中環及灣仔繞道和東區走廊連接路
西面通風大樓的外觀設計

Central-Wan Chai Bypass and Island Eastern Corridor Link
Exterior Design of West Ventilation Building

港島區海濱發展專責小組 - 第四次會議
4th Meeting of Task Force on the Harbourfront Developments on Hong Kong Island

2011年1月27日
27 January 2011

簡報內容
Presentation Contents

- 西面通風大樓與園景平台的融合
- Integration of WVB and Landscaped Deck
- 引入空氣淨化系統提升空氣質素
- Enhancement of Air Quality by Air Purification System (APS)
- 減低噪音影響
- Reduction in Noise Impact

西面通風大樓與園景平台的融合

Integration of WVB and Landscaped Deck

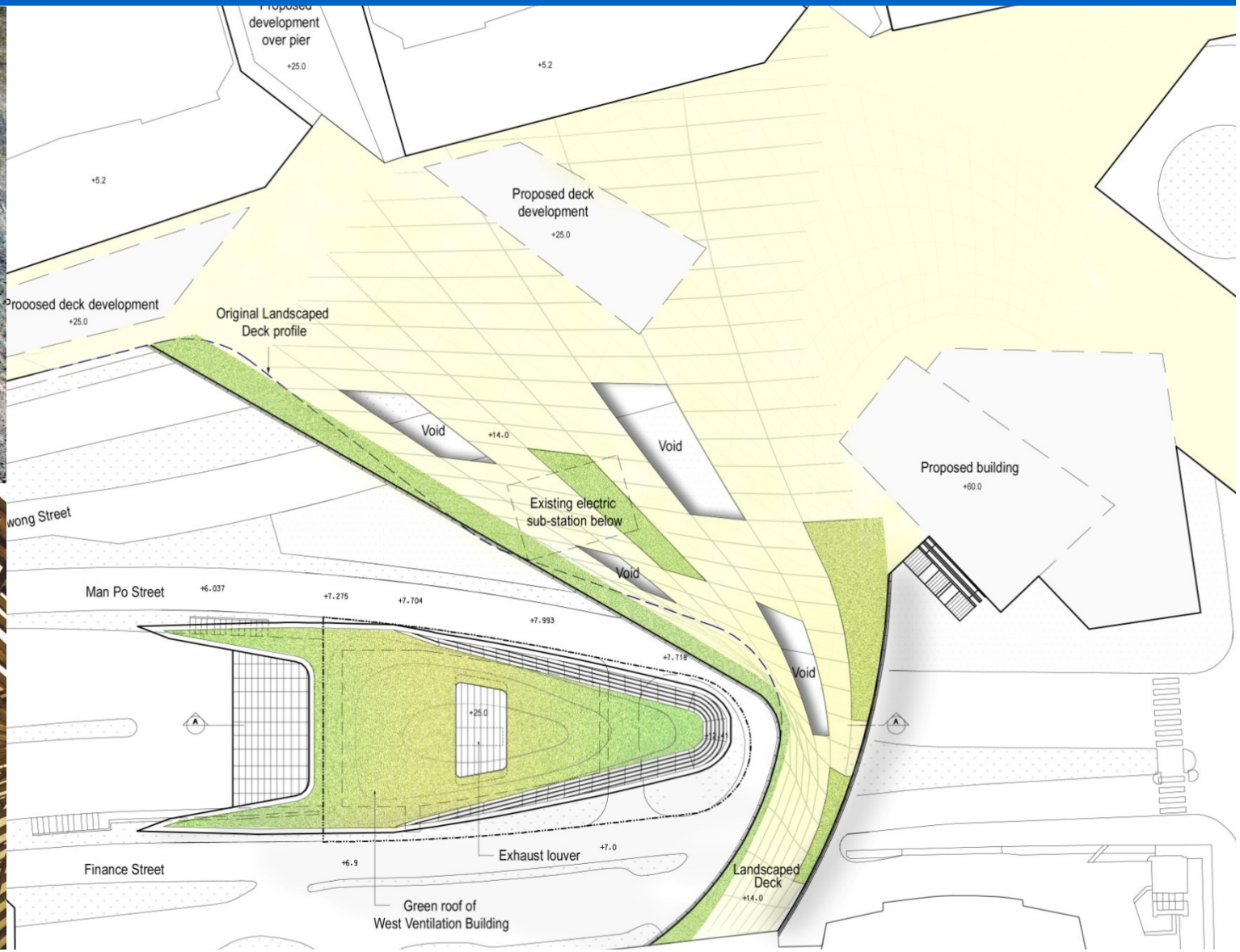
西面通風大樓與園景平台的融合
Integration of WVB and Landscaped Deck

- 西面通風大樓及園景平台的佈局主要根據以下兩個原則設計：
- The layout of the Landscaped Deck and the WVB has been designed mainly on the basis of the following principles:

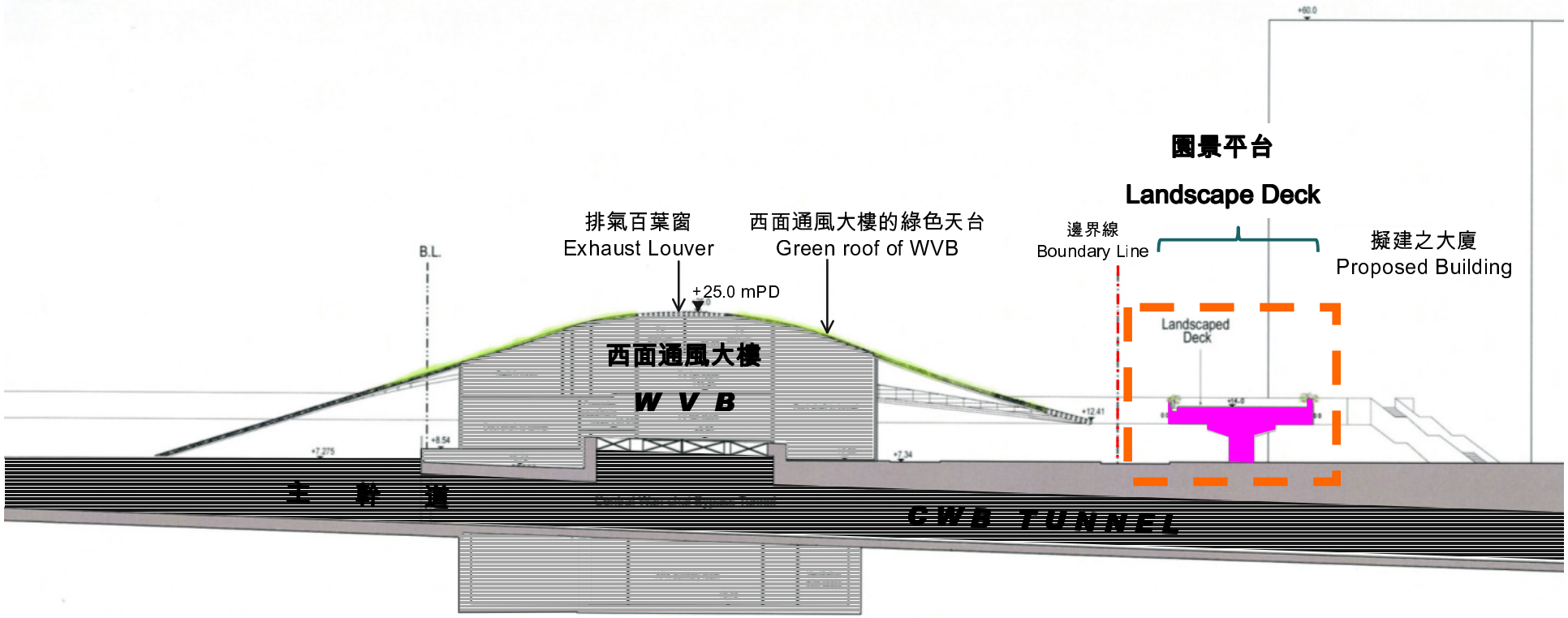
  - 外觀概念之融合
    Conceptual integration of the appearance

  - 結構實體之融合
    Physical integration of the structures

概念之融合 : 園景平台與西面通風大樓和應
Conceptual Integration : Landscaped Deck Echoing with WVB



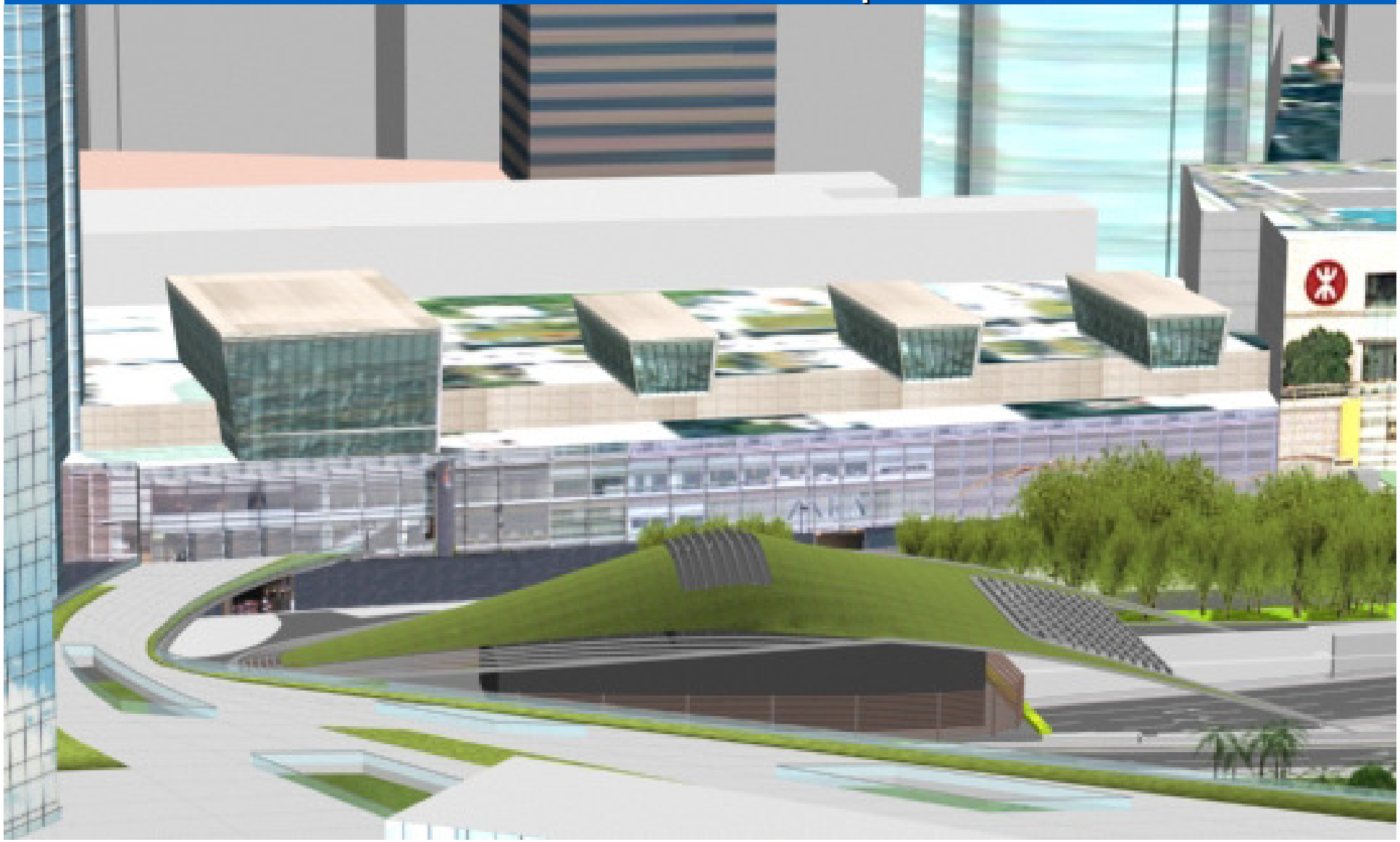
西面通風大樓與園景平台的關係
Relationship between WVB and Landscaped Deck



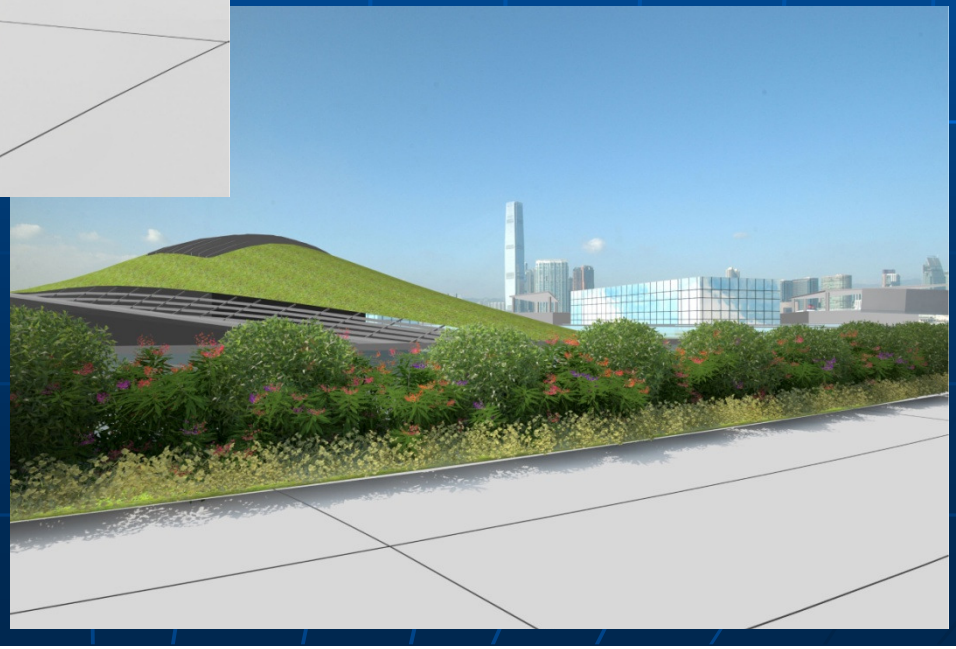
園景平台與西面通風大樓和應
Landscaped Deck echoes with WVB Design

園景平台與西面通風大樓和應
Landscaped Deck echoes with WVB Design

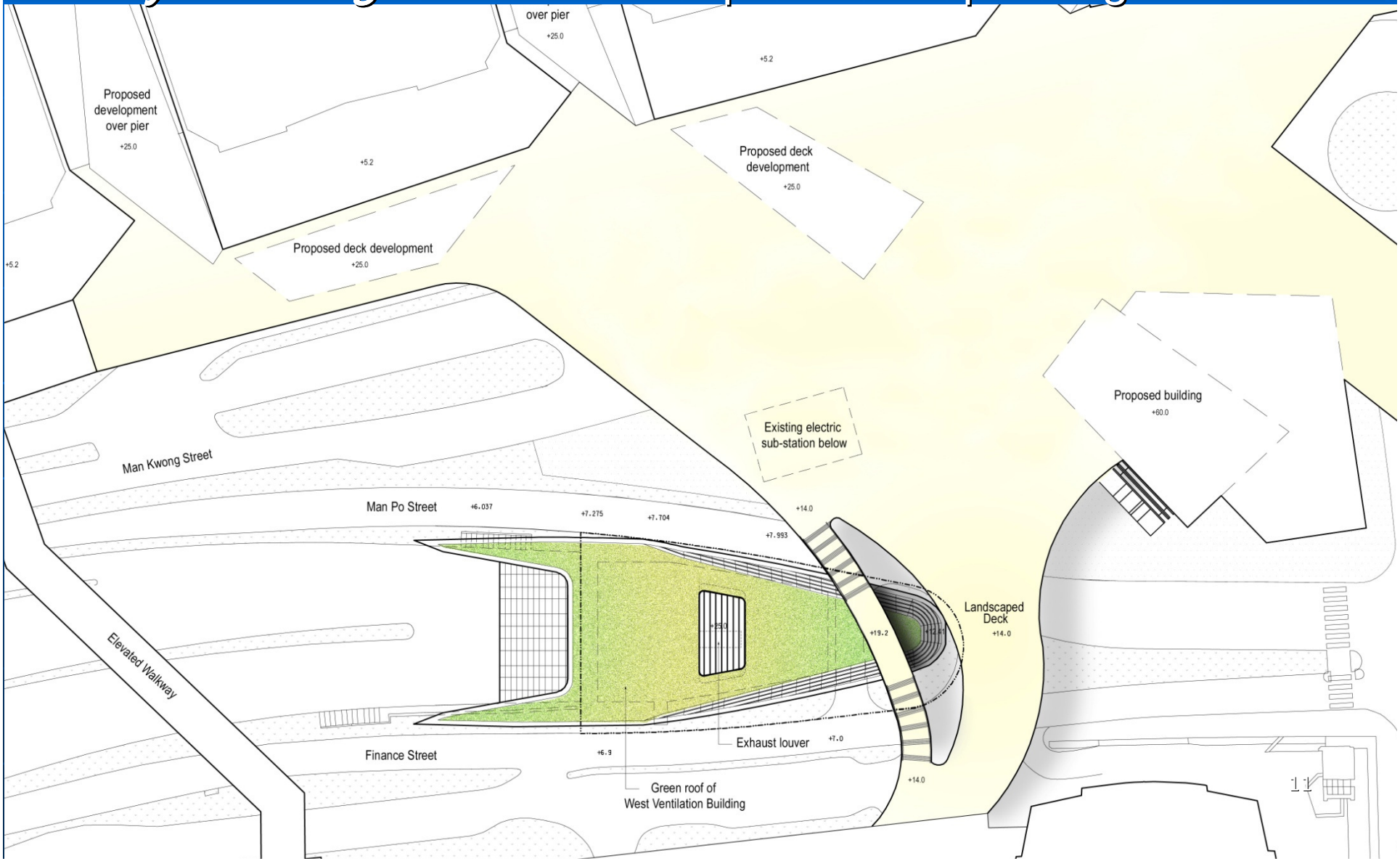
園景平台的鳥瞰景觀
Aerial View to Landscaped Deck



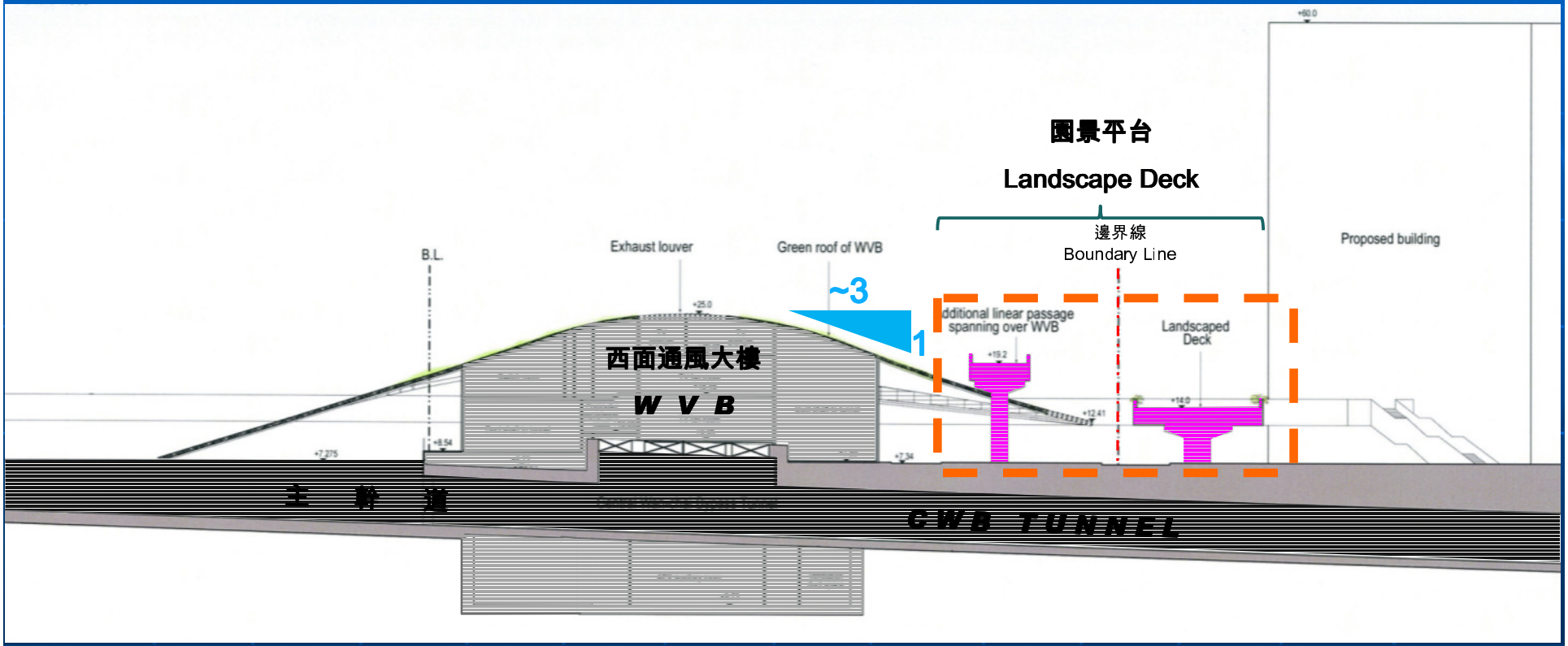
園景平台的景觀
View from Landscaped Deck



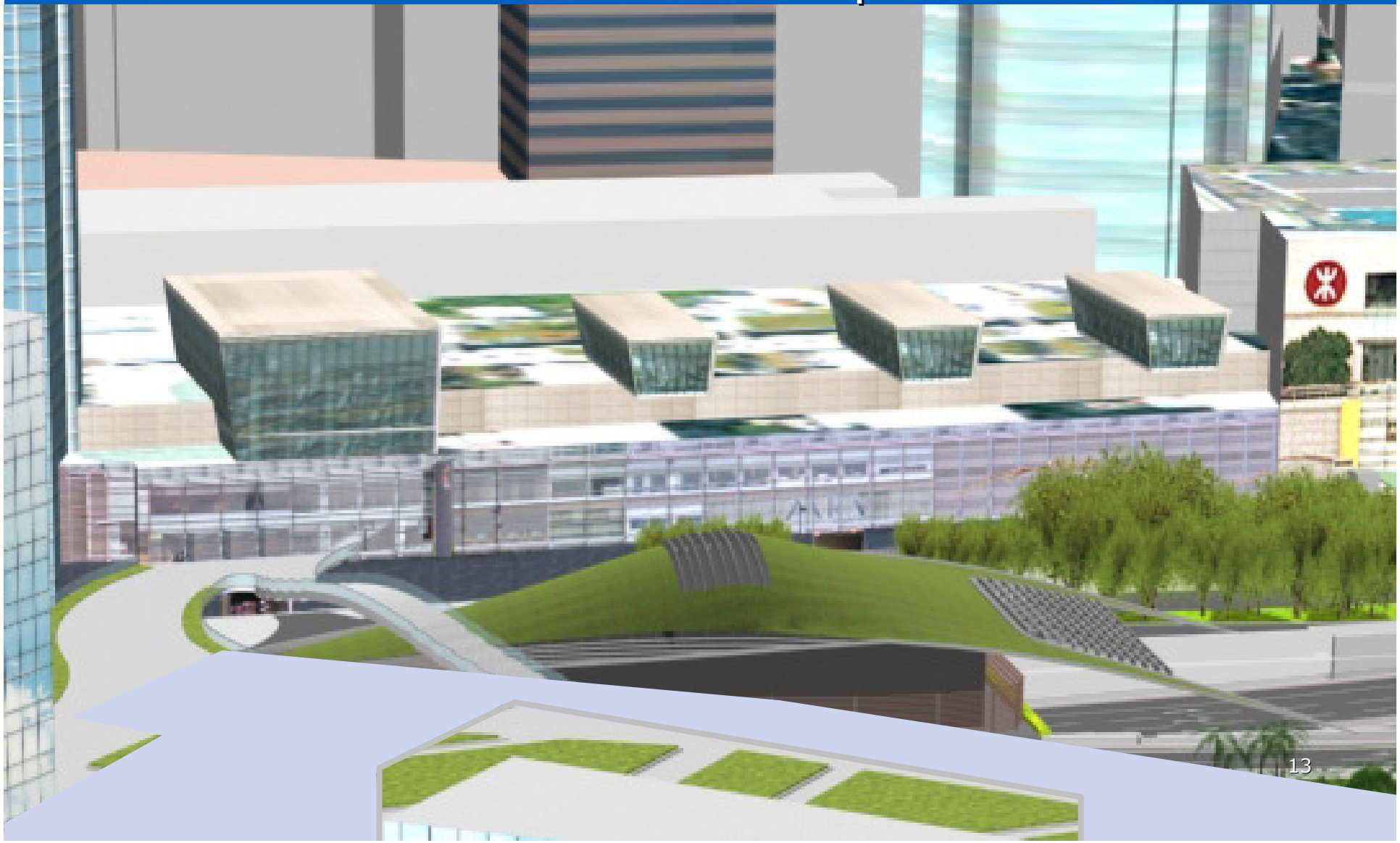
*結構之融合：*園景平台跨越西面通風大樓
*Physical Integration ：*Landscaped Deck Spanning over WVB



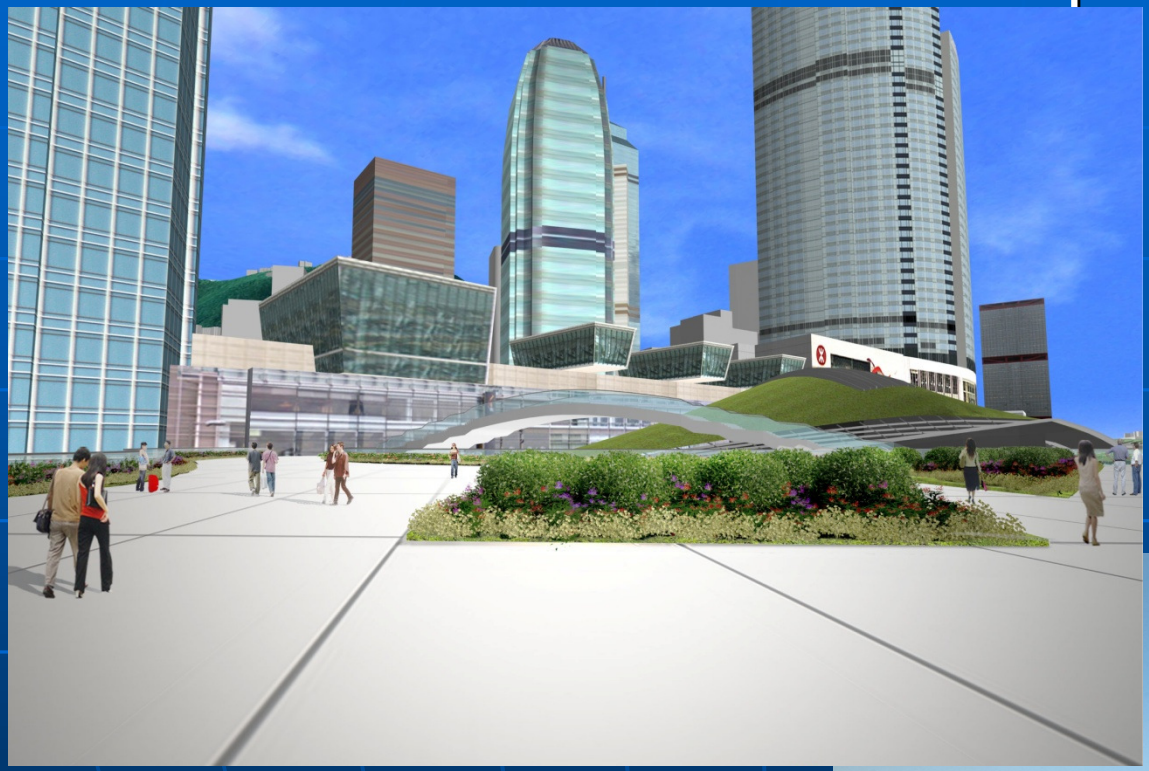
西面通風大樓與園景平台的關係
Relationship between WVB and Landscaped Deck

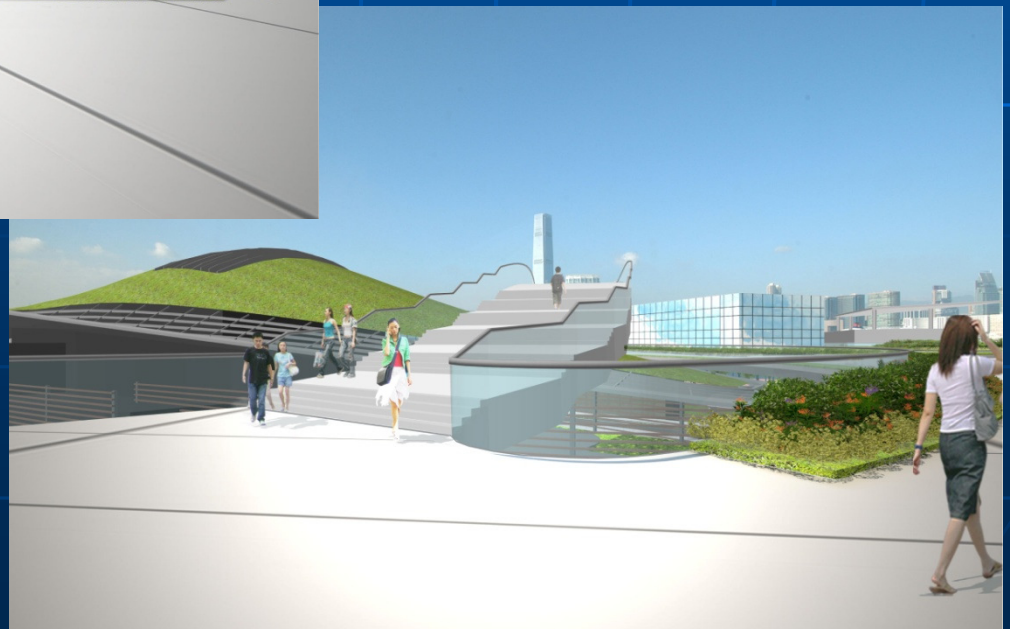


園景平台的鳥瞰景觀
Aerial View to Landscaped Deck



園景平台的景觀
View from Landscaped Deck





引入空氣淨化系統提升空氣質素
Enhancement of Air Quality by Air Purification System (APS)

空氣淨化系統
Air Purification System (APS)

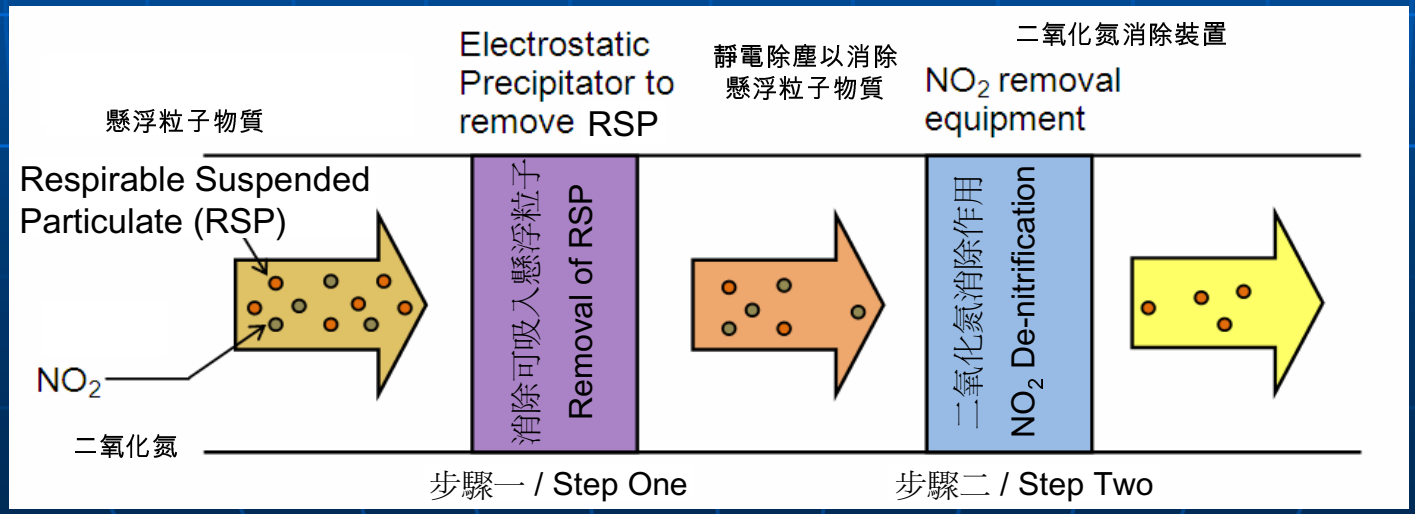
- 現時建議的空氣淨化系統:
- The current proposed APS :
  - 高可靠性
    High reliability
  - 高效率 – 可清除80%的二氧化氮和可吸入懸浮粒子
    High efficiency - 80% removal for NO_2 and RSP
  - 功能隨時間退減的情況較低
    Low performance degradation over time
  - 已經成功應用於其他外國公路隧道項目
    Proven record in similar overseas road tunnel applications

空氣淨化系統 – 方法及過程
APS – Approach and Process

- 空氣淨化系統之目的 / Aim of APS
  - 消除汽車廢氣中的可吸入懸浮粒子及二氧化氮
    Removal of RSP and NO_2 from exhaust air

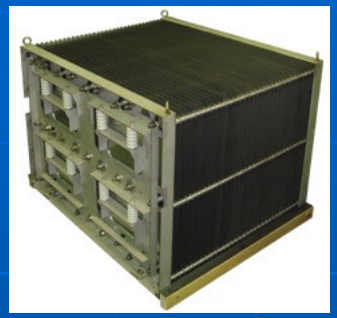
- 步驟 / Process ：

1. 以靜電除塵器消除可吸入懸浮粒子
   Removal of RSP by electrostatic precipitator
2. 以吸收劑消除二氧化氮
   NO_2 De-nitrification through the use of an absorbent



- 成效 / Outcome ： - 消除 80% 的可吸入懸浮粒子及二氧化氮
  - 80% of RSP and NO_2 removed

空氣淨化系統 – 靜電除塵器組件單位
APS – Electrostatic Precipitator Modular Units



一個組件單位

One Modular Unit

Source : Kawasaki

可以根據須處理的空氣流量彈性組合多個組件單位

Different Combinations of Modular Units to Suit Volume of Air to be Treated

空氣淨化系統的大小、噪音影響及電力消耗
Size, Noise Impact and Energy Consumption of APS

- 大小：機組將置於地底，不會影響西面通風大樓地面以上的體積
  Size Impact – Plants to be located below ground level and will not increase the size of the WVB

- 噪音影響：甚少
  Noise Impact – Negligible

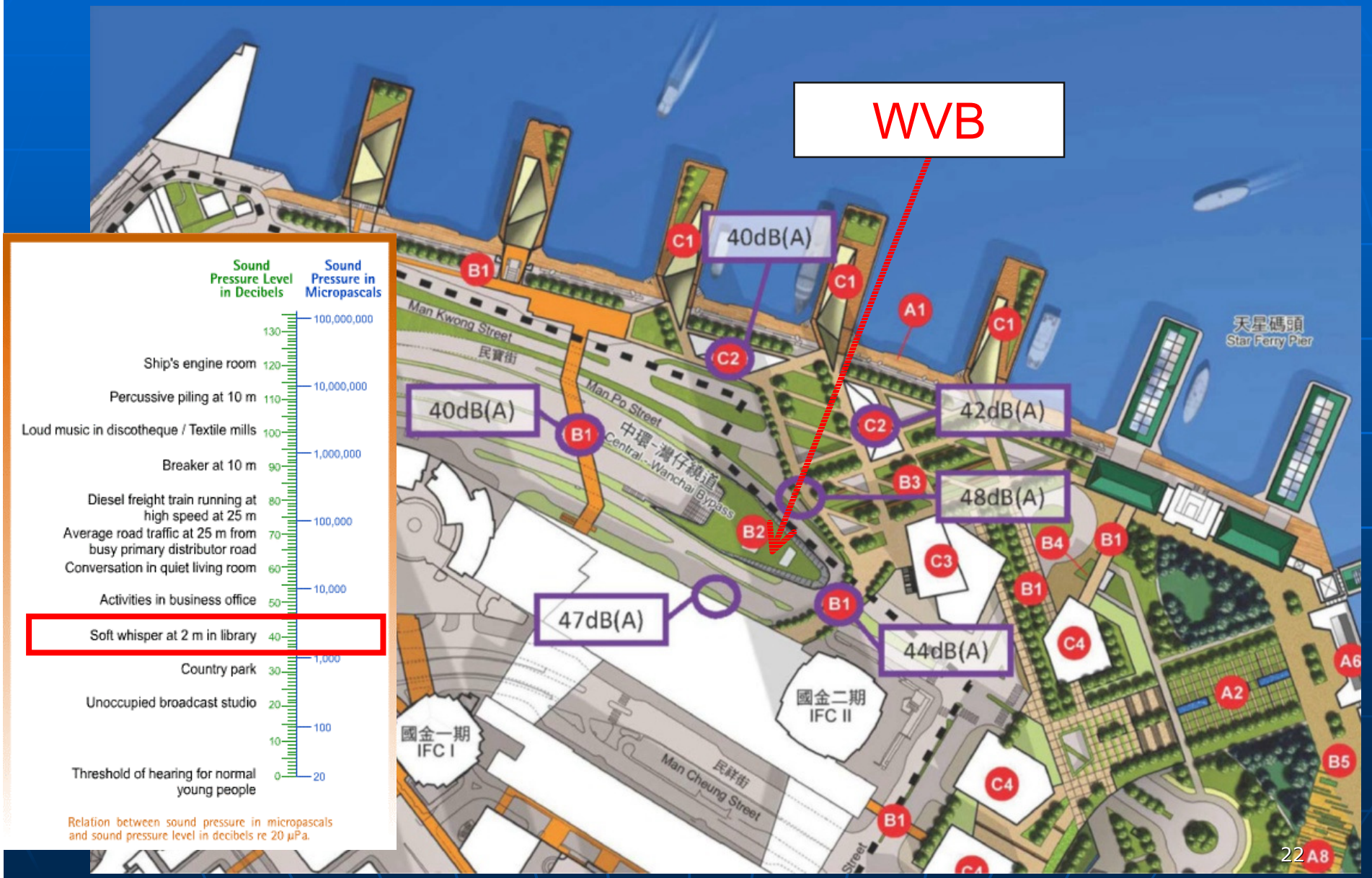
- 電力消耗：耗電主要因需加強通風扇速度而增加，但是我們將按需要啟動通風扇，以將電力消耗減至最低。
  Energy consumption – Additional energy mainly required for increased ventilation fan speed, but would be minimised by controlling the number of ventilation fans in operation on a need basis.

減低噪音影響
Reduction in Noise Impact

靜音器
Silencers

- 特性 / Characteristics:
  - 風機兩端都設有靜音器
  - Silencers installed on both ends of fan
  - 降低對隧道內及通風樓外的噪音影響
  - Keep noise level in tunnel and atmosphere outside ventilation buildings within requirement

西面通風大樓之固定機件噪音
Fixed Plant Noise from WVB



控制啟動隧道通風扇數目以減低噪音
Controlling the Number of Tunnel Ventilation Fans in Operation for Noise Reduction

- 風扇在有需要時才會運作。就此，隧道內會安裝一氧化碳，二氧化氮和能見度的感應器。

  The ventilation fans will be operated on a need basis. For this, tunnel sensors on carbon monoxide (CO), NO_2 and visibility will be installed.

- 風扇會按照隧道內的污染物濃度逐一啟動。

  Based on the pollutant concentration inside the tunnel, the exhaust fans will be turned on sequentially one by one.

- 啟動的抽氣扇數目於任何時間維持最少，以減低噪音，節省能源，保護環境。

  By keeping the number of exhaust fans in operation at any point in time to a minimum, it will result in noise reduction, energy saving and environmental friendliness.

完
The End