

# 12 Conclusion

## 12.1 General

In accordance with the EIA Study Brief (No. ESB-276/2014) issued under the Environmental Impact Assessment Ordinance (EIAO) for this Project, an assessment of the potential environmental impacts associated with construction and operation of the Project has been conducted. Environmental issues covered in this EIA include:

- Air Quality Impact
- Noise Impact
- Water Quality Impact
- Sewerage and Sewage Treatment Implications
- Waste Management Implications
- Land Contamination
- Ecological Impact (Terrestrial and Aquatic)
- Landscape and Visual Impacts
- Impact of Hazard to Life

The findings of this EIA study have determined the likely nature and extent of environmental impacts and identified environmental control measures for incorporation into the planning and design of the Project to ensure compliance with environmental legislation and standards during construction and operation phases. The implementation schedule for the recommended mitigation measures are presented in **Section 14**.

## 12.2 Summary of Key Environmental Outcomes

### 12.2.1 Environmental Benefits of the Project and the Environmental Protection Measures Recommended

The police facilities proposed to be co-located at Kong Nga Po under this Project are currently located close to existing and planned residential areas (i.e., Ma Tso Lung Village, residential developments under the North East New Territories New Development Area). The co-location of these scattered police facilities to a centralised location in Kong Nga Po will reduce the number of sensitive receivers affected.

Key environmental protection measures recommended in the EIA during construction phase include:

- Dust suppression measures (e.g. water spraying) for heavy construction activities
- Use of noise barriers, noise enclosures / acoustic shed and noise insulating fabric on noisy plants
- Adopting good site drainage practices as outlined in ProPECC PN1/94
- Adopting waste reduction measures such as sorting C&D materials and recovering reusable / recyclable portions
- Erection and maintenance of temporary protective fence enclosing flora species of conservation interest

- Protection and preservation of unaffected trees within the Project site
- Erection of decorative screen hoarding to screen undesirable views of the construction site

Key environmental protection measures recommended in the EIA during operation phase include:

- 2m to 5m boundary / side walls to alleviate fixed noise impacts
- Restricted helicopter approach/departure flight paths
- Bullet containment systems to reduce lead dust
- Provision of silt removal facilities at storm drains
- Conveyance of sewage to Shek Wu Hui Sewage Treatment Works
- Buffer / roadside tree planting and vertical greening

### **12.2.2 Population and Environmentally Sensitive Areas Protected**

Sensitive areas in the vicinity of the Project have been protected through the avoidance and/or minimisation of environmental impacts due to the construction and operation of the Project. Adverse air quality and noise impacts on sensitive receivers within the study areas have been minimised. Risks associated with existing / planned hazardous facilities in the vicinity (i.e. Sheung Shui Water Treatment Works and Organic Waste Treatment Facility 2) as well as hazardous scenarios of the Project's facilities risks are all within "Acceptable" level. Furthermore, potential air, noise, hazard and visual impacts on the future population in the proposed residential development under the North East New Territories New Development Area have been avoided as a result of the co-location of the police facilities to KNP.

### **12.2.3 Recommended Environmental Friendly Designs**

During construction phase, works will be conducted in phases to minimise construction dust and noise impacts, and avoid significant visual impact from extensive construction works across the entire Project site. The phasing of construction works will also allow excavated inert construction and demolition (C&D) materials to be stored onsite and reused, minimising the amount to be disposed of at the Government's Public Fill Reception Facilities. In addition, decorative screen hoarding will be erected along the construction boundary, which will screen undesirable views.

The location of the police facilities have been designed to minimise the landscape footprint and visibility of structures. Furthermore, to minimize the potential visual impact during operation phase, it has been proposed that the form, textures, finishes and colours of the superstructure should be compatible with the existing surroundings. The retaining walls will also be aesthetically enhanced through the use of soft landscape works including tree and shrub planting.

### **12.2.4 Key Environmental Problems Avoided and Compensation Areas Included**

The KNP site has avoided or minimised the following environmental problems:

- No loss of waterbodies / water courses
- No impacts to areas of archaeological interest
- No discharge of treated or untreated sewage effluent into surrounding waterbodies

- No contaminated land affected
- Overall reduction in the number of environmental sensitive receivers
- Reduced number of trees affected
- Less habitats are affected
- Reduction in the total amount of excavated material

Approximately 5,982 new trees will be planted as compensation of the trees recommended for felling and part of the mitigation measures for the Project, which will cover around 5.54ha of land. The mitigation planting will utilise native species and will form an almost continuous buffer around the periphery of the Project Site.

### **12.3 Air Quality Impact**

#### **12.3.1 Construction Phase**

Potential air quality impacts from the construction works of the Project would mainly be related to construction dust from site formation, foundation works, excavation, and improvement works of existing Kong Nga Po Road. With proper implementation of the recommended mitigation measures, it has been assessed that all identified ASRs are predicted to comply with the TSP Environmental Impact Assessment – Technical Memorandum (EIAO-TM) criterion as well as the relevant AQOs for RSP and FSP. Hence, there is no adverse air quality impacts anticipated due to the Project during the construction phase.

#### **12.3.2 Operation Phase**

During the operation phase, based on the cumulative vehicular and chimney emission modelling results, it is concluded that all the identified ASRs would be in compliance with the AQOs for hourly NO<sub>2</sub>, annual NO<sub>2</sub>, daily RSP, annual RSP, daily FSP and annual FSP. No significant operational phase air quality impact from the proposed helipad is expected. With implementation of the practical mitigation measures, impacts of dust, lead dust are anticipated to be localised within the firing ranges. Accumulation of air pollutants at the proposed firing ranges leading to exceedance of the relevant air quality criteria is therefore not anticipated. The findings from the odour patrol and test results obtained on two typical hot and dry sunny days show that the potential cumulative odour impacts at all ASRs due to the three existing pig farms, the existing San Uk Ling Firing Range, the proposed OWTF2 and the proposed firing ranges of the Project would be insignificant. Hence, no adverse air quality impacts are anticipated during the operation phase.

### **12.4 Noise Impact**

#### **12.4.1 Construction Noise**

The construction noise impact assessment has been conducted based on the best available information (taking into account other concurrent projects). With the implementation of the mitigation measures in form of quieter plant, movable barriers, noise enclosures and noise insulating fabric, the construction noise

levels at all NSRs are predicted to comply with the noise standards stipulated in the EIAO-TM. Adverse construction noise impacts are therefore not anticipated in this project.

#### **12.4.2 Road Traffic Noise**

The potential road traffic noise impacts have been assessed based on the peak traffic flows in 2038. The predicted road traffic noise levels at all representative NSRs would comply with the relevant noise criteria. Thus, no adverse road traffic noise impact is anticipated.

#### **12.4.3 Fixed Noise Sources**

Noise impact from planned fixed noise sources could be effectively mitigated by implementing appropriate noise control measure at source during the detailed design stage. By installing at least 2.5m height perimeter wall / boundary wall at the Project site and extra 5m height 4-side walls at Ma Tso Lung firing range as well as the adoption of the maximum permissible SWLs for the proposed fixed plants (i.e. ventilation openings, sewage pumping station and petrol/diesel filling station), the impact noise levels at all representative NSRs complies with the relevant fixed noise criteria. Therefore, adverse fixed noise sources impact to the nearby NSRs is not anticipated.

#### **12.4.4 Helicopter Noise**

The helicopter noise impact assessment has been conducted based on the best available information. After adopting the design and operation measures as confirmed with GFS which includes treatment at source, restricting approach / taking-off flight paths and flight angles, and implementing at least 2.5m height perimeter wall / boundary wall at Project site, the predicted helicopter noise levels at all representative NSRs do not exceed the day-time helicopter noise standard laid down in Annex 5 of the EIAO-TM for both scheduled flight and emergency flight. The planned helipad at KNP from 7pm to 7am is for emergency use only and there will not be any scheduled flight during evening and night-time periods. The frequency of using the existing Lo Wu Range helicopter landing site from 7pm to 7am in Year 2010 – 2015 for emergency use is only 3 in total. The duration of each emergency use was about 7 minutes. The helicopter noise impact would comply with the relevant day-time noise criterion of  $L_{max}$  85 dB(A) at all representative NSRs. No residual helicopter noise impact is anticipated.

### **12.5 Water Quality Impact**

#### **12.5.1 Construction Phase**

During construction phase, potential water quality impacts associated with the Project include construction site runoff and general construction activities, accidental spillage of chemicals, sewage from the construction workforce and construction works in close proximity to inland watercourses. Mitigation measures have been recommended to ensure no adverse water quality impacts including the implementation of good site practices as outlined in ProPECC Note PN1/94 and ETWB TC (Works) No. 5/2005, proper storage of chemicals in accordance with the Code of Practice on the Packaging, Labelling

and Storage of Chemical Wastes, provision of portable toilets for the construction workforce and temporary diversion of existing drainage culverts. With the recommended mitigation measures in place, no adverse water quality impacts are expected during construction phase.

### **12.5.2 Operation Phase**

During operation phase, potential water quality impacts associated with stormwater runoff and accidental spillage of chemicals will be adequately mitigated with implementation of silt traps in the stormwater drainage system and appropriate containment and storage of chemicals. For refuelling activities, there shall either be no drainage system in the vicinity or the drainage system will be connected to the foul sewerage system. Similarly, runoff generated by the Police Driving and Traffic Training Facilities (PD&TTF) will be managed through the installation of silt traps and petrol interceptors. Sewage generated during operation phase will be conveyed to the Shek Wu Hui Sewage Treatment Works (SWHSTW) for treatment, while the risk of emergency discharge of untreated effluents from the on-site sewage pumping station (SPS) will be minimised through provision of a retention tank and standby pumps as part of the system. With the recommended mitigation measures in place, no adverse water quality impacts are expected during operation phase.

## **12.6 Sewerage and Sewage Treatment Implications**

The Project site is not currently served by a public sewerage connection and the existing septic tank facility is not considered to be sufficient to accommodate the sewage flows generated by the Project, hence conveyance to SHWSTW is required. The sewage flows from the Project are estimated to be 1.74 l/s ADWF and 10.42 l/s peak flow.

The conveyance of these sewage flows to the SHWSTW will be facilitated through the connection of a new on-site SPS and sewer pipeline to connect to the planned communal sewer with OWTF2, before discharging to existing sewerage facilities (PS3 and associated rising main) along Man Kam To Road. The planned communal sewer will be implemented by either this Project or by OWTF2 project (subject to further liaison between CEDD and EPD during detailed design stage) while upgrades to the existing facilities will be managed under a separate contract (CE1/2015(DS)) by DSD, with agreement that the upgrades will take into account the combined additional sewage flows generated by the Project and the OWTF2. The treatment capacity of SHWSTW will be increased under its Phase 1A expansion and will have sufficient treatment capacity for the Project-related sewage flows by the time of operation in 2022. With implementation of the proposed new sewerage facilities and upgrades to existing facilities (by others), adverse sewerage impacts are not anticipated as a result of the Project.

## **12.7 Waste Management Implications**

### **12.7.1 Construction Phase**

The major waste types generated by the construction activities will include construction and demolition (C&D) materials from site clearance, site formation works, foundation works, retaining walls and slope

works, building construction and superstructure works, and road improvement works; chemical waste from maintenance and servicing of construction plant and equipment and general refuse from the workforce. Provided that all these identified wastes are handled, transported and disposed of in strict accordance with the relevant legislative and recommended requirements and that the recommended good site practices and mitigation measures are properly implemented, no adverse environmental impact is expected during the construction phase.

### **12.7.2 Operation Phase**

During the operation phase, the key waste types generated will include general refuse from staff and trainees within Project; chemical waste from regular maintenance activities for some firing range structures and petrol and diesel filling activities for the police vehicle fleet; as well as cartridge casings and bullet heads from firing and training activities. Provided that all these wastes are handled, transported and disposed of in strict accordance with the relevant legislative requirements and the recommended mitigation measures are properly implemented, no adverse environmental impact is expected during the operation phase.

## **12.8 Land Contamination**

### **12.8.1 Construction Phase**

The land contamination assessment has been conducted by reviewing the historical and current land uses, desktop appraisal and site reconnaissance survey with respect to the potential land contamination at the Study Area. Other relevant information collected from the related government departments has been reviewed.

Based on the findings of the desktop appraisal of the historical and current land uses and the site survey in the Study Area, land contamination impacts associated with construction of the Project is not anticipated.

In case contaminated materials are discovered after the commencement of works, mitigation measures for handling of contaminated materials and regular site audits are recommended to minimise the potential adverse impacts on workers' health and safety and remediation/ disposal of potentially contaminated materials.

### **12.8.2 Operation Phase**

The planned land uses within the Project will mainly include firing training, weapons training, driving and traffic training. All cartridge casing and bullet heads will be collected from the firing range after each target practice and stored in the storeroom for disposal. Therefore, no contaminated land issue is anticipated during training activities.

A petrol/ diesel filling station will be provided in the PD&TTF. Spills and leaks from underground storage tanks and pipework may pose potential land contamination issues. With the recommended mitigation

measures in place, no land contamination would be expected to arise and no adverse impacts are anticipated.

Mobile oil refuelling truck for refuelling of helicopters will be required under some specific operational need. The refuelling activities will be carried out at the helipad. With the recommended mitigation measures in place, no land contamination would be expected to arise and no adverse impacts are anticipated.

## **12.9 Ecological Impact**

The Project site comprises of five habitat types including plantation, grassland, grassland/shrubland, developed area and orchard. Amongst these habitat types, grassland is dominant in the Project site. Although several flora and fauna species of conservation interest were recorded within the Project site, the area is generally not ecologically significant owing to the relatively low ecological value of the habitats. Grassland habitat is common in the Study Area and this habitat is also the dominant habitat at the periphery of the Project Site. Therefore, the potential direct impact on habitat loss is considered as of moderate-minor to minor significance. Indirect impact on off-site habitat is also not considered to be significant due to lack of important ecological resources. No significant ecological impact will be resulted from the operation of the Project as all potential air quality, noise and water quality impacts will be controlled to environmentally acceptable levels, thus no specific ecological mitigation measure is considered necessary.

To minimise impact on the flora species of conservation interest within the Project site, it is recommended to conduct a detailed vegetation survey as baseline monitoring to update the exact locations, number and condition of individuals of any flora species of conservation interest within the proposed works area prior to the commencement of site clearance. Erection and maintenance of a temporary protective fence enclosing the flora species of conservation interest to be preserved is recommended to avoid potential impact from construction activities. A proper transplantation proposal should be prepared and implemented if individuals of flora species of conservation interest are identified not preserved on site. Monthly monitoring of any other flora species of conservation interest identified in the detailed vegetation survey should be conducted during the construction phase to preserve those flora species of conservation interest recorded within the Project site.

With consideration of minimizing impact on rare butterfly species of conservation interest recorded at the grassland in the Project site, it is recommended to consider inclusion of some common grass species which are the larval food plants of Small Three-ring and Swallowtail in the proposed vegetation planting or the Landscape Master Plan in order to benefit these species.

## **12.10 Landscape and Visual Impacts**

The proposed development will see a complete change in the landscape of the Project site, transforming it from a rural albeit disturbed landscape into a large institutional facility. The proposals include extensive site formation works, including significant retaining walls and the introduction of new building forms into a landscape currently characterised by smaller scale and fine textured development contained within a

setting of hills and large areas of woodland. Many of the areas which surround the site are typical open storage and light industrial uses which have replaced more traditional agricultural uses.

The future landscape context represented by the planning framework including OZPs and the projects identified as part of the assessment of cumulative impacts will be a much more developed setting. As such, the Project will be in-tune with this future setting.

It should be noted that despite the coverage of grassland, shrubland and plantation woodland, the Project site is a degraded landscape shaped by the previous engineering requirements for a borrow site. The design of the site formation proposals have sought to be as sensitive as possible, given the functional requirements, to the existing landscape setting. This includes lowering the development platform and hence the height of the retaining structures at the periphery of the site through a number of design iterations and the design and disposition of the proposed buildings and structures to minimise their impact on surrounding landscape character and visual amenity. The landscape and visual mitigation proposals are centred on the use of extensive woodland planting around the periphery of the site to form a landscape buffer. This buffer will screen low-level views (the majority of the existing VSRs are low-level) and integrate the proposed works within the existing landscape framework in more elevated views.

Given the design of the proposed works, the likely impacts on landscape resources during the design year (Year 10) will range from moderate adverse to slight beneficial; and for landscape character the impacts are largely slight adverse to insubstantial although there will be moderate adverse impacts on the Kong Nga Po Upland landscape. Although visual impacts range from moderate to slight adverse, it should be noted that owing to the rural nature of the existing setting, these views are only available to a relatively few people. The level of residual landscape and visual impacts is directly linked to the effectiveness of the proposed mitigation measures.

In accordance with the criteria and guidelines for evaluating and assessing impacts as state in Annex 10, Clause 1.1(c) of the EIAO-TM, overall, it is considered that the residual landscape and visual impacts of the proposed development are acceptable with mitigation during the construction and operation phases.

### **12.11 Impact of Hazard to Life**

A hazard-to-life assessment was carried out for the Proposed Police Facility in Kong Nga Po. The potential impacts from nearby PHI to the Project, as well as the risk impact by the transport, storage and use of helicopter fuel and other DGs were analysed. By carrying out Quantitative Risk Assessment on the facilities, it can be concluded that the overall risk (in terms of individual risk and societal risk level) satisfy the requirement as stipulated in the Annex 4 of the Technical Memorandum of Environmental Impact Assessment Ordinance, and no risk mitigation measure is necessary. Recommendations / good practices are proposed to ensure the safe operation of the proposed police facilities.

## **12.12 Summary of Environmental Impacts**

A summary of environmental impacts for each individual impact in the EIA report is presented in **Table 12.1**.

Table 12.1: Summary of Environmental Impacts of Police Facilities in Kong Nga Po

Assessment Points	Result of Impact Prediction	Relevant Standards / Criteria	Extent of Exceedances Predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
<b>Air Quality Impact</b>						
Air Sensitive Receivers (ASRs) within 500 m Study Area and within the Project boundary.	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Compliance with the AQO for hourly TSP, daily RSP under Tier 1 mitigated scenario and for daily FSP under Tier 1 unmitigated scenario.</li> <li>Compliance with the AQO for annual RSP and annual FSP under mitigated scenario.</li> </ul> <p><u>Operation Phase</u></p> <p>Compliance with the AQO for hourly and annual NO<sub>2</sub>, daily and annual RSP, and daily and annual FSP.</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) (Environmental Impact Assessment Ordinance (EIAO) (Cap. 499.S16), EIAO-TM, Annexes 4 and 12;</li> <li>Air Pollution Control Ordinance (APCO) (Cap. 311) and the Air Quality Objectives (AQO); and</li> <li>Air Pollution Control (Construction Dust) Regulation.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) (Environmental Impact Assessment Ordinance (EIAO) (Cap. 499.S16), EIAO-TM, Annexes 4 and 12; and</li> <li>Air Pollution Control Ordinance (APCO) (Cap. 311) and the Air Quality Objectives (AQO).</li> </ul>	<p><u>Construction Phase</u></p> <p>With the mitigation measures in place, the predicted cumulative hourly TSP, daily and annual RSP and daily and annual FSP levels at all ASRs would comply with the relevant hourly TSP criterion as well as the relevant AQO for daily and annual RSP and FSP.</p> <p><u>Operation Phase</u></p> <p>Based on the modelling results, it is predicted that all the identified ASRs would be in compliance with the AQOs for daily RSP, annual RSP, daily FSP, annual FSP, hourly NO<sub>2</sub> and annual NO<sub>2</sub>.</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Use of regular water spraying (once every 1.25 hours or 8 times per day) to reduce dust emissions from heavy construction activities (including ground excavation, earth moving, etc.) at all active works area, exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>Covering 80% of stockpiling area by impervious sheets and spraying all dusty material with water immediately prior to any loading transfer operations to keep the dusty materials wet during material handling at the stockpile areas.</li> <li>Dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation.</li> </ul> <p><u>Operation Phase</u></p> <p>To minimize air quality impacts from the firing range of the project, the following control measures should be implemented as far as practicable:</p> <ul style="list-style-type: none"> <li>Bullet containment systems.</li> <li>Monitoring and adjusting of soil pH or runoff.</li> <li>Use of lead-free primers mixture for firearms or air pistol.</li> <li>Erect solid fence wall with at least 2.4m to 3.5m height.</li> </ul>	<p><u>Construction Phase</u></p> <p>No residual impacts anticipated due to the project development during the construction phase.</p> <p><u>Operation Phase</u></p> <p>Residual impact is not anticipated.</p>
<b>Noise Impact</b>						
<p><u>Construction Noise / Road Traffic Noise / Fixed Noise Sources</u></p> <p>Noise Sensitive Receivers within 300m assessment area</p> <p><u>Helicopter Noise</u></p> <p>694m assessment area has been established against the criteria of L<sub>max</sub> 85 dB(A) under several worst assumptions.</p>	<p><u>Construction Noise</u></p> <p>With the implementation of the mitigation measures in form of quieter plant, movable barriers, noise enclosures and noise insulating fabric, the construction noise levels at all NSRs are predicted to comply with the noise standards stipulated in the EIAO-TM. Adverse construction noise impacts are therefore not anticipated in this project.</p> <p><u>Road Traffic Noise</u></p> <p>The predicted road traffic noise levels at all representative NSRs would comply with the relevant noise criteria. Thus, no adverse road traffic noise impact is anticipated.</p> <p><u>Fixed Noise Sources</u></p> <p>With the recommended avoidance and mitigation measures in place, the planned and cumulative mitigated noise levels due to fixed noise sources would</p>	<ul style="list-style-type: none"> <li>Noise Control Ordinance;</li> <li>EIAO-TM; relevant Guidance Notes under EIAO;</li> <li>Technical Memorandum on Noise from Construction Work other than Percussive Piling; and</li> <li>Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.</li> </ul>	<p><u>Construction Noise</u></p> <p>With the avoidance and mitigation measures in place, no exceedance of the daytime construction noise criterion at any representative NSRs was predicted.</p> <p><u>Road Traffic Noise</u></p> <p>No exceedance of the relevant road traffic noise criteria at any representative NSRs was predicted.</p> <p><u>Fixed Noise Sources</u></p> <p>With the avoidance and mitigation measures in place, no exceedance of the relevant fixed noise criteria at any representative NSRs was predicted.</p> <p><u>Helicopter Noise</u></p> <p>With the avoidance and mitigation measures in place, no exceedance of the relevant helicopter noise criteria at any representative NSRs was predicted.</p>	<p><u>Construction Noise</u></p> <p>Good site practice to limit noise emissions at source as follows:</p> <ul style="list-style-type: none"> <li>Only well-maintained plant to be operated on-site, and plant should be serviced regularly during the construction works</li> <li>Machines and plant that may be in intermittent use to be shut down between work periods, or throttled down to a minimum</li> <li>Plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs</li> <li>Mobile plant should be sited as far away from NSRs as possible.</li> <li>Material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	<p><u>Construction Noise</u></p> <ul style="list-style-type: none"> <li>Selection of quieter plant</li> <li>Use of movable noise barrier</li> <li>Use of noise enclosure / acoustic shed</li> <li>Use of noise insulating fabric</li> </ul> <p><u>Road Traffic Noise</u></p> <p>N/A</p> <p><u>Fixed Noise Sources</u></p> <p>At least 2.5m height perimeter wall / boundary wall at the Project site and 5m height 4-side walls at Ma Tso Lung firing range will be installed.</p> <p><u>Helicopter Noise</u></p> <ul style="list-style-type: none"> <li>At least 2.5m height perimeter wall / boundary wall at the Project site will be installed.</li> <li>The helicopter will be in approaching or taking-off within the restricted ranges of approach /</li> </ul>	<p><u>Construction Noise</u></p> <p>Residual construction noise impact is not anticipated.</p> <p><u>Road Traffic Noise</u></p> <p>Residual road traffic noise impact is not anticipated.</p> <p><u>Fixed Noise Sources</u></p> <p>Residual fixed noise impact is not anticipated.</p> <p><u>Helicopter Noise</u></p> <p>Residual helicopter noise impact is not anticipated.</p>

Assessment Points	Result of Impact Prediction	Relevant Standards / Criteria	Extent of Exceedances Predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
	<p>comply with the relevant noise criteria at all representative NSRs.</p> <p><u>Helicopter Noise</u></p> <p>By adopting the recommended avoidance and mitigation measures, the predicted helicopter noise levels at all representative NSRs would comply with the relevant noise criteria.</p>			<p><u>Road Traffic Noise</u></p> <p>N/A</p> <p><u>Fixed Noise Sources</u></p> <p>Specification of the maximum permissible SWLs of the Project's fixed plants during daytime/evening and night-time should be followed.</p> <p><u>Helicopter Noise</u></p> <p>Only one helicopter will be allowed in hovering, approaching or taking-off while another helicopter should be idling on ground.</p>	<p>take-off flight paths and adopting steeper approach / departure (take-off) angles.</p>	
<b>Water Quality Impact</b>						
WSRs within 500m of the Project boundary, Deep Bay Water Control Zone (WCZ) and in the vicinity of the Project site	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>No adverse water quality impacts are expected as a result of general construction activities;</li> <li>No adverse water quality impacts anticipated as a result of site runoff;</li> <li>No adverse water quality impacts are expected as a result of accidental spillage of chemicals;</li> <li>No adverse water quality impacts are anticipated from sewage generated by the construction workforce; and</li> <li>No adverse water quality impacts are predicted by construction works in close proximity to inland watercourses.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>No adverse water quality impacts are expected as a result of stormwater runoff;</li> <li>No adverse water quality impacts are expected as a result of accidental spillage of chemicals, oils and fuels;</li> <li>No adverse water quality impacts are anticipated as a result of runoff generated by the Police Driving &amp; Traffic Training Facilities (PD&amp;TTF);</li> <li>No adverse water quality impacts are anticipated as a result of treated sewage discharge to Deep Bay WCZ; and</li> <li>No adverse water quality impacts are anticipated from emergency discharge from the proposed sewage pumping station (SPS).</li> </ul>	<ul style="list-style-type: none"> <li>Annexes 6 and 14 of EIAO-TM;</li> <li>Water Pollution Control Ordinance (Cap. 358);</li> <li>Deep Bay WCZ Water Quality Objectives (WQO)</li> <li>Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters;</li> <li>"No Net Increase in Pollution Load" Requirement in Deep Bay; and</li> <li>Practice Note for Professional Persons on Construction Site Drainage.</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Connection of Project site to the existing sewerage system and SWHSTW for treatment avoids the need for an on-site STW (and associated discharges to adjacent WSRs)</li> </ul>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Appropriate storage of construction materials and waste;</li> <li>Adoption of good site practices outlined in ProPECC Note PN1/94</li> <li>Appropriate storage and labelling of chemicals;</li> <li>Regular maintenance and licensed disposal of sewage from portable toilets; and</li> <li>Temporary diversion of existing drainage culverts and other measures stipulated in ETWB TC (Works) No. 5/2005.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Regular maintenance of silt removal and petrol interceptor facilities;</li> <li>Appropriate storage and labelling of chemicals, oils and fuels;</li> <li>In refuelling areas, either (i) no stormwater drainage is to be installed, or (ii) petrol interceptors are to be installed with downstream connection to the foul sewerage system;</li> <li>Conveyance of sewage to SWHSTW for treatment; and</li> <li>Buffer capacity through standby pumps and retention tank at the on-site SPS.</li> </ul>	<p><u>Construction Phase</u></p> <p>No residual impacts are anticipated.</p> <p><u>Operation Phase</u></p> <p>No residual impacts are anticipated.</p>
<b>Sewerage and Sewage Treatment Implications</b>						
Study Area	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>No adverse impacts are anticipated from conveyance of sewage generated by the Project to the SWHSTW;</li> <li>No adverse impacts are anticipated from emergency discharge from</li> </ul>	<ul style="list-style-type: none"> <li>Sewerage Manual (Drainage Services Department); and</li> <li>Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning, EPD Report No. EPD/TP 1/05, Version 1.0, 2005.</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>On-site SPS to be installed with duty/ standby pumps;</li> <li>Installation of a retention tank to provide buffer capacity to the on-site SPS;</li> <li>Provision of twin rising mains from</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>No residual impacts are anticipated.</p>

Assessment Points	Result of Impact Prediction	Relevant Standards / Criteria	Extent of Exceedances Predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
	the proposed on-site SPS.				the Project site to convey sewage to the public sewerage system.	
<b>Waste Management Implications</b>						
Study Area	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Inert construction and demolition (C&amp;D) materials of about 600,000m<sup>3</sup> and non- inert C&amp;D materials of about 3,000m<sup>3</sup> will be generated from site formation; foundation, retaining walls and slope work, building construction and superstructure works as well as road improvement works;</li> <li>General refuse of maximum daily arising of up to 260kg from construction workforce;</li> <li>Small quantity of chemical waste from maintenance and servicing of construction plant and equipment.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>About 170 kg/day of general refuse will mainly be generated from training activities and restaurants;</li> <li>Chemical waste from maintenance activities for some firing range structures and petrol and diesel filling activities for police vehicle fleet at PD&amp;TTF; and</li> <li>About 7,000kg of cartridge casings and bullet heads will be generated from firing and training activities per year.</li> </ul>	<ul style="list-style-type: none"> <li>Annexes 7 and 15 of EIAO-TM</li> <li>Waste Disposal Ordinance (Cap. 354);</li> <li>Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);</li> <li>Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);</li> <li>Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK); and</li> <li>Land (Miscellaneous Provisions) Ordinance (Cap. 28).</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Minimise site excavation for site formation works and retaining structure and minimise the amount of excavated materials to be generated.</li> </ul> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Good site practices and waste reduction measures for C&amp;D materials;</li> <li>Handling of chemical wastes in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, and disposal of chemical wastes at licensed chemical waste recycling/ treatment facilities; and</li> <li>Employ a reputable licensed waste collector for disposal of general refuse at designated landfill sites.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Employ a reputable licensed waste collector to collect general refuse on a daily basis and dispose of the general refuse at designated landfill sites;</li> <li>Handling of chemical wastes in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, and disposal of chemical wastes at licensed chemical waste recycling/ treatment facilities; and</li> <li>Employ a designated waste contractor to collect cartridge casings and bullet heads regularly.</li> </ul>	<p><u>Construction Phase</u></p> <p>No residual impacts would be anticipated.</p> <p><u>Operation Phase</u></p> <p>No residual impacts would be anticipated.</p>
<b>Land Contamination</b>						
Study Area	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>The land contamination assessment has been conducted by reviewing the historical and current land uses, desktop appraisal and site reconnaissance survey with respect to the potential land contamination at the Study Area.</li> <li>Land contamination impacts associated with the construction of the proposal project is not anticipated.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Cartridge casing and bullet heads will be generated from firing training and weapons training activities..</li> <li>Spills and leaks maybe occurred from underground storage tanks and pipework of petrol/ diesel filling station.</li> </ul>	<ul style="list-style-type: none"> <li>Section 3 of Annex 19 of EIAO-TM;</li> <li>Guidance Note for Contaminated Land Assessment and Remediation;</li> <li>Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management; and</li> <li>Practice Guide for Investigation and Remediation of Contaminated Land.</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>The design engineer should adhere to relevant design standards for storage tank and pipework;</li> <li>Regular inspections and maintenance should be performed;</li> <li>Underground fuel storage tank should be placed within a concrete pit;</li> <li>Refuelling service area should be concrete-paved;</li> <li>Spill control materials and equipment should be provided on site (e.g. absorbent materials, goggles, protective masks, nitrile gloves, disposal bags etc.);</li> <li>If the fuel leakage or spillage occur during refuelling activities, the activities should be immediately stopped; and</li> <li>Fuel leakage or spillage should be contained and cleaned up immediately.</li> </ul>	<p><u>Construction Phase</u></p> <p>No residual impacts would be anticipated.</p> <p><u>Operation Phase</u></p> <p>No residual impacts would be anticipated.</p>
<b>Ecological Impact</b>						
Habitats, flora and fauna within 500m	Moderate-minor impact for the loss of grassland habitat and disturbance to	<ul style="list-style-type: none"> <li>Annexes 8 and 16 of EIAO-TM</li> <li>EIAO GN Nos. 6/2010, 7/2010 &amp;</li> </ul>	N/A	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>erection and maintenance of a</li> </ul>	<p><u>Pre-Construction Phase</u></p> <ul style="list-style-type: none"> <li>a detailed vegetation survey of</li> </ul>	No residual impacts would be anticipated.

Assessment Points	Result of Impact Prediction	Relevant Standards / Criteria	Extent of Exceedances Predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
Study Area and any other areas likely to be impacted by the Project	<p>butterfly species of conservation interest;</p> <p>Minor impact for loss of other habitat and other impacts, including impact on flora species of conservation interest, disturbance impact on terrestrial fauna species of conservation interest and Man Kam To Egret, off-site disturbance, reduction of ecological carrying capacity and indirect impact of surface runoff on aquatic ecology.</p>	10/2010		temporary protective fence enclosing the flora species of conservation interest to be preserved to avoid potential impact from construction activities such as materials storage;	<p>flora species of conservation interest as baseline monitoring within the proposed works area prior to the commencement of site clearance;</p> <ul style="list-style-type: none"> <li>a proper transplantation proposal should be prepared and implemented if individuals of flora species of conservation interest are identified not preserved on site;</li> <li>to consider inclusion of larval food plants of butterfly species Small Three-ring and Swallowtail in the proposed vegetation planting;</li> </ul> <p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>monthly monitoring of any other flora species of conservation interest identified in the detailed vegetation survey;</li> <li>implementation of good site practice during construction stage.</li> </ul>	
<b>Landscape and Visual Impacts</b>						
Landscape Resources (LRs) and Landscape Character Areas (LCAs) within 500m Study Area and Visually Sensitive Receivers (VSRs) within the Visual Envelope	<p>The main impacts will be to the landscape resources and character of the project site which undergo a complete change from a partially restored borrow site to a new institutional facility.</p> <p>Based on broad-brush tree survey 5717 nos. trees of the 8726 trees surveyed will be in conflict with the proposals and recommended for felling. In addition 152 dead trees would be removed</p> <p>Approximately 11.1 ha of grassland in the Project site and alongside Kong Nga Po Road would be lost due to the proposed works.</p> <p>Owing to the nature of the landscape there will also be some indirect impacts on landscape character of the local area particularly during the construction phase.</p> <p>Although views are available to relatively few people there will be significant visual impacts for some VSRs given the scale and visual prominence of the Kong Nga Po development.</p>	<ul style="list-style-type: none"> <li>Annexes 10, 11, 18, 20 and 21 EIAO-TM</li> <li>EIAO GN No. 8/2010</li> </ul>	<p><u>Construction Phase</u></p> <p>N/A</p> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Lowering the height of the development platform and the retaining structures around the periphery of the Project site to reduce landscape and visual impacts.</li> <li>Tree protection and preservation measures for retained trees will be implemented prior to excavation work in accordance with the Guidelines on "Tree Preservation during Development" by the DEVB. This includes the erection of tree protection fences around preserved trees.</li> <li>Transplantation of tree species (including undersized saplings) with conservation interest will be undertaken in accordance with the "Guidelines on Tree Transplanting" by the DEVB. This includes the allowance of sufficient time for preparation works.</li> </ul> <p><u>Operation Phase</u></p> <p>N/A</p>	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> <li>Protection and preservation of existing trees where possible;</li> <li>Tree transplantation to be considered;</li> <li>Construction area control, where possible, to ensure that the landscape and visual impacts arising from the construction activities are minimised;</li> <li>Early implementation of landscape mitigation;</li> <li>Screen hoarding in sensitive locations.</li> </ul> <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> <li>Responsive design and location of buildings and structures including architectural form, disposition, orientation and finishes;</li> <li>Careful design of slopes and retaining walls;</li> <li>Approx. 5.54 ha woodland compensation planting (approx. 5869 nos. new trees for 5717 nos. trees recommended for felling and 152 dead trees recommended to be removed);</li> <li>Approx. 1.02 ha new grassland area;</li> <li>Incorporation of green approaches including vertical greening for structures; green roofs for buildings and green paving (permeable and vegetated) for hard standing.</li> <li>Street and night time lighting designed to avoid glare.</li> </ul>	<p><u>Construction Phase</u></p> <p>Substantial adverse to moderate adverse impacts on LRs within the Project area due to the redevelopment of the whole site. Insubstantial impact on LRs outside Project boundary.</p> <p>Substantial adverse to slight adverse impacts for LCAs which are physically affected by the proposals. Slight adverse to insubstantial impact for LCAs within Study Area.</p> <p>Visual impacts range from substantial adverse to insubstantial due the level of disturbance and the prominence of the Project site.</p> <p><u>Operation Phase</u></p> <p>Impacts for LRs range from slight beneficial to moderate adverse following the full implementation of the mitigation measures.</p> <p>The impact on LCAs will be largely alleviated with impacts ranging largely from slight adverse to insubstantial. Moderate adverse impact for LCA covering the project site.</p> <p>Visual impacts largely moderate adverse to slight adverse due to the scale and prominence of the Kong Nga Po development.</p>
<b>Impact on Hazard to Life</b>						
(1) Risk due to transport, storage and use of chlorine	<p>For all assessment points:</p> <p>The Individual Risk level is below 1 x</p>	Annex 4 of EIAO TM	No exceedances anticipated.	N/A	Mitigation measures are not necessary due to the fact that the societal risk level is in the acceptable region. A list	No residual impacts are anticipated.

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associated with the operations at Sheung Shui Water Treatment Works (2) Risk associated with helicopter refuelling and other Dangerous Goods (DG) in the project site (3) Cumulative risk assessment of the Project through interaction or in combination with Organic Waste Treatment Facilities Phase II	10 <sup>-5</sup> per year considering low presence factor; and  Societal Risk level is in the acceptable region.				of good practices is recommended in the Operation Phase:  <ul style="list-style-type: none"> <li>All DG stores should be constructed according to the standards and recommendations by Fire Services Department, having adequate fire-fighting facilities, proper ventilation and fire-proofing requirement.</li> <li>All DGs such as paints and solvents should be stored in their respective DG rooms.</li> <li>Adequate fire-fighting equipment, such as fire extinguishers, fire sand etc. should be present during kerosene refuelling operation on the helipad.</li> <li>Proper earthing equipment and procedures should be in place to prevent accumulation of static electricity during kerosene refuelling operation.</li> <li>GFS kerosene road tanker and the helicopter pilot should follow the established protocol for arriving at the helipad to prevent helicopter crashing on the road tanker.</li> <li>Refuelling will only be performed in daytime</li> <li>Underground storage tanks will be used for petrol/diesel storage</li> <li>Kerosene pump will be equipped with pressure switch to prevent overfilling</li> </ul>	