

MULTIPLEX'S BRISBANE RIVER NORTHBANK PROPOSAL

A CRITIQUE

First, I should establish my credentials for criticizing the Multiplex proposal to bridge over approximately one third of the width of the Brisbane River downstream of the Victoria Bridge in order to provide an above water platform for a series of high-rise buildings. I have spent a lifetime concerned with stream flows and the effect that bridges, dams, channel improvements and impediments have on those stream flows. My first experience was with the Bridge Branch of the Queensland Main Roads Department and, since 1960, as a principal of a large consulting engineering practice. In that practice my main concern was with river hydraulics and hydrology. Two projects, with which I was intimately concerned were the Merivale Railway bridge and the Riverside Expressway from Alice Street to the Captain Cook Bridge. In both these projects the effect of the structures on the flow of flood-waters was a major consideration. These structures are just upstream and downstream of the proposed building platform and so are directly relevant to any consideration of the effect of the proposed platform on flood flows.

Fluids, including water, flow most efficiently when the flow is uninterrupted by obstructions. So far as rivers are concerned such obstructions can take the form of trees, shrubs, bridge piers, weirs, and other man made structures built in the mainstream flow. The presence of any such obstruction, however small decreases the efficiency of the stream as a carrier of water. In order to bring the carrying capacity of the stream back to what it was before the insertion of the obstruction, the water level upstream of the obstruction rises and the resulting increase in the hydraulic gradient increases the velocity of the stream around the obstruction. If there are a series of obstructions across the stream, such as is the case in a series of bridge piers, the water level across the whole river, upstream of the line of obstructions, is raised.

I believe that, in the Multiplex proposal, about one-third of the river width will be obstructed by about 400 large diameter piles. It is also possible that further obstruction to river flow will be caused by beams supporting the building platform and other structures such as drainage structures, designed to dispose of sewage from the many buildings proposed to be built on the platform. In addition to the obstruction to river flow caused by the structure itself, there is a major potential for the forest of 400 piles to collect large amounts of debris during a major flood. Debris could consist of trees, houses, river craft, mooring pontoons etc. and the increase in flood levels due to debris could be larger than the increase caused by the structure itself.

The 400 piles will cause extensive turbulence and eddies in the river flow over nearly one half of its width and such turbulence will materially reduce the carrying capacity of the river. High flood levels upstream of the platform will be increased by a significant amount. It is not possible for me to calculate the increase in water level with my present knowledge of the river-bed configuration, anticipated flood flows and the configuration of the proposed platform. However I can say that the effect will be significant, maybe of the order of 300 to 500 millimetres. Such water level increase will be at a maximum at the upstream end of the proposed platform and will tail away to zero some kilometres upstream of the platform. The maximum effect will be on the northern side of the river immediately upstream of the platform but both sides of the river will be effected.

The Brisbane River provides the main flood drainage for a substantial proportion of the Moreton District from the NSW border in the south to Malany in the north and from Toowoomba in the west

Ian Cameron
Phone: (07) 3374 1631
Email: iangcameron@optusnet.com.au

to Moreton Bay in the east. It is a relatively large catchment with areas of very high rainfall. There have been many floods in the Brisbane River since white settlement, including massive floods in 1893 and 1974. In both of these floods large amounts of debris were brought down by the floodwaters and in 1893 two large wrought iron bridges, the Victoria road bridge and the Albert rail bridge at Indooroopilly, were destroyed by a build up of debris. All bridges across the Brisbane River built since 1893 have adopted large spans and high-level superstructures in order to avoid a similar fate. Now the designers of the Multiplex river platform seem to be unaware of the fate of these two bridges and are intent on building a major debris trap across one-third of the City reach of the river.

So my **first objection** to the construction of the Multiplex platform is on the basis of the increased flood levels upstream of the platform resulting from the turbulence introduced by 400 large diameter piles and other structural elements even without any build up of debris. The structure also has the potential to trap a large amount of debris during flooding, thus magnifying the increase in flood levels very significantly. When the next flood occurs, Multiplex (the designers and developers) will probably have ceased to exist as will the original insurers. This leaves the Queensland Government as the promoters and approvers of the platform as the only body left to compensate the upstream property owners for the considerable increase in damages resulting from the platform's interference with flood flows. I hope the Government has deep pockets as the additional damages will be considerable.

My **second objection** is on the grounds of aesthetics. Evidently one of the government's objectives in promoting the platform is to hide what some see as the eyesore of the Riverside Expressway. Beauty is in the eye of the beholder and for everyone that finds the appearance of the Riverside Expressway objectionable there are several who find it a very satisfying delineation of the river bank through the city reaches. This latter group includes architects and artists as well as engineers, who might be expected to be a bit biased in their view. In any case to hide one eyesore with an even greater eyesore is not achieving anything. Who could imagine that a platform supported on piles would have any aesthetic value. Furthermore the construction of a large number of high-rise buildings on the platform will completely hide such historical treasures as the old Treasury Building, the old Library, the old Government Printery and the old administration building, which so enhance the view of Brisbane from across the river. We cannot afford to bury this historic precinct behind a facade of 'modern' buildings of undoubtedly questionable architectural merit.

My **third objection** concerns the devaluation of the Brisbane River as a major geographic feature in its city reaches. Not so long ago the Brisbane City Council was busily turning all of Brisbane's creeks into concrete lined drains. Their efficiency as water carriers was enhanced but the effect on the creek environments and appearances was disastrous. In more recent times the Council has been undoing, at great expense, the damage caused by concrete lining. The Multiplex platform is very analogous to the concrete lining of the smaller waterways. Brisbane will lose a rather grand river and will gain a much smaller concrete lined stream.

My **fourth objection** concerns the effect that the platform will have on the efficiency of the Riverside Expressway as a means of getting traffic into and out of the CBD. At present, Expressway on and off-ramps at Elizabeth and Alice streets rise well above the level of the main carriageways of the expressway in order to get traffic from and to the west-bound expressway lanes across the east-bound lanes. These ramps would clash with the proposed platform and in an early drawing of the proposal had been eliminated. In so doing all access outbound from the CBD between Adelaide Street and the Gardens to the west bound lanes of the Expressway would be severed. All the traffic wishing to leave the CBD for the western and south-western suburbs would

Ian Cameron
Phone: (07) 3374 1631
Email: iangcameron@optusnet.com.au

be forced to traverse George and Creek streets to Coronation Drive at Ann Street or to Milton Road. The traffic congestion would be horrendous !

My **fifth and final objection** concerns maintenance of the Riverside Expressway. I remember that, when I was chairman of the Council of QIT, we proposed the construction of a series of high-rise buildings along the Riverside Expressway. The Government of the day insisted that we provide a roadway of ample width between the freeway and the proposed buildings so that cranes and other equipment would have access to the Expressway structure for maintenance purposes. Recently there was concern regarding cracking of some of the on/off ramps and the wisdom of having to make adequate maintenance access became obvious to all. So far as I can tell the Multiplex proposal would completely encase the Expressway in the structure of the platform, thus denying any maintenance access. The Riverside Expressway will need maintenance during its life. Some will require major remedial works. How is this to be effected with the Expressway encased in the platform and its supporting structure.

WILL THE GOVERNMENT PLEASE COME TO ITS SENSES AND DESIST FROM THIS MAD PROPOSAL. THE ONLY ENTITY WHICH WOULD GAIN FROM THE CONSTRUCTION OF THE PLATFORM IS MULTIPLEX AND IT WILL BE A SHORT TERM GAIN. THE REST OF USE WILL SUFFER LONG TERM DISADVANTAGE !!

21 March 2008