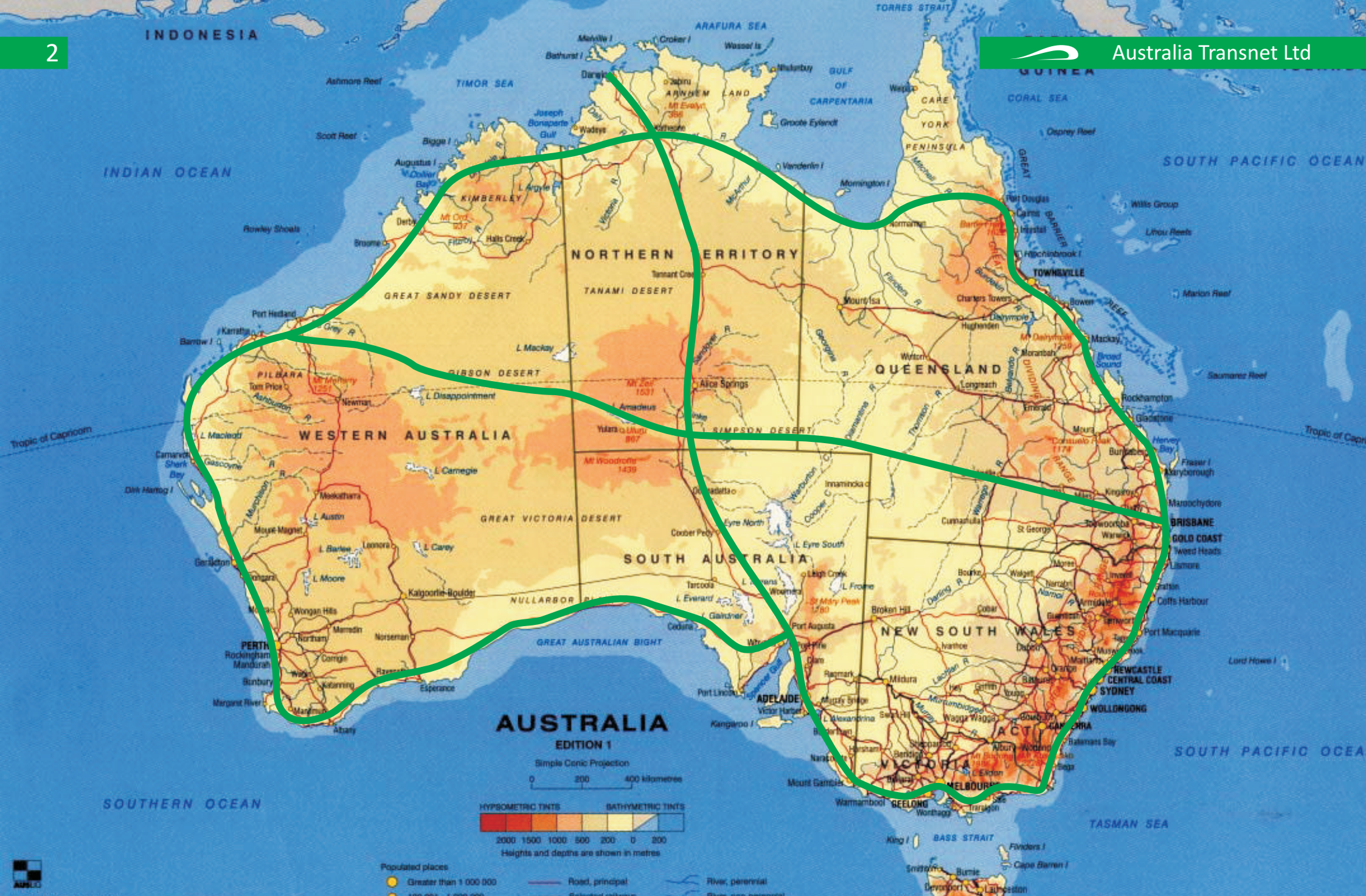




# TSY radial-ring network in Australia

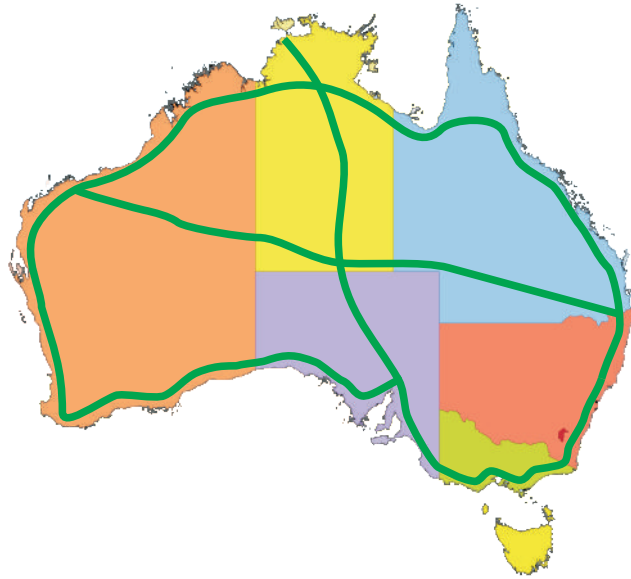


Map of Australia with trace options for string line

TSY network in Australia

Directions:

Ring route	11 600 km	
Route "East - West"	3 600 km	(Brisbane - Port Hedland)
Route "North - South"	2 400 km	(Darwin - Port Augusta)
Total:	17 600 km	

Ring route:

Sydney - Brisbane	820 km
Brisbane - Townsville	1 150 km
Townsville - Katherine	1 850 km
Katherine - Port Hedland	1 770 km
Port Hedland - Perth	1 600 km
Perth - Adelaide	2 870 km
Adelaide - Melbourne	730 km
Melbourne - Sydney	810 km
Total:	11 600 km

Routes by states/territories:

New South Wales	1 100 km
Queensland	4 000 km
Northern Territory	3 500 km
Western Australia	5 800 km
South Australia	2 400 km
Victoria	800 km
Tasmania	0 km
Australian Capital Territory	0 km
Total:	17 600 km

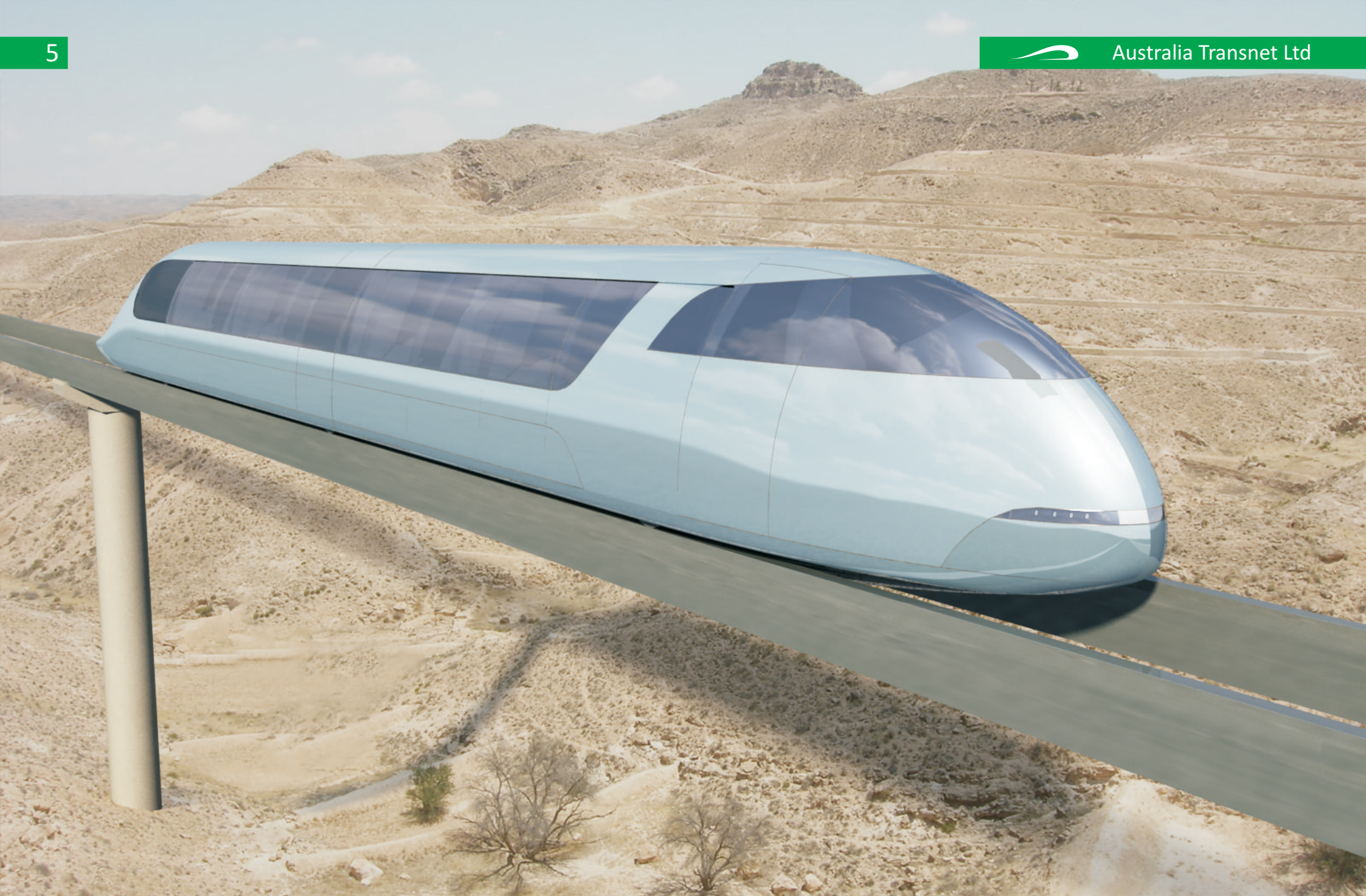
Routes between cities (by states/territories):

Eden - Sydney	380 km
Sydney - Forster	240 km
Forster - Coffs Harbour	230 km
Coffs Harbour - Tweed Heads	250 km
Tweed Heads - Brisbane	100 km
Brisbane - Townsville	1 150 km
Townsville - State border	1 150 km
Brisbane - Mitchell	550 km
Mitchell - State border	1 050 km
Ring route	1 100 km
Darwin - Tennant Creek	840 km
Tennant Creek - Kulgera	720 km
Territory south	840 km
State border - Broome	850 km
Broome - Port Hedland	520 km
Port Hedland - Geraldton	1 220 km
Geraldton - Perth	380 km
Perth - Albany	500 km
Albany - Esperance	410 km
Esperance - Border Village	720 km
Port Hedland - Lake Hopkins	1 200 km
Border Village - Coorabie	320 km
Coorabie - Elliston	340 km
Elliston - Port Augusta	330 km
Port Augusta - Adelaide	250 km
Adelaide - Mount Gambier	360 km
Port Augusta - Kulgera	800 km
Mount Gambier - Melbourne	370 km
Melbourne - Lakes Entrance	270 km
Lakes Entrance - Timbillica	160 km
Total:	17 600 km



General view of rapid TSY (450 km per hour)

TSY network in Australia



Rapid yunibus with capacity of 40 passengers

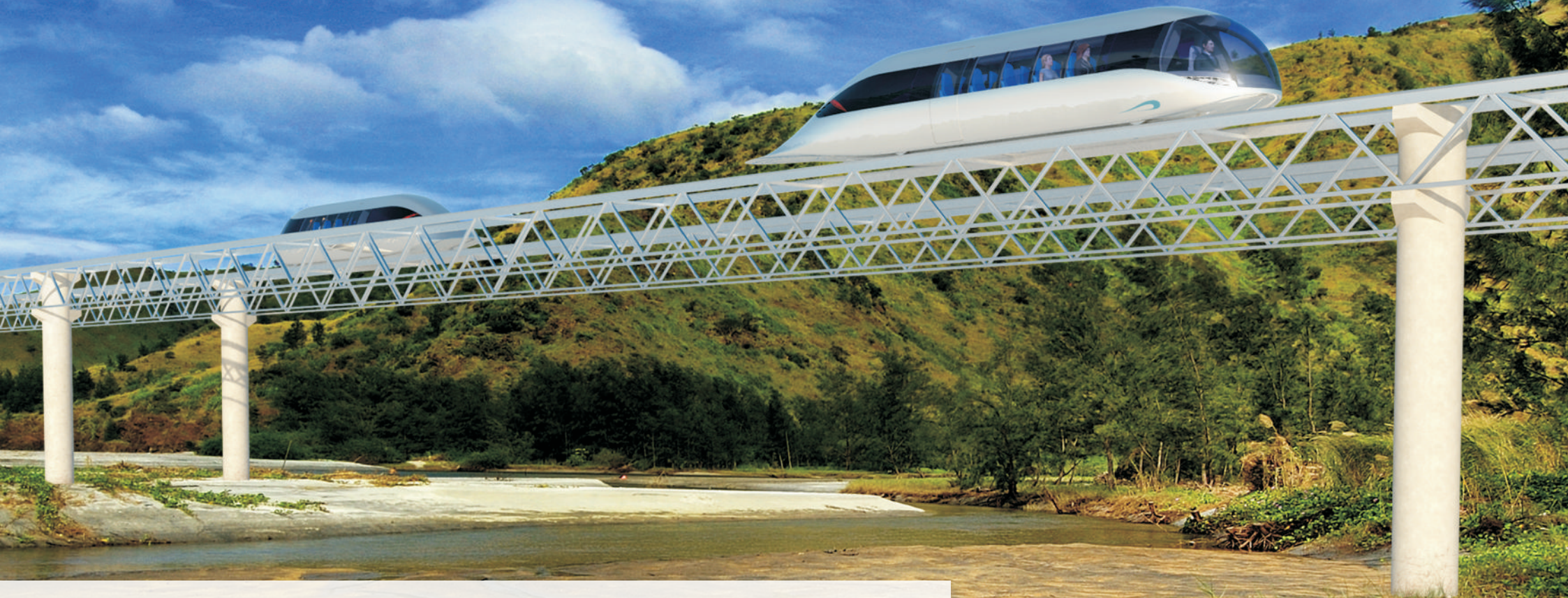
TSY network in Australia

Specific power of a drive at a speed of 360 km/hour: 8—12 kW/pass.  
Specific fuel consumption at 360 km/hour: 0.6-0.9 liter/100 pass.-km



High-speed yunibus (eventually up to 500 km / hour)

TSY network in Australia



Averaged double-track high-speed highway TSY cost is

**4.8—6.5 million AUD/km**

including:

- track structure and supports
- stations, depots, terminals
- high-speed unibus
- security, control and communications
- other

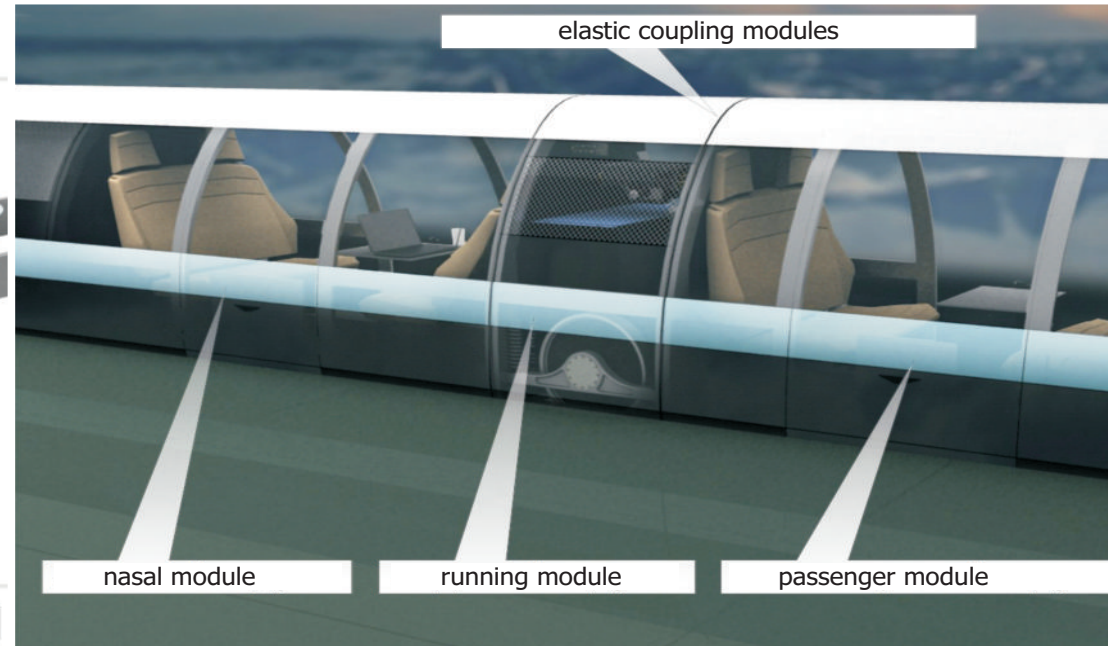
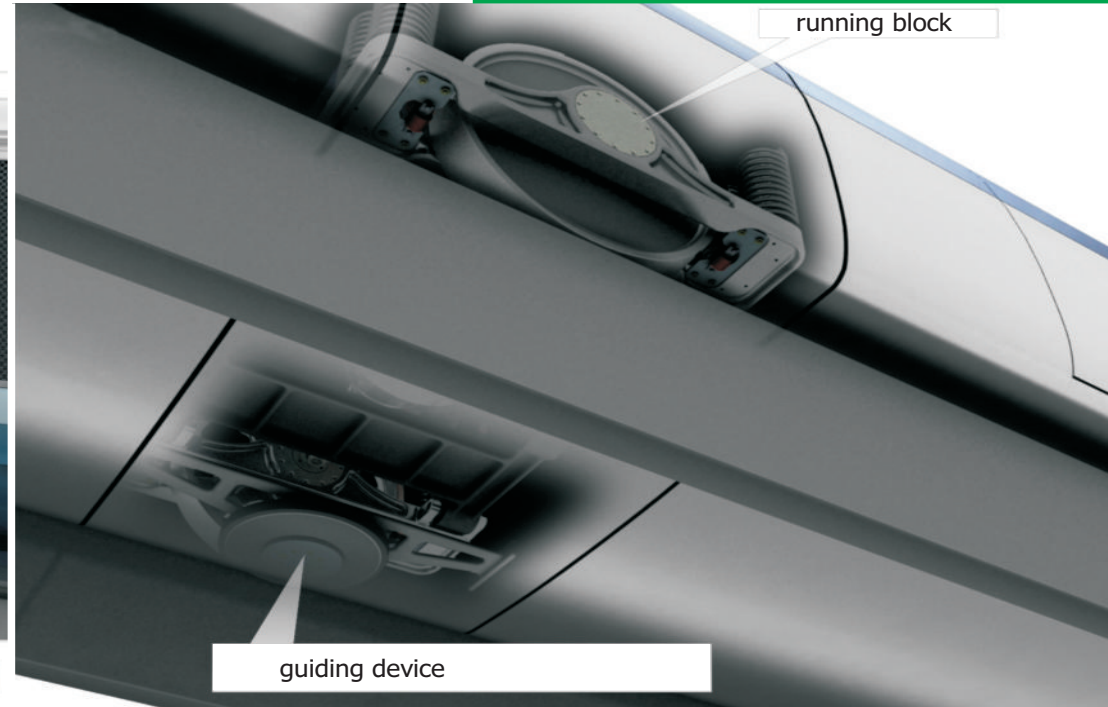
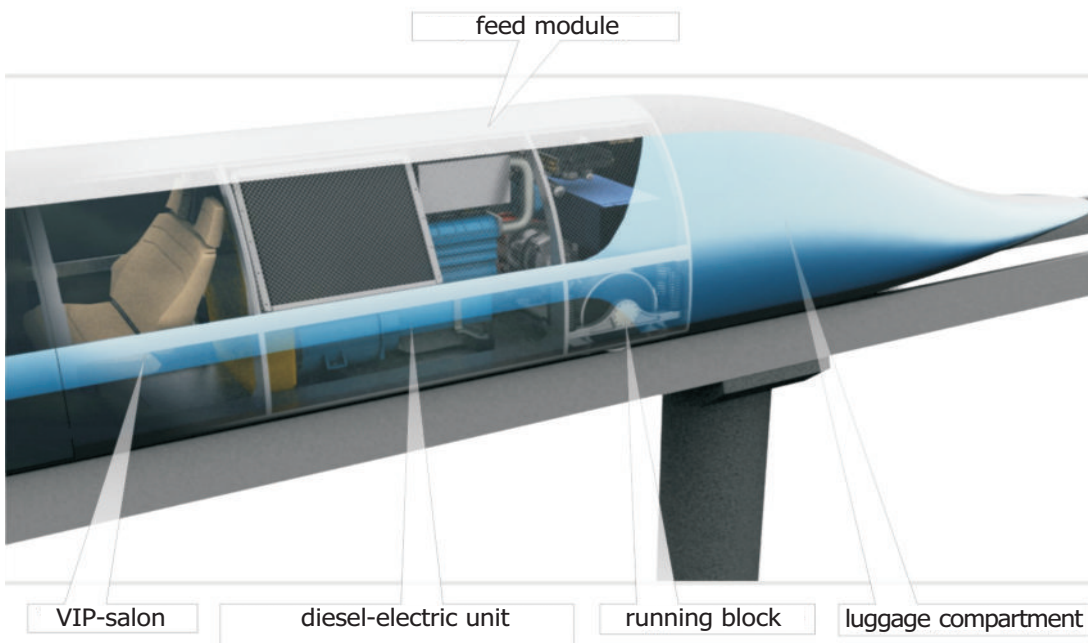
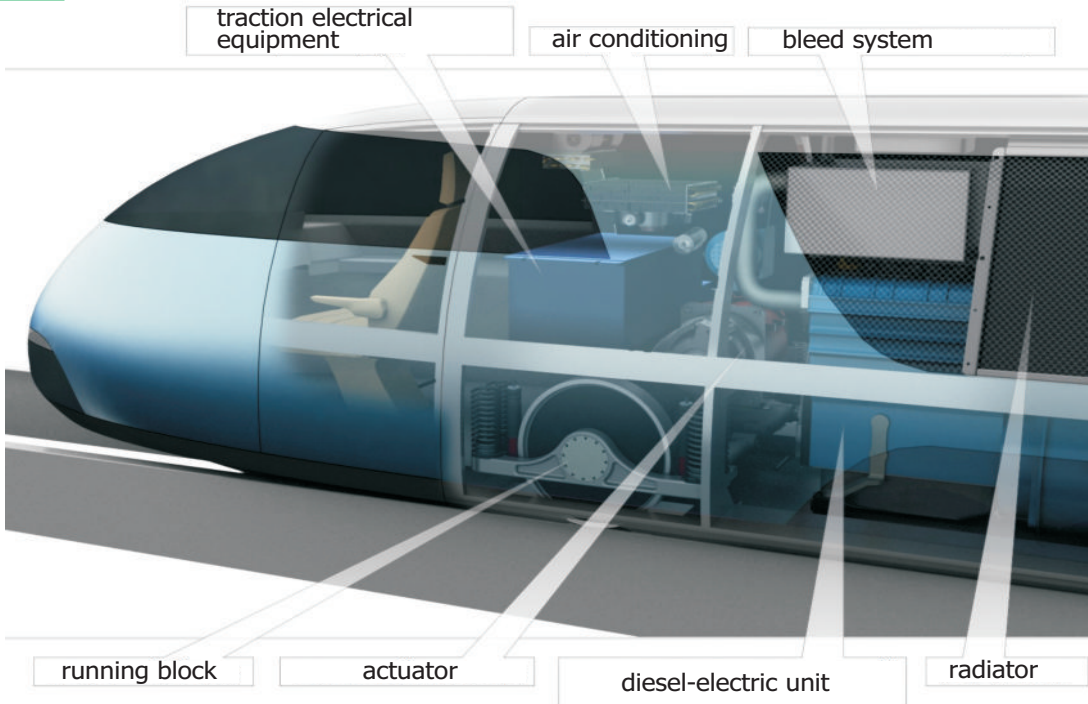
4.2—5.5 million AUD/km

0.1—0.2 million AUD/km

0.1—0.2 million AUD/km

0.1—0.2 million AUD/km

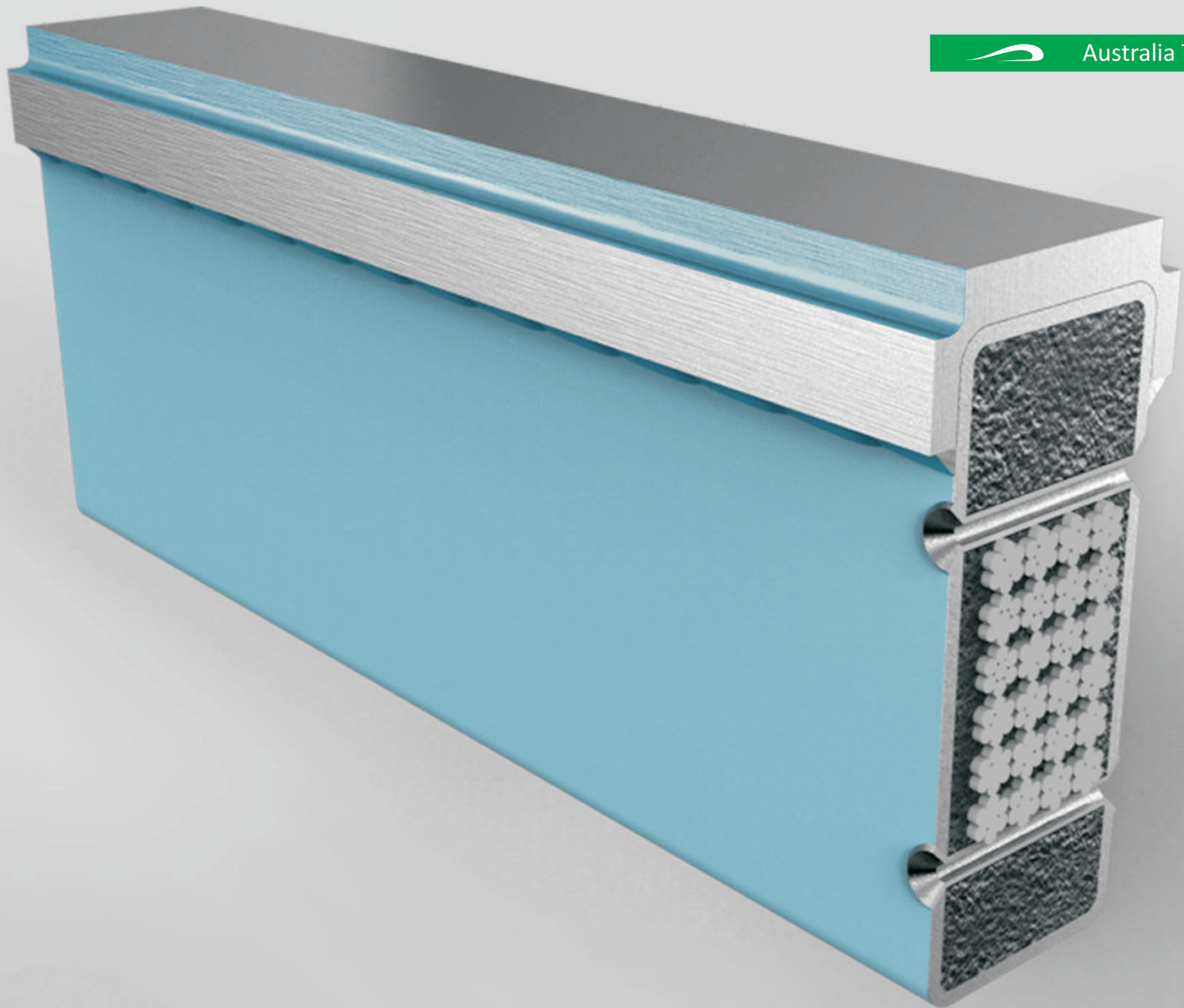
0.3—0.4 million AUD/km



Design features of high-speed yunibus

TSY network in Australia





TSY string rail at 1:2 scale

TSY network in Australia

### TSY radial-ring network in Australia

Transport Systems Yunitskiy (TSY) - "second tier" rail transport, which track structure is raised by supports to the height of 5-10 meters or more and forms spans of 40-50 meters or more. Basis of TSY track structure consist of special designed string rails, made in the form of a rail-string (or truss-string), inside of which pre-stressed armature - string - provides the necessary strength, smoothness and durability. Design of TSY track structure is a form of transport racks, suspension and cable-stayed bridges with minimized consumption of materials and thus - value.

TSY rolling stock is a rail cars with steel wheels, called yunibus. Yunibus is the most efficient vehicle of all currently known (car, airplane, helicopter, high-speed railway train, magnetic levitation train).

TSY trails are environmentally friendly, all-weather and resistant to both natural disasters (floods, earthquakes, hurricanes, tsunamis, extreme cold and heat, etc.) and to cases of vandalism and terrorism.

Length of TSY rapid radial-ring route in Australia - 17.600 kilometers. Estimated cost of such transcontinental TSY highway - 95 billion AUD. After the optimization and industrial development of rapid TSY in the certification part of the track in Australia, project cost can be reduced to 80 billion AUD. For comparison, a route made by the best global technologies of traditional rapid railroad in trestle execution, would cost to the customer the amount of not less than 800 billion AUD.

Length of TSY rapid ring (along the coast of Australia) track - 11.600 km, radial track "East - West" - 3.600 km, section "North - South" - 2.400 km.

Average value of TSY rapid (in the long term - up to 500 km / h) double-track trails in Australia: is 4,8-6,5 million AUD / km, including:

- Track structure and supports	4.2-5.5 million AUD / km
- Station, depots, terminals	0.1-0.2 million AUD / km
- High-speed yunibus	0.1-0.2 million AUD / km
- Security, governance, energy and communication	0.1-0.2 million AUD / km
- Other	0.3-0.4 million AUD / km

Cost of TSY rapid tracks depends on:

- terrain (it determines the height of supports and length of spans);
- climatic factors (seasonal variations in temperature, estimated wind speed, strength of underlying soil, likelihood of frost, floods, earthquakes, etc.);
- taken from TSY characteristics in specific project (design speed, capacity and load of yunibus, estimated passenger and cargo flows, adopted guidelines, biases and radii of curvature of track structure, etc.);
- optimization of design decisions at the design stage (bench tests and pilot production cycles on certification test site in real climatic conditions of the project). Optimization can save up to 0.5-1 million AUD / km, which, for example, will give 9-18 billion AUD of economic benefit on 17.6 thousand km network length.

Power density of rapid yunibus drive at a speed of 360 km per hour (or 100 meters per second): 8-12 kW / pass. For comparison, the same indicator for rapid railway - 50-70 kW / pass., sports car has a top speed of 360 km per hour - more than 200 kW / pass.

Specific fuel consumption (in terms of calculation of electrical energy in fuel) of rapid yunibus at speed of 360 km per hour (or 100 metre per second): 0.6-0.9 litre /100 pass.-km. For comparison, the same indicator for rapid railway - 3,9-5,5 litre /100 pass.-km.

TSY rapid roads in Australia will be built with the same standards as urban TSY. Therefore, Australia will be a single communication network designed to move not only multi (20-50 pass. and more), but in the long term - personal (1-2 pass.), and "family" (3-6 people) rapid yunibus with the ability to develop the speed up to 500 km / hour on the main roads. In urban areas, this speed may be limited to 120 km per hour. This will make infrastructure revolution of 21<sup>st</sup> century for the economy of any country, comparable in scale (and even exceeding) the revolution, which made the car in the 20<sup>th</sup> century.

Carrying capacity of TSY rapid double-track trails (total in opposite directions) - 1 million people per day. In the sections of the route, where passengers' density will be higher, the number of ways may be increased. With the average trip distance of 500 km Australian network of string roads can serve over 20 million users per day, ie the whole population. TSY track structure will be combined with lines of communication and power lines (they will be "protected" in string rails), supports – with wind and solar power. Such a communication system of Australia will pay for itself in 3-5 years.



TSY network in Australia