

## 13 SUMMARY OF ENVIRONMENTAL OUTCOMES

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### 13.1 Overview

13.1.1.1 According to the Constituency Boundary Maps 2015 (<http://www.elections.gov.hk/dc2015/eng/ebmaps.html>), the 500m boundary of the Project covers five District Council Election Constituency Areas, including Fung Nin, Shui Pin, Nam Ping, Pek Long and Yuen Long Centre. The total estimated population of these five areas is about 90,000 in June 2015.

13.1.1.2 Through the delineation of the site boundary, the design of the elevated pedestrian corridor and the mitigation measures of the construction programme, the Project would avoid and minimize environmental impacts on various aspects for the population. This chapter summarises the overall environmental outcomes due to the development of the proposed elevated corridor in Yuen Long Town connecting with Long Ping Station.

### 13.2 Environmental Benefits of the Project

13.2.1.1 The environmental benefits of the Project including minimizing the potential nuisance from vehicular emission and noise on the pedestrians and enhancing the visual and landscape resources at the street level along the Yuen Long Town Nullah. Details are discussed in **Section 2.3.5** and summarized as below:

- most of the sections of the three major existing at-grade north-south pedestrian routes from Kau Yuk Road to West Rail Long Ping Station will experience in general over 50% pedestrian flow reduction during the peak hour with the provision of the Project. Therefore, less pedestrians will be subject to the nuisance caused by the vehicular emission and noise in the vicinity of the Project; and
- the visual and landscape resource along both bends of the Yuen Long Town Nullah will be enhanced by landscape and streetscape works of the Project. In comparing with the existing channelized nullah with hard concrete surface, the Project will provide beneficial visual impact to the pedestrians.

### 13.3 Environmental Friendly Design Adopted

#### 13.3.1 Landscape Works

13.3.1.1 A pleasant environment along the pedestrian corridor will be created by providing enhanced streetscape design and treatment of site frontages along the corridor. The pedestrian corridor will be well-lit and be made fully accessible with ramps, stairs and elevators if necessary. Four viewing platforms will be provided on the footbridge to allow pedestrians to better enjoy the neighbouring environment.

13.3.1.2 Within the pedestrian interchanges, plantation areas will be incorporated to provide an open space for the pedestrians and improve the visual context of the structures in operation phase. The pedestrian corridor will not only serve as a linkage, but will also become linear open spaces with ample space for pedestrian, circulation

network and greenery. They will be designed with the provision of seating urban hard landscape features and visual landscape amenities for visual relief.

### 13.3.2 Prefabricated Steel Works

13.3.2.1 Prefabrication of steel works is recommended for the footbridge structure. This would meet the design requirements while reducing the disturbance to existing environment. In construction phase, steel trusses will be prefabricated off-site before they are transported to the site in the nullah in order to minimize the onsite works. The completed steel trusses will be launched into position by crane, and hence massive temporary scaffolding works under the footbridge could be avoided. This would also help to soften the visual impacts during the construction phase.

### 13.3.3 Transparent Rooftop

13.3.3.1 The proposed footbridge will make use of sunlight for daytime illumination in order to reduce the daytime use of lighting devices and hence minimize the electricity consumption. According to the current design, about half of the roof area of the footbridge will be constructed by tempered laminated glass.

### 13.3.4 Phased Implementation

13.3.4.1 There are many environmental sensitive receivers along the alignment, including both residential uses and education institutions. Besides, given the urban nature, the separation distances between the workfronts and these receivers are relatively small and hence they are more prone to impacts and nuisance during the construction period. Other than mitigation measures on the noisy items, the construction methodology has been critically re-examined to ensure that the construction work is implemented in phases. For example, the temporary erection at the eastern side of the nullah will be conducted during 2<sup>nd</sup> to 4<sup>th</sup> quarter in Year 2018. The works of different sections of the nullah will be conducted in sequences and will not in place at the same time. This careful phased implementation will ensure that only optimal number of construction works will be conducted concurrently and hence reduced the potential environmental impacts and nuisance at the outset.

## 13.4 Population Protected and Environmental Sensitive Area Protected

### 13.4.1 Population in the vicinity

13.4.1.1 As mentioned in **Section 13.1.1.1**, the total estimated population in the vicinity of the Project is about 90,000 in June 2015. In consideration of there are several residential development projects (e.g. West Rail Long Ping Station (North) Property Development, West Rail Long Ping Station (North) Property Development, etc.) will be completed in coming future, the population in the vicinity of the Project will continue to grow.

13.4.1.2 Due to the high traffic flow and pedestrian movement within Yuen Long Town Centre, especially during peak hour and weekend, there are serious traffic congestion and vehicle-pedestrian conflicts due to narrow roads and footpaths within the Yuen Long Town Centre. These traffic congestion and vehicle-

pedestrian conflicts issues not only cause safety problems to the pedestrians but also expose pedestrians to nuisance of vehicular emission and noise.

- 13.4.1.3 With the provision of the Project, some of the existing pedestrian flow on the at-grade footpath will be diverted to the proposed elevated pedestrian corridor. Under the current situation, there are three major existing north-south pedestrian routes in Yuen Long Town Centre from Kau Yuk Road to West Rail Long Ping Station, including (1) along Hong Lok Road and eastern side of the nullah, (2) along Kik Yeung Road and western side of the nullah, and (3) along Fung Nin Road, On Shun Street and Chun Yin Square. According to the latest traffic study, the footpaths across Castle Peak Road - Yuen Long Section and Kau Yuk Road are the busiest sections of these three pedestrian routes. The estimated maximum pedestrian flow of these sections ranged from about 1750 to 7310 per hour in Year 2022. With the proposed elevated pedestrian corridor, the maximum pedestrian flow of these three pedestrian routes would be reduced to about 760 to 4,640 per hour. There are in general over 50% of the pedestrian flow of most of the sections at the north-south at-grade pedestrian routes will be diverted to the proposed elevated pedestrian corridor. Therefore, the proposed footbridge would improve the pedestrian safety as well as minimising the nuisance of vehicular emission and noise on the pedestrians within the Yuen Long Town Centre. In addition, the landscape and streetscape works of the Project will also enhance the visual quality to the pedestrian as well. Hence, it is considered that the Project would cause beneficial impacts to the population in the vicinity during the operation phase.
- 13.4.1.4 The environmental impacts caused by the Project to the population in the vicinity would occur during the construction phase of the Project. Therefore, the environmental impacts during the construction phase are examined. It is anticipated that the Project would not cause any significant environmental impacts with the implementation of good site practices and site management, except construction noise.
- 13.4.1.5 Based on the construction noise assessment, mitigation measures, such as use of quiet plant and noise barrier, have been recommended to ensure that the construction noise is controlled to acceptable level, and this would help to protect the population in the vicinity, especially those at the residential premises and schools along both sides of the nullah.

## 13.4.2 Downstream Ecological Sensitive Area

- 13.4.2.1 Number of ecological sensitive areas are identified at the downstream of Yuen Long Town Nullah, including Mai Po Inner Deep Bay Ramsar Site, Deep Bay Wetland Outside Ramsar Site, Mai Po Nature Reserve, Mai Po Marshes and Inner Deep Bay SSSIs, and Tsim Bei Tsui and Tsim Bei Tsui Egrety SSSIs, etc.. The impacts on these ecological sensitive area are minimized and mitigated by avoiding deteriorated water quality arise from the Project with provision of mitigation measures, such as use of cofferdams, good site managements, provision of drainage system, etc., during construction and operational phase of the Project. Details are given in **Section 13.5.3**.

## 13.5 Approaches Adopted to Minimise/Mitigate Environmental Impacts

- 13.5.1.1 It can be seen that the design and construction of the elevated footbridge has adopted the principle to avoid environmental impacts. Where the impacts could not

be avoided, efforts have been deployed to minimize / mitigate the impact. Notwithstanding this, the EIA has recommended a package of mitigation measures that would be required. The Project Implementation Schedule in **Appendix 12.1** has clearly stated the details of such mitigation measures, the timeframe and the implementation agents. Some of the key mitigation measures are discussed below.

### 13.5.2 Provision of Noise Mitigation Measures during Construction Phase

13.5.2.1 Construction noise impact is one of the major key environmental issues identified for the Project. As mentioned in **Section 5.3.5**, exceedence of construction noise criteria is anticipated at the NSRs, including residential buildings and schools, along the Yuen Long Town Nullah without mitigation measures provided. Therefore, mitigation measures have been considered throughout the design process to minimize the potential construction noise impact. Besides good site practices, use of quiet plants and working methods, use of shrouds / temporary noise barriers to screen noise from relatively static PMEs, scheduling of construction works outside school examination periods in critical areas and alternative use of plant items within one worksite would be required during the construction phase to reduce the construction noise at the NSRs to acceptable levels.

### 13.5.3 Water Quality to the Nullah and Downstream Ecological Sensitive Area

13.5.3.1 As mentioned in **Chapter 9**, the construction works of the Project will be conducted within and on top of the Yuen Long Town Nullah, which eventually discharges into downstream ecological sensitive area including Mai Po Inner Deep Bay Ramsar Site, Deep Bay Wetland Outside Ramsar Site, Mai Po Nature Reserve, Mai Po Marshes and Inner Deep Bay SSSIs, and Tsim Bei Tsui and Tsim Bei Tsui Egrety SSSIs, etc. as mentioned in **Section 13.3.3**.

13.5.3.2 During construction phase, potential impact to the downstream wildlife at the ecological sensitive area due to the deteriorated water quality in Yuen Long Town Nullah arisen from the construction activities, including increased suspended solid, accidental spillage of chemical and oil into the nullah, etc, would be one of the key environmental issues of the Project. Therefore, construction works within the Nullah, such as piling works for the bridge piers, will be undertaken during dry season. At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works. Also, cofferdam and temporary platform will be constructed to constrain the SS release to the river waters during construction activities. Good site practices and certain mitigation measures will also be implemented to control construction site runoff. Monitoring of the water quality will be also implemented to ensure the water quality of the Nullah and downstream will not be deteriorated by the Project. Emergency actions will be conducted once unacceptable water quality is identified in order to protect the downstream ecological sensitive area and wildlife.

### 13.5.4 Tree Compensation

13.5.4.1 As discussed in **Chapter 10**, there are 125 trees in the vicinity of the Project. Based on the tree survey report, 38 trees will be affected, out of which 1 tree are proposed to be transplanted and 37 trees are proposed to be felled. All of them belongs to common species. None of them are LCSD Champion Trees, Registered Old and Valuable Trees nor trees that meet the criteria for Important Trees. Some

compensation planting and transplanting of trees will be required for mitigating the landscape and visual impact.

### **13.5.5 Implementation of Environmental Monitoring System during Construction Phase**

13.5.5.1 In addition to the mitigation measures as described above (see more details in the Project Implementation Schedule), a comprehensive environmental monitoring and auditing programme would be implemented to cover various aspects of concern. An independent environmental checker would also be employed to ensure that all the necessary mitigation measures are implemented in a timely and orderly manner.

### **13.5.6 Overall**

13.5.6.1 With the provision of the Project, there will be in general over 50% pedestrian flow reduction during the peak hour in most of the sections of the three major at-grade north-south pedestrian routes from Kau Yuk Road to West Rail Long Ping Station. Therefore, less pedestrians will be subject to the nuisance caused by the vehicular emission and noise in the vicinity of the Project.

13.5.6.2 Besides, the visual and landscape resource along both bends of the Yuen Long Town Nullah will be enhanced by landscape and streetscape works of the Project. In comparing with the existing channelized nullah with hard concrete surface, and the disorder street element, the Project will provide beneficial landscape impact to the pedestrians. In visual point of view, the proposed footbridge will unavoidably cause visual obstruction to the existing visual corridor and adverse visual impact, by taken account into the overall visual impact to all VSRs are mostly slight to insubstantial, and the functional requirement of the project, the works is considered as marginally acceptable in visual point of view.

13.5.6.3 Mitigation measures and good site practices to minimise the environmental impacts were recommended throughout the impact assessments such as noise, water quality, landscape and visual, etc. These measures were consolidated in the Project Implementation Schedule which specifies the responsibility, methodology and timing of implementation, such that effective and appropriate implementation of the measures can be assured.