

Integrated Environmental Design for Infrastructure: Sound Tracking Through the EIA Process

West Rail is part of the Kowloon-Canton Railway Corporation's (KCRC) planned rail network expansion of its services from the urban area into the New Territories of the Hong Kong Special Administrative Region (SAR). Extensions to the existing East Rail line will provide for wider accessibility to rail for growing populations of Hong Kong's existing and planned new towns.

The forecast patronage of West Rail will result in the new railway being one of the busiest in the world and is critical to the SAR Government's strategic need to accommodate Hong Kong's growing housing needs. The US\$10bn. West rail (Phase I) comprises 31 km of track which passes through mixed areas of existing and proposed high rise urban residential developments as well as traditional low rise village housing some of which lies as close as 10 metres from the alignment.

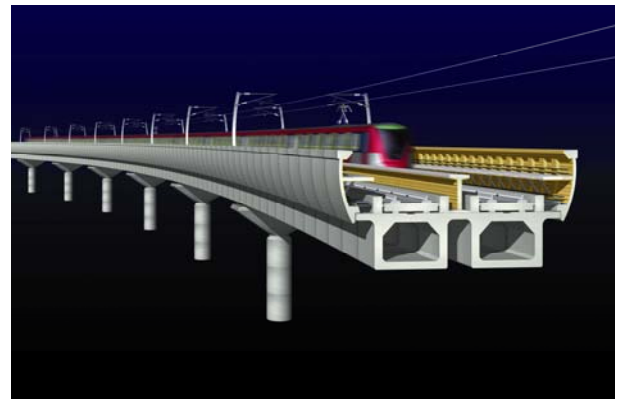
Noise Control Challenges

Amongst the Hong Kong Government's requirements for new railways is a restriction on the acquisition of property or land other than within a ten metre strip either side of the alignment, which is allowable for construction purposes and to enable future emergency access. This restriction arises from Hong Kong's shortage of development land - made more acute by the increasingly stringent environmental presumption against further land reclamation - and is intended to ensure that the new railway is built and operated without compromising the potential for strategic high-density residential areas to be developed along the alignment.

This restriction on "noise setbacks" is compounded by a statutory noise control

criteria for operating railways which are the most stringent in the world, defining an absolute noise performance limit with no recourse to providing at-receiver mitigation such as secondary glazing of affected properties. To meet this target, a noise reduction of 27 dB(A) (with allowance for structure borne noise) is required which far exceeds the performance of existing mitigation systems other than full enclosure: in addition, to meet the legal limits there is a requirement to attenuate structure borne noise (i.e. train-induced vibration in the viaduct structure which radiates as audible noise).

These twinned constraints placed a unique requirement on the noise assessment team to develop an integrated package of mitigation measures that would enable the railway to operate legally whilst providing the KCRC with a speed and frequency of service that ensured that West Rail could provide an effective and profitable means of transporting people from the New Territories to the central business areas of Hong Kong.



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