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3. AIR QUALITY IMPACT ASSESSMENT

3.1 Introduction

3.1.1 This *Section* presents an assessment of the potential air quality impact that could arise from the construction and operation of the Project. It covers the scope outlined *Clause 3.4.10* of the *EIA Study Brief (ESB-322/2019)* and is based on the criteria and guidelines for evaluation and assessment of air quality impacts stated in *Annexes 4* and *12* of the *EIAO-TM*.

3.2 Statutory Requirements and Evaluation Criteria

3.2.1 The criteria for evaluating air quality impacts and the guidelines for air quality assessment are laid out in *Annex 4* and *Annex 12* of the *EIAO-TM*. The principal legislation for the management of air quality in Hong Kong is the *Air Pollution Control Ordinance (APCO) (Cap. 311)*. The Air Quality Objectives (AQOs) stipulating statutory ambient limits for air pollutants and the maximum allowable number of exceedances over specific averaging periods are presented in **Table 3.1**.

Table 3.1
Hong Kong Air Quality Objectives

Air Pollutant	Averaging Time	Concentration Limit ($\mu g/m^3$)[i]	Number of Exceedances Allowed per Year
Sulphur dioxide, SO_2	10-minute	500	3
	24-hour	50	3
Respirable suspended Particulates, RSP (PM_{10}) [ii]	24-hour	100	9
	Annual	50	Not applicable
Fine suspended Particulates, FSP ($PM_{2.5}$) [iii]	24-hour	50	35 (18)[iv]
	Annual	25	Not applicable
Nitrogen dioxide, NO_2	1-hour	200	18
	Annual	40	Not applicable
Ozone, O_3	8-hour	160	9
Carbon monoxide, CO	1-hour	30,000	0
	8-hour	10,000	0
Lead	Annual	0.5	Not applicable

Notes:
[i] All measurements of the concentration of gaseous air pollutants, i.e. sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are adjusted to a reference temperature of 293K and a reference pressure of 101.325 kPa.
[ii Suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
[iii] Suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.
[iv] The blanket value refers to the number of allowable exceedances for 24-hour PM2.5 for new Government Projects (i.e. 18).

3.2.2 A maximum hourly TSP level of 500 $\mu g\ m^{-3}$ at Air Sensitive Receivers (ASRs) is also stipulated in *Section 1, Annex 4* of the *EIAO-TM* to assess potential construction dust impacts. The *EIAO-TM* also stipulated that the odour level at a sensitive receiver should not exceed 5 odour units based on an averaging time of 5 seconds for odour prediction assessment.

Air Pollution Control (Construction Dust) Regulation

3.2.3 The measures stipulated in the Air Pollution Control (Construction Dust) Regulation should be followed whenever possible to ensure that any dust impacts are reduced. The measure specifies processes that require special dust control, and require the Contractor to inform EPD and implement proper dust suppression measures while carrying out "Notifiable Works" and "Regulatory Works".

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

3.2.4 *The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation* stipulates that non-road mobile machinery (NRMM), except those exempted, are required to comply with the prescribed emission standards. The Contractor is required to ensure the adopted machines or non-road vehicle under the Project could meet the prescribed emission standards and requirement.

Air Pollution Control (Fuel Restriction) Regulation

3.2.5 *The Air Pollution Control (Fuel Restriction) Regulation* was enacted in 1990 and amended in 2008. The regulation imposes legal control on the type of fuels allowed for use and their sulphur contents in commercial and industrial processes. Gaseous fuel, conventional solid fuel with a sulphur content not exceeding 1% by weight or liquid fuel with a sulphur content not exceeding 0.005% by weight and a viscosity not more than 6 centistokes at 40°C, such as Ultra Low Sulphur Diesel (ULSD) are permitted to be used in commercial and industrial processes.

Recommended Pollution Control Clauses for Construction Contracts

3.2.6 The Recommended Pollution Control Clauses (RPCC) are generally good engineering practice to minimize inconvenience and environmental nuisance to nearby residents and other sensitive receivers. Some modifications may be necessary to suit specific site conditions.

DEVB's TC no. 13/2020, Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts

3.2.7 In response to the carbon emission reduction target as specific in the "Hong Kong Climate Action Plan 2030+", timely provision of electricity could help reduce carbon emission arising from operation of diesel generators at the beginning of the construction works. At the detailed design stage, project team should timely apply for the temporary electricity with a target that the necessary cables laying works could be completed before the commencement of the works contract. In addition, timely provision of electricity to construction sites can facilitate the use of Electric Vehicles (EVs) in public works contracts. The Project team should specify the use of EV(s) as well as the installation of designated medium-speed charger for each EV as a standard provision at the site accommodation in each public works contract.

DEVB's TC No.1/2015, Emissions Control of NRMM in Capital Works Contracts of Public Works

3.2.8 This Circular promulgates the requirements for the use of non-road mobile machinery ("NRMM") approved under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation ("the Regulation") in new capital works contracts of public works including design and build contracts, in addition to the statutory requirements of the Regulation.

3.3 Study Area

3.3.1 *Clause 3.4.10.2* of the *EIA Study Brief (ESB-322/2019)* prescribes the Study Area which is generally defined by a distance of 500m from boundary of the Project, or to include other project locations as identified in the EIA. **Figure 3.1** shows the Study Area within the 500m envelope of the Project (including the works areas) and the identified representative ASRs which have been described in the next section in details. This Study Area is the same for both the construction and operation phases.

3.4 Identification of Air Sensitive Receivers

3.4.1 Representative existing, planned and committed ASRs within the Study Area have been identified based on the topographic maps supplemented by site surveys, Outline Zoning Plans (OZPs), other published plans in the vicinity of the Project Site. Reference has been made to the approved Outline Zoning Plan (OZP) for Ping Che and Ta Kwu Ling (No.S/NE-TKL/14) and Ta Kwu Ling North (No.S/NE-TKLN/2) in identifying appropriate ASRs. In addition, site visits have been conducted to verify the ASRs and its assessment point.

3.4.2 Existing Air Sensitive Receivers (ASRs) have been identified in accordance with *Annex 12* of *EIAO-TM* and are summarised in **Table 3.2** and shown in **Figure 3.1**. No planned or committed ASRs have been identified within the Study Area.

Table 3.2
Identified Representative Air Sensitive Receivers

ASR	Description	Nature of Use	No. of storeys	Height of ASR (m above ground)	Separation Distance from the Nearest Site Boundary (m)	Phases Affected	
						Construction Phase	Operation Phase
ASR1	307 Ping Yeung	Residential	3	1.5, 4.5, 7.5	5	✓	x
ASR2	17 Ping Yeung	Residential	1	1.5	4	✓	x
ASR3	362 Ping Yeung	Residential	3	1.5, 4.5, 7.5	5	✓	x
ASR4	331 Ping Yeung	Residential	3	1.5, 4.5, 7.5	4	✓	x
ASR5	156B Ping	Residential	2	1.5, 4.5	7	✓	x

ASR	Description	Nature of Use	No. of storeys	Height of ASR (m above ground)	Separation Distance from the Nearest Site Boundary (m)	Phases Affected	
						Construction Phase	Operation Phase
	Yeung						
ASR6	Temporary Shelter near TKL04	Residential	1	1.5	3	✓	x
ASR7	Sing Ping Village	Residential	2	1.5, 4.5	36	✓	x
ASR8	Caritas Fung Wong Fung Ting Home	Home for the Elderly	2	1.5, 4.5	6	✓	x
ASR9	5 Tong Fong	Residential	3	1.5, 4.5, 7.5	67	✓	x
ASR10	55 Lei Uk	Residential	3	1.5, 4.5, 7.5	33	✓	x
ASR11	Wun Chuen Sin Kwoon	Temple	2	1.5, 4.5	35	✓	x
ASR12	200 Tai Po Tin	Residential	3	1.5, 4.5, 7.5	42	✓	x
ASR13	323 Tai Po Tin	Residential	3	1.5, 4.5, 7.5	32	✓	x
ASR14	118 Tai Po Tin	Residential	3	1.5, 4.5, 7.5	36	✓	x
ASR15	103 Ping Che	Residential	2	1.5, 4.5	87	✓	x
ASR16	Temporary Shelter near TKL05	Residential	1	1.5	2	✓	x
ASR17(1)	New Territories North New Development Area	New Town Development	NA	NA	NA	✓	x

Notes: (1) The Detail of New Territories North New Development Area has yet to be available.

3.5 Baseline Condition and Background Air Quality

3.5.1 The Project Site is located in a rural area in Ta Kwu Ling with predominately village and agricultural uses around. Several villages are identified on either side of the Project Site. The local air quality is influenced mainly by general background conditions. The nearest EPD's Air Quality Monitoring Station (AQMS) is located in Tai Po urban area (roof of the Tai Po Government Offices Building, 1 Ting Kok Road). The latest 5 years annual averaged concentrations (2016 – 2020) of air pollutants are presented in **Table 3.3**.

Table 3.3
5-year Averaged Annual Background Concentration of Air Pollutants recorded at Tai Po Station by EPD for the Period of 2016-2020

Air Pollutant	Averaging Time	AQO [(a)]	Data Description	Unit	Year [(b) (c)]					5-year mean
					2016	2017	2018	2019	2020	
Fine Suspended Particulates (FSP) (PM 2.5)	24-hour	50 (18)	19th Max.	µg m^{-3}	43	46	38	41	33	40
			No. of Exceedance(s)	-	13	13	5	7	2	0
	Annual	25	-	µg m^{-3}	20	22	19	20	15	19
Respirable Suspended Particulates (RSP) (PM10)	24-hour	100 (9)	10th Max.	µg m^{-3}	74	82	69	65	58	70
			No. of Exceedance(s)	-	1	1	0	2	0	1
	Annual	50	-	µg m^{-3}	29	32	31	31	24	29
Sulphur Dioxide (SO_2)	10-minute	500 (3)	4th Max.	µg m^{-3}	37	39	24	20	19	28
	24-hour	50 (3)	4th Max.	µg m^{-3}	10	9	8	10	7	9
Nitrogen Dioxide (NO_2)	1-hour	200 (18)	19th Max.	µg m^{-3}	112	127	125	142	106	122
			No. of Exceedance(s)	-	0	0	0	0	0	0
	Annual	40	-	µg m^{-3}	33	39	36	36	30	35
Carbon Monoxide (CO)	1-hour	30,000	Max.	µg m^{-3}	N/M	N/M	N/M	N/M	N/M	N/M
	8-hour	10,000	Max.	µg m^{-3}	N/M	N/M	N/M	N/M	N/M	N/M
Ozone (O_3)	8-hour	160 (9)	10th Max.	µg m^{-3}	147	**181**	**167**	**197**	**165**	**170**
			No. of Exceedance(s)	-	5	**17**	**13**	**27**	**14**	**15**

Notes: (a) Values in ( ) indicate the number of exceedances allowed per year
(b) Data extracted from EPD Website (http://www.aqhi.gov.hk/en/download/air-quality-reportse469.html?showall=&start=1)
(c) Bolded values represent exceedances of the AQOs.
(d) N/M – not measured

3.5.2 The 5-year average for all parameters complied with the respective AQO requirements except ozone (O_3). Ozone is a product of photochemical reactions of NOx and volatile organic compounds (VOCs) instead of being emitted directly from human activities. In the presence of NO_x (a common roadside pollutant), ozone will be broken down into oxygen. Since NO_x concentration in rural areas is low, ozone scavenging effect is small and results in generally high level.

3.5.3 All measured 19th highest 1-hour NO_2 levels from 2016 to 2020 complied with the AQO of 200 µg/m^3. All measured annual mean levels were within the AQO of 40 µg/m^3. The 10th highest daily RSP levels from 2016 to 2020 complied with the AQO of 100µg/m^3. The annual RSP levels were all within the AQO of 50µg/m^3. The 19th highest daily FSP levels had decreased from 43 µg/m^3 in 2016 to 33 µg/m^3 in 2020, as compared with the AQO of 50 µg/m^3. The annual FSP levels were all within the AQO of 25µg/m^3. All the measured 4th highest 10-minute and 4th highest 24-hour SO_2 levels were well within their respective AQOs of 500 µg/m^3 and 50 µg/m^3. The highest 8-hour O_3 levels were ranged from 197 to 147µg/m^3. Exceedances were found from Year 2017 to Year 2020. The highest 1-hour and 8-hour CO levels were not measured at Tai Po Station.

PATH v2.1 Model Year 2025 Prediction

3.5.4 The Project is located on PATH Grid Cells (38,56), (38,57), (39,56) and (39,57) of PATH v2.1. The annual average of concerned air pollutants at Year 2025 modeled by PATH v2.1 model are summarized in Table 3.4 below.

Table 3.4
Background Air Pollutants at Year 2025 by PATH v2.1 Model (μ g/m^3)

Air Pollutant	Averaging Time	AQO	Data Description	PATH Grids			
				(38,56)	**(38,57)**	**(39,56)**	**(39,57)**
Fine Suspended Particulates (FSP) ($PM_{2.5}$)	24-hour	50 (18)	19th Max.	41	40	38	39
	Annual	25	-	17	17	16	16
Respirable Suspended Particulates (RSP) (PM_{10})	24-hour	100 (9)	10th Max.	69	70	67	69
	Annual	50	-	29	29	28	28
Sulphur Dioxide (SO_2)	10-minute	500 (3)	4th Max.	80	86	74	84
	24-hour	50 (3)	4th Max.	13	13	12	12
Nitrogen Dioxide (NO_2)	1-hour	200 (18)	19th Max.	107	106	94	91
	Annual	40	-	13	13	11	12
Carbon Monoxide (CO)	1-hour	30,000	Max.	908	911	880	894
	8-hour	10,000	Max.	835	837	817	826
Ozone (O_3)	8-hour	160 (9)	10th Max.	**203**	**204**	**202**	**201**

Notes:
[1] For 24-hr average PM_{10}, the concentration is adjusted by adding 11.0 μg/m^3, extracted from EPD's Guidelines on Choice of Models and Model Parameters.
[2] For annual average PM_{10} and $PM_{2.5}$ the concentration is adjusted by adding 10.3 μg/m^3 and 3.5 μg/m^3, extracted from EPD's Guidelines on Choice of Models and Model Parameters.
[3] Bolded values represent exceedances of the AQOs.
[4] Blanketed refers to the number of exceedances allowed per year.

3.6 Assessment Methodology

3.6.1 An air quality impact assessment has been undertaken in accordance with the criteria and guidelines as stated in Annexes 4 and 12 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO). The improvement works will be divided in sections. Each section is divided into segments of about 50m, at most 3 work fronts will be conducted at the same time and only 1 excavator will be operated in each work front. Therefore, significant dust impact is not anticipated. Thus, a quantitative assessment is not proposed. The relevant justifications and assessment results are presented in below sections.

3.6.2 For operational phase, no air pollution source from the Project is identified. Thus, adverse air quality impact is not anticipated. No mitigation measures are required.

3.7 Evaluation of Impacts during Construction Phase

Identification of Air Pollution Sources

3.7.1 The following sources of air pollution are expected during the construction phase of the Project:

- Fugitive dust caused by earth works including site clearance, excavation of the proposed drainage channel, materials handling, loading and unloading etc. for the construction of the TKL04 and TKL05;
- Fugitive dust caused by earth works including site clearance, excavation and backfilling activities for the construction of the u-channel and drainage pipelines;
- Fugitive dust caused by formwork and reinforcement works;
- Wind erosion of open sites and stockpiling areas.
- Gaseous emissions from diesel-powered construction equipment; and
- Odour from the excavated stream bed materials.

3.7.2 Other superstructure works involving the re-provisioning of the pedestrian and vehicular river crossings should unlikely be a major dust generating source, given the relatively small-scale construction works involved.

3.7.3 Potential impacts associated with the construction of the Project mainly include vehicular emissions (i.e. NO_2, PM10 and PM2.5) from on-site vehicles/PMEs and the fugitive dust (i.e. TSP, PM10 and PM2.5) emissions from the excavation, formwork and reinforcement, storage and handling of materials and the movements of on-site vehicles on haul roads.The proposed drainage improvement works at each active works area (each approximately 50m) which is programmed to take only about 2- 4 weeks to complete

Evaluation of Impacts

Fugitive Dust

3.7.4 The construction of TKL04 and TKL05 will be constructed in sections of maximum 50m in length and hence the exposed area will be reduced. The construction activities will not be undertaken at the same time at adjoining sections such that the potential air quality impacts due to fugitive dust generation can be reduced.

3.7.5 Based on the engineering design, it is estimated that about 28,500m^3 of construction and demolition (C&D) materials and river bed material will be excavated from the Project during the peak construction year in 2025. About

4,560m^3 of the excavated materials will be reused on-site and the rest (about 23,940m^3) of excavated materials will be temporarily stored in stockpiling areas for subsequent disposal off-site. Dust generated from construction vehicle movements to and from the stockpiling areas and works areas will generally be limited within the work areas.

3.7.6 For site clearance and demolition works, the proposed drainage improvement works at each active works area (each approximately 50m) which is programmed to take only about 2- 4 weeks to complete. It is estimated that a total of 6 truck trips per days (about 4 truck trips per day for surplus inert C&D materials and 2 truck trips per day for construction waste) will be required to dispose the C&D materials/construction waste off-site. For the surplus inert C&D materials and construction waste generated from the excavation works, a total of 12 truck trips per days (about 11 truck trips per day for surplus inert C&D material and 1 truck trip per day for construction waste) will be required to dispose the materials/waste off-site. The disposal sites will be proposed by Contractor in the Environmental Management Plan (EMP) and Waste Management Plan (WMP) for the Engineer's approval before implementation. Nevertheless, all vehicles will be cleansed by wheel washing facility before leaving the construction sites, and soil brought away from construction sites is thus not anticipated. Vehicle containing dusty material will also be covered by sheet to avoid any potential nuisance. Any dusty discharge on road is a violation of the Public Health & Municipal Ordinance. Therefore adverse off site dust impact is not anticipated. With proper implementation of good site practices, potential dust impacts associated with on-site handling and transportation of the public fill and construction waste to disposal sites are not expected to occur.

3.7.7 Excavation, U-channel/piping construction and backfilling are the major construction activities during the construction of the associated drainage facilities at Ping Che Road and Ping Yeung Village. Traditional open cut method will be adopted. However, some of the works will be carried out in the narrow village alleys, accesses and open space of the villages (i.e. Ping Yeung Village), therefore, only hand-held tools or small-scale construction plant will be used for excavation, pipe laying and backfilling. It is understood that the construction of drainage system would be carried out section by section. Since the drainage system would be constructed in small sections, with each section about 50 m long at maximum, thus the excavation area for each construction event would be limited. Any dust emissions during excavation activities is expected to be localized and dust impact to nearby ASRs is not anticipated with implementation of dust mitigation measures. Precast material will be used as far as possible to minimise the potential dust impact from on-site construction works, e.g. concreting. For backfilling works, fugitive dust emissions will be reduced by compacting the filled area immediately after backfilling and covered by impervious sheet when it is not in use.

3.7.8 In view of the relatively small scale of the construction works, the quantity of excavated materials generated and no concrete batching on-site, the potential fugitive dust nuisance during the construction phase should be limited with the implementation of typical dust suppression measures and good site practices

recommended in *Section 3.9.1*. No adverse air quality impacts on the identified representative ASRs are anticipated during the construction phase.

Gaseous Emissions from Diesel-powered Construction Equipment

3.7.9 The potential air quality impacts associated with the gaseous emissions from diesel-powered construction equipment are expected to be relatively low as only a small number of such plant are expected to operate. In addition, all construction plant is required to use ultra-low-sulphur diesel (ULSD) (defined as diesel fuel containing not more than 0.005% sulphur by weight) as stipulated in *Environment, Transport and Works Bureau Technical Circular* (*ETWB-TC(W*)) *No 19/2005* on *Environmental Management on Construction Sites*. EPD has also introduced the *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation*, which came in operation on 1 June 2015, to regulate emissions from machines and non-road vehicles. Starting from 1 December 2015, only approved or exempted non-road mobile machinery are allowed to be used in construction sites. Hence, with the implementation of the said Regulation, the gaseous emissions such from construction equipment are considered relatively small and will not cause adverse air quality impact to the surrounding ASRs. Therefore, no adverse air quality impacts are expected from gaseous emissions.

Odour

3.7.10 Excavation of river bed material will be required for the construction of the proposed Drainage Channel TKL04 and TKL05. Depending on the quality of the river bed material, the excavation and handling of river bed material may cause odour impacts during construction. Hydrogen sulphide (H_2S) is the key odour constituent of the excavated material. With the implementation of good site practice recommended in *Section 3.9.2*, odour nuisance is not anticipated.

3.8 Evaluation of Impacts during Operation Phase

3.8.1 Maintenance would be necessary for the proposed channels to remove excessive silts, vegetation, debris and obstructions in order to maintain its hydraulic performance and structural integrity. Moderate siltation will generally be allowed to accumulate, and removal of excess silt would be carried out at locations where it would impede water flow. Virtually little or no maintenance will be necessary. During the operation phase, the Project will unlikely cause any adverse air quality impacts in terms of dust, gaseous emission and odour.

3.9 Mitigation Measures

Construction Phase

3.9.1 Relevant dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, and good site practices will be incorporated as the Contract Specifications for implementation throughout the construction period. These include:

Excavation Material and Stockpiling Areas

- The works area for site clearance and excavation should be sprayed with water before, during and after the operation so as to maintain the entire surface wet.
- Restricting heights from which materials are to be dropped, as far as practicable to reduce the fugitive dust arising from unloading/ loading.
- Erection of hoarding along the site boundary, where appropriate.
- Any stockpile of dusty materials should be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and four sides.
- All dusty materials should be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- Regular maintenance of construction equipment deployed on-site should be conducted to prevent black smoke emission.
- Adopt at least 2.4m and higher hoarding height close to the ASRs with short separation distance (2m – 7m).
- Avoid dusty works and stockpiling near the ASRs with short separation distance (2m – 7m).

Transport and Removal of Materials

- Locate the haul road away from those concerned ASRs;
- Minimization of unpaved, exposed earth by immediate covering/ permanent paving as soon as the works have been completed.
- The travelling speed of vehicles within the site should be controlled to reduce the traffic induced dust dispersion and re-suspension.
- Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle.
- Immediately before leaving a construction site, all vehicles should be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage.

Construction Works within Work Areas

- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.
- All demolished materials that may generate dust should be covered entirely by

impervious sheeting or placed in a covered area with the top and three sides enclosed within a day of demolition.

- At construction works areas where demolition takes place, water or dust suppression chemicals should be sprayed prior to, during and immediately after the demolition activities to ensure that the top surface remains wet.

- Excavated river bed materials that are placed on trucks for disposal should be properly covered during transportation to minimise the release of any potential odour. Odorous river bed material excavated during construction phase should be removed off-site as soon as practicable within 24 hours to avoid any odour nuisance.

- Regular maintenance of construction equipment deployed on-site should be conducted to prevent black smoke emission.

- Connect construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable to minimize the emission impact from these machineries on nearby residents.

Site Cleanliness and Tidiness

- The requirements stipulated in the Works Branch Development Bureau Technical Circular No. 08/2010 Enhanced Specification for Site Cleanliness and Tidiness should be followed as far as practicable to enhance the cleanliness and tidiness of construction sites.

Control on NRMMs

- NRMMs should be approved or exempted with a label issued by EPD. The label should be displayed at a conspicuous position of the machine or vehicle. Non-road vehicles are required to meet the emission standards and smoke requirements as stipulated under the **Air Pollution Control (Non-road Mobile Machinery)(Emission) Regulation**.

Operation Phase

3.9.2 No mitigation measures are considered necessary during the operation of the Project. In the event that excavated materials are found to be odorous during regular maintenance, the following measures should be implemented by DSD.

- Temporarily stockpile odorous excavated material as far away from ASRs as possible; and

- Temporary stockpiles of odorous excavated material should be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to avoid any odour nuisance arising.

3.10 Potential for Cumulative Impacts

3.10.1 The potential for cumulative air quality impact during the construction phase has been checked against the following known committed/existing projects at the time the EIA is prepared:

- Implementation of Water Intelligent Network (WIN), Remaining District Metering Areas and Pressure Management Areas in Yuen Long and Sheung Shui & Fanling Major Supply Zones;

- Widening of the Western Section and Eastern Section of Lin Ma Hang Road (Ping Yuen River to Ping Che Road / Tsung Yuen Ha to Lin Ma Hang).

3.10.2 Implementation of WIN will fall within the Study Area while the works will be confined into localised works area with little potential to generate fugitive dust. In addition, the upgrading works of the section of connecting road to Liantang / Heung Yuen Wai Boundary Control Point (LT/HYW BCP) within the Study Area is not substantial and is at about 400m from the nearest ASRs (at Tong Fong) of this Project. Therefore, the potential of causing unacceptable cumulative fugitive dust impacts from these projects is considered low.

3.10.3 In addition to the above projects, there are also three planning studies with study areas within and in the vicinity of the Project Site, which included the following:

- Preliminary Feasibility Study on Developing the New Territories North (NTN);

- Drainage Improvement Works in Hang Tau, Kong Ha and Sha Tau Kok Town, and Lower Ping Yuen River; and

- North East New Territories Sewerage System Upgrade.

3.10.4 The cumulative impacts with the above concurrent projects are mostly related to the air quality impacts such as dust, caused by excavation works during the construction phase. It is expected that the cumulative impacts from the construction and operation of the proposed Drainage Channel TKL04 and TKL05 and other concurrent projects will not lead to exceedance of any relevant air quality criteria, provided that the recommended mitigation measures as stated in the referenced EIA studies are implemented properly. As such, no adverse cumulative environmental impacts are envisaged during both construction and operation of the Project.

3.11 Residual Impacts

3.11.1 No adverse residual impact is anticipated from the construction and operation of the Project with the implementation of the recommended mitigation measures and good construction site practice.

3.12 Monitoring and Audit Requirements

3.12.1 Dust impacts during the construction phase can be readily mitigated through implementation of standard mitigation measures and good housekeeping practices.

3.12.2 No specific air quality monitoring is necessary during construction phase. Monthly site inspections and audits will be conducted to ensure that the recommended mitigation measures are properly implemented during the construction stage to reduce the air quality impacts from the Project.

3.13 Conclusion

3.13.1 Construction works of the Project will inevitably generate some fugitive dust, especially during the excavation of the proposed channel. With the section-by-section construction approach, the areas of excavation works should be limited in scale. Regular site wetting will also help to control wind-blown nuisances.

3.13.2 Excavation and handling of river bed material may cause odour impacts during construction and operation. With the implementation of good site practice, odour nuisance is not anticipated.

3.13.3 Through proper implementation of dust control measures required under the *Air Pollution Control (Construction Dust) Regulation* and the *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation*, construction fugitive dust should be controlled at source to satisfactory levels.

3.13.4 Maintenance works for the Project will be small-scale in nature. During the operation phase, the Project will unlikely cause any adverse air quality impacts in terms of dust and odour.

3.13.5 In order to ensure and demonstrate that mitigation measures are properly implemented during the construction stage for reducing the air quality impacts from the Project, monthly site inspections and audits will be conducted as part of the EM&A Programme of the Project.

END OF TEXT