

## Council's "Tunnel Vision"

- .. Toll nightmare
- .. Poisonous pollution
- .. More traffic jams
- .. The "Airport Road" is back



Communities Against the Tunnels  
(CATT) [www.rag.org.au/tunnel/](http://www.rag.org.au/tunnel/)

## Property impacts of Vibration during Tunnel Construction

The Richard Heggie Noise and Vibration Report sets out the assessment guide values for transient and continuous vibration in order to ensure a minimal risk of cosmetic damage to buildings in Table 10-8 on page 10-9 of the draft North South Bypass Tunnel (NSBT) Environmental Impact Statement (EIS). The peak particle velocity for heritage listed buildings of 2 mm/sec is either two and one half or five times that for residential and sensitive commercial buildings, depending on the length of duration of the vibration.

These guide values however are recognised as indicative only. The actual degree of tolerance of any building depends in a complex way on both the structural characteristics of the building and the frequency spectrum of the exciting vibration.

The draft EIS states "it is a statutory requirement of BCC to conduct pre- and post-blasting Building Condition Surveys where it is considered there may be potential cosmetic building damage". (Paragraph 5, page 10-19). The criteria for a building to be considered for these surveys is not mentioned in the report but the report states: "Examples of threshold or cosmetic cracking include minor non-structural effects such as superficial cracking in cement render or plaster" (paragraph 2, page 10-9)

On page 10-12 the EIS states "due to the significant separation distances between the bulk earthworks on the worksite and the surrounding sensitive uses, significant vibration impacts are not anticipated".

During the construction of the Inner City Bypass (ICB) old (1880's) buildings with cavity brick and mortar construction on stone foundations suffered damage because of construction vibration even though they were located approximately five hundred and fifty metres from the ICB blasting. When construction of the Inner City Bypass commenced owners and occupiers of these buildings were not formally advised that blasting was to occur. Yet they were able to "set their watches" from the accurate timing of the vibrations and deep roar which they both felt and heard from the blasting. Building suffered cracking of the internal plaster finishes, typically above and below openings.

The EIS does not consider the various types of construction and how they are affected by vibration. For instance timber buildings are far better at withstanding vibration than masonry structures, particularly older lime mortar masonry buildings.

Cultural Heritage experts including Heritage Architects have used the Richard Heggie Report to determine which buildings require management of noise and vibration impacts.

These subsequent reports have assumed that "noise and vibration impacts are very localised" (page 22-6). The old Woolloongabba Post Office, and Police Station, Leckhampton (Shaftson Avenue) and RNA Showgrounds are the only nominated buildings to be considered for management of noise and vibration impacts.

The noise and vibration study in the draft EIS has not been externally peer reviewed. Based on previous experiences with the ICB construction the vibration from the construction of the NSBT has the potential to create far more damage to buildings than those within a 75metre radius of the construction zone and leave the building owners with damaged buildings and no pre-construction Building Condition Survey for which to base their compensation claim on. These owners would then not have access to compensation from the BCC or contractor.

Main Roads Standard Specification - Use of explosives in Road Works'. The document says; 'Inspection of buildings and structures shall be carried out in any area where the maximum peak particle velocity from a blast generated ground vibration is likely to exceed 5 mm/sec or the subsequent air blast is likely to exceed 120 db'. However without the information on the vibration levels produced by the ICB construction these figures have no meaning.

The potential for building damage from construction vibration is very real.