

MINISTER'S VALUE-FOR-MONEY ACHIEVEMENT AWARD



DISTINGUISHED AWARD

INNOVATIVE VENTILATION DESIGN FOR HILLVIEW CONNECT

- ✓ Innovative jack-up roof design with opening & acoustic louvre in road tunnel
- ✓ Reduced traffic noise, while natural ventilation allowed
- ✓ No additional ventilation system & facility building; acquisition of private land avoided
- ✓ Savings of **\$56.3M** for whole life cycle cost

**Innovative Ventilation Design
for Hillview Connect**



PROJECT TEAM



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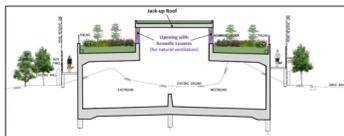
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DISTINGUISHED AWARD

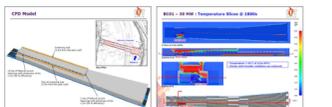
INNOVATIVE VENTILATION DESIGN FOR HILLVIEW CONNECT

SOLUTION

Innovative Ventilation Design for New Underpass



- Jack-up roof and louvres designed to facilitate natural ventilation; obviating the need for Facility building and additional ventilation facilities
- Fire simulations conducted using performance-based approach; obtained SCDF's approval
- Restriction of Heavy Goods Vehicle from using underpass to meet SCDF's requirements; alternative route available via Hillview Road
- Similar concept can be applied to future underpasses which has similar setups (longer than 90m but shorter than 240m, space available on top of it with no planned developments)

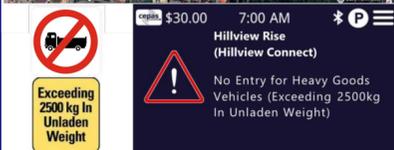


- Covered the depressed road by jack-up roof with opening installed with acoustic louvre to allow natural ventilation.

Risk Management



- Heavy Goods Vehicles(HGV) need to be stopped from using Hillview Connect and redirected to Hillview Road
- Signages put up at Hillview Connect approaches
- Message sent to HGV ERP2 OBU's when they are approaching Hillview Connect (300m from entrance) advising them to use Hillview Road
- Cameras put up at entrances to detect illegal entering of HGV



- Restricted Heavy Goods Vehicles from using the road underpass to comply with SCDF's requirements and directed them to use the existing Hillview Road.

SOLUTION STATEMENT

Covered up the depressed road using jack-up roof with opening and acoustic louvre for natural ventilation.

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IMPACT

Economy

Cost	Original Scheme - Conventional underpass with FB (a)	New Scheme - Underpass with Jack-up roof & Louvres (b)	Actual Savings (a-b)
Development (Once-off)	\$66.1 mil <i>(incl. additional land cost)</i>	\$41.5 mil	\$24.6 mil
Operating (Recurrent)	\$41.58 mil <i>(\$0.42 mil/year over 99 years)</i>	\$11.88 mil <i>(\$0.12 mil/year over 99 years)</i>	\$31.68 mil
Total			\$56.28 mil

Total estimated cost savings by adopting the new underpass scheme is about **\$56.3 mil** (LCC over 99 years)

- First road underpass with jack-up roof and acoustic louvre to avoid the provision of ventilation system and facility building.
- There was no need to acquire private land (i.e. condominiums) to house the facility building.
- Cost savings: \$56mil over underpass lifespan of 99 years.

OUTCOME STATEMENT

LTA was able to use the innovative ventilation design to meet the request from Adviser/ residents to cover the depressed road to reduce traffic noise, while avoiding costly ventilation system with huge facility building which required private land acquisition.