TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

5 WATER QUALITY

5.1 Introduction

5.1.1 This section presents the assessment on the potential water quality impacts associated with the construction and operation of the Project. The water quality impact assessment has been conducted in accordance with the requirement in Annexes 6 and 14 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) and the requirements in Section 3.4.5 and Appendix D of the EIA Study Brief (ESB-363/2023).

5.2 Environmental Legislation, Standards and Assessment Criteria

Environmental Impact Assessment Ordinance (EIAO)

5.2.1 The EIAO-TM was issued by Environmental Protection Department (EPD) under Section 16 of the EIAO. The EIAO-TM specifies criteria and assessment methodologies that are to be followed in an EIA Study. Sections relevant to water quality impact assessment include:

- Annex 6 - Criteria for Evaluating Water Pollution; and
- Annex 14 - Guidelines for Assessment of Water Pollution.

Water Quality Objectives

5.2.2 *Water Pollution Control Ordinance* (WPCO) (Cap. 358) provides the major statutory framework for the protection and control of water quality in Hong Kong. According to the Ordinance and its subsidiary legislation, Hong Kong waters are divided into ten Water Control Zones (WCZs). Corresponding statements of Water Quality Objectives (WQOs) are stipulated for different water regimes (marine waters, inland waters, bathing beaches subzones, secondary contact recreation subzones and fish culture subzones) in each WCZ based on their beneficial uses. The Project Site is located within the Deep Bay WCZ and the respective WQOs are shown in **Table 5.1**.

Table 5.1 Summary of Water Quality Objectives for Deep Bay WCZ

Parameters	Criteria	Subzone
Aesthetic appearance	(a) Waste discharges shall cause no objectionable odours or discolouration of the water.	Whole Zone
	(b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	
	(c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	
	(d) There should be no recognisable sewage-derived debris.	
	(e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	

Parameters	Criteria	Subzone
	(f) Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.	
Bacteria	(a) The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Secondary Contact Recreation Subzone and Mariculture Subzone (L.N. 455 of 1991)
	(b) The level of Escherichia coli should be zero per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	(c) The level of Escherichia coli should not exceed 1000 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
	(d) The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive in one calendar year. Samples should be taken at least 3 times in a calendar month at intervals of between 3 and 14 days.	Yung Long Bathing Beach Subzone (L.N. 455 of 1991)
Dissolved Oxygen (DO)	(a) Waste discharges shall not cause the level of dissolved oxygen to fall below 4 mg/L for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Inner Marine Subzone excepting Mariculture Subzone
	(b) Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be calculated as water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 milligrams per litre within 2 metres of the seabed for 90% of the sampling occasions during the year.	Outer Marine Subzone excepting Mariculture Subzone
	(c) The dissolved oxygen level should not be less than 5 mg/L for 90% of the sampling occasions	Mariculture Subzone

Parameters	Criteria	Subzone
	during the year; values should be taken at 1 metre below surface.	
	(d) Waste discharges shall not cause the level of dissolved oxygen to be less than 4 mg/L.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone, Water Gathering Ground Subzones and other inland waters of the Zone
Colour	(a) Waste discharges should not cause the colour of water to exceed 30 Hazen units.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	(b) Waste discharges should not cause the colour of water to exceed 50 Hazen units.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Temperature	Waste discharges shall not cause the natural daily temperature range to change by more than 2.0°C	Whole Zone
Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.	Whole Zone
pH	(a) The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 units.	Marine waters excepting Yung Long Bathing Beach Subzone
	(b) Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	(c) The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
	(d) The pH of the water should be within the range of 6.0–9.0 units for 95% of samples. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 units.	Yung Long Bathing Beach Subzone
Suspended Solids (SS)	(a) Waste discharges shall neither cause the natural ambient SS level to be raised by 30% nor give rise to accumulation of SS which may adversely affect aquatic communities.	Marine waters
	(b) Waste discharges shall not cause the annual median of SS to exceed 20 mg/L.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone,

Parameters	Criteria	Subzone
		Ganges Subzone, Indus Subzone, Water Gathering Ground Subzones and other inland waters
Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 mg/L, calculated as the annual average (arithmetic mean).	Whole Zone
Nutrients	(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Inner and Outer Marine Subzones
	(b) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.7 mg/L, expressed as annual mean.	Inner Marine Subzones
	(c) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.5 mg/L, expressed as annual water column average (arithmetic mean of at least 2 measurements at 1 m below surface and 1 m above seabed).	Outer Marine Subzones
5-Day Biochemical Oxygen Demand (BOD_5)	(a) Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 mg/L.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	(b) Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 mg/L.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Chemical Oxygen Demand (COD)	(a) Waste discharges shall not cause the chemical oxygen demand to exceed 15 mg/L.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	(b) Waste discharges shall not cause the chemical oxygen demand to exceed 30 mg/L.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Toxins	(a) Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone

Parameters	Criteria	Subzone
	(b) Waste discharges shall not cause a risk to any beneficial uses of the aquatic environment.	Whole Zone
Phenol	Phenols shall not be present in such quantities as to produce a specific odour, or in concentration greater than 0.05 mg/L as C_6H_5OH.	Yung Long Bathing Beach Subzone
Turbidity	Waste discharges shall not reduce light transmission substantially from the normal level.	Yung Long Bathing Beach Subzone

Source: Statement of Water Quality Objectives (Deep Bay Water Control Zone)

Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (DSS-TM)

5.2.3 Discharges of effluents are subject to control under the WPCO. The DSS-TM, issued under Section 21 of the WPCO, gives guidance on permissible effluent discharges based on the type of receiving waters (foul sewers, stormwater drains, inland and coastal waters). The limits control the physical, chemical and microbial quality of effluent. Any effluent discharges from the proposed construction and operational activities must comply with the standards for effluent discharged into the foul sewers, inland waters and coastal waters of the Deep Bay WCZs provided in the DSS-TM.

Practice Notes

Professional Persons Environmental Consultative Committee Practice Note 1/23 Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 1/23)

5.2.4 ProPECC PN 1/23 issued by EPD provides reference and guidelines to Authorised Persons in preparing drainage plans for various types of wastewater that would arise from. The design of drainage and disposal of various types of effluents should follow relevant regulations, guidelines and practices as given in the ProPECC PN 1/23.

Professional Persons Environmental Consultative Committee Practice Note 2/24 Construction Site Drainage (ProPECC PN 2/24)

5.2.5 ProPECC PN 2/24 issued by EPD provides some basic environmental guidelines for handling 10 types of discharge from construction sites. Types of discharge include surface run-off, groundwater, boring and drilling water, wastewater from concrete batching and/or precast concrete casting, wheel washing water, bentonite slurries, water for testing and/or sterilization of water retaining structures and water pipes, wastewater from building construction, acid cleaning, etching and picking wastewater, wastewater from site facilities. Good practice provided in the ProPECC PN 2/24 should be followed as far as possible during construction to prevent and minimise the water quality impact due to construction site drainage.

Technical Circular

5.2.6 Environment, Transport and Works Bureau Technical Circular (Works) (ETWB TC(W)) No. 5/2005 *Protection of natural streams / rivers from adverse impacts arising from construction works* provides an administrative framework to better protect all natural streams/rivers from the impacts of construction works. The procedures promulgated

under this Circular aim to clarify and strengthen existing measures for protection of natural streams/rivers from government projects and private developments. The guidelines and precautionary mitigation measures given in the Circular should be followed as far as possible to protect the inland watercourses at or near the government projects and private developments during the construction phase.

Hong Kong Planning Standards and Guidelines (HKPSG)

5.2.7 Chapter 9 of the HKPSG outlines environmental requirements that need to be considered in land use planning. The recommended guidelines, standards and guidance cover the selection of suitable locations for the developments and sensitive uses, provision of environmental facilities, and design, layout, phasing and operational controls to minimise adverse environmental impacts. It also lists out environmental factors that influence land use planning and recommends buffer distances for land uses.

5.3 Description of Environment

Assessment Area

5.3.1 In accordance with Section 3.4.5.2 of the EIA Study Brief, the assessment area for this water quality impact assessment was defined as all areas within 500 m from the boundary of the Project Site including the Development Area and the associated infrastructure works, and also covers the Deep Bay WCZ as designated under the WPCO as well as the water sensitive receivers (WSRs) in the vicinity of the Project (**Section 5.4** refers).

5.3.2 The baseline condition of water bodies in the assessment area was established based on the routine marine and river water quality monitoring data collected by EPD. Descriptions of the baseline conditions provided in the subsequent sections are extracted from EPD's reports *Marine Water Quality in Hong Kong in 2023* and *River Water Quality in Hong Kong in 2023* which contain the latest information on marine and river water quality respectively at the time of preparation of this EIA Report.

Marine Water

5.3.3 The marine water quality monitoring data at EPD's marine water quality monitoring stations DM1 and DM2 in 2023 are summarised in **Table 5.2**. The locations of the monitoring stations are shown in **Figure 5.2**.

5.3.4 In 2023, the overall WQO compliance rate for the Deep Bay WCZ was 53%, as compared with a ten-year average of 47% in 2009-2018. Overall, with the measures under the Deep Bay Water Pollution Control Joint Implementation Programme taken progressively by the governments of Hong Kong and Shenzhen, there have been significant water quality improvements in Deep Bay. In particular, there has been full compliance of the NH_3-N WQO in the past seven years. Although Deep Bay, as compared with other WCZs, shows higher nutrient levels with annual depth-averaged total inorganic nitrogen (TIN) levels exceeding the respective TIN WQOs, a noticeable long-term decrease in TIN levels since mid-2000s has been seen.

Table 5.2 Summary Statistics of Marine Water Quality of Deep Bay WCZ Collected by EPD in 2023

Parameters		Inner Deep Bay		WPCO WQO (in marine waters)
		DM1	DM2	
Temperature (°C)		25.6 (19.0 - 31.7)	25.5 (19.0 - 31.4)	Not more than 2°C in daily temperature range
Salinity		18.6 (9.7 - 23.3)	20.5 (11.5 - 25.5)	Not to cause more than 10% change
Dissolved Oxygen (mg/L)	Depth Average	5.2 (3.7 - 7.7)	5.4 (3.7 - 7.6)	Marine Subzone excepting Mariculture Subzone: Not less than 4 mg/L for 90% of samples Mariculture Subzone: Not less than 5 mg/L for 90% of the sampling occasions during the whole year
	Bottom	N/A	N/A	Outer Marine Subzone excepting Mariculture Subzone: Not less than 2 mg/L for 90% of the sampling occasions during the whole year
Dissolved Oxygen (% Saturation)	Depth Average	70 (54 - 112)	74 (55 - 111)	Not available
	Bottom	N/A	N/A	Not available
pH		7.4 (7.1 - 7.8)	7.4 (6.8 - 7.8)	Marine Waters excepting Yung Long Bathing Beach Subzone: 6.5 - 8.5 (±0.2 from natural range) Yung Long Bathing Beach Subzone: 6.0-9.0 for 95% of samples (±0.5 from natural range)
Secchi Disc Depth (m)		1.2 (0.9 - 1.6)	1.1 (0.8 - 1.5)	Not available
Turbidity (NTU)		27.2 (6.0 - 52.2)	29.1 (7.2 - 55.7)	Yung Long Bathing Beach Subzone: Not reduce light transmission substantially from the normal level.
Suspended Solids (SS) (mg/L)		28.3 (15.0 - 61.0)	35.5 (15.0 - 72.0)	Not more than 30% increase
5-day Biochemical Oxygen Demand (BOD_5) (mg/L)		1.0 (0.5 - 1.8)	1.0 (0.1 - 2.5)	Not available
Ammonia Nitrogen (NH_3-N) (mg/L)		0.397 (0.170 - 0.810)	0.282 (0.076 - 0.860)	Not available
Unionised Ammonia (mg/L)		0.006 (0.001 - 0.012)	0.004 (<0.001 - 0.016)	Not more than annual average of 0.021 mg/L
Nitrite Nitrogen (NO_2-N) (mg/L)		0.118 (0.043 - 0.350)	0.094 (0.035 - 0.280)	Not available
Nitrate Nitrogen (NO_3-N) (mg/L)		0.883 (0.580 - 1.300)	0.764 (0.250 - 1.100)	Not available
Total Inorganic Nitrogen (TIN) (mg/L)		1.40 (0.83 - 1.82)	1.14 (0.60 - 2.04)	Inner Marine Subzone: Not more than annual mean of 0.7 mg/L Outer Marine Subzone: Not more than annual water column average of 0.5 mg/L
Total Kjeldahl Nitrogen (TKN) (mg/L)		0.76 (0.40 - 0.98)	0.64 (0.31 - 1.00)	Not available
Total Nitrogen (TN) (mg/L)		1.76 (1.24 - 2.20)	1.50 (0.97 - 2.18)	Not available
Orthophosphate Phosphorus (PO_4) (mg/L)		0.123 (0.069 - 0.170)	0.119 (0.049 - 0.320)	Not available
Total Phosphorus (TP) (mg/L)		0.20 (0.14 - 0.27)	0.19 (0.14 - 0.35)	Not available

Parameters	Inner Deep Bay		WPCO WQO (in marine waters)
	DM1	DM2	
Silica (as SiO_2) (mg/L)	5.38 (1.90 - 10.00)	4.43 (1.00 - 11.00)	Not available
Chlorophyll-*a* (µg/L)	3.5 (1.7 - 6.0)	5.5 (1.4 - 13.0)	Not available
E. coli (count/100 mL)	310 (24 - 3,300)	380 (21 - 80,000)	Secondary Contact Recreation Subzones and Mariculture Subzone (L.N. 455 of 1991): Not exceed 610 per 100 mL Yung Long Bathing Beach Subzone (L.N.455 of 1991): Not exceed 180 per 100 mL
Faecal Coliforms (count/100 mL)	640 (44 - 10,000)	730 (40 - 220,000)	Not available

Remarks:
1. Data source: EPD Marine Water Quality in Hong Kong in 2023.
2. Except as specified, data presented are depth-averaged values calculated by taking the means of three depths: surface, mid-depth and bottom.
3. Data presented are annual arithmetic means of depth-averaged results except for *E.coli* and faecal coliforms that are annual geometric means.
4. Data in brackets indicate the ranges.

Inland Water

5.3.5 There is no EPD's river water quality monitoring station situated within the 500 m assessment area. The closest EPD's river water quality monitoring stations are at Kam Tin River (KT1 and KT2) and Fairview Park Nullah (FVR1). The locations of these monitoring stations and the monitoring results are shown in **Figure 5.2** and **Table 5.3** respectively.

5.3.6 The overall WQO compliance rate at Kam Tin River in 2023 was 55%. Both monitoring stations (i.e. KT1 and KT2) at Kam Tin River were graded as "Fair" and "Bad" Water Quality Index (WQI) respectively in 2023. The monitoring station at Fairview Park Nullah (i.e. FVR1) recorded a WQO compliance rate of 73% in 2023. Its WQI grading remained "Fair" in 2023.

Table 5.3 Summary Statistics of River Water Quality of Kam Tin River and Fairview Park Nullah Collected by EPD in 2023

Parameters	Kam Tin River		Fairview Park Nullah	WPCO WQO (in inland waters)
	KT1	KT2	FVR1	
Dissolved Oxygen (mg/L)	5.9 (1.8 - 7.2)	3.8 (1.2 - 7.4)	5.4 (3.7 - 11.7)	Not less than 4 mg/L
pH	7.5 (7.3 - 7.9)	7.6 (7.3 - 7.9)	7.4 (7.1 - 8.5)	Yuen Long & Kam Tin (Upper) Subzone: within the range of 6.5-8.5 Other inland water: within the range of 6.0-9.0
Suspended Solids (mg/L)	9.4 (5.9 - 110.0)	15.5 (5.3 - 75.0)	11.5 (6.8 - 22.0)	Yuen Long & Kam Tin (Upper) Subzone, other inland waters: Annual median not to exceed 20 mg/L
5-Day Biochemical Oxygen Demand (mg/L)	8.5 (4.1 - 29.0)	15.0 (5.2 - 53.0)	6.9 (3.0 - 13.0)	Yuen Long & Kam Tin (Upper) Subzone: Not to exceed 3 mg/L Other inland waters: Not to exceed 5 mg/L

Parameters	Kam Tin River		Fairview Park Nullah	WPCO WQO (in inland waters)
	KT1	KT2	FVR1	
Chemical Oxygen Demand (mg/L)	23 (13 - 46)	26 (14 - 120)	30 (9 - 70)	Yuen Long & Kam Tin (Upper) Subzone: Not to exceed 15 mg/L Other inland waters: Not to exceed 30 mg/L
Oil & Grease (mg/L)	<0.5 (<0.5 - 1.3)	0.6 (<0.5 - 5.1)	<0.5 (<0.5 - <0.5)	Not available
E.coli (cfu/100 mL)	32,475 (8,000 - 150,000)	65,187 (28,000 - 190,000)	25,146 (2,900 - 120,000)	Other inland water: running median of most recent 5 consecutive samples shall not to exceed 1000 per 100 mL
Faecal Coliforms (cfu/100 mL)	157,082 (78,000 - 510,000)	215,166 (74,000 - 970,000)	71,882 (14,000 - 440,000)	Not available
Ammonia-Nitrogen (mg/L)	3.450 (0.910 - 15.000)	7.200 (1.200 - 14.000)	1.450 (0.450 - 2.800)	Not available
Nitrate-Nitrogen (mg/L)	1.200 (0.018 - 3.000)	0.380 (<0.002 - 1.000)	0.760 (0.340 - 1.200)	Not available
Total Kjeldahl Nitrogen (mg/L)	4.70 (1.80 - 17.00)	8.50 (1.80 - 20.00)	2.40 (0.92 - 4.00)	Not available
Ortho-Phosphate (mg/L)	0.600 (0.280 - 2.800)	0.925 (0.260 - 1.600)	0.275 (0.095 - 0.530)	Not available
Total Phosphorus (mg/L)	0.86 (0.38 - 3.50)	1.30 (0.38 - 2.90)	0.45 (0.12 - 0.73)	Not available
Sulphide (mg/L)	<0.02 (<0.02 - 0.06)	0.03 (<0.02 - 0.11)	<0.02 (<0.02 - 0.04)	Not available
Aluminium (µg/L)	<50 (<50 - 110)	<50 (<50 - <50)	<50 (<50 - <50)	Not available
Cadmium (µg/L)	<0.1 (<0.1 - <0.1)	<0.1 (<0.1 - <0.1)	<0.1 (<0.1 - <0.1)	Not available
Chromium (µg/L)	<1 (<1 - 1)	<1 (<1 - 2)	<1 (<1 - 1)	Not available
Copper (µg/L)	2 (<1 - 3)	2 (<1 - 4)	2 (<1 - 2)	Not available
Lead (µg/L)	<1 (<1 - <1)	<1 (<1 - <1)	<1 (<1 - <1)	Not available
Zinc (µg/L)	<10 (<10 - 20)	<10 (<10 - 30)	10 (<10 - 20)	Not available
Flow (m^3/s)	0.353 (0.086 - 16.788)	0.282 (0.080 - 11.926)	NM	Not available

Remarks:
1. Data source: EPD River Water Quality in Hong Kong in 2023.
2. Data presented are in annual medians of monthly samples; except those for faecal coliforms and *E. coli* which are in annual geometric means.
3. NM indicates no measurement taken.
4. Figures in brackets are annual ranges.
5. cfu – colony forming unit.
6. Values at or below laboratory reporting limits are presented as laboratory reporting limits.

5.4 Identification of Water Sensitive Receivers

5.4.1 The WSRs that have a bearing on water quality identified within the 500 m assessment area were identified and are listed in **Table 5.4** below, with their locations shown in **Figure 5.1.1** to **Figure 5.1.6**.

Table 5.4 List of Water Sensitive Receivers

ID	Description	Nature	Approx. Distance to Project Site	Remarks
Watercourse				
W1	Ngau Tam Mei Drainage Channel	Modified Watercourse	Partially within Project Site	Section within the Development Area will be retained, diverted and revitalised, while the section outside the Development Area but within the Project Site will not be affected by the proposed works.
W2, W9	Branches of Ngau Tam Mei Drainage Channel	Natural Watercourse	Partially within Project Site	Will be partially removed and diverted.
W2a	Branches of Ngau Tam Mei Drainage Channel	Modified Watercourse	Partially within Project Site	Will be partially removed and diverted.
W3, W5	Branches of Ngau Tam Mei Drainage Channel	Natural Watercourse	Within Project Site	Will be removed.
W4, W9a, W9b	Branches of Ngau Tam Mei Drainage Channel	Semi-natural Watercourse	Within Project Site	Will be removed.
W8	Branch of Ngau Tam Mei Drainage Channel	Semi-natural Watercourse	Within Project Site	Will be realigned and revitalised.
W8a, W8b, W10	Branches of Ngau Tam Mei Drainage Channel	Semi-natural Watercourse	Partially within Project Site	Will be partially removed and diverted.
W3a, W5a, W7, W8c, W10a	Branches of Ngau Tam Mei Drainage Channel	Modified Watercourse	Within Project Site	Will be removed.
W10b	Branch of Ngau Tam Mei Drainage Channel	Modified Watercourse	Partially within Project Site	Will be partially removed and diverted.
W8d	Branch of Ngau Tam Mei Drainage Channel	Modified Watercourse	155 m	-
W6	Watercourse near Lai Yuen	Modified Watercourse	Within Project Site	Will be removed.
W11	Watercourse near Ngau Tam Mei Ventilation Building	Modified Watercourse	Partially within Project Site	Will be partially removed and diverted.
W13	Watercourse near Wah On Villa	Semi-natural Watercourse	278 m	-
W13a	Watercourse near Wah On Villa	Modified Watercourse	19 m	-
W13b	Drainage along Sam Tam Road	Modified Watercourse	31 m	-
W14	Downslope watercourse of Kai Kung Leng	Semi-natural Watercourse	275 m	-

ID	Description	Nature	Approx. Distance to Project Site	Remarks
W15	Drainage Channel along San Tin Highway	Modified Watercourse	Partially within Project Site	Some sections that will be affected by proposed road works of this Project will be temporarily diverted during the construction phase.
W16, W17, W18, W30	Branches of Ngau Tam Mei Drainage Channel	Modified Watercourse	49 m	-
W19	Watercourse downslope of Ngau Tam Shan	Natural Watercourse	Partially within Project Site	Will be partially removed and diverted.
W20	Watercourse near Ching Yau Road	Modified Watercourse	6 m	-
W21	Watercourse near Ching Yau Road	Natural Watercourse	38 m	-
W26	Watercourse downslope of Ngau Tam Shan	Natural Watercourse	Partially within Project Site	Will be partially removed and diverted.
W27	Watercourse near Ko Hang	Modified Watercourse	112 m	-
W28	Watercourse near Yau Mei San Tsuen	Modified Watercourse	Partially within Project Site	A section that will be affected by proposed works for cycle track will be temporarily diverted during the construction phase.
W29	Branch of Fairview Park Nullah	Modified Watercourse	346 m	-
W31, W32	Watercourses downslope of Ngau Tam Shan	Modified Watercourse	238 m	-
W33	Drainage Channel within/in the vicinity of Tam Mei Barracks	Modified Watercourse	Partially within Project Site	Will be partially removed and diverted.
W34	Drainage along Kai Kung Leng	Modified Watercourse	37 m	-
Ponds				
P-W1	Ponds at the northwest of the Project Site	-	33 m	-
P-W2	Ponds at the west of the Project Site	-	87 m	-
P-N1	Ponds at the north of the Project Site	-	53 m	-
P-S1	Ponds near Yau Tam Mei Tsuen	-	Within Project Site	Will be removed.
P-S2	Ponds near Yau Tam Mei Tsuen	-	Within Project Site	Will be removed.
P-S3	Ponds in the vicinity of upstream of Ngau Tam Mei Drainage Channel	-	Within Project Site	Will be removed.
P-S4	Ponds near Wah On Villa	-	240 m	-

ID	Description	Nature	Approx. Distance to Project Site	Remarks
P-E1	Ponds near Ngau Tam Mei Water Treatment Works	-	Partially within Project Site	All ponds that fall within or partially within the Project Site will be removed, while others outside Project Site will not be affected.
Other WSRs				
-	Wetland Buffer Area	Wetland Buffer Area	Partially within Project Site	Partial area within the Project Site which is currently as footpath and Castle Peak Road – Tam Mi will be modified.
-	Wetland Conservation Area	Wetland Conservation Area	84 m	-
-	Lam Tsuen Country Park	Country Park	188 m	-
-	Conservation Area	Conservation Area	21 m	-
-	Comprehensive Development and Wetland Protection Area	Other Specified Uses	78 m	-
-	Wetland Conservation Park	Other Specified Uses	18 m	-

5.5 Assessment Methodology

5.5.1 As mentioned in **Section 5.3.1**, the assessment area includes all areas within 500 m from the Project Site, and also covers the Deep Bay WCZ as well as the WSRs in the vicinity of the Project. The assessment methodology of potential water quality impacts associated with the Project followed the detailed technical requirements given in Appendix D of the EIA Study Brief and based on the Project information as presented in **Section 2**. The criteria and guidelines for evaluating and assessing water pollution followed Annexes 6 and 14 of the EIAO-TM.

5.5.2 The WSRs that may be affected during the construction and operational phases of the Project were identified. Potential sources of water quality impacts that may arise during the construction and operational stages of the Project were identified and evaluated for determination of their impact significance. Practical mitigation measures were recommended as necessary to reduce any identified adverse impacts on water quality to acceptable levels for both construction and operational phases.

5.6 Identification, Prediction and Evaluation of Water Quality Impacts During Construction Phase

5.6.1 No marine works would be required for construction of the Project. Only inland construction works including site formation, construction of new infrastructures (e.g. roads, passageway, transportation system, flood retention facilities, sewers and stormwater drains and sewage pumping station (SPS)), revitalization of the existing Ngau Tam Mei Drainage Channel (NTMDC), and superstructure works would be involved under the Project.

5.6.2 The potential sources of water quality impacts arising from the inland construction works include:

- General construction activities such as site clearance works, demolition works and site formation works;
- Construction site run-off;
- Sewage from construction workforce;
- Accidental spillage of chemicals;
- Construction works in close proximity of inland waters;
- Construction works in inland waters;
- Removal / diversion of watercourses;
- Removal / filling of ponds; and
- Groundwater from contaminated areas, contaminated site run-off and wastewater from land decontamination.

General Construction Activities

5.6.3 Various types of construction activities, including general cleaning and polishing, wheel washing, air quality control and utility installation, may generate wastewater. These types of wastewater contain high concentrations of SS, as well as certain amount of grease and oil. Debris and rubbish may also be generated from packaging, construction materials and refuse. Uncontrolled discharge of site effluents, rubbish and refuse generated from the construction activities could lead to water quality deterioration. It is expected that if the good site practice suggested in **Section 5.8.2** to **Section 5.8.15** are followed as far as practicable, the potential water quality impacts associated with construction activities would be minimal.

5.6.4 The Project would involve demolition works of the existing structures for subsequent construction works of the development. The sewage remaining or washed out from the decommissioned facilities, if any, should not be discharged without proper treatment. Another key concern from demolition works would be surface run-off and site effluent. Precipitation that falls on unpaved areas with the topsoil exposed during the demolition would wash away soil particles. Such surface run-off and stormwater overflows with high levels of suspended solids if directly discharged into the inland waters may lead to water quality impact. Effluent discharge from temporary site facilities, such as wheel washing facilities at site entrances, should be controlled to prevent direct discharge to the neighbouring storm drains and inland waters.

5.6.5 Good site practices should be implemented to control site run-off, drainage and site effluent from the works areas, and to prevent run-off and drainage water with high levels of SS from entering the adjacent waters. With the implementation of adequate site drainage and provision of sediment removal facilities as described in **Section 5.8.2** to **Section 5.8.15** below, it is anticipated that adverse water quality impacts would not arise.

Construction Site Run-off

5.6.6 Potential pollution sources of site run-off may include:

- Run-off and erosion of exposed bare soil and earth, drainage channels, earth working areas and stockpiles;
- Wash water from air quality control sprays and wheel washing facilities;
- Release of any bentonite slurries, concrete washings and other grouting materials with construction run-off or storm water; and
- Fuel, oil and lubricants from maintenance of construction vehicles and equipment.

5.6.7 During rainstorms, site run-off would wash away the soil particles on unpaved lands and areas with the topsoil exposed. The run-off is generally characterised by high concentration of SS. Release of uncontrolled site run-off would increase the SS levels and turbidity in the nearby water environment. Site run-off may also wash away contaminated soil particles, and therefore causes water pollution.

5.6.8 Windblown dust would be generated from exposed soil surfaces in works areas. It is possible that windblown dust could fall directly onto the nearby water bodies when a strong wind occurs. Dispersion of dust within the works areas may increase the SS levels in surface run-off causing a potential impact to the nearby sensitive receivers.

5.6.9 It is important that proper site practice and good site management are followed to prevent run-off with high level of SS from entering the surrounding waters. With the implementation of Best Management Practices (BMPs) to control site run-off and drainage water from the construction site, disturbance of water bodies could be avoided and deterioration in water quality would be minimal. Recommended measures in controlling construction site run-off and adopting proper drainage are described in **Section 5.8.2** to **Section 5.8.15**.

Sewage from Construction Workforce

5.6.10 During the construction of the Project, the workforce on site will generate sewage effluent, which is characterised by high levels of BOD, ammonia and *E. coli* counts. Potential water quality impacts upon the local drainage and fresh water system may arise from these sewage effluent, if uncontrolled.

5.6.11 Temporary sewage generation can be adequately handled by temporary sanitary facilities, such as portable chemical toilets, and are not allowed to be discharged directly into storm drains or inland waters adjacent to the construction site. The number of toilet facilities to be provided on site should be at a ratio of not less than 1 for every 25 workers, subject to later detailed design, the capacity of the chemical toilets, and contractor's site practices. A licensed contractor should be employed to provide appropriate and adequate temporary sanitary facilities and be responsible for appropriate disposal and maintenance. Details are described in **Section 5.8.16** to **Section 5.8.17**.

5.6.12 Provided that the mitigation measures as recommended in **Section 5.8.16** to **Section 5.8.17** are adopted as far as practicable, no adverse water quality impacts are anticipated.

Accidental Spillage of Chemicals

5.6.13 The use of engine oil and lubricants and their storage as waste materials have the potential to create impacts on the water quality if spillage occurs. Waste oil may infiltrate into the surface soil layer, or run-off into adjacent waterbodies, increasing hydrocarbon levels. Groundwater pollution may also be arisen from the improper use and storage of chemical and petroleum products within the site areas where groundwater infiltrates into. Infiltration of groundwater may occur at areas where there are faults and/or fissures in the rock mass. Nevertheless, the potential impacts could be mitigated by practical mitigation measures and good site practices as described in **Section 5.8.18** to **Section 5.8.20**.

Construction Works in Close Proximity of Inland Waters

5.6.14 Construction activities in close proximity of inland watercourses may pollute the inland water bodies due to potential release of construction wastes as well as construction wastewater, and the site run-off are generally characterised by high concentration of SS and elevated pH. Adoption of good housekeeping and mitigation measures would reduce the generation of construction wastes and potential water pollution. The implementation of measures to control run-off and drainage water are important for the construction works adjacent to the inland watercourses in order to prevent run-off and drainage water with high levels of SS from entering the water environment. With the implementation of BMPs and provision of mitigation measures as specified in ProPECC PN 2/24 and ETWB TC(W) No. 5/2005 as detailed in **Section 5.8.21**, it is anticipated that water quality impacts would be minimal.

Construction Works in Inland Waters

5.6.15 Permeable paver block, porous concrete, composite wood and natural granite would be adopted for the revitalization of the existing NTMDC, subject to the detailed design. Potential impacts arising from the revitalization works may be generated by the discharge of construction materials, wastewater, excavation materials (including sediment) and spillage to the receiving downstream waters. With the implementation of the BMPs and the provision of mitigation measures proposed in **Section 5.8.21** to **Section 5.8.23**, it is anticipated that water quality impacts would be minimal.

Removal / Diversion of Watercourses

5.6.16 All the watercourses that fall within the Project Site (except the NTMDC), will be permanently removed under the Project, while the watercourses that are partially within the Project Site would be partially removed and diverted to connect with the proposed drainage system under the Project. The upstream of NTMDC would be realigned and revitalised to improve the flood resilience and adaptation to climate change of the Development Area. The removal / diversion of watercourses would also not induce change in flow regime as the Project will not cause changes in the catchment area. Details of the watercourses to be affected by the Project are presented in **Table 5.4** above and the locations are shown in **Figure 5.1.1** to **Figure 5.1.6**.

5.6.17 Potential impacts may be generated by the release of construction materials, wastewater, excavated sediment, spillage and contaminants to the receiving waters in the downstream (due to soil excavation for construction of new drainage and removal / diversion of the existing watercourses). All these construction works should be undertaken in dry conditions to avoid potential water quality impacts upon the downstream water quality.

5.6.18 With the implementation of mitigation measures as recommended in **Section 5.8.24** to **Section 5.8.26**, it is anticipated that there would be no significant water quality impacts.

Removal / Filling of Ponds

5.6.19 Due to the new developments, most of the existing ponds within or partially within the Project Site will be removed by the Project, while few ponds will be removed by other project (i.e. Northern Link (NOL) Main Line) prior to the commencement of construction works of this Project. Details of the ponds to be affected by the Project

are presented in **Table 5.4** above and the locations are illustrated in **Figure 5.1.1** to **Figure 5.1.6**.

5.6.20 The associated construction works would include draining the water in ponds either before filling up these areas or before commencement of any excavation and construction works. The water of these ponds to be drained would probably be sediment-laden and would carry a certain level of pollutants. Direct discharge of these drained waters to the nearby watercourses will not be allowed.

5.6.21 Excavated materials (including sediment) may be generated from the removal / filling of ponds. Mitigation measures for handling and disposal of excavated materials and sediment as recommended in **Section 5.8.27** to **Section 5.8.28** should be followed to minimise the associated potential environmental impacts.

5.6.22 Together with the adoption of the recommended mitigation measures for the removal / filling of ponds as recommended in **Section 5.8.27** to **Section 5.8.28**, no adverse water quality impact would be expected.

Groundwater from Contaminated Areas, Contaminated Site Run-off and Wastewater from Land Decontamination

5.6.23 It is suspected that some of the areas within Project Site may have land contamination issues, and land decontamination works would be required at the area(s) confirmed with land contamination issues. Any contaminated material disturbed, or material which comes into contact with the contaminated material, has the potential to be washed with site run-off into watercourses. Any wastewater discharge from land decontamination processes could also adversely affect the nearby water environment. Proper land contamination remediation and mitigation measures for contaminated site run-off and wastewater from land decontamination are proposed in **Section 5.8.29** to **Section 5.8.31**. With proper implementation of the recommended mitigation measures, the potential water quality impacts arising from the land decontamination works would be minimised.

5.6.24 Groundwater pumped out or from dewatering process during excavation works in the contaminated areas, if any, would be potentially contaminated. Mitigation measures and monitoring requirements for contaminated groundwater discharge / recharge are recommended in **Section 5.8.29** to **Section 5.8.31**. With proper implementation of the recommended mitigation measures, no adverse water quality would be expected from the groundwater generated from contamination areas.

5.7 Identification, Prediction and Evaluation of Water Quality Impact During Operational Phase

5.7.1 The potential sources of water quality impacts arising from the operational phase of the Project include:

- Non-point source surface run-off from new impervious areas;
- Sewage disposal strategy for the new developments;
- Revitalisation and greening of drainage channel banks;
- Sewage overflow and emergency discharge from the proposed sewage pumping station (SPS);
- Potential impact from refuse collection points;
- Potential flood risk; and

- Change in flow regime and hydrology.

Non-point Source Surface Run-off from New Impervious Areas

5.7.2 Surface run-off to be generated from the Project is known as non-point source pollution. The newly paved roads will increase the quantity of surface run-off. The presence of oil, grease and grit on their surfaces could be washed into the nearby drainage system or even into the watercourses (e.g. revitalised NTMDC and nearby watercourses outside Project boundary) during rainfall event. The surface run-off may also contain debris, refuse, dust from the roof of buildings and cleaning agents used for washing streets and building facades, which may also affect the quality of the nearby receiving water environment, if uncontrolled.

Greening Area of the Project

5.7.3 Within the Development Area of approximately 130 ha, currently about 98 ha have already been developed / paved areas (including brownfield sites / wasteland / village developments), while the remaining area of about 32 ha consists of greening / unpaved surface (such as plantation, grassland, shrubland, etc.). Without the Project, the amount of paved / unpaved area in the future is assumed to be the same as that under the existing situation.

5.7.4 Based on the HKPSG and general guidelines for designing public open space, the percentage of greening (such as soft landscape and tree planting) to be provided for the Development Area is approximately 40% at open spaces, while there will be approximately 20% to 30% greening at new government facilities / school / residential development areas following requirements under DEVB TC(W) 3/2012 *Site Coverage of Greenery for Government Building Projects and Building Department's APP 152 - Sustainable Building Design Guidelines*. Based on these percentages of greening, it is estimated that a minimum of about 36 ha greening would be provided under this Project within the area to be developed (i.e. 94 ha paved area).

Non-point Source Pollution from Surface Run-off

5.7.5 Surface run-off would be generated during the operation of the Project. The paved area within the Development Area is expected to be reduced, comparing to the existing situation. Nonetheless, the surface run-off containing debris and dust, and cleaning agent used during washing would adversely affect the water quality of the nearby waterbodies.

5.7.6 EPD's study "*Update on Cumulative Water Quality and Hydrological Effect of Coastal Developments and Upgrading of Assessment Tool (Update Study)"* suggested that only rainfall events of sufficient intensity and volume would give rise to run-off. It is assumed that only a daily rainfall of greater than 10 mm per day and a rainfall intensity greater than 2 mm/hour would give rise to run-off. The run-off percentage has been calculated based on the 5-year (i.e. 2019 – 2023) data from the Hong Kong Observatory, while the daily run-off value has been calculated using the equation below:

$$\textit{Daily run-off value (mm/day)} = \textit{Averaged daily rainfall (mm/day)} \times \textit{Run-off percentage of the month}$$

where
Run-off percentage of the month = (sum of rainfall for days with total rainfall>10 mm and with maximum rainfall intensity>2 mm/hr) / Total rainfall of the month ×100%

5.7.7 Under the existing situation, the paved surface within the Development Area is about 98 ha. Upon the completion of the Project, the total paved surface of the Development Area is around 94 ha. With consideration of the paved area and a run-off coefficient of 1 for paved surface, the highest daily run-off volume generated from the Project would occur in June with a monthly average value of 13,417 m^3/d. As compared to the existing condition of 13,988 m^3/d, the operation of Project resulted in a reduction in the volume of run-off generated from the Development Area. The maximum pollution loading of stormwater is presented in **Table 5.5**.

Table 5.5 Pollution Loading

Parameters	Event Mean Concentrations for Stormwater Run-off (g/m^3)	With Project	Without Project
		Pollution Loading(1) (kg/d)	
SS	43.25	580.29	604.97
BOD_5	22.48	301.61	314.44
NH_3-N	0.20	2.68	2.80
Cu	0.01	0.13	0.14
TP	0.20	2.68	2.80
PO_4-P	0.04	0.54	0.56
Si	3.28	44.01	45.88
NOx-N	0.40	5.37	5.60
TKN	1.40	18.78	19.58

Note:
(1) Pollution loading is calculated by multiplying the event mean concentration of stormwater run-off with the maximum daily run-off volumes for the with-project and without-project scenarios, which are 13,417 m^3/day and 13,988 m^3/day, respectively.

5.7.8 Stormwater control measures including BMPs, various blue-green infrastructure and Storm Water Pollution Control Plan would be implemented within the Development Area to: (1) control erosion and sedimentation; (2) control run-off quantity and quality; (3) eliminate pollutants in point source discharge from drainage outfalls; (4) prevent "first flush" pollution; and (5) eliminate pollutant discharge in stormwater run-off from entering the poor flushing water of Deep Bay, as described in **Section 5.9.2** to **Section 5.9.12**. The effects of these stormwater control measures have not been taken into consideration in the quantification of non-point source pollution as given above. It is expected that with proper implementation of the recommended measures, the water quality impact due to the non-point source pollution from the Development Area would be minimised.

Surface Run-off from Major Roads

5.7.9 Road run-off may contain minimal amount of oil, grease and grit that may cause water quality impacts to the receiving waters in Deep Bay WCZ. Thus, minor non-point source pollution would be expected from the proposed major roads (e.g. Road D1 and road connection to/from San Tin Technopole). To minimise the potential impact from road run-off, all the roads proposed under the Project should be designed with adequate drainage system and appropriate oil interceptors, as required. It is anticipated that with proper implementation of BMPs as recommended in **Section**

5.9.2 to **Section 5.9.12**, no adverse water quality impact from non-point source surface run-off is expected.

Sewage Disposal Strategy for the New Developments

5.7.10 With reference to **Section 6**, the sewage generated within the Development Area will be conveyed to the proposed on-site SPS and further conveyed via sewerage connections to the future San Tin Effluent Polishing Plant (EPP) (by others) and, as possible measures, the existing Nam Sang Wai (NSW) SPS then ultimately to Yuen Long EPP for proper treatment and disposal in the Deep Bay catchment. The planned and existing sewerage treatment facilities would be adequate in handling the sewage generated from the Project. The associated impact arising from the operation of the San Tin EPP and Yuen Long EPP was evaluated in the approved San Tin / Lok Ma Chau Development Node EIA report (Register No.: AEIAR-261/2024) and the Yuen Long Effluent Polishing Plant EIA Report (AEIAR-220/2019). It is concluded that the provision of the San Tin EPP and Yuen Long EPP would induce water quality beneficial effect by providing new sewerage facilities to the existing unsewered areas.

5.7.11 Considering that the sewage generated within the Development Area would be properly collected, treated and disposed of, no adverse water quality impact is anticipated.

Revitalisation and Greening of Drainage Channel Banks

5.7.12 Sections of NTMDC running through the Development Area will be realigned and revitalised to improve the flood resilience and adaptation to climate change of the Development Area. Permeable paver block, porous concrete, composite wood, natural granite would be adopted for the revitalization of the existing NTMDC, subject to detailed design in later stage. It is anticipated that no change to the hydrodynamics and water quality would result from the revitalisation and greening works during the Project operation.

Sewage Overflow and Emergency Discharge from the proposed Sewage Pumping Station

5.7.13 A SPS with design capacity of 44,875 m^3/day is proposed under the Project. The location of the SPS is shown in **Figure 5.4**.

5.7.14 The normal operation of the proposed SPS would actually have beneficial effect through the enhancement of the efficiency of the sewerage system. However, there will also be an emergency bypass of sewage from the proposed SPS discharged to NTMDC (**Figure 5.4** refers) due to pump failure, power supply failure and damage to pressure main or flooding, resulting in potential water quality impact.

5.7.15 Emergency bypass culvert will be built to convey any emergency overflow from the proposed SPS to the NTMDC which joins Kam Tin River and finally discharges to the Deep Bay. The emergency bypass alignment is illustrated in **Figure 5.4**. The NTMDC, which was channelised in 2005, is a modified watercourse with moderate ecological value as evaluated in **Section 9**.

5.7.16 Under the emergency situation, raw sewage from the proposed SPS will be discharged to the NTMDC leading to Deep Bay. SPS with similar emergency discharge arrangement was previously assessed under the approved EIA report Upgrading and Expansion of San Wai Sewage Treatment Works and Expansion of

Ha Tsuen Pumping Station (Register No.: AEIAR-072/2003) (hereinafter referred to as "the approved EIA report for SW STW"). The approved EIA report for SW STW assessed the water quality impact due to an emergency discharge of raw sewage from Ha Tsuen SPS of 246,000 m^3/day for a duration of 12 days. Since the emergency discharge assessed in the approved EIA report for SW STW would also enter modified watercourses leading to Deep Bay, which is similar to the emergency discharge arrangement of this Project, the findings of the approved EIA report for SW STW can be applied here.

5.7.17 According to the approved EIA report for SW STW, the emergency discharge from Ha Tsuen SPS would cause an increase in *E. coli*, un-ionized ammonia (UIA) and TIN in the receiving waters. The baseline conditions for TIN and UIA would be recovered in 5 to 8 days after termination of the emergency discharge. For *E. coli*, its concentration would decrease more rapidly and return to the baseline level in a much shorter period. Since the capacity of the proposed SPS is smaller than that assessed in the approved EIA report for SW STW, the time required for *E. coli*, UIA and TIN to return to the baseline value is expected to be shorter. Based on past experience, breakdown of SPS could be recovered in only hours, which is much shorter than the emergency period of 12 days assessed in the approved EIA report for SW STW. Thus, the actual water quality impact that would result from the emergency bypass from the proposed SPS could be much smaller than that predicted in the approved EIA report for SW STW.

5.7.18 Since the potential water quality impact arising from overflow, if any, from the proposed SPS would be reversible, no long-term insurmountable water quality impact would be expected from the emergency overflow from the SPS.

5.7.19 In order to minimise the chance of emergency sewage discharge, various precautionary measures to be incorporated in the design of the proposed SPS are recommended in **Section 5.9.13**. With incorporation of the recommended preventive measures, the chance of emergency sewage bypass would be exceptionally rare.

5.7.20 In order to minimise the potential water quality impact in case of emergency discharge, development of a Contingency Plan in the detailed design stage is recommended to deal with the remote occurrence of emergency discharge. An outline of the Contingency Plan is given in **Section 5.9.14**.

Potential Impact from Refuse Collection Points (RCPs)

5.7.21 The potential source of water pollution to be generated from the RCPs would be the potential spillage of pollutants (e.g. rubbish, dirt, debris, etc.) and associated contaminated surface run-off or washed water from any floor cleansing activities. Given that the RCPs would be housed or covered to prevent generation of contaminated rainwater run-off, in addition, that all contaminated surface run-off or washed water would be collected and diverted to appropriate treatment facilities for proper treatment before discharge to the foul sewers, no adverse water quality impact arising from the operation of RCPs would be expected.

Potential Flood Risk

5.7.22 Two underground storage tanks as covered tanks are proposed to minimise flood risk by collecting run-off from the nearby drainage system through gravity flow to avoid overflow of nearby open drainage channels. The stored run-off would be pumped to the adjacent drainage channels after heavy rains. The locations of the underground

storage tanks are shown in **Figure 5.3**. With implementation of the recommended flood protection measures including the realignment and revitalization of NTMDC within the Project Site, the potential flooding risk would be minimised.

Change in Flow Regime and Hydrology

5.7.23 Due to the proposed developments, the watercourses within the Project Site (except NTMDC) will be permanently removed / diverted / realigned under this Project. These watercourses are tributaries of NTMDC and some downhill watercourses. All the watercourses to be removed or diverted are however considered minor water channels only. The main drainage channel within the assessment area namely the NTMDC would be revitalised and remained in the Project Site. The hydraulics of water flow may be changed due to the removal or diversion of these minor watercourses, but the impact is expected to be localised and small. No significant change on the flow regime and hydrology within the assessment area is expected.

5.8 Mitigation Measures for Construction Phase

5.8.1 Measures as discussed below are recommended to mitigate the potential water quality impacts from the land-based construction works during construction phase, and should be incorporated into the Project's contract documents.

General Construction Activities and Construction Site Run-off

5.8.2 Control of potential pollution of nearby water bodies during the construction phase of the Project should be achieved by measures to:

- prevent or minimise the likelihood of pollutants (generated from construction activities including demolition works) being in contact with rainfall or run-off; and
- abate pollutants in the stormwater surface run-off prior to the discharge of surface run-off to the nearby water bodies.

5.8.3 These principle objectives should be achieved by implementation of the BMPs of mitigation measures in controlling water pollution. The guidelines for handling and disposal of construction site discharges as detailed in the ProPECC PN 2/24 should be followed, where applicable. All effluent discharged from the construction site should comply with the standards stipulated in the DSS-TM. The following measures are recommended to protect water quality of the inland waters, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts.

Construction Run-off

5.8.4 Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sandbag barriers should be provided on-site during construction works to properly direct stormwater to such silt removal facilities. Perimeter channels should be provided at site boundaries where necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.

5.8.5 Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each

rainstorm to prevent overflows and localised flooding. Before disposal of at the public fill reception facilities, the deposited silt and grit should be solicited in such a way that it can be contained and delivered by dump truck instead of tanker truck. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains.

5.8.6 Construction works should be programmed to minimise soil excavation works in rainy seasons (April to September) as far as practicable. If soil excavation cannot be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm run-off from washing across exposed soil surfaces. Arrangements should always be in place in such a way that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.

5.8.7 Earthworks final surfaces should be well compacted and the subsequent permanent works or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.

5.8.8 Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.

5.8.9 Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.

5.8.10 Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.

5.8.11 If bentonite slurries are required for any construction works, they should be reconditioned and reused wherever practicable to minimise the disposal volume of used bentonite slurries. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after the related construction activities are completed. Requirements as stipulated in ProPECC PN 2/24 should be closely followed when handling and disposing bentonite slurries.

Boring and Drilling Water

5.8.12 Water used in ground boring and drilling for site investigation or rock / soil anchoring should be re-circulated after sedimentation as far as practicable. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.

Wheel Washing Water

5.8.13 All vehicles and plants should be cleaned before they leave a construction site to minimise the deposition of earth, mud and debris on roads. A wheel washing bay should be provided at every site exit if practicable and washwater should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfill to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.

Rubbish and Litter

5.8.14 Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.

Effluent Discharge

5.8.15 There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. All the run-off and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the discharge licence under the WPCO. The beneficial uses of the treated effluent for other on-site activities such as air quality control, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence.

Sewage Effluent from Construction Workforce

5.8.16 The construction workforce on site will generate sewage and the discharge of such sewage to the stormwater drains or inland waters are not allowed. Sufficient temporary sanitary facilities, such as portable chemical toilets, should be provided. The actual number of the chemical toilets required for the construction sites would be subject to the detailed design, the capacity of the chemical toilets, and contractor's site practices. Reference can be made to Section 5.6.10 of the Construction Industry Council's publication "*Reference Materials on Construction Site Welfare, Health and Safety Measures*", that the number of toilet facilities should be provided at a ratio of not less than 1 for every 25 workers. A licensed waste collector should also be employed to clean and maintain the chemical toilets on a regular basis.

5.8.17 Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment. Regular environmental audit of the construction site will provide an effective control of any malpractices and can encourage continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures.

Accidental Spillage of Chemicals

5.8.18 Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (WDO)

(Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. The contractor is also recommended to develop management procedures for chemicals used and prepare an emergency spillage handling procedure to deal with chemical spillage in case of accident occurs.

5.8.19 Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.

5.8.20 Disposal of chemical wastes should be carried out in compliance with the WDO. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the WDO details the requirements to deal with chemical wastes. General requirements are given as follows:

- Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.
- Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes to avoid accidents.
- Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.

Construction Works in Close Proximity of Inland Water

5.8.21 The practices outlined in ETWB TC(W) No. 5/2005 should be adopted where applicable to minimise the water quality impacts on any natural streams or surface water systems. Relevant mitigation measures are listed below:

- Construction works close to the inland waters should be carried out in the dry season as far as practicable where the flow in the surface channel or stream is low.
- The use of less or smaller construction plants may be specified in areas close to the watercourses to reduce the disturbance to the surface water.
- Temporary storage of materials (e.g. equipment, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any watercourses when carrying out of the construction works.
- Stockpiling of construction materials and dusty materials should be covered and located away from any watercourses.
- Construction debris and spoil should be covered up and / or disposed of as soon as possible to avoid being washed into the nearby water receivers.
- Proper shoring may need to be erected in order to prevent soil or mud from slipping into the watercourses.

Revitalisation Works at NTMDC

5.8.22 In addition to the mitigation measures recommended in **Section 5.8.21** above, the following measures should also be followed to minimise the potential water quality impacts from the revitalisation works at the NTMDC:

- All the construction works should be undertaken in dry conditions and physically separated from the watercourses downstream, for example, by provision of concrete blocks, sandbag barriers or other appropriate measures, prior to the construction works within the NTMDC.
- Physical barriers (such as concrete blocks/sandbags or other appropriate measures) with impermeable liners will be deployed to confine the works area within the NTMDC to maintain a dry condition within and to prevent pollutants running into the downstream waters; and depending on the site conditions, physical barriers or temporary drainage would be established to intercept and divert the upstream flow.
- Dewatering of the construction works area within the NTMDC should be conducted prior to the construction works.
- Silt removal facilities should be adopted to treat the wastewater from dewatering operations prior to discharge.
- Details of the containment structures, flow diversion pathway and water treatment method should be provided by the Contractor to the Engineer for approval before commencement of construction works within the NTMDC.
- After completion of the construction works within the NTMDC, the works area should be cleaned up before receiving any water flow or connecting to any existing watercourse(s).

5.8.23 All materials excavated from watercourses and wet areas should be collected and handled in compliance with the WDO to avoid and minimise the potential environmental impacts arising from the excavated materials. No direct disposal of the construction wastes or excavated materials into the stormwater drainage system and inland water should be allowed.

Removal / Diversion of Watercourses

5.8.24 The construction works for removal and diversion of watercourses should be undertaken within a dry zone. The tentative works sequence for provision of a dry zone for the construction works is described as follows. Construction works at watercourse should be undertaken only after flow diversion or dewatering operation is fully completed to avoid water flow in the works area. Dewatering of watercourse should be performed by diverting the water flow to new or temporary drainage. Where necessary, cofferdams or similar impermeable sheet pile walls should be used to isolate the works areas from neighbouring waters. The permanent or temporary drainage for carrying the diverted flow from existing watercourse to be removed should be constructed and completed before dewatering of that existing watercourse. Construction of all the proposed permanent and temporary drainage should be undertaken in a dry zone prior to receiving any water flow.

5.8.25 The Contractor should provide a dry zone for all the construction works to be undertaken in watercourses and stormwater drainage following the tentative works sequence as described above or using other approved methods as appropriate to suit the works condition. The flow diversion works should be conducted in dry season, where possible, when the flow in the watercourse is low. The wastewater and ingress water from the site should be properly treated to comply with the WPCO before discharge.

5.8.26 The site practices outlined in the ProPECC PN 2/24 and ETWB TC(W) No. 5/2005 should be adopted for the proposed removal or diversion of watercourses where applicable.

Removal / Filling of Ponds

5.8.27 Construction works at the existing ponds should be conducted only after dewatering of these ponds is fully completed. The drained water generated from the dewatering of these ponds to be removed should be temporarily stored in appropriate storage tanks or containers for reuse on-site as far as possible. Any surplus drained water should be tankered away for disposal or treated as necessary before disposal in compliance with the discharge licence under WPCO.

5.8.28 It is recommended to drain only one pond at a time to minimise the potential water quality impact. Dewatering works at ponds / wet areas should be conducted within dry season as far as possible to minimise the quantity of drained water. No direct discharge of drained water to the stormwater drainage system and inland waters should be allowed. Should there be any discharge from the existing ponds, proper treatment shall be provided to ensure the discharge would comply the licence under WPCO.

Groundwater from Contaminated Areas, Contaminated Site Run-off and Wastewater from Land Decontamination

5.8.29 Remediation of contaminated land should be properly conducted following the recommendations of Land Contamination Assessment in **Section 8**. Any excavated contaminated material and exposed contaminated surface should be properly stored, housed and covered to avoid generation of contaminated run-off. Open stockpiling of contaminated materials should not be allowed. Any contaminated run-off or wastewater generated from the land decontamination processes should be properly collected and diverted to wastewater treatment facilities (WTF). The WTF should deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment system should meet the requirements as stated in discharge licence under WPCO and should be either discharged into the foul sewers or tankered away for proper disposal.

5.8.30 No direct discharge of groundwater from contaminated areas should be adopted. Prior to any excavation works within the potentially contaminated areas, the baseline groundwater quality in these areas should be reviewed based on the past relevant site investigation data and any additional groundwater quality measurements to be performed should be made reference to *Guidance Note for Contaminated Land Assessment and Remediation*. The review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the DSS-TM. If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit should deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment plant should meet the requirements as stated in the DSS-TM

and should be either discharged into the foul sewers or tankered away for proper disposal.

5.8.31 If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in Section 2.3 of DSS-TM. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and a working plan should be submitted to EPD for agreement. Pollution levels of groundwater to be recharged should not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells, and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.

Emergency Response Plan (ERP) for Construction Site Discharges

5.8.32 The following measures should be implemented by the Contractors to minimise the chance of emergency construction site discharges (due to failure of treatment facilities such as sand traps, silt traps, sedimentation basins, oil interceptors etc.):

- Provide spare or standby treatment facilities of suitable capacities for emergency replacement in case damage or defect or malfunctioning of the duty treatment facilities is observed;
- Conduct daily integrity checking of the construction site drainage and treatment facilities to inspect malfunctions, before, during and after a storm event; and
- Carry out regular maintenance or desilting works to maintain effectiveness of the construction site drainage and treatment facilities before, during and after a storm event.

5.8.33 An ERP should be developed to minimise the potential impact from construction site discharges under failure of treatment facilities during emergency situations or inclement weather. The ERP should give the emergency contacts to mobilise flood retention facilities and stakeholders to be notified, as well as the details of the proposed construction site drainage system and the design and operation of duty and standby treatment facilities. The ERP should also provide the procedures and guidelines for routine integrity checking and maintenance of the drainage system and treatment facilities as well as the emergency response and rectification procedures to restore normal operation of the treatment facilities in case of treatment failure during emergency situation or inclement weather. An event and action plan including the water quality monitoring requirement to be conducted during emergency discharge should be included in the ERP. The ERP should be submitted to the EPD for approval before commencement of the construction works.

5.9 Mitigation Measures for Operational Phase

5.9.1 Relevant design, contingency plan and mitigation measures as described below should be incorporated into the Project's contract documents.

Stormwater Management Practices and Stormwater Pollution Control Plan

5.9.2 The ProPECC PN 1/23 provides guidelines and practices for handling, treatment and disposal of various effluent discharges to stormwater drains and foul sewers, as well as design of site drainage. BMPs for stormwater discharge should be adopted to reduce the stormwater pollution arising from the Project.

Design Measures to Control Erosion and Run-off Quantity

5.9.3 Exposed surface should be avoided as far as practicable within the Development Area to minimise soil erosion. The Development Area, including open space, roadside amenity strips and central dividers, should be either hard paved or covered by landscaping area and plantation where appropriate to reduce soil erosion. Green areas / tree / shrub planting would be introduced within the Development Area in open space, along roadside amenity strips and central dividers as far as practicable to reduce soil erosion.

5.9.4 All the watercourses, except the existing NTMDC which will be retained and revitalised, within the Project Site will be removed or diverted. The drainage system should be designed to avoid flooding based on the 1 in 50-year return period in accordance with *Stormwater Drainage Manual (5th Edition)* published by DSD.

Devices / Facilities to Control Pollution

5.9.5 Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system.

5.9.6 Road gullies with standard design and silt traps and oil interceptors should be incorporated during the detailed design to remove particles present in stormwater run-off.

5.9.7 Evergreen tree species, which in general generate relatively smaller amount of fallen leaves, should be selected where possible in landscaping design.

Administrative Measures

5.9.8 Good management measures such as regular cleaning and sweeping of road surface / open areas is suggested. The road surface / open area cleaning should also be carried out prior to occurrence of rainstorm.

5.9.9 Manholes, as well as stormwater gullies and ditches provided among the Development Area should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecasted heavy rainfall.

5.9.10 For maintenance of stormwater drainage system, reference should be made to ETWB TC (Works) No. 14/2004 *Maintenance of Stormwater Drainage Systems and Natural Watercourses* where applicable. This Circular sets out the departmental responsibilities for the maintenance of stormwater drainage systems and natural watercourses in government and private lands. Any required maintenance or desilting work (e.g. removal of any silt, grit or rubbish deposited in the inland water system) should be carried out during periods of low flow in dry season to minimise impacts on downstream water quality and sediment suspension.

Blue-green Infrastructure to Control Sedimentation and Run-off Quantity

5.9.11 Various blue-green infrastructures have been proposed under this Project to reduce the drainage loading to the drainage system. They include:

- Rainwater harvesting should be implemented within the Development Area, where possible, to collect rainwater from building roofs, podiums, walkway canopies and other built structures for reuse as an alternative water source e.g. irrigation. The system should meet the prevailing DSD Practice Note No. 4/2022 Guidelines on Water Harvesting.
- Porous paving materials should be used, where practical, to increase stormwater infiltration, improve groundwater recharge and reduce flooding from surface run-off.
- Green roofs would be proposed with vegetation to absorb rainwater and reduce site run-off.

Stormwater Pollution Control Plan

5.9.12 A Stormwater Pollution Control Plan should be developed for potential polluting facilities to prevent or minimise the potential of pollutants coming into contact with rainwater or run-off. The Plan should incorporate details such as locations, sizes and types of measures / installations and the BMPs.

<u>Sewage Overflow and Emergency Discharge from Sewage Pumping Station</u>

5.9.13 The proposed SPS will be properly designed to facilitate maintenance works and to avoid emergency discharge of sewage. In order to further minimise the chance of emergency sewage discharge, the following precautionary measures are proposed to be incorporated in the design of the SPS:

- A standby pump and screen should be provided to cater for breakdown and maintenance of the duty pump in order to avoid emergency discharge.
- Backup power supply in the form of dual / ring circuit power supply or generator should be provided to secure electricity supply.
- An alarm should be installed to signal emergency high water level in the wet well.
- An emergency storage tank / spare volume of wet well should be provided for the proposed SPS to cater for breakdown and maintenance of duty pump.
- Regular maintenance and checking of plant equipment should be undertaken to prevent equipment failure.
- A telemetry system to the nearest manned station / plant should be provided so that swift action can be undertaken in case of malfunction of the unmanned facilities.
- A bar screen (with clear spacing of approximately 25 mm) should be provided to cover the lower half of the opening of any emergency sewage bypass which can prevent the discharge of floating solids into receiving waters as far as practicable while ensuring flooding at the facilities would not occur event if the screen is blocked.

5.9.14 A Contingency Plan to deal with the emergency discharges that may occur during operation of the SPS should be developed to include the following items in the detailed design stage:

- Locations of water bodies or WSRs in the vicinity of the emergency discharges.
- A list of relevant government departments to be informed and to provide assistance in the event of emergency discharge, including key contact persons and telephone numbers.
- Reporting procedures required in the event of emergency discharges.
- Procedures listing the most effective means in rectifying the breakdown of the SPS in order to minimise the discharge duration.

Control of Operational Site Effluents

5.9.15 The practices outlined in ProPECC PN 1/23 should be adopted where applicable for handling, treatment and disposal of operational stage effluent. Drainage outlets provided in covered areas, such as covered electricity substation, covered podiums and other roofed areas, should be discharged to foul sewers.

5.9.16 Drainage serving the Project's covered Transport Interchange Hub, Public Transport Terminus and RCPs should be connected to foul sewers. Sedimentation facilities, petrol interceptors or other appropriate wastewater treatment system should be provided to treat the wastewater or surface run-off generated in these facilities as necessary to meet the discharge standards as stipulated in the DSS-TM prior to the discharge of these effluents to the public sewers.

5.10 Evaluation of Residual Impacts

5.10.1 With proper mitigation measures deployed during the construction and operational phases, no residual water quality impact is anticipated.

5.11 Cumulative Impact

5.11.1 The construction of the Project tentatively commence in 2027 for completion by 2036. The Project would potentially overlap with the construction periods of other nearby concurrent projects as identified in **Section 2**. Nevertheless, with implementation of the adequate mitigation measures, BMPs and effective site management for individual projects, cumulative water quality impacts during construction phase are not anticipated.

5.11.2 In particular, the proposed NTM Station and NTD under NOL Main Line are located within the Development Area. The NOL Main Line is a Schedule 2 designated project and the potential water quality impacts arising from its operation were evaluated in the approved NOL EIA report (Register No.: AEIAR-259/2024). Since all sewage effluent (e.g. from staff and passengers, etc.), wastewater and washed water generated from the operation of NOL Main Line will be properly collected and discharged to the public sewerage system, and no wastewater discharge to the watercourses or nearby water environment would occur, it is concluded that there would be no adverse cumulative water quality impact anticipated during the operation of the Project.

5.12 Environmental Audit and Monitoring

5.12.1 Considering that the proposed revitalisation works would be carried out at NTMDC and its branches, baseline and construction phase water quality monitoring at NTMDC is recommended to be carried out. Details of the recommended water quality monitoring requirements are provided in the stand-alone EM&A Manual for the Project.

5.12.2 A WPCO licence should be obtained if there would be construction drainage discharge. Self-monitoring and reporting should be carried out for monitoring the construction drainage discharge in accordance with the requirements of WPCO licence.

5.12.3 It is also recommended that regular site inspection during the construction phase should be undertaken to inspect the construction activities and works areas in order to ensure the recommended mitigation measures are properly implemented.

5.13 Environmental Acceptability of Schedule 2 Designated Projects

Construction and Operation of new District Distributor Road (Road D1) (DP1)

5.13.1 With proper implementation of the recommended mitigation measures and BMPs for the construction activities as described in **Section 5.8**, as well as the mitigation measures and BMPs to reduce pollution arising from the surface water run-off during the operational phase as described in **Section 5.9**, no adverse water quality impact would be resulted from the construction and operation of the proposed roads.

Revitalisation of NTMDC and River Diversion Works (DP2)

5.13.2 With proper implementation of the recommended mitigation measures and BMPs for construction activities in close proximity of or in watercourses and by avoiding polluted site run-off from entering the revitalised drainage channel water during construction phase, along with BMPs to reduce pollution arising from the surface water run-off during the operational phase (as detailed in **Section 5.8**), no adverse water quality impact would result from the proposed revitalisation works.

5.14 Conclusion

Construction Phase

5.14.1 Water quality impacts from the construction works are associated with the general construction activities, construction site run-off, sewage effluent from construction workforce, accidental spillage of chemicals, construction works in close proximity of / in inland waters, removal / diversion of watercourses, removal / filling of ponds, groundwater from contaminated areas, contaminated site run-off and wastewater from land decontamination. The site practices as outlined in the ProPECC PN 2/24 and the ETWB TC(W) No. 5/2005 are recommended to be implemented in order to minimise the potential water quality impacts from the construction activities. Proper site management and good site practices are also recommended to ensure that construction and demolition wastes and other construction-related materials would not enter the nearby watercourses. Sewage effluent arising from the construction workforce would be handled through provision of adequate portable toilets. Water quality monitoring and regular site inspection will be implemented during the construction phase to ensure that the recommended mitigation measures are properly implemented. With the implementation of the recommended mitigation measures, the construction works for the Project would not result in adverse impacts on water quality.

Operational Phase

5.14.2 All sewage generated from the Project will be discharged to the public sewerage system and diverted to San Tin EPP, and when necessary, to the Yuen Long EPP for proper treatment via the proposed SPS. To avoid emergency bypass to the maximum

extent as far as practicable, various precautionary measures have been proposed for incorporation in the design of the SPS. Also, a Contingency Plan is recommended to be developed for dealing with the remote occurrence of emergency discharge. Hence, the possibility of sewage overflow would be remote and the associated adverse water quality impact would be minimised.

5.14.3 Another source of potential impact during the operational phase will be non-point source run-off from impervious areas. Stormwater control measures including adequate stormwater drainage system with suitable pollutant removal devices, blue-green infrastructure and BMPs are recommended for the Project to minimise the non-point source pollution. The removal of watercourses would have minimal impact on hydrology and flow regime. With proper implementation of the recommended mitigation measures, it is anticipated that the water quality impacts associated with the non-point source discharge from road surfaces and developed areas would be minimised.