2 Project Description

2.1 Introduction

This section provides a description of the proposed police facilities, which includes details relating to the need for and environmental benefits of the Project, design and the layout of the Project, background information on the alternatives considered, as well as indicative construction methods and tentative programme details.

2.2 Project Location and History

2.2.1 Project Location

The proposed Kong Nga Po (KNP) Development locates in the North District roughly in midway between Sheung Shui / Fanling New Town and Shenzhen River, east to the Man Kam To Road and north and east to Ng Tung River. KNP in the North District is a rural area with very limited existing developments. The nearest settlements to the Kong Nga Po site include San Uk Ling, Sha Ling and Hung Lung Hang. The main vehicular access to the Project site is the sub-standard rural track namely Kong Nga Po Road leading from Man Kam To Road. The existing Kong Nga Po Road is a two-way road of typical road width of 6.0m to 6.5m, with no pedestrian or cycle tracks on the side.

The total area of the Project site is approximately 19.1ha and is characterised by a number of platforms created by past activities as a borrow site on a hilltop.

The ground elevation of the site increases gradually from approximately +28mPD at the southern part of the site to approximately +84.0mPD at the northern part. The areas immediately adjacent to the boundary of the site are relatively steep slopes, dipping downwards to the north, to the east and to the west while the area to the south of the study site is a small hill with a peak elevation of approximately +70.0mPD.

The location of the proposed police facilities is presented in **Figure 2.1**.

2.2.2 Site History

The Project site is a former borrow site partly located within the old Frontier Closed Area, which has since been opened up. In 1980 and early 1990, the original topography of low conical hills and ridges was substantially modified by earthworks associated with the construction of Kong Nga Po Road and the site platforms at the proposed development area.

Kong Nga Po Road was constructed as the only access leading from Man Kam To Road to the Project site. Kong Nga Po Road was completed by 1986, while earthworks at the site continued until 1993.

Since then, the Project site has been mostly rural comprising ponds, open areas and scattered buildings / graves. There have been no significant changes in landuse within the Project site.

2.3 Project Scope

The Project consists of site formation works and building works for the co-location of various police facilities in the Project site at Kong Nga Po as well as road improvement works to a section of the existing Kong Nga Po Road between the police facilities and Man Kam To Road. The police facilities include:

- Lo Wu Firing Range (LWFR) to be relocated from Lo Wu;
- Ma Tso Lung Firing Range (MTLFR) to be relocated from Ma Tso Lung;
- Weapons Training Facilities (WTF) to be relocated from Fan Garden;
- Police Driving and Traffic Training Facilities (PD&TTF), including a multi-storey training complex, to be relocated from Fan Garden;
- Helipad to be relocated from Lo Wu;
- A Proposed Police Training Facility (PTF); and
- An internal access road network with underpass (approx. 12m) within the Project site.

In addition to the police facilities to be co-located above, associated supporting infrastructure and utilities will also be provided, which include:

- An underground stormwater storage tank;
- A sewage pumping station (capacity approx. 150m^3/day); and
- A petrol / diesel filling station (with vehicle washing area and vehicle charging area).

The improvement works to Kong Nga Po Road between the police facilities and Man Kam To Road includes roadworks, viaduct of less than 100m between abutments, and associated works such as slopeworks and retaining walls.

The Project layout is shown in **Figure 2.1 and Figure 2.1a**. The location of those existing police facilities to be co-located at Kong Nga Po is shown in **Figure 2.2**.

Civil Engineering and Development Department (CEDD) is the Project Proponent for the development of the Project, and will assume overall responsibility for the construction of site formation and all infrastructure and utilities. Thereafter, the Project will be handed over to Architectural Services Department whom will take over responsibility for the construction of building works and as maintenance agent for Hong Kong Police Force (HKPF) during operation phase, while HKPF will be responsible for management and will be the main user of the individual police and associated facilities.

2.4 Need of the Project

2.4.1 Police Facilities

HKPF operates a number of existing police training facilities in Hong Kong as part of its Hong Kong Police College, which train and develop officers into police professionals with the highest ability and integrity to serve the community. These existing police facilities (including weapons training facilities, firing ranges, and driving training facilities) are currently scattered throughout Hong Kong. As part of the College's

strategic priorities, officers' performance shall be enhanced through quality training and development, and via quality of training assured through improved mechanism, facilities and quality training staff.

2.4.2 Access Road to be Constructed or Improved

The existing Kong Nga Po Road is a two-way road of typical road width of 6.0m to 6.5m with some sections of only 5.8m wide. It was built for the transportation of excavated materials from the borrow area and the alignment roughly follows the existing hilly terrain. There are sharp road bends with steep gradient ranging from 8% to about 15% along the road. The existing Kong Nga Po Road is sub-standard in terms of road width, sightline, horizontal curves and vertical curves according to the current design requirements. To serve the future Police Facilities in Kong Nga Po including the Police off site-road driving training needs, the existing Kong Nga Po Road (the section between the police facilities and Man Kam To Road) will be upgraded to a single two lanes carriageway with 7.3m in width with 2m wide footpath typically on northern side with 8% gradient maximum. The proposed carriageway width and footpath width are the minimum requirements as stipulated in the TPDM for rural roads. The design speed for the improved Kong Nga Po Road is 50km/hr. Such improvement will enhance the carriageway to a safer route for two-way heavy vehicles including container trucks running simultaneous and police off site-road driving training involving large vehicles and relatively inexperienced drivers.

Recognising that there are local residents and other road users, including the existing Hong Kong Police Border District Headquarter (PBDHQ) and the existing Police Dog Unit and Force Search Unit Training School (PDFSTS), the future Organic Waste Treatment Facilities (OWTF), and open storage areas mainly situated on the northern side of Kong Nga Po Road, the provision of 2m wide (clear width) footpaths are proposed along the northern side of the improved Kong Nga Po Road. A few pedestrian crossings and laybys are also proposed to serve local villages and other road users. While there is no specific need for footpath on the southern side of the improved Kong Nga Po Road, the provision of 1m verge is proposed to accommodate the future roadside facilities. The proposed footpath and verge will also serve for future maintenance of adjacent slopes, retaining structures, associated surface channels, roadside utilities / facilities on both sides of the improved road. Please also see **Section 2.6.3.1** Refinement of the Preferred Access Option.

2.4.3 Benefits of the Project

This Project, which will co-locate various existing training facilities within the North District, will enable better site utilisation and operational efficiency and provide a centralised location for weapons and driving-related training along with new and upgraded facilities as well as a re-provisioned helipad for Government Flying Services (GFS). It will also release the land currently occupied by police facilities at Kwu Tung North for other uses to suit the future development of Kwu Tung North area, and provide opportunities for reviewing the land use of the reserved site for police facilities at Fanling North.

2.5 Consideration of "Without Project" Alternative

In the "without Project" scenario whereby the Project does not proceed, some of the existing police facilities to be relocated (those at Lo Wu / Ma Tso Lung) will remain at their current location (as shown in **Figure 2.2**), and any in-situ improvement / upgrading of these existing facilities, if required, would be constrained by their existing site boundary and conditions, while no new facilities can be provided. Any construction activities within the existing police training facilities as part of improvement / upgrading works will also severely disrupt the on-going training activities at the same site, which can adversely affect the programme and progress of police training. Meanwhile, the existing facilities at Fan Garden would instead be relocated to a site within the NENT NDA, and as a result may constrain the development potential of its immediate surroundings within the NDA. At the Kong Nga Po site, the existing San Uk Ling Firing Range (SULFR) is a constraint to future development of the site, hence the land will likely remain unused and undeveloped, while land uses surrounding the Lo Wu and Ma Tso Lung facilities (including parts of the NENT NDA) will continue to be affected and constrained, leading to sub-optimal conditions from a land use planning perspective.

2.6 Consideration of Alternative Siting and Layout

2.6.1 Development Siting

The availability of appropriate sites for the Project is severely constrained by the sensitive nature of the facilities to be relocated. In particular, existing facilities such as the firing range cum helipad at Lo Wu and the firing range at Ma Tso Lung are recognised noise sources whose land use is generally incompatible with major new developments being planned in the New Territories, and their presence poses constraints to land use planning in the vicinity. During the feasibility study for developing KNP site for residential use, it was identified that the existing SULFR poses severe constraints to the proposed residential use, and it was unable to identify suitable sites for its relocation. Meanwhile, it was recognised that the existing Lo Wu and Ma Tso Lung facilities pose constraints to the development potential of the future Kwu Tung North NDA. An opportunity was recognised for resolving both constraints by co-locating police facilities at KNP, and further maximising the land use efficiency by also relocating the existing WTF and PD&TTF at Fan Garden to the KNP site. This co-location of police facilities at KNP was compared against the original proposal under the NENT NDA (which involved retaining the existing firing range and helipad facilities at Lo Wu and Ma Tso Lung while relocating the WTF and PD&TTF from Fan Garden to a reserved site at the Fanling North NDA) and the following benefits were identified.

Co-location of police facilities at KNP would enable:

- Better site utilisation and operation efficiency (while the KNP site is also closer to other existing police facilities such as SULFR, the Border District Police Headquarters and the Police Dog Unit Headquarters);
- Release of land at KTN currently occupied by existing police facilities for other uses to suit the future development; and
- Provide opportunities for reviewing the landuse of reserved sites for police facilities at Fanling North.

The potential dis-benefits of the co-location of police facilities at KNP was also considered and identified to be:

- Increase in the environmental (primarily noise) impacts to existing sensitive receivers in the vicinity of KNP site due primarily to the helipad facilities to be relocated (noting that the addition of the LWFR and MTLFR would not differ substantially from the noise generated by the existing SULFR adjacent to the KNP site); and
- Cost associated with police facilities at KNP.

2.6.1.1 Alternative Helipad Siting

Since the existing Lo Wu Range helicopter landing site will be relocated to KNP, the other existing helicopter landing sites are located in Police Tactical Unit (PTU) headquarter and Fan Garden in Fanling respectively. Those sites are located in the developed area and surrounded by medium to high-rise buildings. From environmental point of view, the potential helicopter noise impacts to the nearby NSRs at these two existing sites are more significant compared with that of the planned helipad at KNP.

2.6.2 Development Layout Options

A preliminary layout and access arrangement for the Project was developed under Agreement No. CE16/2012 – Engineering Feasibility Study for Kong Nga Po – Feasibility Study (hereafter called "Agreement No. CE16/2012"), and is shown in **Figure 2.3**. Three refinement options were subsequently developed based on the preliminary layout. The key aim of these refinement options was to explore the possibility in rearranging the facilities to fulfil all of the users' requirements, while improving environmental performance and potentially better cost-effectiveness. The three refinement options are described in sections below.

2.6.2.1 Refinement Layout – Option 1

This option involves re-arrangement of the PD&TTF and reduction of the platform footprints with a view to reducing the overall amount of earthworks and retaining structures in the site formation. The site formation levels of some proposed platforms are revised. Additional sections of driving training tracks with gradient at a ratio of 1:8 are also provided to fulfil the users' requirements. The layout of Option 1 is shown in **Figure 2.4**.

2.6.2.2 Refinement Layout – Option 2

Option 2 is a variation from Option 1 with the incorporation of an alternative scheme to locate the helipad at the north of the Development Area. In Option 2, the site formation layout of the original helipad location (i.e., at the north west of the Development Area) will be adjusted and the level will be lowered from +68mPD to +63mPD to become the same as the adjacent areas for the PD&TTF in order to provide a potential for improved operational efficiency. The northern platform for provision of the helipad will be slightly larger and have a site formation level of +51mPD (1m lower than Option 1) to control the height of the supporting retaining structure. The Option 2 layout is **Figure 2.5**.

2.6.2.3 Refinement Layout – Option 3

Option 3 is similar to Option 1 with the same rearrangement of the locations of the training grounds for PD&TTF but the location of the WTF and the Proposed Police Training Facility (PTF) is swapped to take into account the possible delay in implementation of the PTF. The development layout is shown in **Figure 2.6**.

2.6.2.4 Selection of Preferred Development Layout Option

Consideration has been given to the environmental performance of the different refinement options in comparison with the preliminary layout, which is summarised in **Table 2.1**. The potential environmental impacts associated with all three refinement options are generally less than the preliminary layout. The site formation works and retaining structures have been revised and reduced in the three options, which will generate less surplus excavated materials, create less visual impacts and reduce the size of affected landscape resources. The reduction in surplus excavated materials ranges from 80,000m^3 to 50,000m^3, with the greatest amount of reduction in Option 1 and the least in Option 3. The height of the retaining wall surrounding PD&TTF has been reduced to 12m from 16m under all three refinement options. The length of retaining structure throughout the site has also been reduced by 100 to 150m in all three refinement options, thereby reducing potential visual impact on nearby sensitive receivers. In addition, the total size of the development has been reduced by at least 6% in all refinement options, and the area of newly formed slopes required for site formation has been similarly reduced by at least 5%, which reduces the total areas of landscape resources affected and hence minimises the landscape impact.

Table 2.1: Comparison between the Refinement Options and Preliminary Layout

Refinement Options	Environmental Benefits	Environmental Dis-Benefits
Option 1	• Volume of surplus excavation material reduces by 80,000m^3 • Less trees affected due to smaller platform footprint • Height and length of retaining structures are reduced (from approx. 16m high to approx. 12m high, and overall length reduction of approx.150m), leading to less visual impacts • Total development area reduced to approx. 146,300 m^2 (from approx. 157,100m^2), which reduces the area of landscape resources affected • Less newly formed slopes required for site formation (reduced to 19,900 m^2 from approx. 21,400 m^2)	No specific environmental dis-benefits compared to Preliminary Layout
Option 2	• Volume of surplus excavated material reduces by around 70,000m^3 • Slightly less trees affected due to smaller platform footprint • Height and length of retaining structures are reduced (from approx. 16m high to approx. 12m high, and overall length reduction of between 100 to 150m), leading to less visual impacts • Total development area reduced to approx. 148,600 m^2 (from approx. 157,100m^2), which reduces the area of landscape resources affected • Less newly formed slopes required for site formation (reduced to 18,000 m^2 from approx. 21,400 m^2)	No specific environmental dis-benefits compared to Preliminary Layout
Option 3	• Volume of surplus excavated material reduces by around 50,000m^3	No specific environmental dis-

Refinement Options	Environmental Benefits	Environmental Dis-Benefits
	• Slightly less trees affected due to smaller platform footprint • Height and length of retaining structures are reduced (same as for Option 2), leading to less visual impacts • Total development area reduced to approx. 147,000 m^2 (from approx. 157,100m^2), which reduces the area of landscape resources affected • Slightly less newly formed slopes required for site formation (reduced to 20,400 m^2 from approx. 21,400 m^2)	benefits compared to Preliminary Layout

Comparing between refinement options, Option 1 and Option 3 generally have the same environmental benefits, but the magnitude of waste and landscape benefits associated with reduced excavated materials and reduced size of development area and newly formed slopes required is better for Option 1. Conversely, following consultation with the future users (HKPF and GFS), it was identified that the helipad location under Option 2 is not preferable due to operational safety requirements.

After considering the environmental benefits and dis-benefits between the refinement options and taking into account the operational safety requirements of HKPF and GFS, Option 1, which overall provides the greatest reduction in waste, visual and landscape impact, is selected as the preferred option to be taken forward.

2.6.2.5 Modification to the Preferred Option

Subsequent to the options evaluation, it was identified that the selected preferred option will encroach onto an existing pig farm, which would need to be removed / relocated. Further review identified that it is possible to retain the existing pig farm by shifting the proposed WTF to the west. This would avoid the need for removal of the pig farm (and the associated risk of programme delay due to land resumption). During the process of preliminary design, other minor modifications to the internal layout to further reduce the size of the development (to approx. 139,100 m^2) and newly formed slopes required (to approx. 14,600 m^2), while improving the operational efficiency of the KNP development have also been incorporated. These modifications have enabled the total landscape resources affected by the KNP development to be reduced by 11% and the total area of newly formed slopes to be reduced by 32% compared to the original preliminary layout. The final layout is shown in **Figure 2.1**.

2.6.2.6 Summary of Preferred Option

Overall, the preferred option has minimised environmental impacts to the maximum practicable extent with respect to the following:

Siting – The KNP development is sited to maximise use of existed disturbed land, thereby minimising impacts on previously undisturbed habitats, The proposed platforms are designed as extensions to the existing platforms and sit at different levels under a terracing design wherever possible in order to match with the existing stepped topography, thereby minimising the generation of C&D materials due to site formation.

Footprint – The footprint of individual facilities are adopted from the minimum footprint requirements specified by the user, while the overall KNP development footprint has been reduced as far as practicable given the topographical constraints, thereby minimising landscape impacts.

Building Heights – Being an uphill development, the proposed development layout has avoided excessive building height in respect to the surrounding natural scenic environment. On top of confining the multi-storey building complex to the southern portion of the KNP development area which is at a lower development platform, the building height of the multi-storey buildings have also been carefully scrutinised to meet the users' requirement without excessive provision. The maximum building height for all police facilities has been reduced to a practical minimum wherever possible, and would be no more than approx. 20m, thereby minimising visual impacts due to bulk structural form to the maximum practicable extent.

A summary of the preliminary development parameters for the key components of the preferred option is presented in **Table 2.2**.

Table 2.2: Summary of Preliminary Development Parameters for Preferred Option

Key Project Components	Site Formation Level	Platform / Building Area	Height of Built Structures
Lo Wu Firing Range	+64.0 mPD	12,800 m^2 (platform) 400 m^2 (Control Building)	Approx. 4 m (for Control Building)
Ma Tso Lung Firing Range	+62.0 mPD	750 m^2 (platform) 125 m^2 (Control Building)	Approx. 4 m (for Control Building)
Weapon Training Facilities	+48.5 mPD	10,800 m^2 (platform) 320 m^2 (each building)	Approx. 20 m
Proposed Police Training Facility	+52.0 mPD	15,000 m^2 (platform) Between 200 to 700 m^2 (each building)	Approx. 20 m
Police Driving and Traffic Training Facilities	+64.0 mPD +55.5 mPD (for multi-storey training complex)	21,300 m^2 (total for all platforms) 200 m^2 (Control Tower) 56 m^2 (for single storey rooms) 150 m^2 (for parking training building) 1,269 m^2 (for multi-storey training complex)	Approx. 6 m (for Control Tower) Approx. 4.5 m (for single storey rooms) Approx. 3 m (for parking training building) Approx. 20 m (multi-storey training complex)
Helipad	+70.0 mPD	5,000 m^2 (platform)	N/A

2.6.3 Access Options

Six options for access to the proposed development were originally identified and are shown in **Figure 2.7**. However, five of the six options had to be discounted due to the following reasons:

Option A to D – these options will require substantial land resumption affecting many different types of landscape resources (including agricultural land, orchard, grassland, shrubland, pond and secondary woodland as well as developed areas) as part of the road improvement works in order to meet the required road standard, and this would cause adverse implications to the Project due to difficulties in

implementation and unnecessary disturbance to the public. Therefore, options A to D are not considered further.

Village road from Man Kam To Road – has topographic constraints which would necessitate provision of a spiral ramp structure to connect the development area to the village road. Aside from visual impacts of this additional structure and the landscape impacts associated with extensive hillside cutting around the spiral ramp, this structure would cause operational safety issues for the future users (which includes the police driving school), hence is not considered to be practicable.

The remaining option (Kong Nga Po Road) does not require land resumption, has no topographic constraints that would adversely affect operational safety, and being an existing road, would generally require less construction works and thus less disturbance to the environment. As such, Kong Nga Po Road has been selected as the preferred access option.

2.6.3.1 Refinement of the Preferred Access Option

To further minimise the total width of the future road, the standard 1.5m verge specified under TPDM between the carriageway and footpath (which is typically required for roadside greening) has been avoided. Along the southern side of the road, the standard 2m verge specified under TPDM is reduced to only 1m for accommodation of roadside furniture / facilities except that footpaths (2m clear width) are provided at locations where a need for maintaining pedestrian access to adjacent developments, local villages and other facilities are identified. These refinements would minimise the slope works and tree felling required, thus minimizing the environmental impact. Compared to the standard TPDM widths which is estimated to affect approx. 1,500 trees, the refined design for Kong Nga Po road would reduce the number of affected trees to approx. 1,400 nos.

There is a sharp turning with large elevation differences at approximate 1.2km from the junction of Man Kam To Road and Kong Nga Po Road, and an elevated road will be provided at this portion to straighten the alignment and reduce the steep gradient, at the same time, maintaining existing vehicular access to the nearby village and minimising construction works and tree felling along the existing road. Retaining wall was considered as an alternative option to the elevated road, but discounted on the ground that the extent of the temporary excavation for the construction of the massive retaining structure with maximum height about 14m would be greater and leading to a greater loss of existing trees and habitats, and create visual impacts to the nearby village residents.

In deriving the preferred alignment of the road improvement works at Kong Nga Po Road, consideration has been given to minimisation of cut / fill slope works and tree removal. Notwithstanding the road width requirements from safety and suitability (for existing and planned users) perspective, the preferred alignment shown in **Figure 2.1** already makes the best use of the existing road alignment to avoid / minimise cutting across vegetated slopes. The option of straightening the alignment to minimise the length and required width of road improvement works was considered but discounted on the grounds that given the existing topography, such straightening would inevitably cut across larger areas of vegetated slopes leading to a greater loss of existing trees and habitats compared to the current alignment following the

existing road. The preferred alignment shown in **Figure 2.1**, taking into account the various operational and safety requirements, has thus minimised environmental impacts to the maximum practicable extent.

2.7 Consideration of Alternative Construction Methods

The major construction elements will broadly include:

- Site formation
- Foundation works
- Retaining walls and slope works
- General building and structure construction
- Improvement of existing Kong Nga Po Road

The associated building and structure construction works for co-location of police facilities at Kong Nga Po Site will be carried out after completion of the site formation, retaining wall and slope works.

2.7.1 Site Formation and Road Works

The construction methods to be employed for site formation and roadworks will include site clearance, excavation and filling, construction of access road, utilities laying and landscaping works. For these works, the methods are well established and there are limited alternative options. Minimisation of potential environmental impacts will largely be achieved via application of specific mitigation measures as identified in **Section 3 to 11** where applicable.

2.7.2 Retaining Walls and Slope Works

The following options have been considered for constructing retaining walls:

- Gravity walls;
- L-shape walls; and
- Piling walls.

The Project will require permanent site formation works in the form of cut slopes, fill slopes and retaining structures as high as 12m. Retaining walls can be in the form of gravity walls, reinforced concrete (RC) L-shape walls etc. Gravity wall is a traditional form of retaining wall, however, it will require much more material when compared to other options as the walls are made from large masses of concrete. Due to topographical constraints, it is anticipated that L-shape or pile retaining walls will be constructed. The structure of L-shape retaining walls will be constructed with reinforced concrete, by formation of temporary cut slope or excavation, and fill and compaction where necessary. Construction of pile retaining wall is expected to be in the form of bored piles, which will involve drilling and installation of pile elements. No percussive piling of any kind is anticipated. Generally, the base slab construction for the L-shape wall would require a larger excavation area when compared to pile wall construction. This may increase C&D materials and dust generation, however these could be readily alleviated with proper site management. With proper site management, there are no significant differences between L-shape or pile retaining walls in terms of environmental benefits and dis-benefits. L-shape wall would be a more cost effective solution

for retaining walls of height less than 9m and would generally become uneconomic for 9m height. Pile wall would become a more cost effective solution for retaining walls of height more than or equal to 9m. Pile wall offers advantages in less working area while L-shape wall offers advantages in terms of cost. Given that with proper site management, there would be no significant difference between the two methods, a combination of L-shape walls and pile walls is anticipated to be adopted to provide a cost effective solution, subject to the detailed design.

Improvement works such as soil nailing, slope re-compaction and re-grading of slope gradient are envisaged as part of the slope works to improve ground stability.

2.7.3 Building Works

2.7.3.1 Foundation Works

Buildings from one to five storeys high are expected to be constructed for the proposed facilities. Shallow foundations such as strip or pad footings may be adopted for single storey small structures. In case large loading capacity is required for multi-storey buildings, three piling options have been assessed:

- Option A – Large Diameter Bored Piles;
- Option B – Pre-bored Socket H-piles; and
- Option C – Driven Steel H-piles

Option A requires larger working spaces when compared to other options and has the largest structural capacities to cater for lateral and vertical loads and less numbers of piles are required. Option C will generate the greatest noise and vibration impacts when compared to other options, and will also require greater number of piles due to its lower loading capacity. The environmental impacts of Option A and Option B are similar, though Option B is considered to be more preferable as it requires less working space and is sufficient to meet the engineering requirements. It should be noted that as construction of building works will be handed over to the Architectural Services Department (ArchSD) once the site formation and road works are completed, the final piling option will be subject to the future detailed design of the building works.

2.7.3.2 Superstructure

Construction of the superstructures will be selected from the following options:

- Conventional in-situ reinforced concrete construction;
- Precast concrete construction; or
- Steelwork construction much of which will be in the form of prefabricated steelwork elements.

In general, the above construction options will not present significant differences in terms of environmental impacts to nearby sensitive receivers. As construction of building works will be handed over to ArchSD, specific construction methods will be subject to the future detailed design once the structural form of the buildings has been developed. However, the superstructures are expected to be of small scale, and the conventional reinforced concrete is likely to be adopted. Should a different form be adopted, it will not present a significant change with regards to environmental impacts.

2.8 Programme and Sequence of Works

The design of the proposed project will commence in about end-2016 / early 2017. Taking into account the time required for Outline Zoning Plan submission and approval by Town Planning Board, the earliest site work is anticipated to commence in about 2018 and complete by about 2022 tentatively.

Several options for construction programming were considered, including construction of the whole site at the same time versus phased construction of different 'zones' within the project site. The former has the benefit of increased efficiency of construction works, but would be associated with the highest construction noise and dust emissions, while the latter would constrain the construction works efficiency, but would enable a reduction in construction noise and dust emissions. Taking into account the sensitivity of nearby sensitive receivers, the latter option has been adopted and the construction sequence has been optimised to avoid concurrent construction of particularly dusty and/or noisy activities within the same locations as far as practicable.

The tentative construction programme is shown in **Appendix 2.1**.

2.9 Concurrent Projects

A review of available information has identified a number of other projects that are undergoing planning, design, construction and/or operation within the construction and/or operation period for this project:

- Proposed Organic Waste Treatment Facilities Phase 2;
- Proposed Man Kam To Development Corridor;
- Fanling North Freshwater Service Reservoir under North East New Territories New Development Areas;
- Columbarium Crematorium and Related Facilities at Sandy Ridge;
- Proposed Development of Village Houses in Hung Lung Hang; and
- Preliminary Feasibility Study on Developing the New Territories North - Feasibility Study

A summary of these projects are provided in **Table 2.3**. The locations of the concurrent projects and the Project boundary are shown in **Figure 2.8**.

Table 2.3: Summary of Concurrent Project Considered for Cumulative Impacts

Potentially Concurrent Projects	Description	Consideration of Cumulative Impacts
Proposed Organic Wastes Treatment Facility Phase 2	According to the approved EIA for this project (AEIAR-180/2013), the proposed Organic Wastes Treatment Facility Phase 2 is located at Sha Ling in the North District. This project is for construction and operation of a biological treatment facility with a capacity of about 300 tonnes per day, for conversion of organic waste into reusable compost and biogas. Construction is anticipated to commence in late 2017 and commission is tentatively in 2019/20.	Cumulative impacts considered and incorporated
Proposed Man Kam To Development Corridor	The Land Use Planning for the Closed Area Feasibility Study Report in 2010 indicates that following the release of the Closed Area, the area within the Fu Tei Au & Sha Ling Outline Zoning Plan (No. S/NE-FTA/13)	Insufficient information available - not assessed for

Potentially Concurrent Projects	Description	Consideration of Cumulative Impacts
	adjacent to the southern side of Man Kam To Road, which is currently zoned as agricultural land, is intended to be rezoned as a Development Corridor, subject to Town Planning Board Approval. However, land use and development proposals will depend on private initiatives and market circumstances. The implementation of the Man Kam To Development Corridor is now under studied by the Preliminary Feasibility Study on Developing the New Territories North – Feasibility Study.	cumulative impacts
Fanling North Freshwater Service Reservoir under North East New Territories New Development Areas	The Fanling North New Development Area (FLN NDA) is one of the North East New Territories New Development Area (NENT NDA) proposed to accommodate a population of 73,300 people, providing a mix of housing types as well as basic infrastructure and community facilities. According to the approved EIA (AEIAR-175/2013), there are several key infrastructures under the FLN NDA development. The secondary freshwater service reservoir proposed under this development is identified to be the only project component located within the proposed Kong Nga Po Police Facilities assessment area. Construction of this reservoir is scheduled to be from 2024 to 2028.	No concurrent construction period – not assessed for cumulative impacts
Columbarium Crematorium and Related Facilities at Sandy Ridge Cemetery	This project comprises mainly the site formation and associated works of about 10 hectares of land and provision of associated infrastructural works, including roads, viaducts, tunnel, pedestrian walkway between Lo Wu MTR Station and the proposed columbarium facilities, drainage and sewerage works, waterworks and other utility services. The site formation works will be carried out by phases with the handover of the formed land in 2019 and the construction of building works of the columbarium, crematorium and related facilities expected to complete in 2022.	Cumulative impacts considered and incorporated
Proposed Development of Village Houses in Hung Lung Hang	According to The Land Use Planning for the Closed Area Feasibility Study Report, a residential development at Hung Lung Hang is proposed at the east of the proposed Kong Nga Po Police Facilities. The Hung Lung Hang Residential Area will be implemented by the private sector. Such proposals will depend on private initiatives and market circumstances. The implementation programme of the Hung Lung Hang Development is subject to private development applications under the statutory planning framework, and is yet to be confirmed.	Insufficient information available - not assessed for cumulative impacts
Preliminary Feasibility Study on Developing the New Territories North	The objective of the Study is to examine the development potential of the New Territories North (NT North), strategic infrastructure provisions required for the development and the development of a modern new town. It will formulate broad land uses and development scale of the potential development areas (PDAs) in the NT North and ascertain their preliminary development feasibility and sustainability in terms of engineering, traffic and other infrastructure capacities, environment and ecology, etc. The Study will also look into the development potential of the Fanling Golf Course together with the Fanling Lodge. The Study commenced on 30 January 2014 for completion in 2016. However, according to communications with the project proponent, the study is still in progress and no information regarding construction programme and works area is available.	Insufficient information available - not assessed for cumulative impacts
Greening Master Plans for New Territories North East– Investigation, Design and Construction	The Greening Master Plan (GMP) is an overall greening framework which aims to serve as a guide for all parties involved in planning, design and implementation of green works. The GMP will establish the greening themes and propose suitable planting species in different districts. The GMP for New Territories has been formulated under four consultancy studies. The GMP NT North East (NTNE) study area covers the North District and Tai Po, including the KNP area. The	No construction work within 500m assessment area - not assessed for cumulative impacts

Potentially Concurrent Projects	Description	Consideration of Cumulative Impacts
	investigation and design for NTNE was completed in 2015, and construction is schedule to complete by 2019. Based on latest design information, the proposed greening work will not fall into our project assessment area.	