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VFT TOPICS

VFT and the Environment

The VFT, like other major human enterprises, will have effects on our environment as soon as it gets off the drawing board. Those effects will be both positive and negative; and it is accepted that judgements about which elements fall into which category will vary widely among the Australian community. People who hold strong views against development or construction occurring in rural areas have different perceptions from those who can hardly wait to have fast, safe and reliable access to relatives, friends and business contacts far away.

A greater glider: a species distributed widely, though sparingly, throughout Victoria. Studies of habitats of animals such as these have already started. They will allow VFT planners to be especially sensitive to environmental factors along the whole route. – CSIRO photo.

For this and many another reason, a major feature of the VFT feasibility study is an environmental impact process in which communities will be consulted very widely. It will not take place until it is possible to be more specific about the VFT's route (the decision between a coastal or inland route south of Canberra is not to take place until May 1990); in other places only a corridor between one and ten kilometres wide has been identified for study. It is only when the final alignment is known that it will be possible to identify many of the local impacts and to analyse them realistically.

As with other wide-ranging projects, the benefits of the VFT will be enjoyed by a large number of people over a wide area, whereas most negative impacts will be concentrated on a small number of people in a relatively small area. Because the negative impacts are felt more keenly by the people affected, publicity given to their concerns will tend to obscure the environmental benefits enjoyed by a wider population. That said, the VFT Joint Venture intends to do everything practicable and reasonable within its power to minimize adverse effects on communities along the route. This issue of *VFT Topics* is a short introduction to factors in the process that will apply considerable resources to harmonizing the VFT with its surroundings.

Safety

The VFT will have some major environmental benefits. By far the greatest is its capacity to save lives.

The VFT is expected to be an exceptionally safe transport system. The new generation of high-speed railways operating in Japan and France have outstanding safety records. The Shinkansen network in Japan (the famous *Bullet Train*) has carried 2.7 billion passengers over 25 years without a single casualty. The high-speed lines in France, the first of which began operating in 1981, have also been accident-free.

The VFT will have safety standards equal to, or better than, these overseas railways. Automated control systems will eliminate the possibility of collisions. Extremely high standards of maintenance will be applied to trains, track and all other components of the VFT system.

The VFT is expected to draw a substantial proportion of its patronage from car travellers on the Hume Highway, where some 1500 travellers are killed or injured in road accidents each year, at an estimated financial cost to the community of $86 million.[1] To the extent that the VFT diverts travellers out of their cars, a significant saving in human life and suffering will be achieved.

Fencing along the VFT will prevent both people and animals from straying on to the tracks. Unlike some highways, the VFT route will not be littered with the carcasses of dead native animals.

Because the VFT will have no level crossings, another source of accidents will be eliminated. At overpasses, nets on either side of the road will ensure that any object which falls or is dropped from the overpass will send an alarm to a central control centre and will halt approaching trains.

1 1988 figures: $37.4 million for fatal accidents using the Federal Office of Road Safety estimate of $450,000 per fatality; seriously injured, $38.1 million from $90,000 each; minor injury, $10.8 million from $10,000 each.

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Energy Efficiency

The VFT offers major benefits from its more efficient use of energy. The electrically-powered trains will use between one-third and one-seventh of the energy per passenger-kilometre[2] used by cars or jet aircraft. The VFT will be favoured even more as the efficiency of electricity generating plants is improved in the future. Even though it will attract a significant number of additional travellers, the VFT will still result in a very substantial saving of energy used in transport along the Sydney-Melbourne corridor. An economic benefit is that this energy will come from coal or hydro-electricity; other modes of transport will use petroleum fuels which will be imported increasingly as Australia's petroleum reserves dwindle. [3]

Air Pollution and the Greenhouse effect

Associated with this energy efficiency is reduced atmospheric pollution. Reduced energy consumption means reduced pollution. The VFT's pollution is associated with electricity generation at power stations, where emissions are generally better controlled than they are from road vehicles. This factor will become accentuated as imported oil predominates in motor car and aviation fuel: Middle East oil is significantly higher in sulphur content than Australian crude.

The proportion of carbon dioxide in the atmosphere is a major element in the Greenhouse Effect. The amount of this gas emitted by power stations energizing the VFT system will cause much less pollution than other modes of transport. Emission of carbon dioxide per passenger-kilometre travelled on the VFT will be between a third and a fifth of that of cars and jet aircraft. This ratio may improve as the efficiency of electricity-generating plants is improved in the future. The increase in travel induced by the VFT will be far outweighed by its beneficial impact on the emissions of Greenhouse gases.

Other Environmental Issues

The VFT will obviously have an impact on the areas traversed by its route. However, the strip of land required for the VFT alignment is narrower than a modern freeway. The VFT's double track, together with its maintenance road(s) and any gas or oil pipeline, will take up a strip of land about 40 metres wide for much of its route, measured between the boundary fences — a little over half the minimum width of about 75 metres for a modern four-lane highway.[4]

All roads will cross the VFT expressline by overpasses or underpasses. Re-planning of local road networks may be preferable to bridging in the case of some very minor roads presently in existence. In addition to these crossings of the alignment, frequent underpasses or overpasses will be provided for livestock and farm implements along developed areas of the route. Similar provision, complete with appropriate vegetation cover, will be made for native animals after careful study of their movements. These structures, integral components of the VFT alignment, will greatly increase access compared with freeways.

The VFT will be a valuable fire break, and its right-of-way will provide rapid access for fire-fighting vehicles.

Clearly the VFT will have an impact on forests in East Gippsland, if the decision is made to adopt the coastal route. This impact will be minimized by the narrow width of the VFT alignment and by the other features already described. The VFT should also provide a bonus to forest areas: by adding to the growth of tourist industries, with direct employment benefits, it may help to reduce the economic dependency of those areas on logging. The VFT provides a less disruptive form of access to remote areas than roads: VFT passengers do not leave the train wherever they wish, they cannot litter the lineside, and they cannot start fires either deliberately or accidentally.

Environmental Impacts of the Coastal and Inland Routes

Initial environmental studies have been undertaken for both routes between Canberra and Melbourne. These preliminary reviews have covered:

- reserves,
- conservation of vegetation,
- welfare of fauna,
- significant ecological sites, and
- aboriginal and heritage sites.

Measures to reduce impacts on the environment are:

- avoidance of reserves and remnant vegetation, wetlands, rain forest patches, and significant fauna habitat within forests,
- provision of appropriate fauna crossings,
- weed prevention and control,
- exotic predator control, and
- measures during construction to prevent siltation, soil erosion and water degradation.

Climatological aspects of the development which the VFT will generate along its route will also be studied. The environmental impacts of new or enlarged towns or cities will be greater than those of the VFT expressline or the trains. The VFT Joint Venture's preliminary view is that these considerations favour the coastal route. Inland areas have less air movement than coastal zones, so that atmospheric pollution from development would be higher

2 Passenger-kilometres are the measure of the task undertaken by a transport system. For example, 10 passengers travelling 10 kilometres represent 100 passenger-kilometres. So also does one passenger travelling 100 kilometres.

3 Australia's self-sufficiency in petroleum requirements, 84 percent in 1989, has been predicted by the Australian Institute of Petroleum to fall to 33 percent by 2000.

4 As with freeways, some additional space — up to a 150 metre maximum but generally much less — may be required where there are cuttings or embankments.

inland. Lower rainfall in inland areas may restrict water supplies to towns and lower the natural dilution of water-borne pollution caused by communities.

Noise

In the urban areas of Sydney and Melbourne, the VFT will normally not exceed half its maximum speed, using existing transport corridors (rail or road). At these slower speeds the trains, with their superior engineering, will be substantially quieter than existing suburban trains. Track and structures are now built to reduce noise emission.

Once out of the urban areas, where the VFT will accelerate to its full speed of 350 km/h, the principal means of reducing the impact of noise will be to avoid built-up areas. (French TGV-A trains travelling at 350 km/h do not disturb farm animals. As in Australia next to railway lines and highways, birds continue calling and feeding).

A brief summary of noise effects of trains at high speed is as follows:

- When measured at a distance of 25 metres, just outside the boundary fence of the 40-metre wide corridor, the main pulse of noise from a 200 metres long train lasts for only 2 seconds and is louder than background noise for some 13 seconds. The sound is mainly in the higher frequencies and lacks the disturbing bass tones, roaring and rumbling of close traffic and jet aircraft at take-off.
- At 200 metres from the track, the level of noise would normally be less than that of a motor car passing at a distance of 7 metres, i.e. 80 dB(A). This is well within the most stringent criteria in Australia, those of the State Pollution Control Commission of NSW. It is intended not to have dwellings closer than 200 metres from the expressline.
- At 500 metres, the train would normally go unnoticed: if it were noticed, it would be perceived as a background hum, no louder than levels inside an average home, of some 10 seconds duration.

Noise will be minimized by careful attention to the aerodynamic design of the vehicles, by adapting the line's profile to the terrain and incorporating cuttings, using sound-absorbing materials, and erecting noise barriers such as walls, mounds or trees as appropriate.

Some Misconceptions

Many people have misconceptions about the VFT and its environmental impacts. Some of them have been covered in this VFT Topic, such as the belief that the alignment typically will be half a kilometre wide rather than 40 metres. The facts are:

- The fences on either side of the VFT will be about two metres high, and will not be electrified.
- Weed control measures applied within the boundaries of the VFT alignment will not affect nearby crops or grasses.
- The VFT will not cause fires — an electric train operating on high voltage a.c. power does not produce metallic particle sparks and the VFT will not have conventional brakes or diesel engines which sometimes cause fires along conventional railways.
- The train will scarcely, if at all, be audible several kilometres away: accepted noise levels will be met 200 metres from the line.
- The latest construction techniques will cause an absolute minimum of disruption, including minimization of soil erosion.

Environmental studies

The VFT Project has made clear from the outset that it will comply willingly with the environmental study requirements of the various governments. Environmental impact and effects statements will be prepared and published for comment by members of the public and review by governments. These studies and review processes are expected to be undertaken during 1990 and 1991.

Conclusion

Everyone associated with the VFT wishes to see it built and operated in ways which maximize its environmental benefits and which minimize its negative impacts. It is noteworthy that the VFT proposal originated within CSIRO, and links with that organization are maintained. Major components of the initial environmental studies — for example, along the alternative routes between Canberra and Melbourne — have been undertaken by CSIRO, particularly its Division of Wildlife and Ecology. The VFT Joint Venture is determined that the design, construction and operation of the VFT will be undertaken with a very high level of environmental awareness.

Further information about many of the subjects outlined in this issue of VFT Topics is provided in *VFT: Focus for the Future*, a progress report on the VFT project, published in October 1989. Copies are available for $5.00, plus $5.00 postage, from the VFT Joint Venture.

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Series editor Clive Huggan

This issue written primarily by Dale Budd