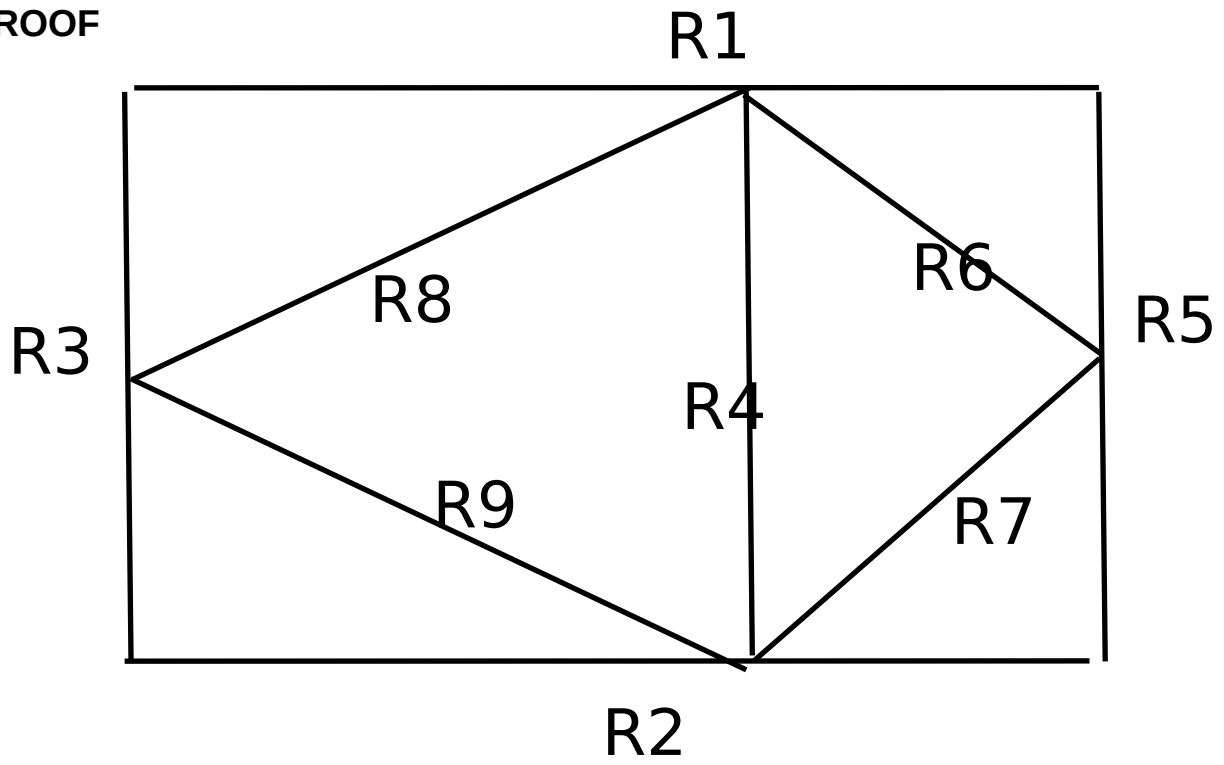


Members	Length
BASE1	3.00 x6
BASE2	2.00 x8

18.00
16.00

Total	34.00
Weight	24.85
Cost	294.67

ROOF

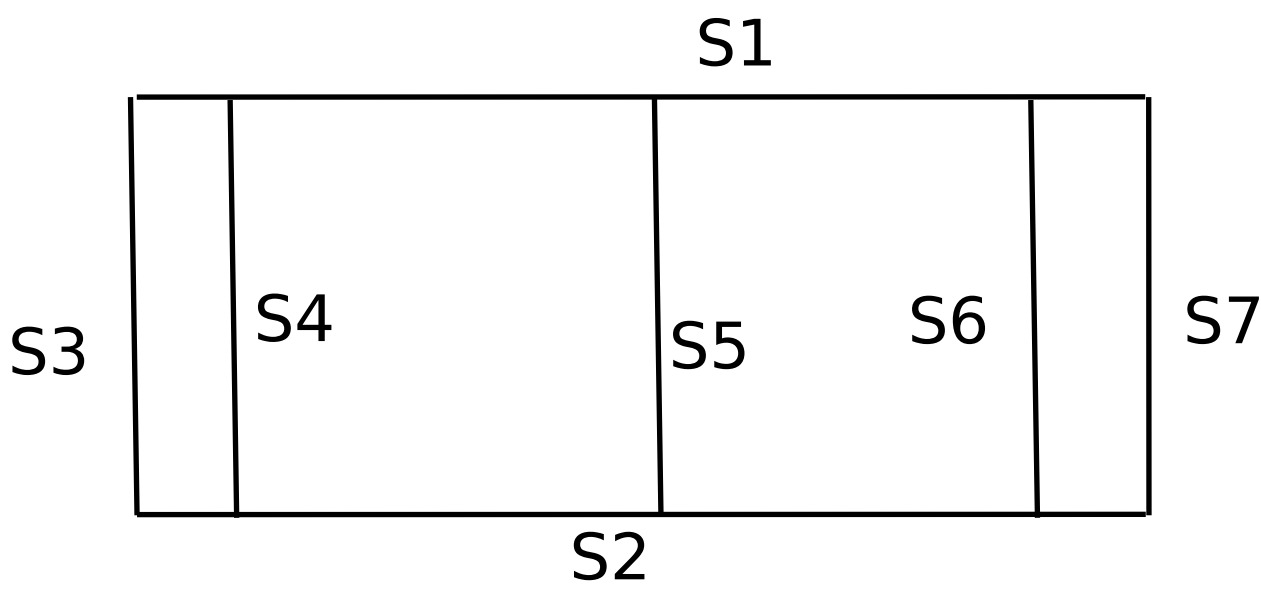


Members Length

R1	3.00
R2	3.00
R3	2.00
R4	2.00
R5	2.00
R6	1.41
R7	1.41
R8	2.24
R9	2.24

Total	19.30
Weight	14.10
Cost	167.27

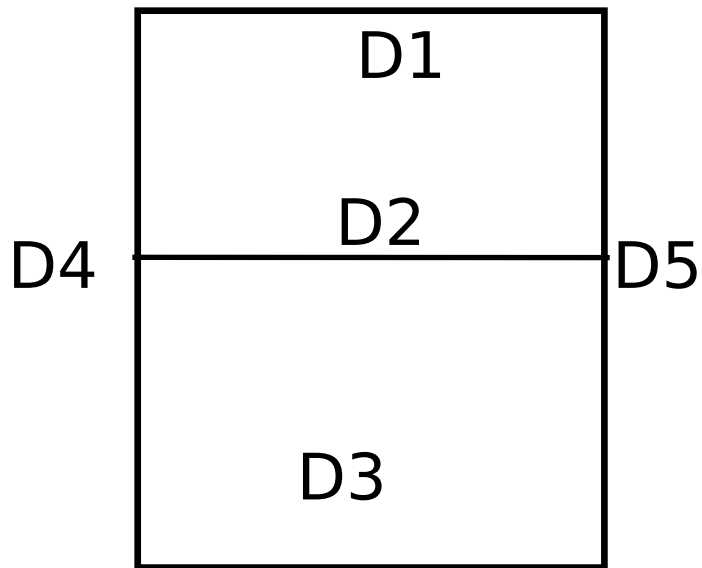
SIDES X 2



Members	Length
S1	3.00
S2	3.00
S3	2.00
S4	2.00
S5	2.00
S6	2.00
S7	2.00

Total	16.00
Weight	11.69
Cost	138.67

DOORS x 4



	Members	Length
	D1	1.00
	D2	1.00
	D3	1.00
	D4	1.50
	D5	1.50
Total		6.00
Weight		4.38
Cost		52.00

STEERING, DRIVE AND SUSPENSION

Independent steering and suspension at each wheel.

