

10. SUMMARY OF ENVIRONMENTAL OUTCOMES

10.1 Introduction

10.1.1 This EIA Report assessed the potential environmental impacts associated with the construction and operation of Roads D3A & D4A with reference to the EIA Study Brief No.ESB-222/2011 for the Project. This chapter concludes the key findings of the assessment.

10.2 Noise Impact

10.2.1 The study area for the potential noise impacts from the construction and operation of the Project is 300m from the proposed Roads D3A & D4A. After carrying out detailed desktop review and with reference to the development schedule in the approved Kai Tak Development (KTD) Schedule 3 Environmental Impact Assessment (EIA) Report, the first population intake of noise sensitive land uses within study area would be at Year 2021 which is after the completion of construction of the proposed Roads D3A & D4A (Year 2016). Therefore, no noise sensitive receiver (NSR) was identified within the study area during construction phase and hence no assessment was carried out for the potential construction noise impact from the Project. Since the project will not include any fixed noise sources, such as ventilation systems of enclosed road section, assessment for fixed noise source is therefore not necessary.

10.2.2 The potential road traffic noise impacts have been assessed based on the worst case traffic flows in 2031. Without any noise mitigation measures in place, the predicted noise levels at the planned NSRs would range from 68 to 79 dB(A). Practicable traffic noise mitigation measures are therefore formulated for the planned residential NSRs with predicted noise levels exceeding the traffic noise criteria. With the proposed noise mitigation measures, the predicted overall noise levels at these NSRs would comply with the noise criterion.

10.2.3 For those planned sites of commercial with noise sensitive uses, their layout should be designed to avoid the noise sensitive uses facing the major traffic noise sources or providing the noise sensitive uses with window insulation and air conditioning and these requirements should be spelt out in the land lease conditions.

10.3 Air Quality Impact

10.3.1 Air quality impacts from the construction works for the Project would mainly be related to construction dust from excavation, material handling and wind erosion. With the implementation of mitigation measures specified in the Air Pollution Control (Construction Dust) Regulation, dust impact on air sensitive receivers would be minimal.

10.3.2 The cumulative air pollutant concentrations associated with the vehicle emissions from open road network of existing and proposed roads, portal and ventilation building emissions and emissions from other sources within 500m from the project site boundary have been assessed. The cumulative air quality impact assessment result shows that all the air sensitive receivers in the vicinity of the Project site would comply with the Air Quality Objectives.

10.4 Water Quality Impact

10.4.1 Water quality impacts from land-based construction are associated with the general construction activities, construction site run-off, accidental spillage, and sewage effluent from construction workforce. Impacts can be controlled to comply with the WPCO standards by implementing the recommended mitigation measures. No unacceptable residual impacts on water quality are anticipated. Regular site inspections should be undertaken routinely to inspect the construction activities and works areas in order to ensure the recommended mitigation measures are properly implemented.

10.4.2 During the operation phase of the Project, the only source of potential impact on water quality would be runoff from the road surfaces. Water quality impacts associated with the operation phase would be minimal and acceptable, provided that the recommended mitigated measures for the surface water drainage system are properly implemented.

10.5 Waste Management Implications

10.5.1 Waste types generated by the construction activities are likely to include C&D materials (from excavation, demolition of existing structures, and site formation), general refuse from workforce and chemical waste from maintenance of construction plant and equipment. Provided that these wastes are handled, transported and disposed of using approved methods and that the recommended good site practices are strictly followed, adverse environmental impacts are not expected during the construction phase.

10.5.2 It is predicted that amount of waste would be generated in the operation phase of the Project, which may include silt or grit from road gullies and litter collected from road surface, is minimal, thus adverse environmental impacts in the operation phase is expected to be minimal.

10.6 Landscape & Visual Impact

10.6.1 All residual landscape impacts on Landscape Resources and Landscape Character Areas are **insubstantial** during the Construction Phase except existing trees along the runway (LR21) for **slight residual landscape impact after mitigation**. During the Construction Phase most of the VSRs will have **insubstantial residual visual impact**, the only exceptions being VSRs of Victoria Harbour (D9), Laguna Verde, Whampoa Garden and Harbourfront Landmark (R14), Grand Waterfront (R16), Wyler Garden (R17), low rise residential development adjacent to Grand Waterfront (R18), Newport Centre (C4), Mixed GIC Use (GIC9), existing vacant site (GIC12), the planned GIC Uses – Hospital and Fire Station Facilities (GIC24A) and Holy Carpenter Primary School, Oblate Father's Primary School (GIC14), business and industrial developments in Kowloon Bay (OU2), business and industrial developments in Hunghom (OU4), the planned Runway Park (O21), travellers of Harbour Traffic (T4) and motorists / pedestrians on planned Taxiway Bridges (T16) who will experience **slight residual visual impacts after mitigation**.

10.6.2 All residual landscape impacts on Landscape Resources and Landscape Character Areas are **insubstantial** during the Operation Phase. During the Operation Phase on Day 1 most of the VSRs will have **insubstantial residual visual impact**, the only exceptions being VSRs at the planned GIC Uses – Hospital Station Facilities (GIC24B), the planned Tourism Node (OU11), the planned Cruise Terminal (OU12), the planned Metro Park (O19) and the planned Waterfront promenade (O20) which will experience **slight residual visual impacts** during the Operation Phase Day 1, reducing to **insubstantial** at Year 10. The only exceptions will be the Tourists/ Motorists/ Pedestrians on Road D3/D4 (T20) which will suffer **moderate residual visual impacts** during the Operation Phase (Day 1 and Year 10). VSRs in the Runway Precinct of the planned residential development (R26) and the planned commercial development (C5) which will experience **moderate residual visual impact** during the Operation Phase on Day 1 reducing to **slight significance** at Year 10.

10.6.3 Overall, it is considered that, in the terms of Annex 10 of the EIAO TM, the landscape and visual impacts are acceptable with mitigation measures.

10.7 Summary of the Measures taken for the Minimization of Environmental Impacts

10.7.1 The various chapters and appendices of this EIA report have presented the measures to minimize pollution in the planning, design, construction and operation stages. The key measures to minimize pollution are summarized below for easy reference and they are not exhaustive. For details, please refer to the relevant chapters and appendices as appropriate.

10.7.2 Mitigation measure requirements specified for other environmental aspects are summarized below.

Measures for Noise

- Provision of a landscaped deck along Roads D3A & D4A.
- Provision of about 1090 m length of vertical noise barrier (connected to the deck) at Roads D3A & D4A.
- Provision of about 60 m length of overhang vertical noise barrier (connected to the deck) at Road D4A.
- Provision of staircases with noise barriers next to Sites 4A1 and 4B1.
- Non-noise sensitive use areas within Sites 4A1 and 4B1
- Avoid sensitive façade with openable window facing Road D3A for the planned NSR at Commercial sites.

Measures for Air Quality

- Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. Besides, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize dust impacts.

Measures for Water Quality

- Implementation of the recommended mitigation measures and site practices outlined in ProPECC PN1/94 (Practice Note for Professional Persons on Construction Site Drainage) to minimize construction phase impacts.
- A surface water drainage system will be provided to collect road runoff. The following measures are recommended to ensure road runoff will comply with the standards stipulated in the TM for discharges into storm water drains:
 - The road drainage would be directed through silt traps in the gully inlets to remove silt and grit before entering the public storm water drainage system; and
 - The silt traps would be regularly cleaned and maintained in good working condition.

Measures for Waste Management

- To avoid offsite disposal of C&D materials and to implement the recommended mitigation measures and site practices outlined in ETWB TCW No. 19/2005 & DEVB TCW No. 6/2010 on construction waste management.

Measures for Landscape and Visual Impact

- The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape.
- Control of night-time lighting and glare by hooding all lights.
- Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.

- Reduction of construction period to practical minimum.
- Limitation of / Ensuring no run-off into surrounding landscape and adjacent seawater areas.
- Temporary or advance landscape should be provided along the temporary access roads to the Cruise Terminal until such time as road D3 is open.
- All above ground structures shall be sensitively designed with regard to the form, material and finishes and shall respond to the existing and planned urban context.
- Streetscape elements shall be sensitively designed in a manner that responds to the existing and planned urban context.
- Attractive soft landscape in areas adjoining any visible structures such as tall buffer screen tree/shrub/ climber planting, vertical greening and roof greening where appropriate should be incorporated so as to provide a visual softening and greening effect and soften hard engineering structures and facilities.
- Structure, ornamental tree/shrub/climber planting should be provided along roadside amenity strips to enhance the townscape quality, where space is available.
- Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.
- Avoidance of excessive height and bulk of the associated landscaped deck to the central boulevard
- Elegant engineering design, sensitive architectural and chromatic treatment and generous planting of the associated landscaped deck to the central boulevard. The form, color and surface detailing of these structures should be carefully considered to reduce their apparent height and bulk (visual weight).
- Sensitive design of noise barriers & enclosures with greening (screen planting/climbers/green roofs) and chromatic measures.
- Compensatory tree planting for felled trees.

10.8 Key Environmental Outcomes

10.8.1 The major environmentally sensitive areas within the study area include the planned development within Kai Tak have been identified. With the implementation of the proposed environmental control and mitigation measures, the sensitive receivers within the study area would be protected from adverse environmental impacts arising from the proposed Project. A summary of the key environmental outcomes arising from the EIA study and environmental benefits of the environmental protection measures are presented in **Table 10.1** below.

Table 10.1 Summary of Key Environmental Outcomes / Benefits

Issue	Environmental Outcome / Benefits
Major environmental benefits of the Project	<p>With the vision to create a distinguished, vibrant, attractive and people-oriented Kai Tak by Victoria Harbour, the key components of Runway Precinct of KTD has adopted the principle to achieve economic, social and environmental sustainability in its preparation.</p> <p>In terms of environmental quality, the Runway Precinct would provide extensive open space and contribute to the area-based significant landscape features of the territory.</p>
Environmental Friendly Designs Recommended	The landscaped deck serves as a safe pedestrian connection across Road D3 with open space and greenway for public enjoyment, which encourage the use of environmentally friendly mode of transport such as by foot, by cycling and by using the

Issue	Environmental Outcome / Benefits
	planned Environmentally Friendly Linkage System above the landscaped deck.
Key Environmental Problems Avoided	<p>30m wide central boulevard at the Runway Precinct is designed as a breezeway and 10m pedestrian streets are designed around development sites to capture wind, in which air quality impact is expected to be reduced.</p> <p>The landscaped deck over the road together with the noise barrier will reduce the noise impact to the development sites.</p>
Population and Environmentally Sensitive Areas Protected	<p>The major environmentally sensitive areas within the study area include residential buildings, commercial buildings, hotels, and recreational areas at Kai Tak Development. With the implementation of the proposed control and mitigation measures, the air, noise and water quality sensitive receivers within the study area would be protected from adverse environmental impacts arising from the Project during both construction and operational phases.</p> <p>The environmental sensitive receivers protected, compensation areas included, and the environmental benefits of environmental protection measures recommended with respect to each environmental issue are summarized below.</p>
Noise Impact	<p>Environmental benefits of environmental protection measures recommended:</p> <p>The following mitigation measures would be recommended for operational traffic noise:</p> <ul style="list-style-type: none"> • Provision of a landscaped deck along Roads D3A & D4A • Provision of vertical noise barrier (connected to the deck) at Roads D3A & D4A; • Provision of overhang vertical noise barrier (connected to the deck) at Road D4A; • Provision of staircases with noise barriers next to Sites 4A1 and 4B1; and • Non-noise sensitive use areas within Sites 4A1 and 4B1. <p>Compensation areas included:</p> <p>N/A</p> <p>Population and environmental sensitive receivers protected:</p> <p>Planned NSRs within 300m of the project boundary</p>
Air Quality Impact	<p>Environmental benefits of environmental protection measures recommended:</p> <p>ASRs identified near the construction sites are protected through implementation of dust suppression measures i.e. regular watering during construction phase.</p> <p>No unacceptable residual impacts from the emission of Project road are anticipated at the planned ASRs.</p> <p>Compensation areas included:</p>

Issue	Environmental Outcome / Benefits
	<p>N/A</p> <p>Population and environmental sensitive receivers protected:</p> <p>Planned developments, including residential, commercial and recreational areas within 500m from Project boundary.</p>
Water Quality Impact	<p>Environmental benefits of environmental protection measures recommended:</p> <p>Implementation of recommended mitigation measures and good site practices outlined in ProPECC PN 1/94 would minimise water quality impacts from land-based construction activities.</p> <p>During operation phase of the Project, water quality impacts from road surface runoff would be minimal and acceptable with implementation of mitigation measures for the surface water drainage system.</p> <p>No unacceptable residual water quality impact from the Project is anticipated.</p> <p>Compensation areas included:</p> <p>Not required.</p> <p>Population and environmental sensitive receivers protected:</p> <p>Cooling water intake in the vicinity of the Project site (refer to Figure 5.1).</p>
Waste Management Implications	<p>Environmental benefits of environmental protection measures recommended:</p> <p>Implementation of the proposed waste control and mitigation measures would avoid the potential water quality, dust, odour, and noise impacts associated with handling, transportation and disposal of the identified wastes arising from the Project.</p> <p>Compensation areas included:</p> <p>Not required (no adverse waste impact is predicted after implementation of the mitigation measure).</p> <p>Population and environmental sensitive receivers protected:</p> <p>Water quality, air, and noise sensitive receivers at or near the Project site, the waste transportation routes and the waste disposal site.</p>
Landscape & Visual Impact	<p>Environmental benefits of environmental protection measures recommended:</p> <p>The residual landscape impacts on Landscape Resources (LRs) and Landscape Character Areas (LCAs) are 'Insubstantial' during the Construction Phase, Day 1 and 10 years after the implementation of mitigation measures during the operation phase, with the exception of existing trees along the runway (LR21) who will experience slight residual landscape impact</p>

Issue	Environmental Outcome / Benefits
	<p>after mitigation during the Construction Phase.</p> <p>During the Construction Phase most of the VSRs will have insubstantial residual visual impact, the only exceptions being VSRs of Victoria Harbour (D9), Laguna Verde, Whampoa Garden and Harbourfront Landmark (R14), Grand Waterfront (R16), Wyler Garden (R17), low rise residential development adjacent to Grand Waterfront (R18), Newport Centre (C4), Mixed GIC Use (GIC9), existing vacant site – the planned mixed GIC Use under KTD (GIC12), the planned GIC Use (Hospital and Fire Station Facilities (GIC24A) and Holy Carpenter Primary School, Oblate Father's Primary School (GIC14), business and industrial developments in Kowloon Bay (OU2), business and industrial developments in Hunghom (OU4) and the planned Runway Park (O21), and travellers of Harbour Traffic (T4) and motorists / pedestrians on planned Taxiway Bridges (T16) who will experience slight residual visual impacts after mitigation.</p> <p>During the Operation Phase on Day 1 most of the VSRs will have insubstantial residual visual impact, the only exceptions being VSRs at the planned GIC Uses – Hospital Station Facilities (GIC24B), the planned Tourism Node (OU11), the planned Cruise Terminal (OU12), the planned Metro Park (O19) and the planned Waterfront promenade (O20) which will experience slight residual visual impacts during the Operation Phase Day 1, reducing to insubstantial at Year 10. The only exceptions will be the Tourists/ Motorists/ Pedestrians on Road D3/D4 (T20) which will suffer moderate residual visual impacts during the Operation Phase (Day 1 and Year 10). VSRs in the Runway Precinct of the planned residential development (R26) and the planned commercial development (C5) which will experience moderate residual visual impact during the Operation Phase on Day 1 reducing to slight significance at Year 10.</p> <p>Overall, it is considered that, in the terms of Annex 10 of the EIAO TM, the landscape and visual impacts are acceptable with mitigation measures.</p> <p>Compensation areas included:</p> <p>A small number trees occur on the Project site and will require to be removed for the development of the Project. In accordance with ETWB-TC No.3/2006, the impacted trees with a stem diameter over 95mm DBH (diameter at breast height or 1.3m above ground level) will be compensated at a ratio of 1:1 by number and girth. If any of the trees are proposed to be transplanted they will be transplanted to permanent site within the project site.</p> <p>Population and environmental sensitive receivers protected:</p> <p>All existing LRs and LCAs within 100 metres from the project study; and all potential existing and planned VSRs within the visual envelope of the Project and associated works during the construction and operation phases.</p>

