

The Kuala Lumpur Outer Ring Road: Engineering geology

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The Kuala Lumpur Outer Ring Road (KLORR) has been planned for easing traffic congestion in the Kuala Lumpur area. Various options for the KLORR route alignment have been looked into. The route studied cuts across the Klang Gates Quartz Ridge in the vicinity of the Klang Gates Dam, and two options for this crossing have been examined, namely: Option 1 (viaduct) versus Option 5 (tunnel). A comparative study of these two options was conducted, and the results of this study are shown in Table 1. Based on the results in Table 1, the viaduct option (Option 1) is selected/recommended.

Additional notes on the geology/engineering geology of the KLORR project include:

- i) the northern section of the KLORR project area is underlain almost entirely by Granite. Vein quartz protrudes above the granite in the form of the prominent Klang Gates Quartz Ridge.
- ii) the Klang Gates Quartz Ridge represents a strand of the Kuala Lumpur Fault Zone. The faults are inactive.
- iii) the geological constraints and geohazards include slope instability/landslide, rockfall, and problems associated with tunnelling and viaduct construction.

Table 1: Comparison of tunnel (Option 5) versus viaduct (Option 1).

FACTOR	TUNNEL	VIADUCT
Slope Instability	minor, at portals only	major, esp. from colluvium
Rockfall	minor, at portals only	major, esp. from quartz ridge
Construction Difficultie	high degree of difficulties, esp. in quartz ridge; progress slow.	less difficult; progress faste
Blasting	required; heavy blasting in quartz ridge	not required
Damage to Dam	possible, from blast vibrations	no blast damages
Reservoir Leak	potential leak from blast-induced fractures (disastrous)	no leak
Environmental Impact	noise/ground vibrations during construction; none after construction	minimal during construction; none after construction
Scenic View	none (long black hole)	scenic view after opening of highway (reservoir & ridge)
Security Concern for Dam	none/minimal (unless someone blows up the tunnel near the dam)	some concern since highway flies over the dam/reservoir
Cost	high, esp. tunnelling in quartz ridge	significantly lowe