Appendix B - Technical assessments conducted in the previously approved planning application No. A/YL-ST/658

Drainage Impact Assessment

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

AGREEMENT NO. CE 47/2020 (CE) –

TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING DEVELOPMENTS IN ZONE 2 (2021 – 2024) – FEASIBILITY STUDY

TASK ORDER NO. 9 – SAN TIN

Drainage Impact Assessment (DIA) Report (Issue 1)

July 2023

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

AGREEMENT NO. CE 47/2020 (CE) – TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING DEVELOPMENTS IN ZONE 2 (2021 – 2024) – FEASIBILITY STUDY

TASK ORDER NO. 9 – SAN TIN

Drainage Impact Assessment (DIA) Report (Issue 1)

[CONFIDENTIAL]

PROJECT NO.: 2512219A

DATE: JULY 2023

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ABBREVIATIONS

CEDD	Civil Engineering and Development Department
CIF	Community Isolation Facility
DSD	Drainage Services Department
EPD	Environmental Protection Department
EVA	Emergency Vehicular Access
GFA	Gross Floor Area
MiC	Modular Integrated Construction
SDM	Stormwater Drainage Manual
WSP	WSP (Asia) Limited

1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP (Asia) Ltd. (WSP) is commissioned by the Civil Engineering and Development Department (CEDD) to submit the Section 16 Planning Application to seek permission from the Town Planning Board (TPB/ the Board) for the Proposed Temporary Training Facilities (the proposed development) at the San Tin Community Isolation Facility (CIF) (Application Site/Site), on a temporary basis up to 31 October 2024.

1.1.2 The Applicant, CEDD, proposes a development on a temporary basis up to 31 October 2024. The Application Site falls within an area zoned for "Other Specified Uses (Services Stations)" under the Approved San Tin Outline Zoning Plan No. S/YL-ST/8 (OZP). In accordance with Clause No. (11) (b) of the covering Notes of the approved OZP, *"……temporary use or development of any land or building not exceeding a period of three years requires permission from the Town Planning Board……*". Therefore, this planning application is submitted to the TPB under Section 16 of the Town Planning Ordinance for the proposed temporary development.

1.1.3 The Application Site is currently occupied by San Tin CIF. With the epidemic in Hong Kong having been brought under control gradually, the CIF have been put into standby mode. To fully utilize the existing resources and facilities, the Applicant intends to convert the existing San Tin CIF as the proposed temporary development up to 31 October 2024.

1.2 STRUCTURE OF THE REPORT

1.2.1 This DIA report contains the following sections in addition to this introduction: -

Section 2	Describe the existing site condition and after development condition.
Section 3	Discuss the methodology of the DIA.
Section 4	Present the flood susceptibility, catchment characteristics and condition of the existing drainage system; assesses the potential drainage impact arising from the proposed development; and formulate corresponding mitigation measures if necessary.
Section 5	Summarize the finding and provide conclusion of the DIA report.

2 SITE DESCRIPTION

2.1 DESCRIPTION OF THE SITE

2.1.1 The proposed development is located at the existing Yuen Long San Tin Community Isolation Facility which is bounded by Castle Peak Road – San Tin to the east, San Tin Tsuen Road to the north and Tung Wing On Road to the south.

2.2 DEVELOPMENT SCHEDULE

2.2.1 Taking into account the Site is previously used as CIF, the units and required infrastructure have already been constructed. The anticipated population intake would be October 2023 tentatively and the Site is intended to operate till 31 October 2024.

3 METHODOLGY AND DESIGN PARAMETERS FOR DRAINAGE IMPACT ASSESSMENT

3.1 GENERAL APPROACH

3.1.1 A desk study is carried out to identify the existing drainage system within and in vicinity of the Site by obtaining existing drainage plan from DSD. The existing drainage system is assessed in terms of capacity and flood protection level with respect to estimated peak flows.

3.1.2 The catchment areas of the existing drainage system have been delineated and reviewed. The following two Scenarios are considered:

Scenario 1: Existing Condition – existing drainage characteristic, including catchment, surface characteristic and drainage system in the vicinity of the Site; and

Scenario 2: After Development – future drainage characteristics, including catchment, surface characteristic and drainage system.

3.1.3 Following the review and assessment, the drainage improvement to support the Development is formulated and the mitigation measures, including improvement or upgrading of the existing drainage system, where appropriate and necessary, are proposed.

3.2 DESIGN CODE AND REFERENCES

3.2.1 The DIA will be conducted with reference to the following design code and references:-

i. Environment, Transport and Works Bureau Technical Circular (Works) No. 2/2006

ii. Environment, Transport and Works Bureau Technical Circular (Works) No. 5/2005

iii. EPD's Practice Note ProPECC PN1/94

iv. Stormwater Drainage Manual (SDM) (Fifth Edition, January 2018) issued by DSD

v. Drainage Services Department Technical Circular No. 1/2017

vi. Stormwater Drainage Manual (SDM) Corrigendum No. 1/2022 by DSD

4 DRAINAGE IMPACT ASSESSMENT

4.1 FLOOD SUSCEPTIBILITY

4.1.1 According to the latest review (July 2023) of the flooding black spots published on DSD website, there is no flooding blackspot within the subject drainage catchment. The current flooding susceptibility of the Site area is therefore considered low.

4.2 EXISTING SITE CONDITION AND DRAINAGE SYSTEM

4.2.1 As mentioned in Section 2.3, the Site is currently occupied by Yuen Long San Tin CIF. There are approximately 720 MiC units.

4.2.2 The Site are mostly paved with concrete with some greenings at its perimeter. The surface runoff at the site is currently being collected by 225mm – 900mm covered channels within site and eventually discharged into existing DSD 1400mm channel at the north of the site.

4.2.3 The hydraulic checking on the existing 1400mm channel can be referred to **Appendix A**.

4.3 PROPOSED WORKS

4.3.1 The proposed development will fully utilize the existing building structures and utilities, therefore, no major works are expected to be carried out within the Site.

Land Characteristics

4.3.2 The existing catchment characteristics will be maintained and there will be no change in surface characteristics.

Proposed Drainage Works

4.3.3 The existing drainage system will be maintained and there is no proposed drainage works.

Drainage Impact Assessment

4.3.4 As there is no change in surface characteristics or any increase in paved area in the site, no additional surface runoff is anticipated.

4.3.5 As the catchment plan will also be the same as that of the existing community isolation facility, adverse impact on the existing drainage system is not anticipated.

5 CONCLUSION

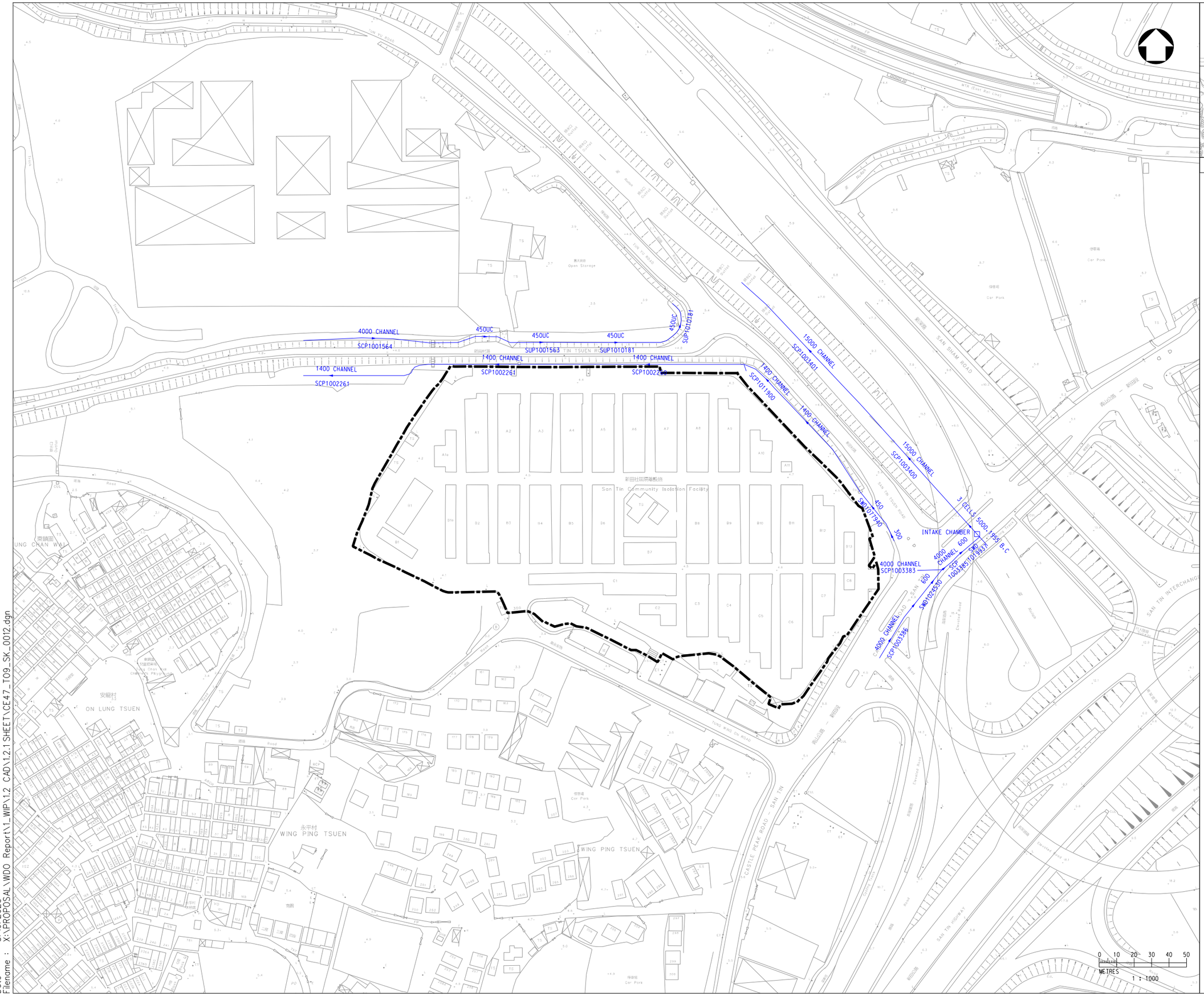
5.1 CONCLUSION

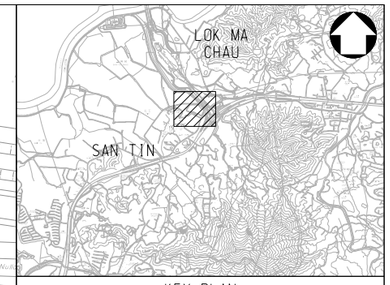
5.1.1 The existing CIF facilities and utilities will be fully utilised and no major works are expected to be carried out within the Site.

5.1.2 The surface runoff at the site is currently being collected by 225mm – 900mm covered channels within site and eventually discharged into existing DSD 1400mm channel at the north of the site.

5.1.3 There is no change in land characteristics, catchment plan or any additional flow. Therefore, no adverse drainage impact from the project is anticipated and no drainage works or mitigation measures are considered necessary.

DRAWINGS





KEY PLAN

LEGEND :

SITE BOUNDARY OF PLANNED DEVELOPMENT

EXISTING STORMWATER DRAINS

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO.CE47/2020 (CE)

TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING DEVELOPMENTS IN ZONE 2 (2021 - 2024) - FEASIBILITY STUDY

Drawing title

TASK ORDER NO. 9 - SAN TIN EXISTING DRAINAGE LAYOUT PLAN

Drawing no.			Rev.
CE47/T09/SK/0012			-
Drawn	Date	Checked	Approved
CAD	JUN 2023	VS	YWY
Scale		Status	
1:1000 (A1)		-	

CEDD 土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT 西拓展處 WEST DEVELOPMENT OFFICE

Date : 8/16/2023
Filename : X:\PROPOSAL\WDO Report\1_WIP\1.2 CAD\1.2.1 SHEET\CE47_T09_SK_0012.dgn

APPENDIX A

HYDRAULIC CALCULATION

Calculations for the Drainage System (U-Channel)

A. Rational method to estimate runoff and pipe sizes

1 in 50 year Design Event for sizing drainage network

1 in 50 year storm constants from DSD Stormwater Manual

Manning's Equation:

$$\bar{V} = \frac{R^{1/6}}{n}\sqrt{RS_f}$$

Storm Constants	**a**	**1167.6**	
	b	**16.76**	
	c	**0.56**	
Climate Change Factor		**0.00%**	
Runoff Coefficient	**Green**	**0.30**	
	Paved	**0.85**	
Manning Coefficient	**n**	**0.018**	**s/m$^{1/3}$**
Viscocity	**u**	**0.000001**	**m^2/s**
Reduction in Flow Area		**10.00%**	

UC ID	Length	UC Size	Gradient	Gradient	Sectional Area	Perimeter	R =A/P	Vel.@ full bore	Vel.@ full bore	Tf	Tc	Intensity	Drained Area	Surface Area		Total Q	Capacity	Remarks	% of Flow to UC Capacity
No.	(m)	(mm)		(1 in x)	(m^2)	(m)	(m)	(m/sec)	(mm/sec)	(mins)	(mins)	(mm/hr)	(m^2)	Green (m^2)	Paved (m^2)	(l/sec)	(l/sec)		
1400 Channel	140.00	1400	0.0040	250	1.575	3.60	0.44	2.03	2025.02	1.15	4.15	212	39672	504	39168	1972	3189	ok	62