

A History of Fraser Island Road Degradation

FIDO's concern over the impact of roads began in 1974 while developing Fraser Island's first ever Management Plan. FIDO then began advocating a light rail people mover as the most visitor friendly and environmentally sustainable form of access to this unique World Heritage site. Since then the Queensland Government has for 30 years refused to grasp the nettle. Fraser Island's roads have not only continued to deteriorate, but the impacts of this deterioration have spread to its unique lakes and soil profiles.

Until **1969**, when Gordon Elmer first began operating the first regular vehicular ferry to Fraser Island, it was extremely difficult to land any motor vehicle on the island. There were very few vehicles other than the small Land Rovers used by the Forestry Department. The roads were so little impacted and the surface so little disturbed that most visitors' vehicles were only conventional two wheel drive, usually fitted with larger tyres. A healthy root mat under all roads except the steep hills down to the eastern beach stopped such vehicles becoming bogged. The tracks were so narrow that the vegetation brushed against even smaller vehicles for most of their journey. Other vehicles on the tracks were extremely rare and it was impossible for two vehicles to pass without one pulling right into the vegetation and stopping to let the other past.

Patrick White described his impression of the drive from the Wanggoolba Airstrip to Central Station in **1968** in "Eye of the Storm": *"An ancient car dashed towards the airstrip from out of the tallwoods and sassafras, bucking, almost pig rooting at every ridge it had to cross ... Nonchalantly the Chevrolet leaped away from the airstrip, tore through a thinnish scrub, and started to climb through the rainforests. ... At some stages of the journey, the trees were so densely massed, the columns so moss upholstered or lichen encrusted, the vines suspended from them so intricately rigged, the light barely slithered down, and then some dark watery green, through the rare gaps where the sassafras had been thinned out, and once where a giant blackbutt had crashed, the intruders might have been reminded of the actual light if this had not been flittered again like moss, but dry, crumbled white to golden. ... For a moment they were overtaken by the forest pressing through the carrol scrub"*

In **1974** FIDO's primary concern was the degree of widening which was occurring to accommodate the increasing traffic and wider buses. This was changing the aesthetics of the Fraser Island experience visitors had previously enjoyed. It was also contributing to the drying out of the road surface and to the desiccation of the forest adjacent to wider roads. FIDO first started noticing the thinning out of orchids and other epiphytes at this time. FIDO recognised that a light rail would require a much narrower road than 4WD vehicles.

By **1986** the deterioration and the widening of the roads had become increasingly obvious, although the down-cutting of even heavily used roads was not obvious anywhere but on a hill behind Eurong. However, FIDO had become so alarmed that it was one of the grounds for FIDO opposing the establishment of the Kingfisher Resort in the Local Government Court in 1987. During that case the proponents of the Resort in sworn testimony undertook to pay for all the upgrading and maintenance of the Cornwalls Break road from their resort to the eastern beach; an undertaking never honoured.

By **1992** FIDO's concern over the rapid deterioration of the roads had been raised to alarm. FIDO was particularly concerned about the impact of heavy traffic destabilising the banks of Wanggoolba Creek and our observation of sediments flowing from the roads into the lakes. At FIDO's instigation, the QPWS commissioned Chenoweth and Associates to carry out an environmental impacts study of the impact of both roads and camping in 1993. This was done, but it failed to address the issues which continue to concern FIDO.

FIDO then noticed that the plant operators on Fraser Island seemed to be intent on removing larger roadside vegetation particularly banksias, which FIDO dubbed "*Banksia Serial Killing*" — a practice still observed a decade on.

1993: The QPWS had developed a set of Draft Road Standards which were to limit road widening and the basis to which roads would be maintained.

1995: In July MOONBI 87 reported on standards proposed for Category 3 roads (major scenic/tourist routes). These "tracks" would have a, "pavement width maximum 4m, minimum 3m, and up to 6m at passing bays. ...Passing bays minimum 100m up to 200m on two way roads depending on alignment and terrain. On one way roads, passing bays may be constructed at a frequency of no more than every 500 metres and preferably no less than 1 km apart. 5m maximum to be brushed or cleared from overhanging trees or branches to a height of 4.5m." MOONBI 87 added: *"The DEH ignored even this draft policy for so long that it is now possible to drive two 50 passenger buses abreast (heaven forbid) for lengthy sections of the one way road leading to Lake McKenzie and the one way road east from Eurong. In many place the graded road width is more than 6 metres — more than 2 metres wider than proposed. Disregard for the Draft Road Standards is a disgrace."*

(In May 2004, FIDO was informed: The 1993 "draft" road standards were never adopted by the Agency and are not used to determine the maintenance standards for the roads and tracks on Fraser Island.)

An Insoluble Problem? In **2000** a team from the Queensland University of Technology School of Civil Engineering began a collaborative research project to develop design strategies to optimise the sustainability of sand roads on Fraser Island. It sought to develop an in-depth understanding of the processes causing the degradation of the sand road network on the Island.

While the project is seeking more funding to carry out further research, the initial findings indicated that the problems were very difficult to solve. One finding was: *"Standard Road Design criteria show that the unpaved sand roads on Fraser Island are only adequate to carry up to ten light vehicles and five heavy vehicles per day. Also, the road base (medium dense sand) only marginally has the ability to support the types of vehicles that currently traverse Fraser Island."*

The study showed the problems resulting from run-off and sand movement resulting from storm-water. *"The stormwater runoff also results from a combination of vehicle compaction and an accumulation of decomposed organic materials filling the pore space between sand grains, forming an impervious layer just beneath the road surface. Rain falling on the road surface cannot infiltrate into the road base due to the impervious nature of the dense compacted organic rich layer just beneath the wheel ruts, which results in significant storm-water runoff in the wheel ruts."*

An interesting revelation was that the organic impervious hardpan under the roads are created by very little traffic and once established they are persistent resulting in reduced infiltration for years after all traffic has been removed from the roads. FIDO has observed the continual sand relocation on many former roads years after they were closed to all vehicles.

Addressing the Issue of Road Deterioration

It has been estimated that as much as a tonne of sand is sluiced down the roads of Fraser Island for every visitor. The deterioration of the roads is resulting in serious environmental impact. Sand flows into lakes and hollows, smothering surface vegetation and substantially altering soil profiles in hollows. But the impacts that the deterioration of Fraser Island's roads extend well beyond the environment. About 40% of the total Fraser Island budget or over \$2million per annum was being spent on road maintenance by 2001. Additionally people currently have two only options to explore Fraser Island — to take a bumpy uncomfortable ride over rough tracks in some form of 4WD vehicle or walk.

GHD Study: In 2001, the QPWS commissioned a Transport and Access Study for Fraser Island to address the problems of how to address the problems being created by the roads. The engineering firm GHD proposed a four stage process to undertake the study which looked at how the Queensland Government could minimize impacts by considering all routes and alternative methods of transport to that currently used. There was to be a four stage study with Stage 1 being an environmental impacts study. Having completed Stages 1, 2 and 3 by February 2003, the EPA stopped the project from proceeding further. The results of their study have never been released. However, their study on impacts coincided with FIDO's conclusions:

- * Erosion leads to sedimentation of creeks and the freshwater lakes. Sluiced sand suffocates existing vegetation and buries the original substrates and altering some soil profiles.
- * Vibrations impact on soil and vegetation stability. This is evident by the destabilisation of the banks of Wanggoolba Creek
- * Damage to vehicles from deteriorating roads. This has a major economic impact. It costs more than \$300,000 to replace a bus and there are more than 50 of them operating there.

Visitor Numbers: The increase in the number of visitors provides some explanation for the deterioration of roads in the last 30 years. In 1970 it is estimated that only 5,000 people visited Fraser Island. That was soon after the first ferry began operation between Inskip and Hook Points. In 1971, the year that the controversy over sandmining on Fraser Island began the numbers doubled to 10,000. Now visitor numbers regularly increase by more than 10,000 as indicated by the following table.

91-92	210,941	97-98	295,153
92-93	239,974	98-99	305,717
93-94	257,184	99-00	301,643
94-95	264,231	00-01	
95-96	266,733	01-02	333,099
96-97	273,622	02-03	345,337

Vehicle Permits: In 1991-92 the number of vehicle permits issued was 29,300. By 1996 the number of vehicle permits had grown to 37,355. By 2002-03 the number had risen to over 41,000 permits. This number represents a 36% increase in 11 years. The number of vehicle permits doesn't include the number of commercial tour operators' vehicles (which have been carrying an increasing proportion of the Fraser Island visitors) nor the ever-growing fleet of management vehicles. This exponential increase in traffic has taken its toll on the roads.

Budgetary Implications: Road maintenance on Fraser Island is contributing the island's degradation and consuming the money urgently needed for other major management problems. Little of the budget remains to manage natural resources and biodiversity. Roads on Fraser Island have proven to be a financial black hole. Money continues to be spent on "maintaining" them, mainly to allow tour operators with the very large buses to operate on them necessitating continuing "maintenance". This is being done despite the now acknowledged environmental impacts of the larger

vehicles with high tyre pressure are having. Despite this expenditure, the state of the roads continues to deteriorate.

Addressing the problem

4WDs don't result in anywhere near as many impacts when travelling on Fraser Island's beaches as they do on the roads, particularly where the roads have any significant gradient. While FIDO sees some solutions in a light rail being created to remove almost half the visitors travelling across the island by buses, there will continue to be some 4WDs operating on Fraser Island and it is important that roads are managed better. These are some of the steps FIDO sees as critical to addressing this long term problem:

- Closer attention needs to be paid to the environmental impacts of all modes of transport and all other options FULLY explored.
- There needs to be a raising of the standards required for drivers of 4WD vehicles on Fraser Island.
- Much damage results from inexperienced drivers. Mandatory vehicle standards may need to be introduced. It is known that lower tyre pressure reduces road damage but there is no enforcement of tyre pressures standards. Likewise it is known that lighter vehicles and automatic transmissions both reduce impacts.
- Axle loading limits need to be enforced as they are on conventional roads. (A full study on axle loading impacts is long overdue).
- Appropriate road standards need to be urgently adopted and implemented. Existing road maintenance practices need to be reviewed.
- More of the budget currently being allocated for roads should be applied to reducing the environmental impacts of road.
- Roads need to be closed to traffic during wet conditions. Both the public and tour operators should be prepared to accept this.
- More roads should be re-routed to reduced steeper grades which results in the worst down-cutting.
- Some road spending should be diverted to explore options to introduce more sustainable people movers such as a light rail as an alternative to the existing transport pattern. (An \$80,000 study would enable the Queensland Government to call for Expressions of Interest to build a light rail.)
- Alternative modes of transport and visitation must be fully explored as a matter of the highest priority to develop a more ecologically sustainable pattern for visitation to Fraser Island. A great start has been made with the development of the Great Walk. People need to be encouraged to explore Fraser Island by modes other than a 4WD vehicle.
- If Fraser Island's sustainable "carrying capacity" can't be improved to make it environmentally sustainable through better management, then it may be necessary to place a cap on visitor numbers.