Attachment 5
Sewerage Impact Assessment

Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Sewerage Impact Assessment

(V2.0)

May 2025

Reviewed By _____

(Technical Director: K.S. Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LIMITED
Room 1710, Technology Park
18 On Lai Street
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

1.1 Background

1.1.1 OXO YW Limited ("the Project Proponent") has proposed to develop a data centre located at No. 7-11 Wing Kin Road, Kwai Chung.

1.1.2 Cinotech Consultants Limited was commissioned by OXO YW Limited to carry out a Sewerage Impact Assessment (SIA) to assess and envisage any potential sewerage impact on the implementation of the Project and to recommend SIA mitigation measures.

1.1.3 This SIA is prepared to support the planning permission from the Town Planning Board (TPB) under Section 16 of the Town Planning Ordinance (CAP. 131) for a data centre with minor relaxation of plot ratio restriction from 9.5 to 11.4, and height restriction from 105mPD to 109.55mPD.

2 THE PROJECT

2.1 The Site

2.1.1 The Application Site (the "Site") is located in an industrial area in Kwai Chung, bordered by Wing Chong Street to the west, Wing Kin Road to the east, Global Trade Centre to the north, and Hou Feng Industrial Building to the south (see **Figure 2-1**). The Site and its surroundings fall within the industrial zone, as per the *Approved Kwai Chung Outline Zoning Plan No. S/KC/32* (see **Figure 2-2**).

2.1.2 The Site covers approximately 964 m² (about 929 m² excluding the additional area) and is currently occupied by a 2-storey industrial building. Planning applications have been submitted and approved with conditions in 2020 (Application No.: A/KC/457) and 2023 (Application No.: A/KC/496) for Offensive Trades use (Lard Boiling Factory) and Industrial use (Warehouse), respectively.

2.2 The Proposed Development

2.2.1 The Project Proponent proposes to redevelop the Application Site into a 17-storey data centre with a height of 109.55mPD and plot ratio of 11.4. The tentative layout of the proposed development is shown in **Appendix 2-1**, with a planned completion date of 2029.

3 SEWERAGE IMPACT ASSESSMENT

3.1 Methodology

3.1.1 *"Guidelines for Estimating Sewage Flows for Infrastructure Planning"* (GESF), version 1.0, March 2005, prepared by Environmental Protection Department (EPD) provides guidelines for the unit flow factor, catchment inflow factor and peaking factor. The daily sewage discharge and the peak sewage flow are estimated by population, unit flow factors and peaking factors.

3.1.2 *"Sewerage Manual – Key Planning Issues and Gravity Collection System"*, third edition, May 2013, (hereafter called "the DSD Manual") prepared by Drainage Services Department (DSD) provides guidelines for the design of the drainage system. The capacities of the public sewers are calculated by Colebrook-White Equation.

3.2 Sewage Discharge from the Proposed Development

3.2.1 The proposed development is intended solely for data centre use. Therefore, the sewage generated from the normal operation of the data centre and the discharge from the water-cooling tower system will be the primary sources.

3.2.2 Since the proposed development is expected to be unmanned and automatic, the number of staff will be limited. As advised by the project applicant, approximately 20 to 25 staff members will be hired; therefore, 25 staff have been adopted in the calculation of sewage discharge for conservatism.

3.2.3 During the operation of the proposed development, no non-staff personnel is expected to be on-site under normal circumstances. In the absence of water-consuming activities and non-staff personnel within the proposed development, the unit flow factor for Commercial Employees, as per EPD's GESF (0.08 m^3/day/person), is deemed appropriate for normal operations. For a conservative assessment, the unit flow factor for Community, Social & Personal Services (0.20 m^3/day/person) has also been adopted to account for potential events held within the proposed development, resulting in a total unit flow factor of 0.28 m^3/day/person.

3.2.4 A water-cooling tower system will be used as the primary cooling method for the equipment (computer server racks) during operation. According to the E&M Consultant, a maximum of 150 m^3/day of bleed-off water is expected to be discharged under worst-case scenarios (i.e., during peak design load in hot weather). The bleed-off water from the water-cooling tower system will be reused wherever practicable, such as for flushing, before being discharged into the public sewerage system. As a result, the amount of direct discharge of bleed-off water will be minimised.

3.2.5 The estimated daily dry weather flow from the project (157 m^3/day) is summarized in **Table 3-1**.

Table 3-1 Calculation of Sewage Discharge

Source	Unit Flow Factors [1] (m^3/day/person)	No. of Occupants / Employee	Flow Rate (m^3/day)
Staff from Data Centre	0.28[2]	25	7.0
Water from the Cooling System	-	-	150.0
Total	**-**	-	**157.0**

[1] EPD's Guidelines for Estimating Sewage Flows for Infrastructure Planning.
[2] The Unit Flow Factor for Commercial Employees, and Commercial activities J11 (Community, Social & Personal Services) in Table T-2 of GEFS has been adopted.
[3] Daily flow rate of the water-cooling tower system is provided by the project E&M consultant.

3.3 Sewage Discharge from the Vicinity

3.3.1 The public sewage network in the vicinity is illustrated in **Figure 3-1**. The surrounding developments near the Project is sectioned into different catchments (A-O) based on the existing sewage system.

3.3.2 The GFA of the catchments are based on the land lot size and maximum allowable plot ratio (9.5 for industrial buildings) in general unless the actual plot ratio is far from the maximum value[1]. As the warehouse in the vicinity also provide logistics service, the usage with higher sewage discharge per unit area, i.e.: logistics (transportation), has been adopted for conservative assessment. For industrial building of multiple type[2], manufacturing type has been assumed for conservative assessment.

3.3.3 Catchments N & O are columbarium and therefore, the number of visitors on Ching Ming Festival Day have been adopted for the sewage discharge calculation. Kwai Chung Columbarium (Catchment N) has 9,276 niches and 16,000 visitors during Ching Ming Festival in 2019 according to press release[3]. The columbarium at Wing Lap Street 2-6 (Catchment O) is allowed to provided 23,000 niches according to its approved planning application (Application No. A/KC/437[4]). As no visitor statistic for the ultimate scenario, when the 23,000 niches are fully occupied, is available, the number of visitors per niches ratio of Kwai Chung Columbarium has been adopted, resulting in 39,672 visitors on Ching Ming Festival Day. In addition, since the number of visitors outweigh the number of staff for the columbarium, the discharge from the staff has been ignored.

3.3.4 The sewage catchment areas in the vicinity are illustrated in **Figure 3-1** and summarised in **Table 3-2**. The detailed calculations are presented in **Appendix 3-1**.

Table 3-2 Sewage Discharge from Surrounding Catchments

Catchment ID	Development	Total Flowrate / catchment (m^3/day)
A	Wing Kin Road 22, Gold Way Industrial Centre, Refuse Collection Point	1,137.5
B	Global Trade Centre, Wing Kin Road 19-21	244.7
C	Wing Kin Road 8-12	31.4
D	Wing Kin Industrial Building	246.6

[1] For example, Wing Kin Road 8-12 in Catchment C consists of low-rise buildings only.
[2] For example, Wing Kin Road 22 consists of 5 floors for storage, and 13 floors for manufacturing according to layout plan
[3] Number of visitor (Kwai Chung Columbarium) - https://www.cso.gov.hk/eng/blog/blog20200315.htm
Number of niches (Kwai Chung Columbarium) - https://www.info.gov.hk/gia/general/202106/16/P2021061600496.htm
[4] Planning Application No. A/KC/437 - https://www2.ozp.tpb.gov.hk/gist/apply/en_tc/A_KC_437_TC.pdf

Catchment ID	Development	Total Flowrate / catchment (m^3/day)
E	Kwai Wan Industrial Building	166.4
F	Hou Feng Industrial Building	317.9
G	Hopewell Logistics Centre, Aji Ichiban Centre	372.1
H	Wing Loi Industrial Building, Valid Industrial Building, Mei Kei Industrial Building, Wing Lap Street 24-28	719.7
I	Good Ba Ba Hitech Building	51.7
J	Wing Hau Street Driving Test Centre	1.1
K	Kerry TC Warehouses 2	401.6
L	Wing Shing Industrial Building	325.4
M	38 Wing Kei Road	62.6
N	Kwai Chung Columbarium	640.0
O	Wing Lap Street 2-6 (columbarium)	1,586.9

[i] The calculation is detailed in **Appendix 3-1**.

3.4 Review of Sewage System

3.4.1 As the scale of the Proposed Project is larger than the existing 2-storey industrial building, the addition sewage discharge may induce potential sewerage impact to the existing public sewage system, thus the utilization of the downstream sewers shall be checked.

3.4.2 The sewage from the Site will be discharged to Public Sewer Manhole FMH4022807, flow along 400mm sewers (PS01 – PS04, **Figure 3-2**) along Wing Kin Road, then join with the 750mm sewers (PS05 – PS06, **Figure 3-2**) along Kwai Hei Street.

3.4.3 As the invert level and material of the 400mm sewer along Wing Kin Road are the key parameter to determine the potential sewerage impact from the Site, Castco Testing Centre Ltd. has been hired to conduct the manhole survey. The manhole survey report is provided in **Appendix 3-3**.

3.4.4 The capacities of the downstream sewer sections (PS01 – PS06, **Figure 3-2)** are calculated by Colebrook-White Equation and listed in **Table 3-3**. The detailed calculation is shown in **Table A of Appendix 3-2**. The adopted information of the sewers PS01 - PS06 are based on the manhole survey report (**Appendix 3-3**) and Geoinfo Map[5].

Table 3-3 Capacity of Existing Public Sewers

Pipe Section	Upstream Manhole	Downstream Manhole	Full Capacity (L/s)
PS01	FMH4022807	FMH4022808	299.9
PS02	FMH4022808	FMH4022809	468.5
PS03	FMH4022809	FMH4022810	444.6
PS04	FMH4022810	FMH4022768	239.0
PS05	FMH4022768	FMH4022769	788.8
PS06	FMH4022769	FMH4022770	695.3

3.4.5 **Table 3-4** shows a summary of the proportion of peak flow to full capacity from surrounding catchments areas to each segment of existing pipe sections. The detailed calculation is shown in **Table B of Appendix 3-2**.

[5] Geoinfo map - https://www.map.gov.hk/gm/

Table 3-4 Utilization of the Existing Sewer

Pipe Section	Full Capacity (L/s)	Peak Flow (L/s) [1-5]	Utilization (%)
PS01	299.9	100.0	33%
PS02	468.5	135.9	29%
PS03	444.6	146.5	33%
PS04	239.0	146.5	61%
PS05	788.8	329.1	42%
PS06	695.3	329.1	47%

[1] The contribution population = total catchment discharge (m^3/day) / 0.27(m^3/day/person)
[2] Peaking Factor of 8 for contribution population <1,000, 6 for contribution population of 1000 – 5000, 5 for contribution population of 5000-10000 and 4 for contribution population of 10000 – 50000 are adopted.
[3] The site is located within Kwai Chung District. The Catchment Inflow Factors of Kwai Chung (=1.1) has been adopted.
[4] Peak Flow = [Daily average dry weather flow × Peaking Factor (including stormwater allowance) / 24 / 3600] × Catchment Inflow Factor.

3.4.6 According to the calculation, the existing downstream sewers can cater for the expected sewage flow. No upgrading work is necessary.

3.5 Proposed New Sewer

3.5.1 The sewage discharge from Project is proposed to be collected by a terminal manhole (FTMH01) and discharged via a proposed pipe (PP01) to an existing public sewage manhole (FMH4022807). The 225mm PE sewer (PP01) is proposed with slope of 1:100. The information of the proposed new pipe is listed in **Table 3-5**; and detailed in **Appendix 3-2**.

3.5.2 The alignment of the proposed new sewer is illustrated in **Figure 3-3**. The precise alignment and invert levels will subject to detailed design. The Project Proponent will be responsible for constructing the proposed pipe PP01 and its associate works.

Table 3-5 Proposed New Sewer

Segment	Proposed New [1]			Full Capacity (L/s)	Total Peak Flow (L/s)	Total Discharge Loading to Pipe Capacity (%)
	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Diameter (mm)			
Proposed New Sewer						
PP01	FTMH01	FMH4022807	225	56.4	16.0	28%

[1] The precise alignment and invert levels of the proposed pipes will be subject to detail design.

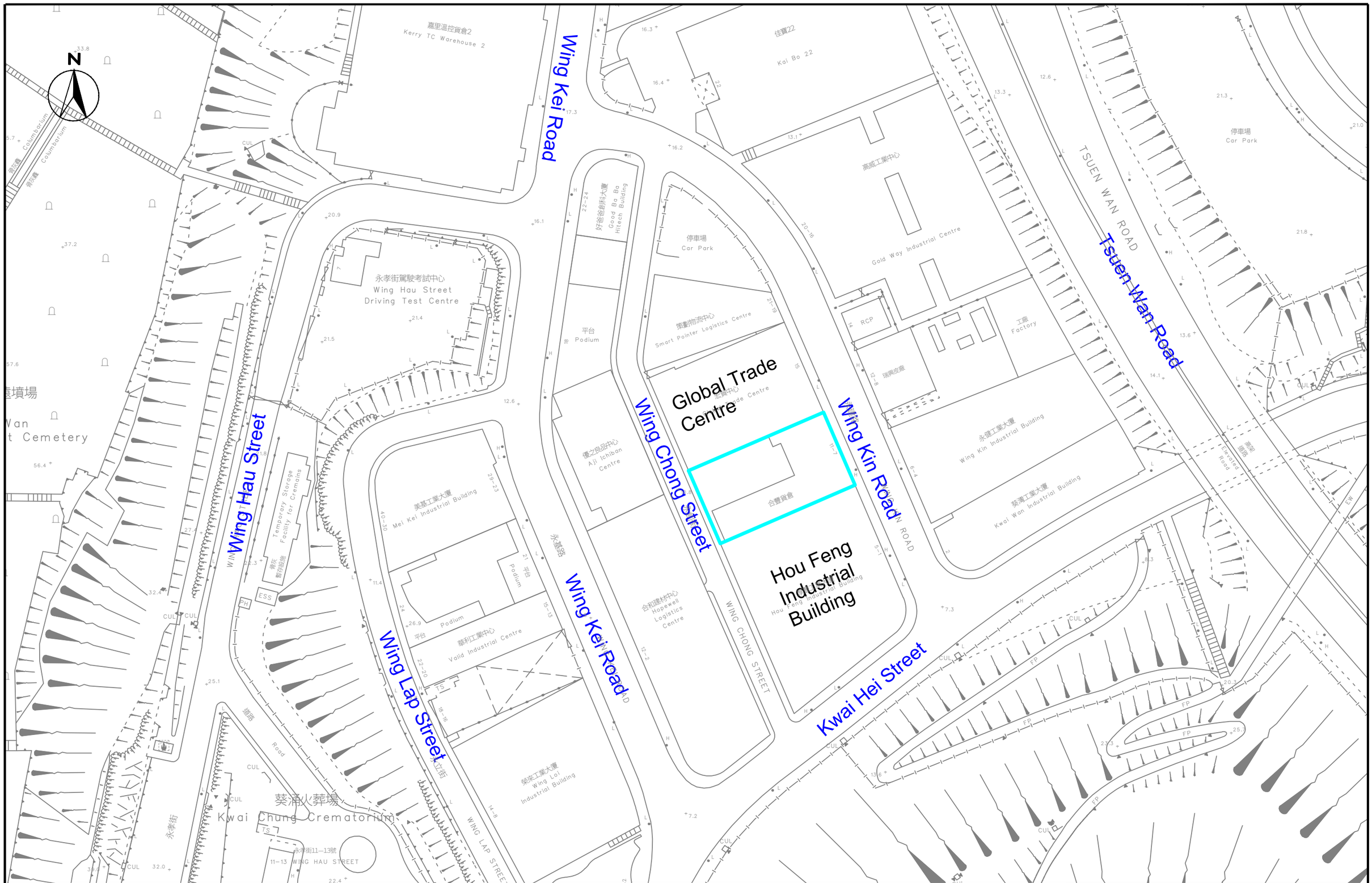
4 CONCLUSION

4.1.1 This sewage impact assessment (SIA) has been prepared to address all the potential adverse sewerage impacts arose from the proposed development of the lot, and to recommend mitigation measures and improvement works, if required.

4.1.2 The estimated daily sewage discharge from the Project is 157 m^3/day. Sewage from the Project will be collected by the new terminal sewage manhole FTMH01 and discharged to existing sewer manhole FMH4022807 via a proposed 225mm PE sewer (PP01) with slope of 1:100. Actual layout and invert levels of the proposed sewer are subject to detailed design.

4.1.3 The sewerage network is considered to have sufficient capacities to cater for the expected sewage flows from the Project and the surrounding catchments. Therefore, no adverse sewerage impact on the public sewage system is expected from the Project.

FIGURES



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Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Location of the Project Site

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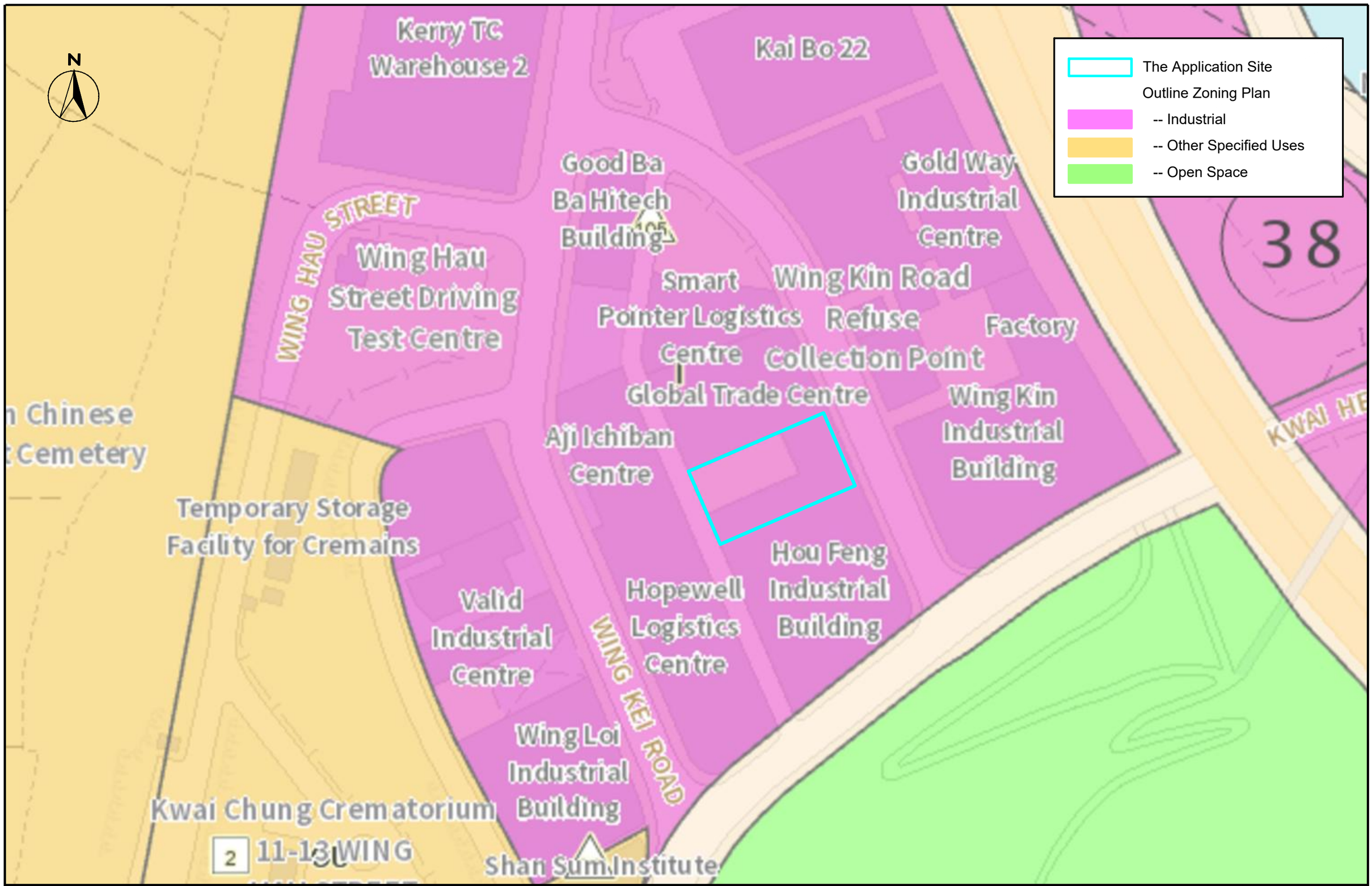
		REV	-



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Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Zoning in the Vicinity of the Project Site

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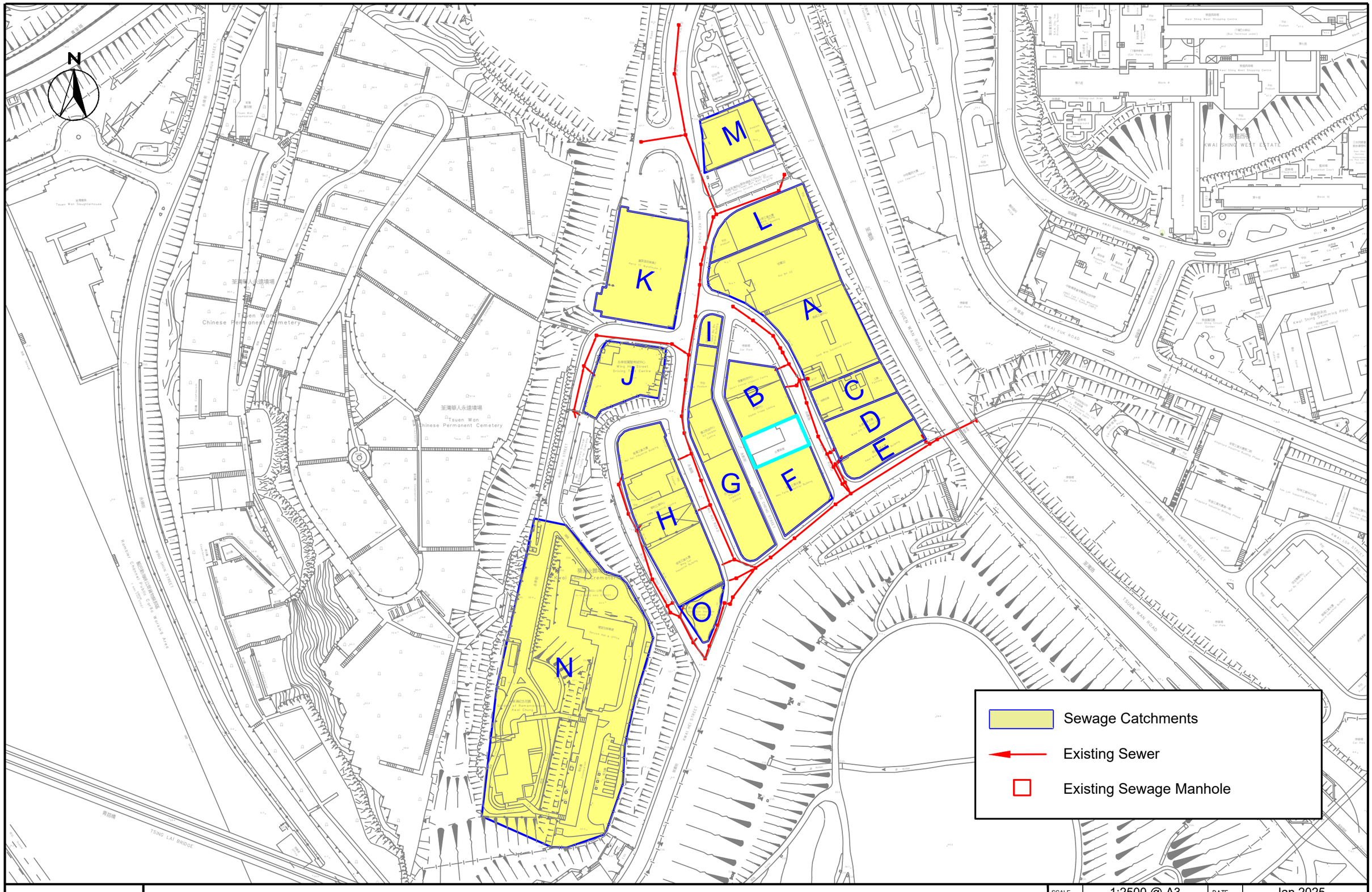

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Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Sewage Catchments and Existing Public Sewers in the Vicinity - Overview

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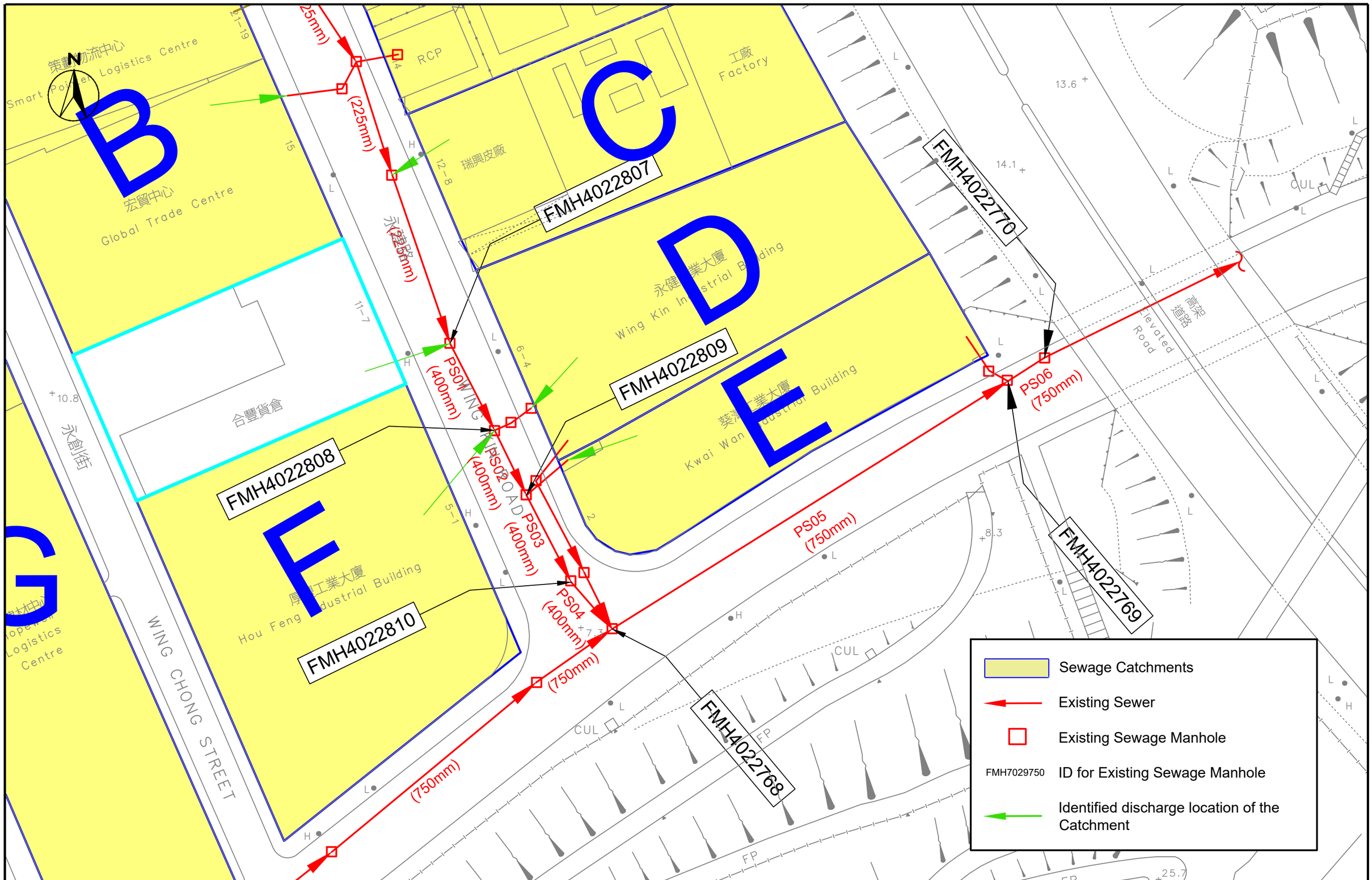

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Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Existing Sewers in the Vicinity

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CHECK	CC	DRAWN	LL
JOB No.	IA23170	DRAWING No.	3-2
		REV	-

N

宏貿中心
Global Trade Centre

永(325mm)

PP01
(225mm)

FTMH01

合豐貨倉

FMH4022808

PS01
(400mm)

WING KIN ROAD

PS02
(400mm)

PS03
(400mm)

FMH4022

瑞興皮廠

永健

永創街

15
12–8
11–7
6–4
5–1
2
10.8
H
L

	Sewage Catchments
	Existing Sewer
	Existing Sewage Manhole
FMH7029750	ID for Existing Sewage Manhole
	Identified discharge location of the Catchment
	Proposed New Sewer
	Proposed New Manhole

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Proposed Data Centre at No. 7-11 Wing Kin Road, Kwai Chung (K.C.T.L. 145)

Proposed New Sewer and Manhole

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JOB No.	IA23170	DRAWING No.	3-3
		REV	-

APPENDIX 2-1
DEVELOPMENT PARAMETERS AND TENTATIVE SECTION PLANTENTATIVE SECTION PLAN

1.0	**PLOT RATIO & SITE COVERAGE CALCULATIONS**									
1.1	SITE AREA (UNDER LEASE)	929.031	m^2							
1.2	ADDITIONAL SITE AREA FACING WING CHONG STREET	35.169	m^2							
1.3	**SITE AREA FOR PR & SC CALCULATIONS**	**964.200**	**m^2**							
1.4	PERMITTED PLOT RATIO UNDER OZP	9.5								
1.5	ADDITIONAL PLOT RATIO UNDER PLANNING APPLICATION (20%)	1.9								
1.6	**PROPOSED PLOT RATIO**	**11.4**								
1.7	**PROPOSED TOTAL GROSS FLOOR AREA**	**10,991.880**	**m^2**							
1.8	CLASS OF SITE	A								
1.9	PERMITTED SITE COVERAGE UNDER 40m (82%) UNDER PNAP-132	790.644	m^2							
1.10	PERMITTED SITE COVERAGE ABOVE 61m (65%) UNDER PNAP-132	626.730	m^2							

2.0	**PROPOSED DEVELOPMENT CALCULATIONS**	**Accountable GFA**			**Mandatory Unaccountable GFA**		**CFA / Floor**		**Site Coverage**
2.1	BASEMENT 2 FLOOR		m^2		268.50	m^2	268.5	m^2	-
2.2	BASEMENT 1 FLOOR	51.03	m^2		778.97	m^2	830.0	m^2	-
2.3	GROUND FLOOR	658.20	m^2		436.40	m^2	782.0	m^2	81.104%
2.4	1st FLOOR (E&M FLOOR)	698.80	m^2		40.20	m^2	739.0	m^2	76.644%
2.5	2nd FLOOR (E&M FLOOR)	699.10	m^2		39.90	m^2	739.0	m^2	76.644%
2.6	3rd FLOOR (E&M FLOOR)	726.00	m^2		13.00	m^2	739.0	m^2	76.644%
2.7	4th FLOOR (DATA HALL)	726.00	m^2		13.00	m^2	739.0	m^2	76.644%
2.8	5th FLOOR (DATA HALL)	726.00	m^2		13.00	m^2	739.0	m^2	76.644%
2.9	6th FLOOR (E&M FLOOR)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.10	7th FLOOR (DATA HALL))	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.11	8th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.12	9th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.13	10th FLOOR (E&M FLOOR)	506.00	m^2		113.00	m^2	619.0	m^2	64.198%
2.14	11th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.15	12th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.16	13th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.17	14th FLOOR (E&M FLOOR)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.18	15th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.19	16th FLOOR (DATA HALL)	606.00	m^2		13.00	m^2	619.0	m^2	64.198%
2.20	MAIN ROOF	140.75	m^2		94.25	m^2	235.0	m^2	-
2.21	UPPER ROOF	-	m^2		65.00	m^2	65.0	m^2	-
2.22	**PROPOSED TOTAL GROSS FLOOR AREA**	**10,991.88**	**m^2**		**2005.22**	**m^2**	**12,684.50**		
2.25	HEIGHT OF GROUND FLOOR	11.00	m						
2.26	HEIGHT OF 1st FLOOR	6.00	m						
2.27	HEIGHT OF 2nd FLOOR	6.00	m						
2.28	HEIGHT OF 3rd FLOOR	6.00	m						
2.29	HEIGHT OF 4th - 18th FLOOR (@5.5m PER FLOOR)	71.50	m						
2.30	**PROPOSED TOTAL HEIGHT**	**100.50**	**m**						
2.31	MEAN SITE STREET LEVEL	8.390	mPD						
2.32	HEIGHT OF GROUND FLOOR ABOVE MEAN STREET LEVEL	0.660	m						
2.33	PROPOSED HEIGHT ABOVE PRINCIPAL DATUM	109.550	mPD						
2.34	PERMITTED HEIGHT UNDER OZP	105.000	mPD						
2.35	**ADDITIONAL** HEIGHT UNDER PLANNING APPLICATION	4.550	mPD		4.15%				
3.1	Required Set Back Area at G/F under PNAP APP-132 (8% of Site Area)	77.136	m^2						
3.2	Planter Area at G/F	2.00	m^2						
3.3	Planter Area at 1/F	11.00	m^2						
3.4	Planter Area at 2/F	4.00	m^2						
3.5	Planter Area at 3/F	9.00	m^2						
3.6	Vertical Green Area	169.00	m^2						
3.7	**Total Greening Area**	**195.00**	m^2						
3.8	**Greenery Site Coverage - Primary Zone**	**17.73%**							
3.9	**Greenery Site Coverage - Overall**	**20.22%**							

NOTES:

DO NOT SCALE DRAWINGS.

ALL DIMENSIONS MUST BE VERIFIED AT THE WORK BY THE CONTRACTOR.

REVISION

NO	DATE	DESCRIPTION

ARCHITECT

STUDIO | RCA

18/F | Xiu Hua Commercial Building
211-213 Jaffe Road | Wan Chai | HK
Tel: 3583-2000 | Fax: 8143-1130
Email: mail@studiorca.com

STUDIO | RAYMOND CHAU | ARCHITECTURE | LIMITED

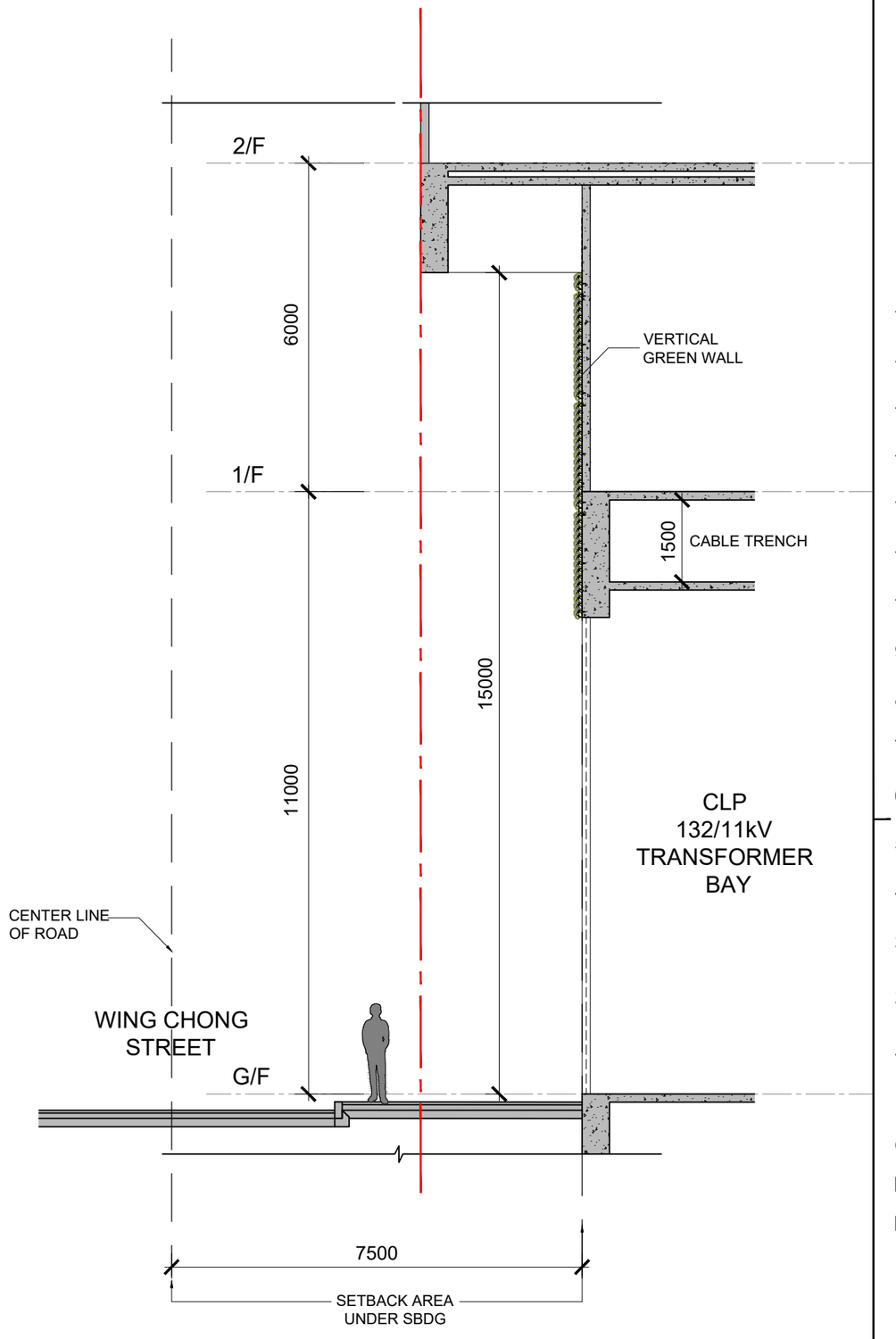
PROJECT NAME

PROPOSED DATA CENTRE
7-11 WING KIN ROAD
KWAI CHUNG, N.T.

DRAWING TITLE

DEVELOPMENT SCHEDULE

DRAWN BY	CHECKED BY
TK	RC
SCALE	**DATE**
NIL	2025.06.18
JOB No.	**DRAWING No.**
2208	A-00



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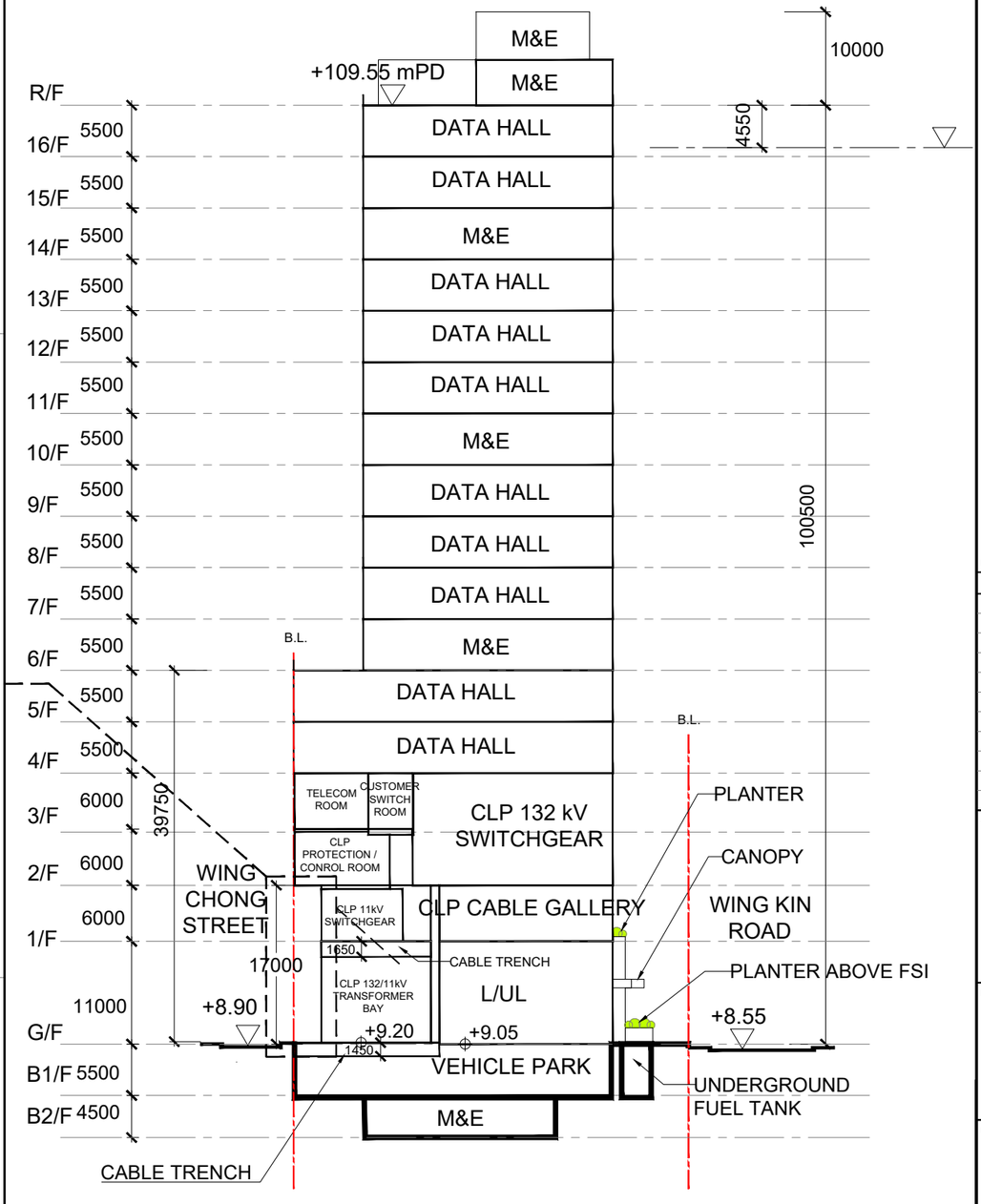

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REVISION

NO	DATE	DESCRIPTION

ARCHITECT
STUDIO | RCA
18/F | Xiu Hua Commercial Building
211-213 Jaffe Road | Wan Chai | HK
Tel: 3583-2000 | Fax: 8143-1130
Email: mail@studiorca.com
STUDIO | RAYMOND CHAU | ARCHITECTURE | LIMITED

PROJECT NAME

PROPOSED DATA CENTRE
7-11 WING KIN ROAD
KWAI CHUNG, N.T.

DRAWING TITLE

SECTION A-A

DRAWN BY	CHECKED BY
TK	RC
SCALE	DATE
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JOB No.	DRAWING No.
2208	A-14

APPENDIX 3-1
SEWAGE DISCHARGE FROM SURROUNDING CATCHMENTS

Appendix 3-1: Sewage Discharge from Surrounding Catchments

Catchment ID	Building	Total Office Area (m^2)	Total I/O Building Area (m^2)	Total Transport Area (m^2)	Total Manufacturing Area (m^2)	Other Employees [2]	Total Visitors [3]	Population / No. of Occupants (by worker density) [4]				Flowrate (m^3/day) [5]					Total Flowrate / catchment (m^3/day)
								Community, Social & Personal Services (staff)	Finance, Insurance, Real Estate & Business Services (Staff)	Transport (staff)	Manufacturing (staff)	Community, Social & Personal Services UFF = 0.28	Finance, Insurance, Real Estate & Business Services UFF = 0.08	Transport & Storage UFF=0.18	Manufacturing UFF=0.73	Visitor [6] UFF=0.04	
A	Wing Kin Road 22, Gold Way Industrial Centre, Refuse Collection Point	0	0	0	67650	6	0	6	0	0	1556	1.7	0.0	0.0	1135.8	0.0	**1137.5**
B	Global Trade Centre, Wing Kin Road 19-21	0	0	6527	11913	0	0	0	0	248	274	0.0	0.0	44.6	200.0	0.0	**244.7**
C	Wing Kin Road 8-12	0	0	0	1873	0	0	0	0	0	43	0.0	0.0	0.0	31.4	0.0	**31.4**
D	Wing Kin Industrial Building	0	0	0	14687	0	0	0	0	0	338	0.0	0.0	0.0	246.6	0.0	**246.6**
E	Kwai Wan Industrial Building	0	0	0	9909	0	0	0	0	0	228	0.0	0.0	0.0	166.4	0.0	**166.4**
F	Hou Feng Industrial Building	0	0	0	18934	0	0	0	0	0	435	0.0	0.0	0.0	317.9	0.0	**317.9**
G	Hopewell Logistics Centre, Aji Ichiban Centre	0	0	18440	14649	0	0	0	0	701	337	0.0	0.0	126.1	246.0	0.0	**372.1**
H	Wing Loi Industrial Building, Valid Industrial Building, Mei Kei Industrial Building, Wing Lap Street 24-28	0	0	0	42864	0	0	0	0	0	986	0.0	0.0	0.0	719.7	0.0	**719.7**
I	Good Ba Ba Hitech Building	0	0	0	3078	0	0	0	0	0	71	0.0	0.0	0.0	51.7	0.0	**51.7**
J	Wing Hau Street Driving Test Centre	121	0	0	0	0	0	4	0	0	0	1.1	0.0	0.0	0.0	0.0	**1.1**
K	Kerry TC Warehouses 2	0	0	58720	0	0	0	0	0	2231	0	0.0	0.0	401.6	0.0	0.0	**401.6**
L	Wing Shing Industrial Building	0	0	0	19380	0	0	0	0	0	446	0.0	0.0	0.0	325.4	0.0	**325.4**
M	38 Wing Kei Road	0	17772	0	0	0	0	0	782	0	0	0.0	62.6	0.0	0.0	0.0	**62.6**
N	Kwai Chung Columbarium	0	0	0	0	0	16000	0	0	0	0	0.0	0.0	0.0	0.0	640.0	**640.0**
O	Wing Lap Street 2-6 (columbarium)	0	0	0	0	0	39672	0	0	0	0	0.0	0.0	0.0	0.0	1586.9	**1586.9**

Notes:

[1] Total Area = land lot size x maximum allowable plot ratio (9.5)

[2] Other employees include the staffs of Refuse Collection Point (classified as community services).

[3] The total visitors is the number of grave sweepers on Ching Ming Festival Day.

[4] The worker density for Community, Social & Personal Services Area (5.9 employee per 100 m^2), Transport Area (3.8 employee per 100 m^2), Manufacturing Area (2.3 employee per 100 m^2) and I/O Building (4.4 employee per 100 m^2)employee are from Figure 9 & 15 of Commercial and Industrial Floor Space Utilization Survey 2005.

[5] The Unit Flow Factors are 0.28, 0.18, 0.73, 0.04 m^3/person/day for "Community, Social & Personal Service", "Transport & storage", "Manufacturing", "Visitor" respectively.

[6] The Unit Flow Factor of student has been adopted as the visitors.

Supplementary Note for the Estimated GFA Breakdown

Catchment ID	Address	Estimated Land lot area	Estimated GFA(m^2)	GFA Breakdown (m^2)					Type	Remark
				Office	I/O Building	Transport	Storage	Manufacturing		
Project Site	Wing Kin Road 7-11	967	11024		10992				Data Centre	
A	Wing Kin Road 22	3697	35121.5					35121.5	5 floors for storage, and 13 floors for manufacturing according to layout plan	Assume 100% manufacturing for conservative assessment
	Refuse Collection Point	--	--						Special	Assume 6 staff
	Gold Way Industrial Centre	3424	32528					32528	Manufacturing	
B	Gobal Trade Centre	1254	11913					11913	Manufacturing	
	Wing Kin Road 19-21	687	6526.5			6526.5			Transport & storage	
C	Wing Kin Road 8-12	1391	1873					1873	Manufacturing	GFA from layout
D	Wing Kin Industrial Building	1546	14687					14687	Manufacturing	
E	Kwai Wan Industrial Building	1043	9908.5					9908.5	Manufacturing	
F	Hou Feng Industrial Building	1993	18933.5					18934	Manufacturing & storage & transport	Assume 100% manufacturing for conservative assessment
G	Hopewell Logistics Centre	1941	18439.5			18439.5			Transport & storage	
	Aji Ichiban Centre	1542	14649					14649	Manufacturing	
H	Wing Loi Industrial Building	1962	18639					18639	Manufacturing	
	Valid Industrial Building	523	4968.5					4969	Manufacturing	
	Mei Kei Industrial Building	1100	10450					10450	Manfacturing	
	Wing Lap Street 24	927	8806.5					8806.5	Manfacturing	
I	Good Ba Ba Hitech Building	324	3078					3078	Manufacturing	
J	Wing Hau Street Driving Test Centre	2762	121	121					Office	GFA from layout
K	Kerry TC Warehouses 2	6181	58719.5			58719.5			Storage	
L	Wing Shing Industrial Building	2040	19380					19380	Manufacturing	
M	38 Wing Kei Road	--	17772.4		17772				Data Centre	https://www.leasinghub.com/zh/building/38-wing-kei-road/17828

Note:

[1] For warehouse, ratio of the area has been assumed to be 100% of transport for conservative assessment.

[2] Manufacturing has been assumed for the industiral buildings with multiple usage.

[3] Estimated GFA is calculated by estimated land lot area and maximum allowable plot ratio (9.5) for industrial buildings, except for the buildings with specified remark.

APPENDIX 3-2
DETAILED CALCULATION OF THE SEWERS

Appendix 3-2: Detailed Calculation of the Sewers

Table A: Calculation of Sewer Capacity

Segment	Upstream Manhole	Downstream Manhole	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Length (m)	Diameter (mm)	Area (m^2)	Hydraulic Radius (m)	Slope	Kinematic Viscosity (m^2/s)	Pipe material	Hydraulic Pipeline Roughness (m) [1]	Velocity (m/s)	Full Capacity (l/s)
Existing Downstream Sewers														
PS01	FMH4022807	FMH4022808	**6.400**	**6.176**	14.0	**400**	0.126	0.1	0.0160	0.00000114	**Slimed Clayware**	0.0006	2.39	299.9
PS02	FMH4022808	FMH4022809	**6.086**	**5.682**	10.4	**400**	0.126	0.1	0.0388	0.00000114	**Slimed Clayware**	0.0006	3.73	468.5
PS03	FMH4022809	FMH4022810	**5.597**	**5.106**	14.0	**400**	0.126	0.1	0.0350	0.00000114	**Slimed Clayware**	0.0006	3.54	444.6
PS04	FMH4022810	FMH4022768	**5.105**	**5.014**	8.9	**400**	0.126	0.1	0.0102	0.00000114	**Slimed Clayware**	0.0006	1.90	239.0
PS05	FMH4022768	FMH4022769	**4.584**	3.860	67.1	**675**	0.358	0.16875	0.0108	0.00000114	**Slimed Concrete**	0.003	2.20	788.8
PS06	FMH4022769	FMH4022770	3.860	3.830	6.2	750	0.442	0.1875	0.0048	0.00000114	Slimed Concrete	0.003	1.57	695.3
Proposed New Sewer														
PP01	FTMH01	FMH4022807	--	--	12.2	225	0.040	0.05625	0.0100	0.00000114	PE	0.0003	1.42	56.4

Note:

[1] The roughness coefficient for slimed clayware sewer under poor condition has been adopted; the ks values are 0.6mm for velocities greater than 1.2m/s, otherwise 3mm.
The roughness coefficient for slimed concrete sewer under poor condition has been adopted; the ks values are 3mm for velocities greater than 1.2m/s, otherwise 6mm.
The roughness coefficient for slimed uPVC sewer under poor condition has been adopted for the proposed PE sewer; the ks values are 0.3mm for velocities greater than 1.2m/s, otherwise 1.5mm.

[2] The **bolded underlined information** are based on the Manhole Survey.

[3] The alignment and invert levels of the proposed new sewers are subject to detailed design.

Appendix 3-2: Detailed Calculation of the Sewers

Table B: Utilization of the Sewers

Segment	Upstream Manhole	Downstream Manhole	Full Capacity (L/s)	Catchment	Total catchment discharge (m^3 /day)	Catchment Inflow Factors, P_{CIF} [3]	Total catchment discharge with P_{cif}(m^3/day)	Contribution Population[1]	Peaking Factor[2]	Peak Flow [4] (L/s)	% of full capacity
Existing Downstream Sewers											
PS01	FMH4022807	FMH4022808	299.9	The Site + Catchment A - C	1570.6	1.1	1727.7	5817	5	100.0	33%
PS02	FMH4022808	FMH4022809	468.5	The Site + Catchment A - D & F	2135.1	1.1	2348.6	7908	5	135.9	29%
PS03	FMH4022809	FMH4022810	444.6	The Site + Catchment A - F	2301.5	1.1	2531.6	8524	5	146.5	33%
PS04	FMH4022810	FMH4022768	239.0	The Site + Catchment A - F	2301.5	1.1	2531.6	8524	5	146.5	61%
PS05	FMH4022768	FMH4022769	788.8	The Site + Catchment A - O	6462.5	1.1	7108.8	23935	4	329.1	42%
PS06	FMH4022769	FMH4022770	695.3	The Site + Catchment A - O	6462.5	1.1	7108.8	23935	4	329.1	47%
Proposed New Sewer											
PP01	FTMH01	FMH4022807	56.4	The Site	157.0	1.1	172.7	581	8	16.0	28%

Note:

[1] The contribution population = total catchment discharge (m^3/day) / 0.27(m^3/day/person)

[2] Peaking Factor of 8 for contribution population <1,000 , 6 for contribution population of 1000 - 5000, 5 for contribution population of 5000-10000, 4 for contribution population of 10000-50000 are adopted.

[3] The site is located within Kwai Chung District. The Catchment Inflow Factors of Kwai Chung (=1.1) has been adopted.

[4] Peak Flow = Daily average dry weather flow × Peaking Factor (including stormwater allowance) × Catchment Inflow Factor / 24 / 3600, the operation hour is assumed to be 24 hours.

APPENDIX 3-3
MANHOLE INTERNAL CONDITION SURVEY (MHICS) REPORT

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

Manhole Internal Condition Survey (MHICS) REPORT

Manhole Internal Condition Survey at

Wing Kin Road

Project No.: Y22-US-P-103-002
Report No.: Y22-US-P-103-002-R0_00
CASTCO LRN: US0220618-1
Version: 00
June 2022

Prepared by:

Castco Testing Centre Ltd.

Issue Date:

20th June, 2022

6/F, 33 On Kui Street, Fanling, N.T.
29A On Chuen Street, Fanling, N.T.
1/F, 30 On Kui Street, Fanling, N.T.

Tel: 2597-8333
Fax: 2602-3662
E-mail: info@castco.com.hk / pinky.lee@castco.com.hk
Website: www.castco.com.hk

FOREWORD

This report presents the results of Manhole Internal Condition Survey (MHICS) at Wing Kin Road.

The report is prepared by our specialist in Underground Utility Industry. According to the findings of the survey on site, it has been checked by well-experienced professional to ensure all data and records are in order and accurate.

Prepared by:

Ki HO BEng
Project Coordinator

Checked by:

Pinky LEE
BSc in Surveying, OMHKIUS
Project Manager

Endorsed by:

Stanley CHAN MScSurv
Senior Manager

TABLE OF CONTENT

1. INTRODUCTION

Client information, background and Scope of Survey will be briefed in this Section 1.

1.1 Client Information

Client information is shown in below ***Table 1.1.1***.

Table 1.1.1 – Client information

Project Client:	***KJL Limited***
Project Client's Representative:	Kenneth Li
E-mail:	kjl@kjlpd.com

1.2 Background

Castco Testing Centre Ltd. was appointed by ***KJL Limited*** as their Utility Specialist Contractor to carry out *Manhole Internal Condition Survey (MHICS) at Wing Kin Road, Kwai Chung.*

1.3 Scope of Survey

The work under this contract aims to evaluate the internal condition of manhole at ***Wing Kin Road*** for client's design and construction. The result of manhole survey shall be treated as a reliable base for manhole rehabilitation work including repairing structural defects, satisfying maintenance requirements and eliminating inflow and infiltration.

The service of works shall include all administration and management and field works on all aspects of the utility investigation works within the survey area to identify and locate specified ground and underground utilities, it can be summarized as followed:

Part A - Preparation and operation

1. To preliminary study the site condition and to propose for methods to be adopted
2. To coordinate and liaise with client and other parties involved if needed
3. To carry out Manhole Survey by assets identified within the survey extent with the latest available information from various sources including reconnaissance survey, manhole survey and pipeline investigations (Detailed Methodology is presented in Appendix D – Survey Methodology)
4. QA/QC checks to be conducted by the Project Manager and Survey Crew Leader in house and on site
5. All results generated shall be reviewed and checked by the Project Manager

Part B - Reporting

1. To submit preliminary survey drawing and relevant information if requested to present preliminary result in the interim data analysis period
2. To submit final survey report with drawing to present overall survey result
3. To attend the meeting by our project manager to keep client and consultant updated about the survey progress and preliminary result

2. SURVEY DETAILS AND SITE DESCRIPTION

Details of survey and site location are shown in ***Table 2.1 – Details of Survey***.

Table 2.1 – Details of Survey

Surveyed Location:	Wing Kin Road ***(Figure 2.1)***
Crew Leader:	Mr. C. F. WONG
Survey Duration of Utility Survey:	18th June, 2022

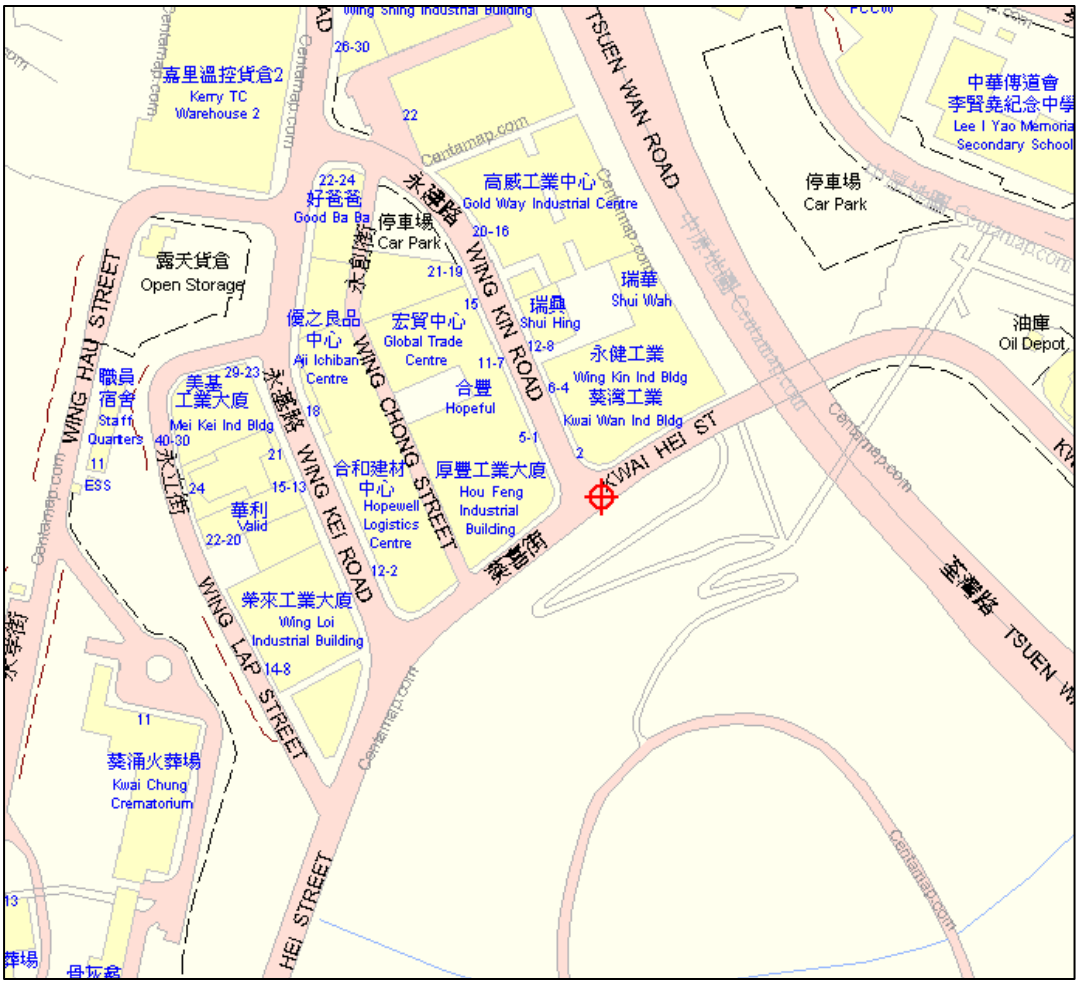


Figure 2.1 – Location plan (Source: CentaMap)

3. SUMMARY OF SURVEY RESULTS

There are ***5*** visible manholes including ***0*** Storm water manholes and ***5*** Foul Water Manholes within the survey boundary and ***5*** no. of manholes had been inspected. Survey location plan has been enclosed in ***Appendix A – Survey Result Drawing*** to present the manholes location and relevant connections. The summary of manhole survey with specified findings is shown in ***Table 3.1 - Summary of Manhole Survey***. Due to the limitation of the condition of site, some of manholes may not be located, inspected satisfactorily or only inspected partially, the reasons or site conditions causing in comprehensive result will be briefed in ***Table 3.1*** as well. More detailed manholes information about its conditions, dimensions and photo records can be found in Manhole Record Forms in ***Appendix B – Manhole Record Forms***.

Table 3.1 – Summary of Manhole Survey

No.	Manhole Ref.	Service Type	Manhole Record Form in Appendix D	Specified findings
1.	FMH4022768	Foul	Y	Broken chamber
2.	FMH4022810	Foul	Y	Broken shaft
3.	FMH4022809	Foul	Y	Broken chamber, benching and iron (4 nos.)
4.	FMH4022808	Foul	Y	Broken benching
5.	FMH4022807	Foul	Y	Broken iron (2 nos.)

4. REFERENCES

- ETWB, 2006, Code of Practice on Monitoring and Maintenance of Water-Carrying Services Affecting Slopes
- Wong King & R.J. Allen, Hong Kong Conduit Condition Evaluation Codes, HKCCEC 2009 (4th Edition), UTI. The Code of Practice on Conduit Condition Evaluation using CCTV in Hong Kong
- Hong Kong Institute of Utility Specialists, Specification for Conduit Condition Evaluation, CCE (CCTV&ME), 2011 Edition
- Hong Kong Institute of Utility Specialists, Specification for Manhole Internal Condition Survey (MHICS), 2011 Edition

5. JOB REFERENCES[1]

- SSE517 – Underground Utility Survey for Construction of a 30-Classroom Secondary School at Site 1A-2, Kai Tak Development – Architectural Services Department
- SSF513 – Underground Utility Survey for Construction of Avenue Park at Kai Tak – Architectural Services Department
- SSF516 – Underground Utility Survey for Construction of a 30-Classroom Primary School at Tonkin Street, Cheung Sha Wan – Architectural Services Department
- HY/2014/09 – Underground Utility Survey for Central Kowloon Route – Ho Man Tin Access Shaft – Highways Department
- K&T C1 of 2017 – Term Contract for Site Investigation for DMW Project in Kwai Tsing (2017-18) – Home Affairs Department
- K&T C2 of 2018 – Term Contract for Site Investigation for DMW Project in Kwai Tsing (2018-19) – Home Affairs Department
- 20150364 – Underground Utility Survey at Construction of Public Rental Housing Development at Choi Yuen Road Site 3 & 4, Sheung Shui – Hong Kong Housing Authority
- 20160605 – Underground Utility Survey for Construction of Public Rental Housing Development of Tung Tau Estate Phase 8 – Hong Kong Housing Authority
- 20170225 – Construction of Public Rental Housing Development Phases 1 & 2 and Subsidised Sale Flats Development at Diamond Hill Comprehensive Development Area – Hong Kong Housing Authority
- 15/WSD/10 – Underground Utility Survey for Expansion of Tai Po Water Treatment Works and Ancillary Raw Water and Fresh Water Transfer Facilities - Design and Build of New Stream II – Water Supplies Department

[1] Only Part of Job References was presented, Full Job References could be provided if requested.

APPENDIX A – SURVEY RESULT DRAWING

GENERAL NOTES :

1. Unit of depth is in metres (m), indicated as #d.
2. Unit of diameter of pipes/cables is in millimeter (mm), indicated as #Ø.
3. Symbols are indicative, and not to scale.
4. Coordinates and Levels are according to the Hong Kong 1980 Grid System and the Hong Kong Principal Datum (HKPD).
5. Width of the line in the drawing is not presenting the actual size of pipes/cables or the width of cables' bundle. Actual width is presented in the table "Summary of Pipes & Cables".
6. The assigned number of each utility alignments with its cable's/pipe's size, range of depth, reference point of presented pipe's/cable's depth and remarks for additional information are summarized and shown in the table "Summary of Pipes & Cables" on the drawing.
7. The assigned number of each utility manholes, pits, valves or gullies with its Cover Level (C.L.) in Metres above Principal Datum (m.P.D.), Invert Level (I.L.), depth and remarks for additional information are summarized and shown in the table "Summary of Manholes, Pits & Valves" on the drawing.
8. The basemap feature is for reference only, additional topographic survey should be carried out if detailed topographical features on ground requested.
9. The size of Pipes/Manholes/Pits/Chambers is from the internal dimension; its thickness is not counted.
10. Survey report shall be reviewed with drawing together as comprehensive survey result presentation.
11. Alignment of power cable located by passive detection is for reference only. Depth measurement from this detection mode is not accurate and should not be relied on. The Electricity Supply Lines (Protection) Regulation requires that all reasonable steps including trial pit shall be taken to ascertain the existence of these electricity cables or lines.

LEGEND :

Foul Manhole

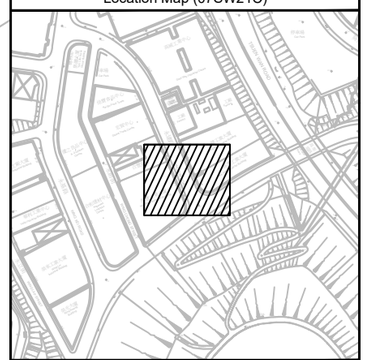
FOUL Foul Water Pipe

Cover

Chamber

Rev.	Date	Drawn by	Description
00	06/2022	Ki Ho	First Issue

Location Map (07SW21C)



PROJECT CLIENT:

KJL Limited

SPECIALIST CONTRACTOR :

CASTCO
佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.
Tel: (852) 2597-8333 / 2597-8002 Fax: (852) 2597-8399/ 2602-3662
E-mail: info@castco.com.hk Website: http://www.castco.com.hk/

PROJECT TITLE :

Manhole Internal Condition Survey
at Wing Kin Road

DRAWING TITLE : Manhole Survey Drawing

A3 Size	Scale: 1:100	Survey Date	June 2022
Prepared By	Pinky Lee	Approved By	Pinky Lee
Project No.	Y22-US-P-103-002		
Drawing No.	Y22-US-P-103-002-D_00		

APPENDIX B – MANHOLE RECORD FORMS

CASTCO

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

Manhole Record

(1) NODE REF. 井序號	FMH4022768														
(6) PROJECT NO. 項目序號	Y22-US-P-103-002			-				(2) GRID REF.	N 824325.801 E 830368.466						
(7) WO NO. 工作單號	--		(9) DSD REF. 渠務署編號	FMH4022768				(3) DRAINAGE AREA CODE	07SW21C						
(10) LOCATION 位置	Wing Kin Road							(4) SURVEYED BY	C. F. WONG						
(11) YEAR LAID 何時造(YYYY)	Unknown	(12) STATUS 狀況*	PU	(13)FUNCTION 用途*	F	(14) NODE TYPE 類別*	M	(5) SURVEY DATE (DD/MM/YYYY)	18/6/2022						
COVER 井蓋	(15) SHAPE 井蓋形狀	S	(16) HINGED 鉸	N	(17) LOCK 鎖	N	(18) DUTY 井蓋厚度*	H	(19) COVER SIZE井蓋大小 (dia.) (mm)	580	X	580	(29)TOXIC ATMOSPHERE毒氣	N	
SHAFT 井頸	(20) SIDE ENTRY 側邊入口	N	(21) REGULAR COURSES 磚	0	(22) DEPTH 井頸深(mm)	615			(23) SHAFT SIZE 井頸大小	575	X	575	(30)EVIDENCE OF VERMIN蟲害	N	
CHAMBER 井膽	(24) SOFFIT 膽頂形狀*	S	(25) STEPS 腳踏級數	4	(26) LADDERS 爬梯級數	0	(27) LNDGS 平台層數	0	(28)CHAMBER SIZE 井膽大小	1980	X	1510	(31)CONSTRUCT CODE 建築方法*	I	

(32) DEPTH OF FLOW 水流深 (mm)	(33) DEPTH OF SILT 泥深 (mm)	(34) HEIGHT SURCH 浸水深(mm)	(61) MH DEPTH 井深(m)	(35) COVER LEVEL (mPD)
300	250	0	2.805	7.391

INCOMING PIPES入水渠務

	(36) UPSTREAM REF. 上游井編號	(37) PIPE SHAPE* 渠筒型狀	(38) PIPE SIZE渠筒大小 (dia.\W) (mm)		(H) (mm)	(39) BACKDROP 跌級 (mm)	(40) PIPE MATERIAL*物料	(41) LINING 內補	(42) PIPE DEPTH 渠筒底深(m)	(43)INVERT LEVEL (m)
A	FMH4022767	C	225	X			CO	N	2.715	4.674
B	FMH4022810	C	400	X			VC	N	2.375	5.014
C	FMH4052921	C	300(270)	X			LINING	Y	2.105	5.284
D				X						
E				X						
F				X						
G				X						
H				X						

OUTGOING PIPES出水渠務

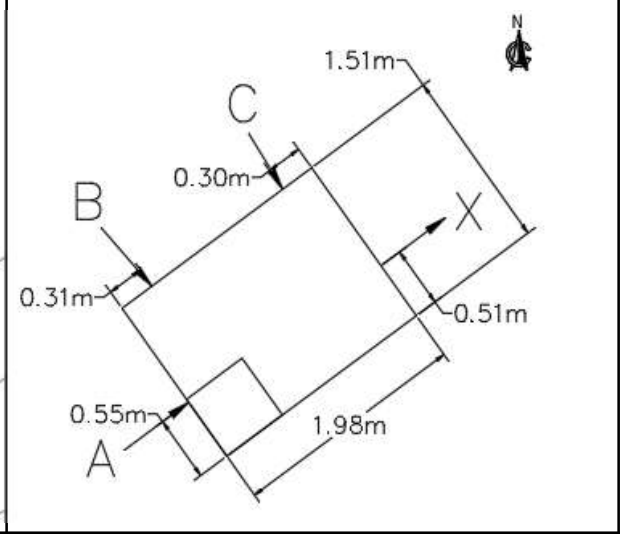
	(36) DOWNSTREAM REF. 下游井編號					(44) CCTV COND 是否做過CCTV				
X	FMH4022769	C	750(675)	X			LINING	Y	2.805	4.584
Y				X						

CONDITIONS 有損壞 (Y if attention required)	(46) COVER 井蓋	(47) IRON/ LADDER 腳踏/爬梯/平台	(48) SHAFT 井頸	(49) CHAMBER 井膽	(50) BENCHING 馬枕	(51) OTHER 其他
	N	N	N	Y	N	N
(52) PHOTO NO.	--	--	--	P7-8	--	--

(53) UTR	N	(59) LOACTION PHOTO No. 位置相	P1	(63) REMARKS: Broken chamber. Cover level of lowest reference point for manhole measurement is 7.389mPD.
(54) UTL	N			
(55) UTGA	N	(60) INTERNAL PHOTO No.內部相	P2-6	(64) RECORD PLAN DIFFERENCE 測量結果與已有資料不同: Y — (Y if attention required) 如有: - GNC is a 300mm dia Incoming pipe instead of 375mm dia indicated in record plan.
(56) UTS	N			
(57) JETTING	N	SLOPE NO斜坡編號.: (If slope involved in project)	--	(65) COVER TYPE: ~~STANDARD 二人井~~ STANDARD-LARGE大二人井 ~~MULTIPLE COVER 九宮格~~ ~~LARGE 四人井~~ ~~WITH DECORATION COVER裝飾蓋~~ ~~OTHERS: ( )~~
(58) ON-SLOPE 位於斜坡	N			

(66) Location Sketch

(67) Plan of MH



(68) With Risk Assessment	N
(69) With Permit to Work	N
(70) With Traffic Permit	N

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022768 -P1
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Manhole Location Photo
Remark :

Photograph No. : FMH4022768 -P2
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark :

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022768 -P3
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Incoming pipe A

Photograph No. : FMH4022768 -P4
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Incoming pipe B

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022768 -P5
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Incoming pipe C

Photograph No. : FMH4022768 -P6
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Outgoing pipe X

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022768 -P7
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Broken chamber

Photograph No. : FMH4022768 -P8
Location : Wing Kin Road
Manhole Reference : FMH4022768
Description : Internal Condition Photo
Remark : Broken chamber

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CASTCO TESTING CENTRE LTD.

Manhole Record

(1) NODE REF. 井序號	FMH4022810														
(6) PROJECT NO. 項目序號	Y22-US-P-103-002			-					(2) GRID REF.	N 824332.557 E 830362.607					
(7) WO NO. 工作單號	--		(9) DSD REF. 渠務署編號	FMH4022810					(3) DRAINAGE AREA CODE	07SW21C					
(10) LOCATION 位置	Wing Kin Road								(4) SURVEYED BY	C. F. WONG					
(11) YEAR LAID 何時造(YYYY)	Unknown	(12) STATUS 狀況*	PU	(13)FUNCTION 用途*	F	(14) NODE TYPE 類別*	M		(5) SURVEY DATE (DD/MM/YYYY)	18/6/2022					
									(dia.) (mm)						
COVER 井蓋	(15) SHAPE 井蓋形狀	S	(16) HINGED 鉸	N	(17) LOCK 鎖	N	(18) DUTY 井蓋厚度*	H	(19) COVER SIZE井蓋大小	580	X	580	(29)TOXIC ATMOSPHERE毒氣	N	
SHAFT 井頸	(20) SIDE ENTRY 側邊入口	N	(21) REGULAR COURSES 磚	0	(22) DEPTH 井頸深(mm)	745			(23) SHAFT SIZE 井頸大小	570	X	550	(30)EVIDENCE OF VERMIN蟲害	N	
CHAMBER 井膽	(24) SOFFIT 膽頂形狀*	S	(25) STEPS 腳踏級數	3	(26) LADDERS 爬梯級數	0	(27) LNDGS 平台層數	0	(28)CHAMBER SIZE 井膽大小	980	X	1260	(31)CONSTRUCT CODE 建築方法*	I	

(32) DEPTH OF FLOW 水流深 (mm)	(33) DEPTH OF SILT 泥深 (mm)	(34) HEIGHT SURCH 浸水深(mm)	(61) MH DEPTH 井深(m)	(35) COVER LEVEL (mPD)
300	0	0	2.419	7.540

INCOMING PIPES入水渠道

	(36) UPSTREAM REF. 上游井編號	(37) PIPE SHAPE* 渠筒型狀	(38) PIPE SIZE渠筒大小 (dia. \ W) (mm)	(H) (mm)	(39) BACKDROP 跌級 (mm)	(40) PIPE MATERIAL*物料	(41) LINING 內補	(42) PIPE DEPTH 渠筒底深(m)	(43)INVERT LEVEL (m)
A	FMH4022809	C	400 X			VC	N	2.418	5.106
B			X						
C			X						
D			X						
E			X						
F			X						
G			X						
H			X						

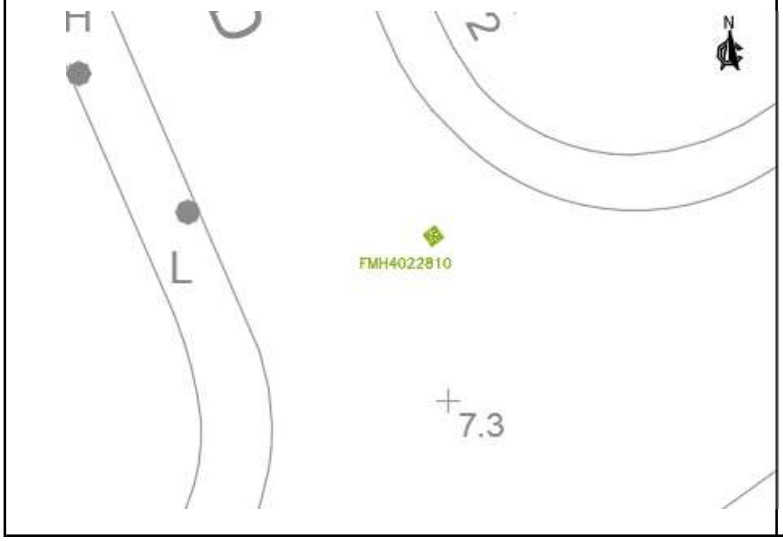
OUTGOING PIPES出水渠道

	(36) DOWNSTREAM REF. 下游井編號				(44) CCTV COND 是否做過CCTV				
X	FMH4022768	C	400 X			VC	N	2.419	5.105
Y			X						

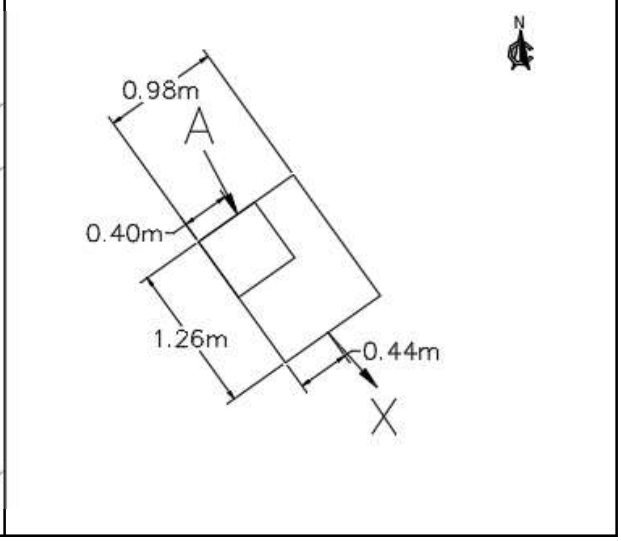
CONDITIONS 有損壞 (Y if attention required)	(46) COVER 井蓋	(47) IRON/ LADDER 腳踏/爬梯/平台	(48) SHAFT 井頸	(49) CHAMBER 井膽	(50) BENCHING 馬枕	(51) OTHER 其他
	N	N	Y	N	N	N
(52) PHOTO NO.	--	--	P5	--	--	--

(53) UTR	N	(59) LOACTION PHOTO No. 位置相	P1	(63) REMARKS Broken shaft. Cover level of lowest reference point for manhole measurement is 7.524mPD.
(54) UTL	N			
(55) UTGA	N	(60) INTERNAL PHOTO No.內部相	P2-4	(64) RECORD PLAN DIFFERENCE 測量結果與已有資料不同: N (Y if attention required) 如有:
(56) UTS	N			
(57) JETTING	N	SLOPE NO斜坡編號.: (If slope involved in project)	--	(65) COVER TYPE STANDARD 二人井 / STANDARD-LARGE大二人井 / MULTIPLE COVER 九宮格 / LARGE 四人井 / WITH DECORATION COVER裝飾蓋 / OTHERS: ( )
(58) ON-SLOPE 位於斜坡	N			

(66) Location Sketch



(67) Plan of MH



(68) With Risk Assessment	N
(69) With Permit to Work	N
(70) With Traffic Permit	N

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022810 -P1
Location : Wing Kin Road
Manhole Reference : FMH4022810
Description : Manhole Location Photo
Remark :

Photograph No. : FMH4022810 -P2
Location : Wing Kin Road
Manhole Reference : FMH4022810
Description : Internal Condition Photo
Remark :

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022810 -P3
Location : Wing Kin Road
Manhole Reference : FMH4022810
Description : Internal Condition Photo
Remark : Incoming pipe A

Photograph No. : FMH4022810 -P4
Location : Wing Kin Road
Manhole Reference : FMH4022810
Description : Internal Condition Photo
Remark : Outgoing pipe X

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. :	FMH4022810 -P5
Location :	Wing Kin Road
Manhole Reference :	FMH4022810
Description :	Internal Condition Photo
Remark :	Broken shaft

BLANK

Photograph No. :	
Location :	
Manhole Reference :	
Description :	
Remark :	

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CASTCO TESTING CENTRE LTD.

Manhole Record

(1) NODE REF. 井序號	FMH4022809														
(6) PROJECT NO. 項目序號	Y22-US-P-103-002			-				(2) GRID REF.	N 824344.777 E 830356.293						
(7) WO NO. 工作單號	--		(9) DSD REF. 渠務署編號	FMH4022809				(3) DRAINAGE AREA CODE	07SW21C						
(10) LOCATION 位置	Wing Kin Road							(4) SURVEYED BY	C. F. WONG						
(11) YEAR LAID 何時造(YYYY)	Unknown	(12) STATUS 狀況*	PU	(13)FUNCTION 用途*	F	(14) NODE TYPE 類別*	M	(5) SURVEY DATE (DD/MM/YYYY)	18/6/2022						
COVER 井蓋	(15) SHAPE 井蓋形狀	S	(16) HINGED 鉸	N	(17) LOCK 鎖	N	(18) DUTY 井蓋厚度*	H	(19) COVER SIZE井蓋大小 (dia.) (mm)	580	X	580	(29)TOXIC ATMOSPHERE毒氣	N	
SHAFT 井頸	(20) SIDE ENTRY 側邊入口	N	(21) REGULAR COURSES 磚	20	(22) DEPTH 井頸深(mm)	505			(23) SHAFT SIZE 井頸大小	600	X	610	(30)EVIDENCE OF VERMIN蟲害	N	
CHAMBER 井膽	(24) SOFFIT 膽頂形狀*	S	(25) STEPS 腳踏級數	4	(26) LADDERS 爬梯級數	0	(27) LNDGS 平台層數	0	(28)CHAMBER SIZE 井膽大小	1365	X	955	(31)CONSTRUCT CODE 建築方法*	I	

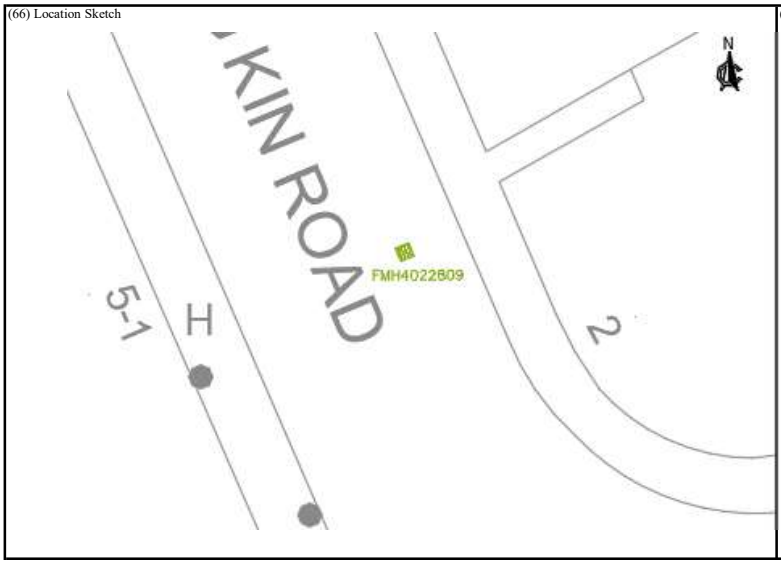
(32) DEPTH OF FLOW 水流深 (mm)	(33) DEPTH OF SILT 泥深 (mm)	(34) HEIGHT SURCH 浸水深(mm)	(61) MH DEPTH 井深(m)	(35) COVER LEVEL (mPD)
300	0	0	2.545	8.163

	(36) UPSTREAM REF. 上游井編號	(37) PIPE SHAPE* 渠筒型狀	(38) PIPE SIZE渠筒大小 (dia. \ W) (mm)		(H) (mm)	(39) BACKDROP 跌級 (mm)	(40) PIPE MATERIAL*物料	(41) LINING 內補	(42) PIPE DEPTH 渠筒底深(m)	(43)INVERT LEVEL (m)
INCOMING PIPES入水渠筒 A	FMH4022808	C	400	X			VC	N	2.460	5.682
B	GNB	C	150	X			VC	N	1.725	6.417
C				X						
D				X						
E				X						
F				X						
G				X						
H				X						
	(36) DOWNSTREAM REF. 下游井編號					(44) CCTV COND 是否做過CCTV				
OUTGOING PIPES出水渠筒 X	FMH4022810	C	400	X			VC	N	2.545	5.597
Y				X						

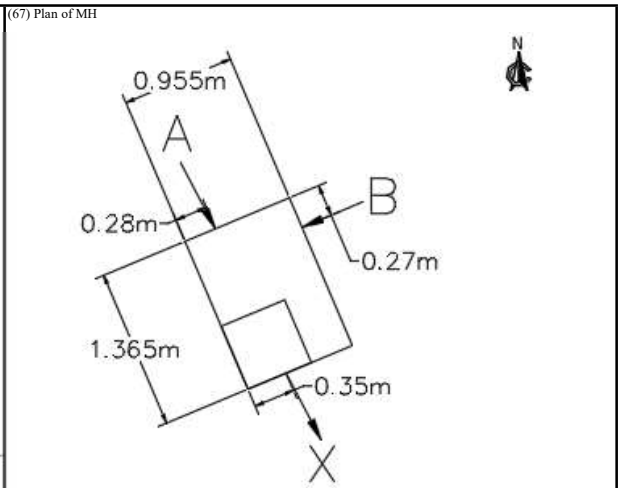
CONDITIONS 有損壞 (Y if attention required)	(46) COVER 井蓋	N	(47) IRON/ LADDER 腳踏/爬梯/平台	Y	(48) SHAFT 井頸	N	(49) CHAMBER 井膽	Y	(50) BENCHING 馬枕	Y	(51) OTHER 其他	N
(52) PHOTO NO.	--		P6		--		P8		P7		--	

(53) UTR	N	(59) LOACTION PHOTO No. 位置相	P1	(63) REMARKS: Broken, chamber, benching and iron (4 nos.). Cover level of lowest reference point for manhole measurement is 8.142mPD.
(54) UTL	N			
(55) UTGA	N	(60) INTERNAL PHOTO No.內部相	P2-5	(64) RECORD PLAN DIFFERENCE 測量結果與已有資料不同: Y — (Y if attention required) 如有:- GNB is a 150mm dia Outgoing pipe instead of 225mm dia indicated in record plan.
(56) UTS	N			
(57) JETTING	N	SLOPE NO斜坡編號.: (If slope involved in project)	--	(65) COVER TYPE: ~~STANDARD 二人井~~ STANDARD-LARGE大二人井 ~~MULTIPLE COVER 九宮格~~ ~~LARGE 四人井~~ ~~WITH DECORATION COVER裝飾蓋~~ ~~OTHERS: ( )~~
(58) ON-SLOPE 位於斜坡	N			

(66) Location Sketch



(67) Plan of MH



(68) With Risk Assessment	N
(69) With Permit to Work	N
(70) With Traffic Permit	N

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022809 -P1
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Manhole Location Photo
Remark :

Photograph No. : FMH4022809 -P2
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Internal Condition Photo
Remark :

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022809 -P3
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Internal Condition Photo
Remark : Incoming pipe A

Photograph No. : FMH4022809 -P4
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Internal Condition Photo
Remark : Incoming pipe B

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. :	FMH4022809 -P5
Location :	Wing Kin Road
Manhole Reference :	FMH4022809
Description :	Internal Condition Photo
Remark :	Outgoing pipe X

Photograph No. :	FMH4022809 -P6
Location :	Wing Kin Road
Manhole Reference :	FMH4022809
Description :	Internal Condition Photo
Remark :	Broken iron

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022809 -P7
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Internal Condition Photo
Remark : Broken benching

Photograph No. : FMH4022809 -P8
Location : Wing Kin Road
Manhole Reference : FMH4022809
Description : Internal Condition Photo
Remark : Broken chamber

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佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

Manhole Record

(1) NODE REF. 井序號	FMH4022808														
(6) PROJECT NO. 項目序號	Y22-US-P-103-002			-						(2) GRID REF.	N 824354.119 E 830351.744				
(7) WO NO. 工作單號	--		(9) DSD REF. 渠務署編號	FMH4022808						(3) DRAINAGE AREA CODE	07SW21C				
(10) LOCATION 位置	Wing Kin Road									(4) SURVEYED BY	C. F. WONG				
(11) YEAR LAID 何時造(YYYY)	Unknown	(12) STATUS 狀況*	PU	(13)FUNCTION 用途*	F	(14) NODE TYPE 類別*	M			(5) SURVEY DATE (DD/MM/YYYY)	18/6/2022				
COVER 井蓋	(15) SHAPE 井蓋形狀	S	(16) HINGED 鉸	N	(17) LOCK 鎖	N	(18) DUTY 井蓋厚度*	H	(19) COVER SIZE井蓋大小 (dia.) (mm)	580	X	580	(29)TOXIC ATMOSPHERE毒氣	N	
SHAFT 井頸	(20) SIDE ENTRY 側邊入口	N	(21) REGULAR COURSES 磚	5	(22) DEPTH 井頸深(mm)	450			(23) SHAFT SIZE 井頸大小	555	X	550	(30)EVIDENCE OF VERMIN蟲害	N	
CHAMBER 井膽	(24) SOFFIT 膽頂形狀*	S	(25) STEPS 腳踏級數	3	(26) LADDERS 爬梯級數	0	(27) LNDGS 平台層數	0	(28)CHAMBER SIZE 井膽大小	990	X	1400	(31)CONSTRUCT CODE 建築方法*	I	

(32) DEPTH OF FLOW 水流深 (mm)	(33) DEPTH OF SILT 泥深 (mm)	(34) HEIGHT SURCH 浸水深(mm)	(61) MH DEPTH 井深(m)	(35) COVER LEVEL (mPD)
300	0	0	2.600	8.712

INCOMING PIPES入水渠務

	(36) UPSTREAM REF. 上游井編號	(37) PIPE SHAPE* 渠筒型狀	(38) PIPE SIZE渠筒大小 (dia.\W) (mm)		(H) (mm)	(39) BACKDROP 跌級 (mm)	(40) PIPE MATERIAL*物料	(41) LINING 內補	(42) PIPE DEPTH 渠筒底深(m)	(43)INVERT LEVEL (m)
A	FMH4022807	C	400	X			VC	N	2.510	6.176
B	GNB	C	225	X			VC	N	1.884	6.802
C	FMH4022812	C	300(250)	X			LINING	Y	2.502	6.184
D				X						
E				X						
F				X						
G				X						
H				X						

OUTGOING PIPES出水渠務

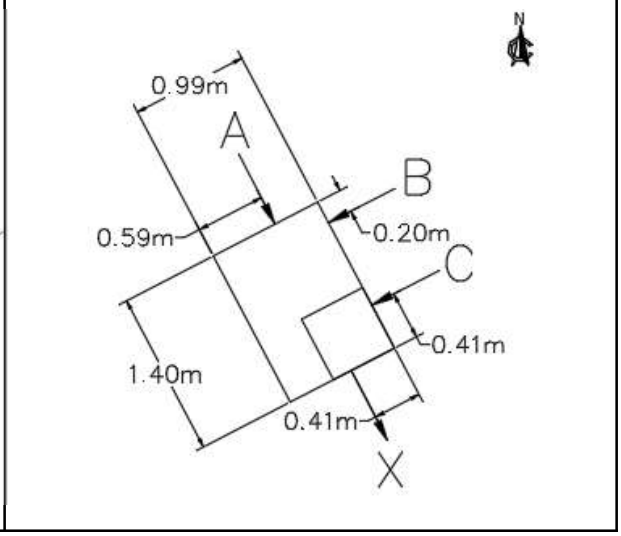
	(36) DOWNSTREAM REF. 下游井編號					(44) CCTV COND 是否做過CCTV				
X	FMH4022809	C	400	X			VC	N	2.600	6.086
Y				X						

CONDITIONS 有損壞 (Y if attention required)	(46) COVER 井蓋	(47) IRON/ LADDER 腳踏/爬梯/平台	(48) SHAFT 井頸	(49) CHAMBER 井膽	(50) BENCHING 馬枕	(51) OTHER 其他
	N	N	N	N	Y	N
(52) PHOTO NO.	--	--	--	--	P7	--

(53) UTR	N	(59) LOACTION PHOTO No. 位置相	P1	(63) REMARKS: Broken benching. Cover level of lowest reference point for manhole measurement is 8.686mPD.
(54) UTL	N			
(55) UTGA	N	(60) INTERNAL PHOTO No.內部相	P2-6	(64) RECORD PLAN DIFFERENCE 測量結果與已有資料不同: N (Y if attention required) 如有:
(56) UTS	N			
(57) JETTING	N	SLOPE NO斜坡編號.: (If slope involved in project)	--	(65) COVER TYPE: ~~STANDARD 二人井~~ / STANDARD-LARGE大二人井 / ~~MULTIPLE COVER 九宮格~~ / ~~LARGE 四人井~~ / ~~WITH DECORATION COVER裝飾蓋~~ / ~~OTHERS: ( )~~
(58) ON-SLOPE 位於斜坡	N			

(66) Location Sketch

(67) Plan of MH



(68) With Risk Assessment	N
(69) With Permit to Work	N
(70) With Traffic Permit	N

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022808 -P1
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Manhole Location Photo
Remark :

Photograph No. : FMH4022808 -P2
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark :

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022808 -P3
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark : Incoming pipe A

Photograph No. : FMH4022808 -P4
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark : Incoming pipe B

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022808 -P5
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark : Incoming pipe C

Photograph No. : FMH4022808 -P6
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark : Outgoing pipe X

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022808 -P7
Location : Wing Kin Road
Manhole Reference : FMH4022808
Description : Internal Condition Photo
Remark : Broken benching

BLANK

Photograph No. :
Location :
Manhole Reference :
Description :
Remark :

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CASTCO TESTING CENTRE LTD.

Manhole Record

(1) NODE REF. 井序號	FMH4022807														
(6) PROJECT NO. 項目序號	Y22-US-P-103-002			-					(2) GRID REF.	N 824366.984 E 830345.076					
(7) WO NO. 工作單號	--		(9) DSD REF. 渠務署編號	FMH4022807					(3) DRAINAGE AREA CODE	07SW21C					
(10) LOCATION 位置	Wing Kin Road								(4) SURVEYED BY	C. F. WONG					
(11) YEAR LAID 何時造(YYYY)	Unknown	(12) STATUS 狀況*	PU	(13)FUNCTION 用途*	F	(14) NODE TYPE 類別*	M		(5) SURVEY DATE (DD/MM/YYYY)	18/6/2022					
COVER 井蓋	(15) SHAPE 井蓋形狀	S	(16) HINGED 鉸	N	(17) LOCK 鎖	N	(18) DUTY 井蓋厚度*	H	(19) COVER SIZE井蓋大小 (dia.) (mm)	580	X	580	(29)TOXIC ATMOSPHERE毒氣	N	
SHAFT 井頸	(20) SIDE ENTRY 側邊入口	N	(21) REGULAR COURSES 磚	0	(22) DEPTH 井頸深(mm)	1825			(23) SHAFT SIZE 井頸大小	540	X	540	(30)EVIDENCE OF VERMIN蟲害	N	
CHAMBER 井膽	(24) SOFFIT 膽頂形狀*	S	(25) STEPS 腳踏級數	4	(26) LADDERS 爬梯級數	0	(27) LNDGS 平台層數	0	(28)CHAMBER SIZE 井膽大小	1530	X	1210	(31)CONSTRUCT CODE 建築方法*	I	

(32) DEPTH OF FLOW 水流深 (mm)	(33) DEPTH OF SILT 泥深 (mm)	(34) HEIGHT SURCH 浸水深(mm)	(61) MH DEPTH 井深(m)	(35) COVER LEVEL (mPD)
300	0	0	3.180	9.602

INCOMING PIPES入水渠務

	(36) UPSTREAM REF. 上游井編號	(37) PIPE SHAPE* 渠筒型狀	(38) PIPE SIZE渠筒大小 (dia. \ W) (mm)		(H) (mm)	(39) BACKDROP 跌級 (mm)	(40) PIPE MATERIAL*物料	(41) LINING 內補	(42) PIPE DEPTH 渠筒底深(m)	(43)INVERT LEVEL (m)
A	GNA	C	225	X			VC	N	2.825	6.755
B	FMH4052922	C	225	X			VC	N	2.380	7.200
C	GNC	C	150	X			VC	N	1.610	7.970
D				X						
E				X						
F				X						
G				X						
H				X						

OUTGOING PIPE出水渠務

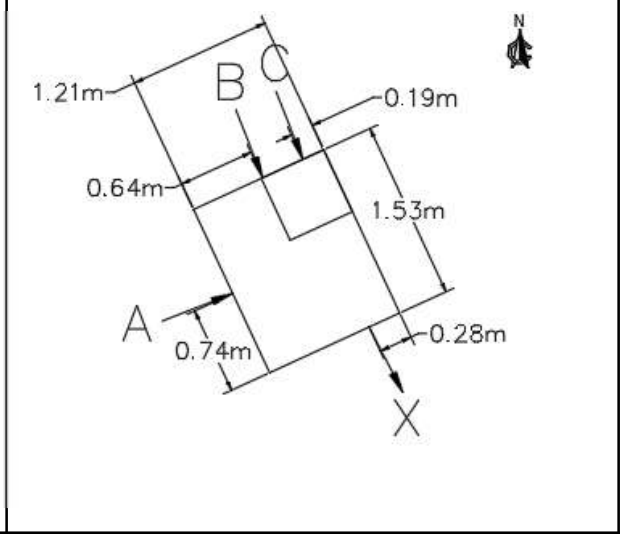
	(36) DOWNSTREAM REF. 下游井編號					(44) CCTV COND 是否做過CCTV				
X	FMH4022808	C	400	X			VC	N	3.180	6.400
Y				X						

CONDITIONS 有損壞 (Y if attention required)	(46) COVER 井蓋	(47) IRON/ LADDER 腳踏/爬梯/平台	(48) SHAFT 井頸	(49) CHAMBER 井膽	(50) BENCHING 馬枕	(51) OTHER 其他
	N	Y	N	N	N	N
(52) PHOTO NO.	--	P7	--	--	--	--

(53) UTR	N	(59) LOACTION PHOTO No. 位置相	P1	(63) REMARKS: Broken iron (2 nos.). Cover level of lowest reference point for manhole measurement is 9.580mPD.
(54) UTL	N			
(55) UTGA	N	(60) INTERNAL PHOTO No.內部相	P2-6	(64) RECORD PLAN DIFFERENCE 測量結果與已有資料不同: Y — (Y if attention required) 如有: -Additional one 225mm dia. Incoming pipe A & one 150mm dia. Incoming pipe C in plan of MH existed.
(56) UTS	N			
(57) JETTING	N	SLOPE NO斜坡編號.: (If slope involved in project)	--	(65) COVER TYPE: ~~STANDARD 二人井~~ STANDARD-LARGE大二人井 ~~MULTIPLE COVER 九宮格~~ ~~LARGE 四人井~~ ~~WITH DECORATION COVER裝飾蓋~~ ~~OTHERS: ( )~~
(58) ON-SLOPE 位於斜坡	N			

(66) Location Sketch

(67) Plan of MH



(68) With Risk Assessment	N
(69) With Permit to Work	N
(70) With Traffic Permit	N

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022807 -P1
Location : Wing Kin Road
Manhole Reference : FMH4022807
Description : Manhole Location Photo
Remark :

Photograph No. : FMH4022807 -P2
Location : Wing Kin Road
Manhole Reference : FMH4022807
Description : Internal Condition Photo
Remark :

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. :
FMH4022807 -P3

Location :
Wing Kin Road

Manhole Reference :
FMH4022807

Description :
Internal Condition Photo

Remark :
Incoming pipe A

Photograph No. :
FMH4022807 -P4

Location :
Wing Kin Road

Manhole Reference :
FMH4022807

Description :
Internal Condition Photo

Remark :
Incoming pipe B

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. :
FMH4022807 -P5

Location :
Wing Kin Road

Manhole Reference :
FMH4022807

Description :
Internal Condition Photo

Remark :
Incoming pipe C

Photograph No. :
FMH4022807 -P6

Location :
Wing Kin Road

Manhole Reference :
FMH4022807

Description :
Internal Condition Photo

Remark :
Outgoing pipe X

CASTCO 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

Manhole Survey Photographs

Contract No.: Y22-US-P-103-002
Location: Wing Kin Road

Photograph No. : FMH4022807 -P7
Location : Wing Kin Road
Manhole Reference : FMH4022807
Description : Internal Condition Photo
Remark : Broken iron

BLANK

Photograph No. :
Location :
Manhole Reference :
Description :
Remark :

APPENDIX C – SURVEY METHODOLOGY

Dimensional Requirements

All dimensions should be measured in accordance with the description stated in ***Figure A & B.*** Leader should counter check this for accuracy and logicality before leaving the site.

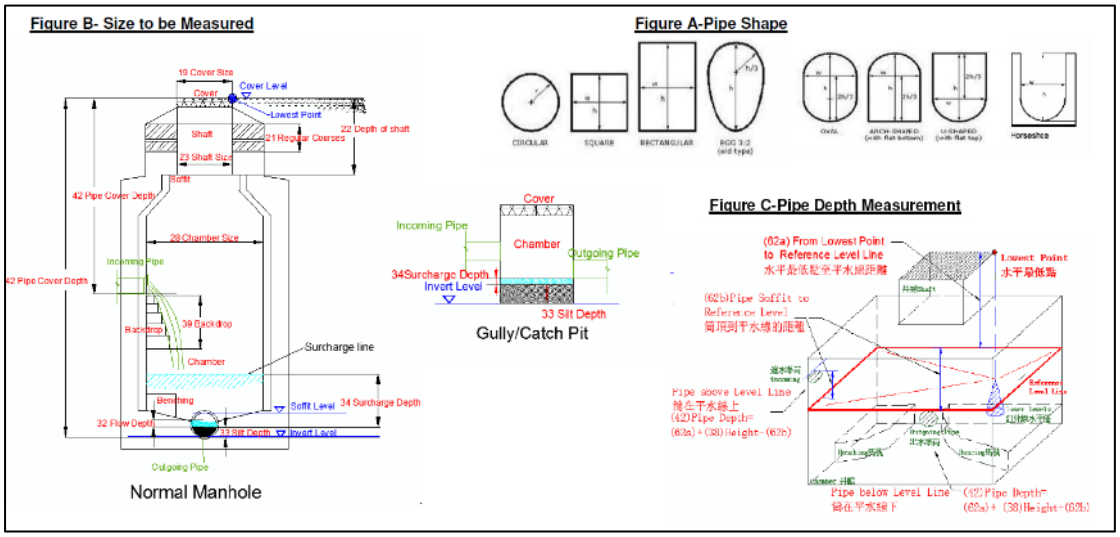


Figure A – Manholes dimensions to be measured

APPENDIX D – QUICK REFERENCE FOR MANHOLE CODES

Quick Reference for Manhole Survey Record Form (Site Record)

Field No.	Description		Code			Remarks
9	DSD Reference	渠務署編號（井內標牌）	-	-	-	井內標識牌
12	Status	井狀況	PU	Public	位於公眾地方	
			PR	Private	位於私人地方	
			HD	Highway drain	位於高速公路	
			WA	Watercourse	位於河道	
			TR	Trunk	位於幹渠	
			AB	Abandoned	廢棄	
			TC	To be constructed	待建	
			HC	Housing Committee	房屋署	
			WA	Water Company Maintained	水務署	
			U	Unspecified	不清楚	
13	Function	井用途	F	Foul	污水	
			S	Surface	清水	
			C	Combined	混合	
			O	Overflow	溢流	
			U	Unspecified	不清楚	
14	Node Type	井類別	A	Catch Pit	隔沙井	
			B	Hydrobrake	攔水膽	
			C	Cascade	跌級	
			D	Dual function Manhole	雙功能井	
			E	Ejector		
			F	Outfall	排水口	
			G	Ghost	暗井	
			H	Hatchbox		
			I	Inlet	明渠駁入口	
			J	Junction(Saddle)	渠筒打針位	
			K	Combined	混合	
			L	Lamphole	燈柱	
			M	Manhol	沙井	
			N	Dead End	非正常中斷點	
			O	Oil Inteerceptor	隔油	
			P	Pumping Station	泵站	
			Q	Transition	中途井	
			R	Rodding eye	疏通蓋	
			S	Soak-away	污水滲透坑	
			T	Vent Column	沼氣通風柱	
			U	Unspecified	不清楚	
			V	Storm Overflow	雨水溝道（救命井）	
			W	Treatment works	污水處理廠	
			X	Unreliable	不可信	
			Y	Gully	讀羅	
			Z	Ghost in rising main	泵送壓力管道閘井	
15	Cover Shape	井蓋形狀	S	Square	正方形	
			R	Retangular	長方形	
			T	Triangular	三角形	
			D	Dobule Triangular	雙三角	
			C	Circular	圓形	
			U	Unspecified	不規則	
18	Cover Duty	井蓋厚度	L	Light	輕	
			M	Medium	中	
			H	Heavy	重	
			U	Unspecified	不清楚	
21	Regular Courses	磚	-	-	-	井頸表面鋪磚有幾層（一滿圈為一層，不滿圈不計）

Field No.	Description		Code			Remarks
24	Soffit	腰頂形狀	S	Reducing Slab	平	
			T	Taper	漸尖	
			A	Arch	拱	
			C	Corbel	坎梁	
			N	None	無腰頂	
			U	Unspecified	不規則	
31	Construct Code	井體建築方法	B	Brick	磚	
			P	Pre-cast Units	混凝土預製件	
			I	In-Situ	現場澆築	
			S	Segmental	節段	
			R	Rendered		
			U	Unspecified	不清楚	
37	Pipe Shape	渠筒形狀	A	Arch(with flat-bottom)	拱形（平底）	
			B	Barrel	水桶形	
			C	Circular	圓形	
			E	Egg	蛋形	
			F	U-shaped(with flat-top)	U形（平頂）	
			H	Horseshoe，inverted	馬蹄鐵形	
			O	Oval	橢圓形	
			R	Rectangular	長方形	
			S	Square	正方形	
			T	Trapezodial	梯形	
			U	Unspecified	不規則	
40	Pipe Material	渠筒物料	AK	Alkathene	高壓聚乙烯	
			AC	Asbestos Cement	石綿	
			BR	Brick	磚	
			CI	Cast Iron	生鐵	
			CO	Concrete	混凝土	
			CSB	Concrete Segemnts Bolted	混凝土製分節段（有鎖釘）	
			CSU	Concrete Segemnts	混凝土製分節段（無鎖釘）	
			CC	Concrete Box Culvert	混凝土製方形渠箱	
			DI	Ductile Iron	球墨鑄鐵	
			GRC	Glass Reinforced	玻璃纖維增強混凝土	
			GRP	Glass Reinforced	玻璃纖維增強塑膠	
			PSC	Plastic/Steel Composite	塑膠/鋼複合材料	
			PVC	Polyvinyl Chloride	聚氯乙烯	
			PE	Polyethylene	聚乙烯	
			RPM	Reinforced Plastic Matrix	強化塑膠複合材料	
			SI	Spun Iron	離心精鑄鐵	
			ST	Steel	鋼	
			VC	Vitrified Clay	瓦	
			PP	Polypropylene	聚丙烯	
			PF	Pitch Fibre	瀝青纖維	
			MAC	Masonry, coursed	特定石圍	
			MAR	Masonry, random	石圍,沒特定	
			U	Unspecified	不清楚	
62a	平水線深度					Figure C
62b	渠筒到平水線距離					
65	Cover Type	井蓋類型		Standard	二人井	520x520mm
				Standard-Large	大二人井	580x580mm
				Multiple Cover	九宮格	
				Large	四人井	
				With Decoration Cover	裝飾蓋	
				Others	其他	

Figure B - Manholes coding

Survey Field Record

The Manhole record card should be filled in by the team leader or by well experienced staff in accordance with the format as shown in ***Figure C***

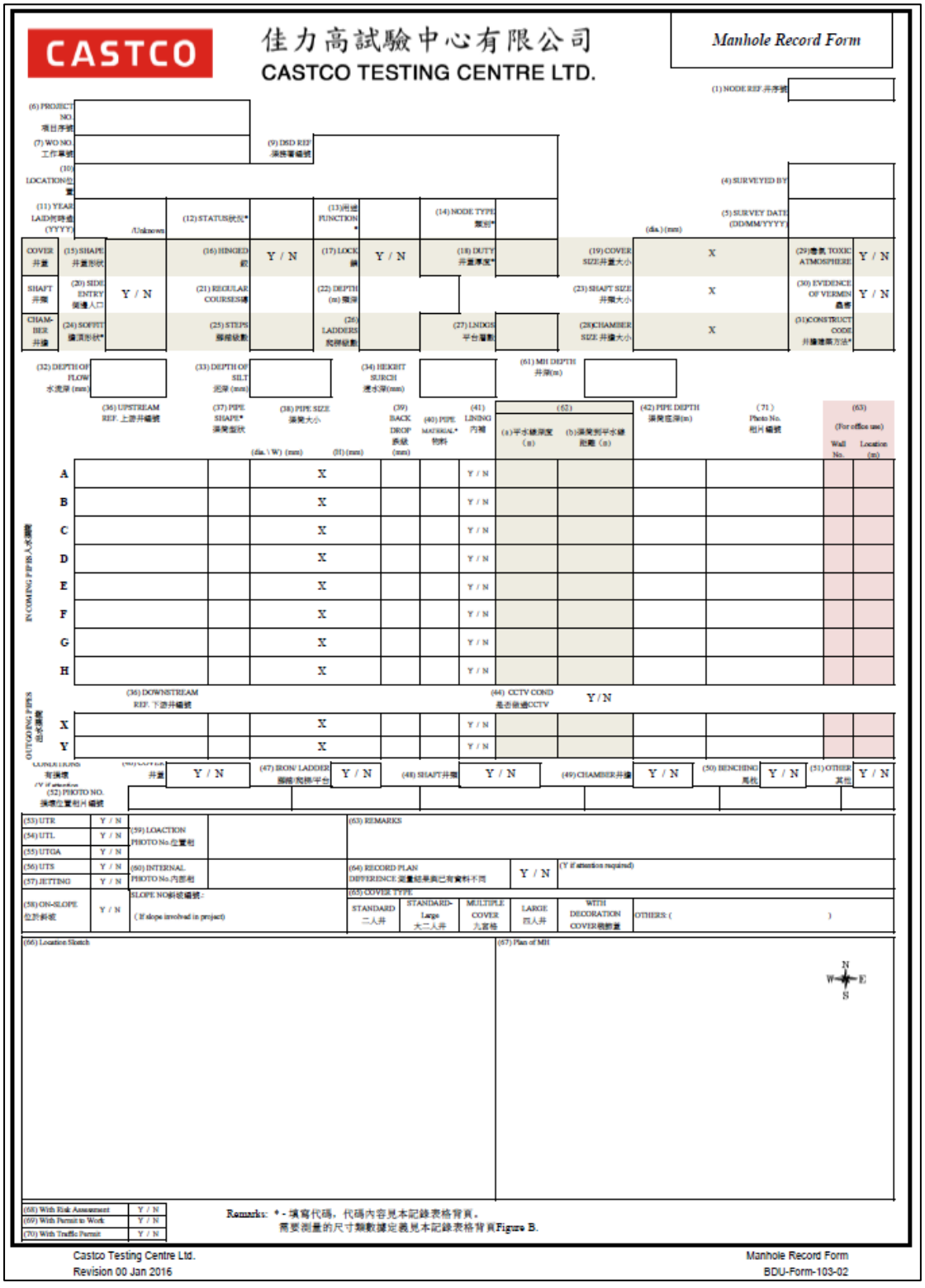


Figure C – Survey form

APPENDIX E – ELECTRONIC COPY OF SURVEY RESULT