

Appendix 7.1

Land Contamination Review

Water Supplies Department
**Ngau Tam Mei Water Treatment
Works Extension**
Land Contamination Review

282551-REP-142-02

Revised | 6 February 2024

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 282551

Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

ARUP

Contents

	Page	
1	Introduction	1
1.1	Background	1
1.2	Description of the Project	1
1.3	EIA Study Brief	3
1.4	Assessment Area and Site Location	3
1.5	Objectives of this Land Contamination Review	4
1.6	Statutory Legislation and Evaluation Criteria	4
2	Site Appraisal	6
2.1	Desktop Review	6
2.2	Aerial Photographs and Historical Land Uses	6
2.3	Site Geology	7
2.4	Site Survey	7
2.5	Other Relevant Information	8
2.6	Future Land Uses	9
3	Potentially Contaminated Area	10
3.1	Identification of Potentially Contaminated Area	10
4	Conclusion	11

Figures

Figure 1.1 Location of Project

Tables

Table 1 – Summary of historical aerial photographs for the area within the Assessment Areas	6
Table 2 – Summary of site survey findings	8

Appendices

Appendix A

Historical Aerial Photographs

Appendix B

Site Photo Record

Appendix C

Relevant Correspondence with FSD

Appendix D

Relevant Correspondence with EPD

1 Introduction

1.1 Background

- 1.1.1.1 The existing Ngau Tam Mei Water Treatment Works (NTM WTW) and associated treated water transfer and distribution system were commissioned in Year 2000 to provide treated water capacity of 230,000m³/day. The treated water is supplied to Yuen Long, Ngau Tam Mei, San Tin and Mai Po Areas.
- 1.1.1.2 With consideration on the planned and potential developments in Yuen Long area, the future water demand will render the existing water treatment capacity of NTM WTW to be exceeded by Year 2030. In this connection, it is necessary to expand and upgrade the existing NTM WTW and treated water transfer and distribution systems by end of Year 2030 to meet the development programme.
- 1.1.1.3 Ove Arup & Partners Hong Kong Ltd (Arup) was commissioned by the Water Supplies Department (WSD) of the Government of the Hong Kong Special Administrative Region on 15 June 2021 to carry out the Agreement No. CE 78/2020 (WS) on Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension – Investigation, Design and Construction.
- 1.1.1.4 The Agreement No. CE 78/2020 (WS) will include the extension of NTM WTW within the site compound with the aim of upgrading the water treatment capability and enhancing the treatment efficiency. It also includes the construction of extension of NTM Fresh Water Primary Service Reservoir (FWPSR) adjacent to the existing FWPSR and laying of fresh water trunk mains of 1600mm from the extended NTM WTW to FWPSR.
- 1.1.1.5 The Study under this Agreement No. CE 78/2020 (WS) will cover the whole Ngau Tam Mei Water Treatment Works Extension Project (hereinafter referred to as the “Study”), which also includes the works under Agreement No. CE 62/2022 (WS) – “Laying of Fresh Water Trunk Mains from Ngau Tam Mei Fresh Water Primary Service Reservoir to Tan Kwai Tsuen and Modification of Raw Water Tunnel Junction (Chamber G) – Design and Construction”.

1.2 Description of the Project

- 1.2.1.1 As discussed in **Section 1.1**, the Study will cover the investigation, design and construction of NTM WTW extension, NTM FWPSR extension, Chamber G and fresh water trunk main, and the following works will be included:
- Provision of additional treatment facilities within the existing NTM WTW compound to increase the water treatment capacity of NTW WTW;

- Construction of an extension of NTM FWPSR with a capacity of 54,000m³ adjacent to the existing FWPSR;
- Laying of about 9.5km of fresh water trunk mains of diameters ranging from 1600 mm to 2000 mm for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen; and
- Modification of the existing raw water tunnel junction (Chamber G) located near NTM WTW.

1.2.1.2 Upon reviewing the potential Designated Project (DP) elements of the Study under Schedule 2, Part I of the revised Environmental Impact Assessment Ordinance (EIAO) which took effect on 30 June 2023, the Environmental Impact Assessment (EIA) of the Study (hereinafter referred to as the “Project”) would only include Project elements that fall into DP elements (see **Figure 1.1**), which includes the following:

- Laying of about 1km (around 750m from NTM WTW to NTM FWPSR and around 250m from Ching Yau Road to San Tam Road) of fresh water trunk mains of diameters 1600 mm, which encroach into boundary of the Conservation Area (CA), for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen; and
- Modification of the existing raw water tunnel junction (Chamber G) located near NTM WTW within Lam Tsuen Country Park and CA.

1.2.1.3 A separate Preliminary Environmental Review (PER) Report would be prepared to include the non-DP elements of the Study, which are listed below. These elements of the Study would also be considered as concurrent project of the Project.

- Provision of additional treatment facilities within the existing NTM WTW compound to increase the water treatment capacity of NTW WTW;
- Construction of an extension of NTM FWPSR with a capacity of 54,000m³ adjacent to the existing FWPSR; and
- Laying of about 8.5km of fresh water trunk mains of diameters ranging from 1600 mm to 2000 mm, which do not encroach into boundary of Lam Tsuen Country Park or CA, for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen.

1.3 EIA Study Brief

- 1.3.1.1 In accordance with the requirements of Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO), a Project Profile (PP) (No. PP-608/2020) for the Project was submitted to the Director of Environmental Protection (DEP) for application for an EIA Study Brief on 6 August 2020. Pursuant to Section 5(7)(a) of the EIAO, the DEP issued a Study Brief (No.: ESB-333/2020 dated 14 September 2020) for the EIA study.
- 1.3.1.2 Nevertheless, according to Clause 3.4 of the revised Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), “For a designated project under Item Q.1 of Part I of Schedule 2 to the Ordinance (i.e. a project involving works partly or wholly in the environmental sensitive areas mentioned in Item Q.1), which is not otherwise a designated project listed in items A to P of Schedule 2 to the Ordinance, the EIA study brief shall set out in such a way that the assessments and derivation of mitigation measures will focus on the environmental implications of the project on the environmental sensitive areas.” This EIA would therefore focus on the environmental implications of the Project elements, as listed out in **Section 1.2.1.2**, which encroach onto the environmental sensitive areas, i.e. boundary of CA and Lam Tsuen Country Park.

1.4 Assessment Area and Site Location

- 1.4.1.1 Based on **Section 1.2**, the proposed fresh water trunk mains would run through CAs. In addition, the modification works at Chamber G including the proposed raw water mains and bypass tunnels are underground works which would fall within the underground stratum of Lam Tsuen Country Park and a CA.
- 1.4.1.2 Therefore, the concerned works areas within the boundary of the Project (hereinafter referred to as “Assessment Areas”) to be reviewed and assessed in this Land Contamination Review (LCR) include the following:
- Proposed fresh water trunk mains works areas within CA; and
 - Proposed modification works area of Chamber G.
- 1.4.1.3 Locations of the Assessment Areas are shown in **Figure 1.1**. The works areas of modification works of Chamber G are located within a rural area in Ngau Tam Mei, while a portion of proposed fresh water trunk mains stretches from NTM WTW to NTM FWPSR and another portion between Ching Yau Road and San Tam Road, which both portion are within the conservation area.

1.5 Objectives of this Land Contamination Review

- 1.5.1.1 In accordance with Clause 3.4.8 of the EIA Study Brief (ESB-333/2020), a land contamination assessment is required. The objectives of this LCR are:
- Provide an account of the present land uses within the boundary of the Assessment Areas as well as relevant past land use history in relation to possible land contamination;
 - Identify areas of potential contamination and the associated impacts, risks or hazards; and
 - Identify the chemicals of concern and scoping of requirements for sampling and laboratory testing of soil and groundwater samples if required.

1.6 Statutory Legislation and Evaluation Criteria

- 1.6.1.1 This LCR is prepared in accordance with the following Technical Memorandum and Guidance Notes:
- Annex 19 of the EIAO-TM, Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts (Section 3: Potential Contaminated Land Issues), Environmental Protection Department (EPD), 2023
 - Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD, Revised in April 2023;
 - Guidance Notes for Contaminated Land Assessment and Remediation, EPD, Revised in April 2023; and
 - Practice Guide for Investigation and Remediation of Contaminated Land, EPD, Revised in April 2023.
- 1.6.1.2 The EPD's Guidance Notes include a summary of the general steps of a contamination assessment study.
- 1.6.1.3 Under the *Practice Guide for Investigation and Remediation of Contaminated Land* and the Annex 19 of the EIAO-TM, a number of potentially contaminating historical and present land uses should be considered, including boat / ship building or repairing, chemical manufacturing / processing plants, dangerous goods stores, concrete and asphalt production, golf courses, motor vehicle / equipment depots, repairing and service centres, open area storage, petrol filling stations, petroleum products and coal industrial operations (including oil depots and gas works), power plants, individual power generation units, scrap yards, steel mills / metal workshops, waste recycling workshops, car dismantling workshops, dumping ground and landfill, which have the potential to cause or have caused land contamination. Nevertheless, any other potential contaminating activities/ installations/ facilities

within the boundary of the Assessment Areas should be identified and considered based on professional judgement.

- 1.6.1.4 This LCR sets out the requirements for a baseline contamination evaluation of the Assessment Areas under the Project. If environmental site investigation (SI) is deemed necessary upon review, a Contamination Assessment Plan (CAP) will be prepared. A Contamination Assessment Report (CAR) will be prepared following site investigation activities, if required. If contamination is identified in the CAR, a Remediation Action Plan (RAP) will be developed to deal with these areas prior to or during the construction works for the Project. The RAP would follow the requirements specified in EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*. A Remediation Report (RR) would be prepared to demonstrate adequate clean-up and submitted to EPD for agreement prior to the commencement of construction/development works of the Project.

2 Site Appraisal

2.1 Desktop Review

2.1.1.1 A desktop study has been conducted to review past and present land uses, activities and installations within the Assessment Areas that may have potential for land contamination.

2.1.1.2 The following documents and materials have been reviewed and used for the preparation of this assessment:

- Selected historical aerial photographs between Year 1978 and Year 2021;
- Hong Kong Geological Survey Map;
- Outline Zoning Plans; and
- Any relevant studies and environmental Site Investigations (SIs).

2.2 Aerial Photographs and Historical Land Uses

2.2.1.1 Selected historical aerial photographs showing the Assessment Areas between Year 1978 and Year 2021 have been reviewed in order to ascertain any historical land uses with the potential for land contamination. The findings of the selected historical aerial photographs of the area are summarized in **Table 1**. The aerial photographs showing the historical conditions of the site are presented in **Appendix A**.

Table 1 – Summary of historical aerial photographs for the area within the Assessment Areas

Year	Description
<i>Chamber G</i>	
1978	This site area was occupied by natural vegetation.
1988	Land uses at this site remained unchanged as compared with Year 1978.
1997	Land uses at this site remained unchanged as compared with Year 1988.
2001	Land uses at this site remained unchanged as compared with Year 1997.
2010	Land uses at this site remained unchanged as compared with Year 2001.
2022	Land uses at this site remained unchanged as compared with Year 2010.
<i>Fresh Water Trunk Mains Alignment within CA</i>	
1978	The alignment from NTM WTW to NTM FWPSR was occupied by natural vegetation while some agricultural land was observed at the alignment between Ching Yau Road and San Tam Road.
1988	Construction of access road from NTM WTW to NTM FWPSR was observed along the alignment from NTM WTW to NTM FWPSR. No significant changes at the alignment between Ching Yau Road and San Tam Road was observed as compared with Year 1978.

Year	Description
1997	Land uses at the alignment from NTM WTW to NTM FWPSR remained unchanged as compared with Year 1988. Agricultural land previously observed at the alignment between Ching Yau Road and San Tam Road was left vacant and returned to natural vegetation.
2001	Access road from NTM WTW to NTM FWPSR was established. No significant changes at the alignment between Ching Yau Road and San Tam Road was observed as compared with Year 1997.
2010	Land uses at both alignments remained unchanged as compared with Year 2001.
2022	Land uses at both alignments remained unchanged as compared with Year 2010.

2.3 Site Geology

2.3.1.1 With reference to the San Tin Solid and Superficial Geology (1:20 000 map) (Series: HGM20) published by the Geotechnical Control Office, Civil Engineering Services Department, the area near Chamber G is covered by alluvium, terraced alluvium and rhyolite lava, and the fresh water trunk mains alignment falls on area covered by alluvium, terraced alluvium, debris flow deposits, rhyolite lava and slope debris.

2.3.1.2 Besides, a review of the following previous ground investigation (GI) report for GI works undertaken at and in vicinity of the proposed works areas in Chamber G was conducted to obtain information about the geological conditions of these areas.

- Ground Investigation – Phase 1 (Drillholes) for Works Order No. GE/93/08.56, Additional Treatment and Transfer Facilities for North Western New Territories, Ngau Tam Mei Treatment Works, CED Contract No. GE/93/08, by Lam Geotechnics Limited (1995) (CEDD’s Geotechnical Information Unit Report No. 20588).

2.3.1.3 With reference to the above GI Report, the materials encountered during the GI works comprise fill material, debris flow deposits, alluvium and tuff. The area near Chamber G is generally covered by layers of alluvium and coarse ash tuff (from completely, moderately to slightly decomposed) was encountered underneath.

2.4 Site Survey

2.4.1.1 Site surveys were conducted in 12 June 2023 to ground truth the findings of the desktop review and to identify any other land uses within the Assessment Areas which may have potential to cause land contamination.

2.4.1.2 It should be noted that the Chamber G works area was fenced during site survey and is currently occupied by natural vegetation, while the area between Ching Yau Road and San Tam Road is currently occupied by natural vegetation. Given that these areas are currently occupied by natural vegetation, presence of land contaminating sources and activities are not anticipated. Thus, land contamination due to the current land uses at these areas are unlikely.

2.4.1.3 Photo records of the site surveys are provided in **Appendix B**. A summary of site survey findings is provided in **Table 2** below.

Table 2 – Summary of site survey findings

Location	Description
Chamber G	The Chamber G works area was fenced during site survey. Natural vegetation was observed from peripheral observation (Photo 1 in Appendix B).
Fresh Water Trunk Mains Alignment within CA	The alignment from NTM WTW to NTM FWPSR was mainly occupied by public roads and natural vegetation at the road kerb observation (Photo 2-7 in Appendix B). No land contaminating activities or sources were observed. The alignment between Ching Yau Road and San Tam Road is inaccessible and natural vegetation was observed from peripheral observation (Photo 8 in Appendix B). Given that the alignment is currently occupied by natural vegetation, presence of land contaminating sources and activities is not anticipated. Therefore, land contamination along the fresh water trunk mains within CA due to current land use is unlikely.

2.5 Other Relevant Information

2.5.1 Fire Services Department

2.5.1.1 Information requests have been sent to Fire Services Department (FSD) in June 2023 to enquire:

- Records of Dangerous Goods License(s) issued in the assessment area;
- Any past and present information related to the use and/ or storage of DGs in the assessment area; and
- Past and present incident records in the assessment area.

2.5.1.2 Based on the information provided by FSD in August 2023, no incident record was found within the Assessment Areas. A total of 7 DGs Licenses have been issued within the NTM WIW which are out of the assessment area. A copy of FSD's correspondence is provided in **Appendix C**.

2.5.2 Environmental Protection Department

2.5.2.1 Information requests have been sent to EPD in June 2023 to enquire::

- Records of Chemical Waste Producers Registration (CWPR) in the assessment area; and
- Past and present chemical spillage/ leakage records in the assessment area.

2.5.2.2 Based on the information provided by EPD in June 2023, there is no chemical spillage accident records within the Assessment Areas. Besides, no records of CWP registration within the assessment area was found at EPD's Register of Chemical Waste Producers. A copy of EPD's correspondence is provided in **Appendix D**.

2.6 Future Land Uses

2.6.1.1 Land contamination review on the potentially contaminated sites would need to be evaluated against the RBRGs, soil saturation limits (C_{sat}) / solubility limits for non-aqueous phase liquid (NAPL), as stipulated in Table 2.1 and Table 2.2 of the Guidance Manual.

2.6.1.2 The RBRGs were developed based on a risk assessment approach with a view to suiting the local environmental conditions and community needs in Hong Kong. RBRGs were developed for four different land use scenarios, including "Urban Residential", "Rural Residential", "Industrial" and "Public Parks", so as to reflect the typical physical settings in Hong Kong under which people could be exposed to contaminated soil and groundwater.

2.6.1.3 As the proposed water mains and modification works will form part of the NTM WTW and NTM FWPSR in support of their operation during the operational phase of the Project, "Industrial" land use is considered as future land use for this assessment.

3 Potentially Contaminated Area

3.1 Identification of Potentially Contaminated Area

- 3.1.1.1 Identification of potentially contaminated sites within the Assessment Areas for the Project has been done based on the criteria stipulated in EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*. Information collected from desktop review of selected historical aerial photos, site surveys and relevant government departments have also been used to assist the task.
- 3.1.1.2 Based on the desktop review findings of selected aerial photographs, site survey findings, natural vegetation and existing road were observed with no land contamination issue identified within the assessment area. Besides, no DGs records, incidents and chemical spillage accidents were reported within the assessment area from relevant government departments including FSD and EPD. In conclusion, no potentially contaminated areas are identified within the assessment area, which includes the Project as shown in **Figure 1.1**. No land contamination issue is anticipated in the Project, and environmental SI works are not required.

4 Conclusion

- 4.1.1.1 As summarised in **Section 3.1**, environmental SI works are not recommended, preparation and submission of CAP is therefore not necessary.
- 4.1.1.2 As no future works would be conducted within the assessment area (i.e. Chamber G and Fresh Water Trunk Mains Alignment within CA) before commencement of this Project while major construction works for the Project are anticipated to commence in Year 2024. Site re-appraisal is therefore not required prior to the commencement of the construction.
- 4.1.1.3 Based on the information above, no land contamination impacts are identified for the Project. No further site investigation and land contamination assessment are required for the Project.

Figures

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© OVE ARUP & PARTNERS HONG KONG LIMITED.

Printed by : richard-kh.lau
Filename : \\global\EastAsia\HKG\Group\CITENV\env\project\282551\13 Drawing Deliverables\Report\013 Land Contamination Review\03 Draft\Figure 1.1 - Location of Project.dgn
5/2/2024

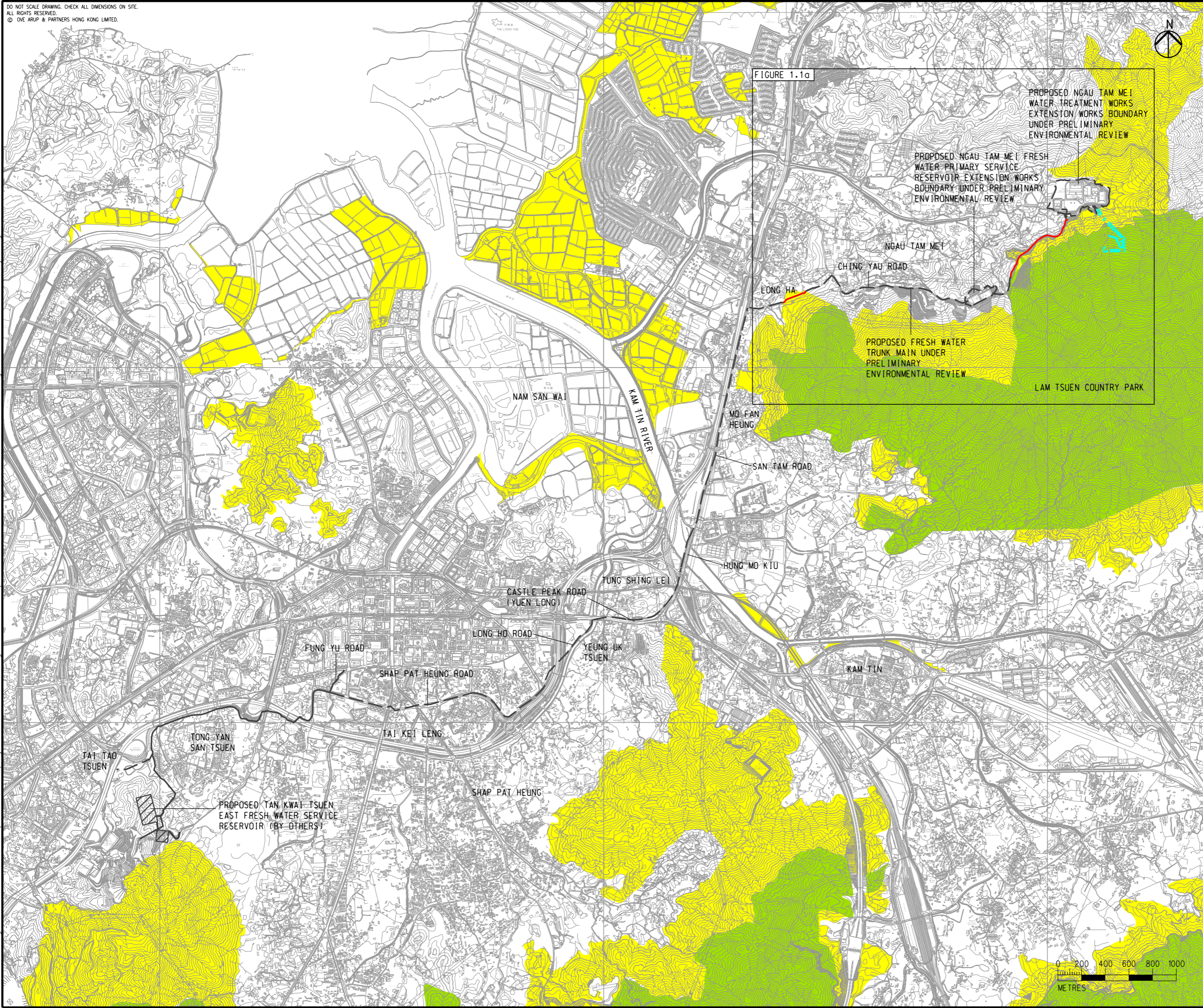


FIGURE 1.1a

PROPOSED NGAU TAM MEI WATER TREATMENT WORKS EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED NGAU TAM MEI FRESH WATER PRIMARY SERVICE RESERVOIR EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED FRESH WATER TRUNK MAIN UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED TAN KWAI TSUEN EAST FRESH WATER SERVICE RESERVOIR BY OTHERS

CONSERVATION AREA

COUNTRY PARK

NGAU TAM MEI

CHING YAU ROAD

LONG HA

LAM TSUEN COUNTRY PARK

NAM SAN WAI

KAM TIN RIVER

MO FAN HEUNG

SAN TAM ROAD

HUNG MO KIU

TUNG SHING LEI

CASTLE PEAK ROAD (YUEN LONG)

YEUNG UK TSUEN

KAM TIN

LONG HO ROAD

SHAP PAT HEUNG ROAD

FUNG YU ROAD

SHAP PAT HEUNG

TAI KEI LENG

TONG YAN SAN TSUEN

TAI TAO TSUEN

PROPOSED TAN KWAI TSUEN EAST FRESH WATER SERVICE RESERVOIR (BY OTHERS)

- LEGEND**
- PROPOSED FRESH WATER TRUNK MAIN
 - - - PROPOSED MODIFICATION OF CHAMBER G
 - PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW
 - PROPOSED FRESH WATER TRUNK MAIN BY OTHERS
 - PROPOSED TAN KWAI TSUEN EAST FRESH WATER SERVICE RESERVOIR BY OTHERS
 - CONSERVATION AREA
 - COUNTRY PARK

Rev	Description	By	Date
C	THIRD ISSUE	GL	02/24
B	SECOND ISSUE	GL	11/23
A	FIRST ISSUE	GL	08/23

Consultant

ARUP

Project title

Ngau Tam Mei Water Treatment Works Extension

Drawing title

LOCATION OF PROJECT

Drawing no.		Rev.	
FIGURE 1.1		C	
Drawn	Date	Checked	Approved
GL	02/24	EL	FC
Scale	Status		PRELIMINARY
1:30000 @A3			

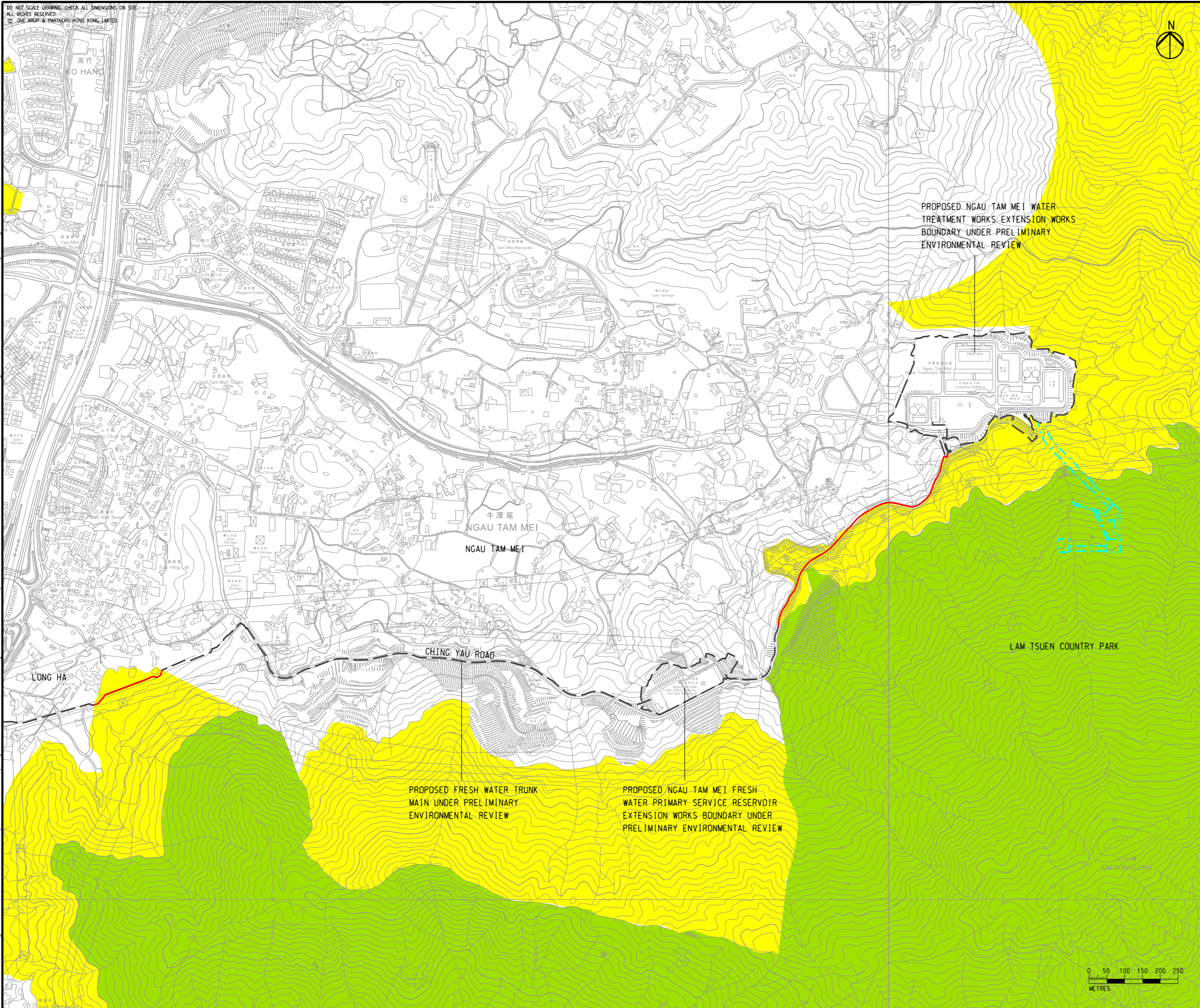
COPYRIGHT RESERVED

水務署
Water Supplies Department



DO NOT SCALE DRAWING - CHECK ALL DIMENSIONS ON SITE
 ALL RIGHTS RESERVED
 © 2024 ARUP & PARTNERS HONG KONG LIMITED

Printed by : richard-kh.lau
 Filename : \\global\EastAsia\HKG\Group\C\EN\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Figure 1.1a - Location of Project.dgn
 5/2/2024



LEGEND

- PROPOSED FRESH WATER TRUNK MAIN
- - - PROPOSED MODIFICATION OF CHAMBER G
- PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW
- CONSERVATION AREA
- COUNTRY PARK

PROPOSED NGAU TAM MEI WATER TREATMENT WORKS EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED FRESH WATER TRUNK MAIN UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED NGAU TAM MEI FRESH WATER PRIMARY SERVICE RESERVOIR EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

Rev	Description	By	Date
C	THIRD ISSUE	GL	02/24
B	SECOND ISSUE	GL	11/23
A	FIRST ISSUE	GL	08/23

Consultant
ARUP

Project title
 Ngau Tam Mei Water Treatment Works Extension

Drawing title
LOCATION OF PROJECT

Drawing no. FIGURE 1.1a		Rev. C	
Drawn GL	Date 02/24	Checked EL	Approved FC
Scale 1:10000 @A3		Status PRELIMINARY	

COPYRIGHT RESERVED

水務署
Water Supplies Department



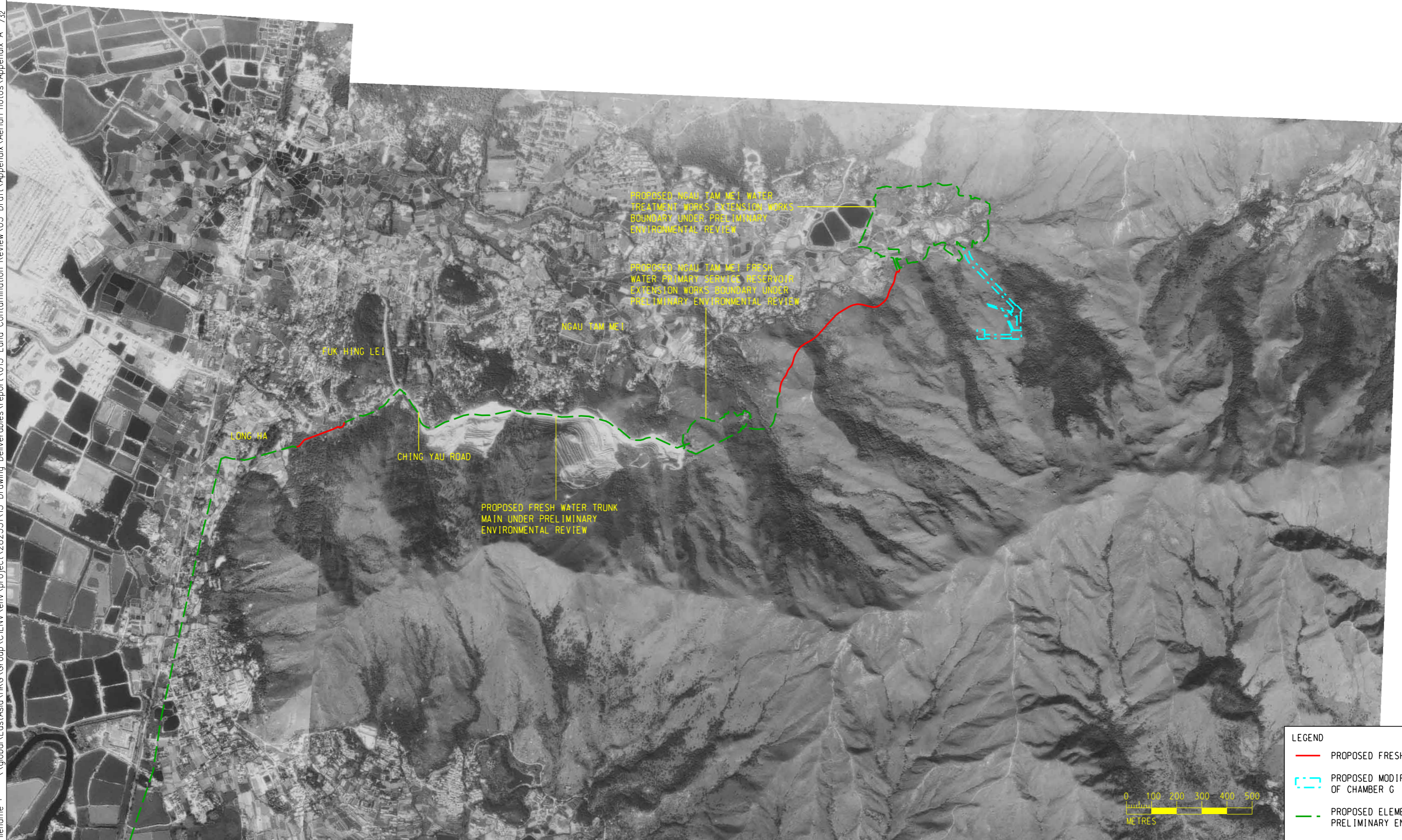
Appendix A

Historical Aerial Photographs




APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 1978)



Printed by : 5/2/2024
Filename : \\global\EastAsia\HKG\Group\CIENV\env\project\282551\13 Drawing Deliverables\Report\013 Land Contamination Report\013 Draft\Appendix Aerial Photos\Appendix A 13/32 Historical Aerial Photographs (1978).dgn



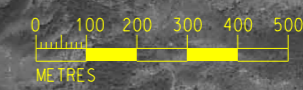
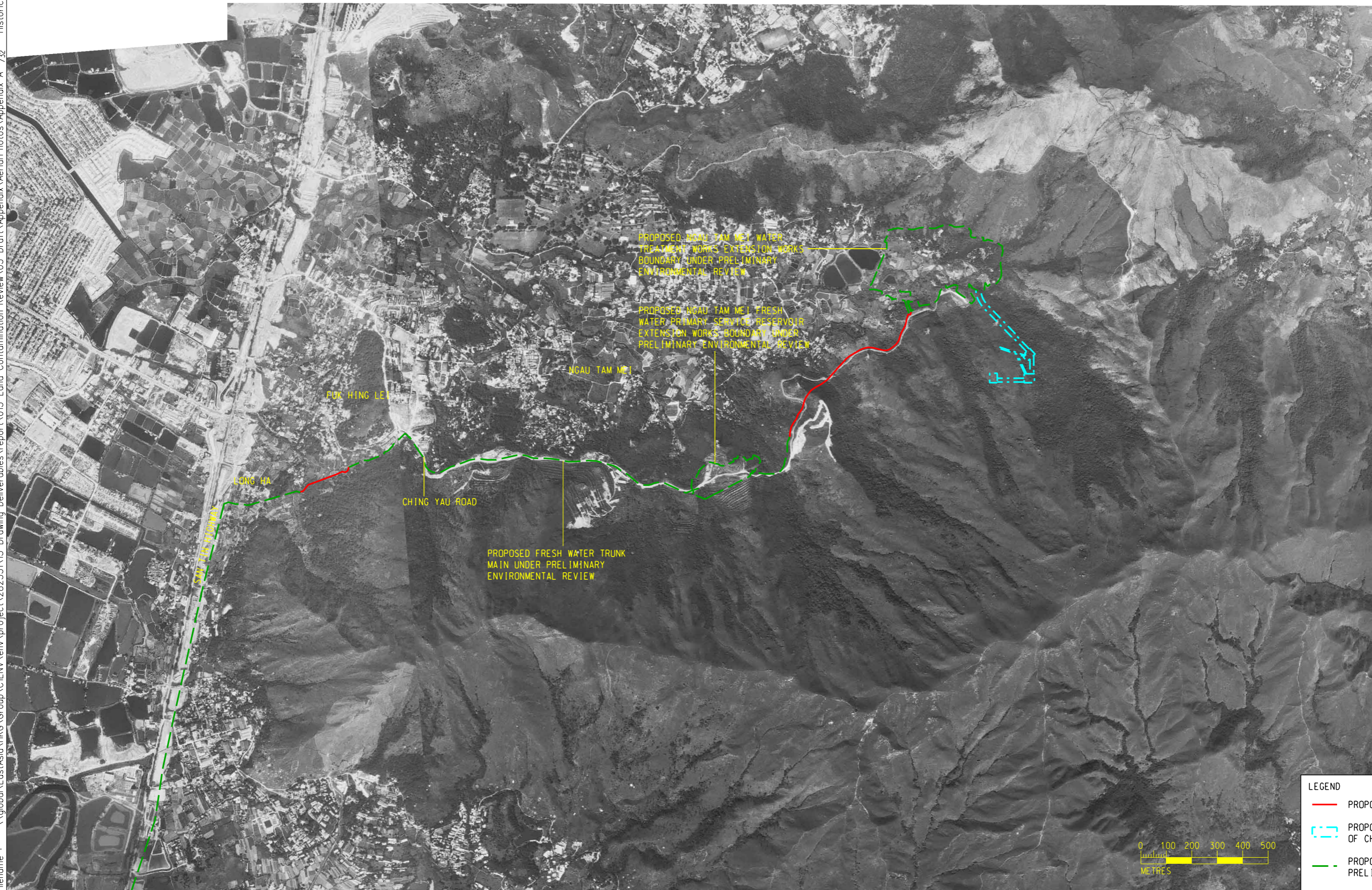
LEGEND

-  PROPOSED FRESH WATER TRUNK MAIN
-  PROPOSED MODIFICATION OF CHAMBER G
-  PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 1988)



Printed by : 5/2/2024
Filename : \\global\EastAsia\HKG\Group\CIENV\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Appendix Aerial Photos\Appendix A 13.dgn

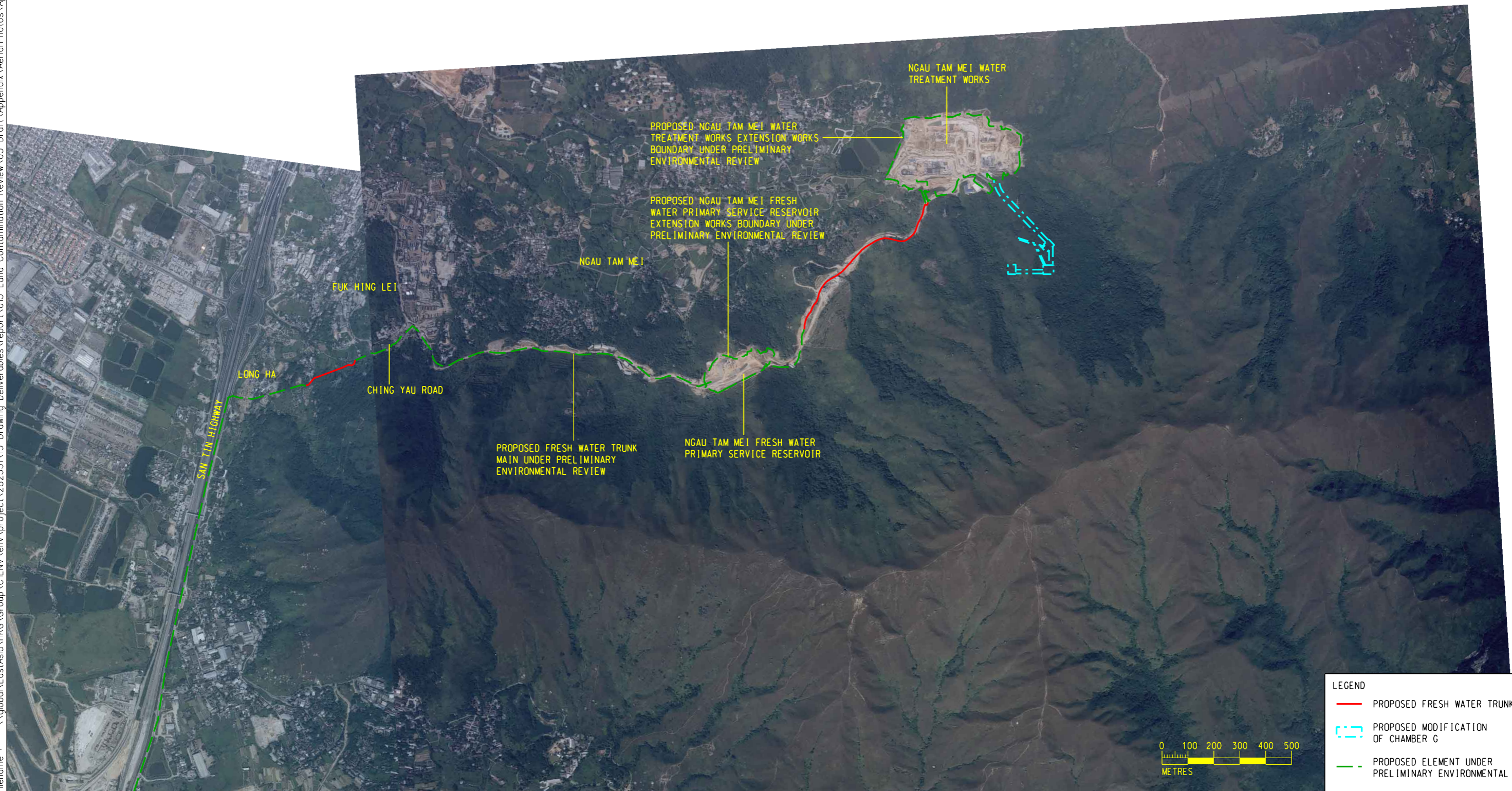


LEGEND	
	PROPOSED FRESH WATER TRUNK MAIN
	PROPOSED MODIFICATION OF CHAMBER G
	PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 1997)



Printed by : 5/2/2024
 Filename : \\global\EastAsia\HKG\Group\C\ENVI\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Appendix\Aerial Photos\Appendix A 13/32 Historical Aerial Photographs (1997).dgn



LEGEND

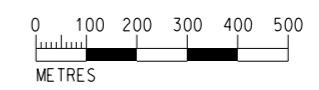
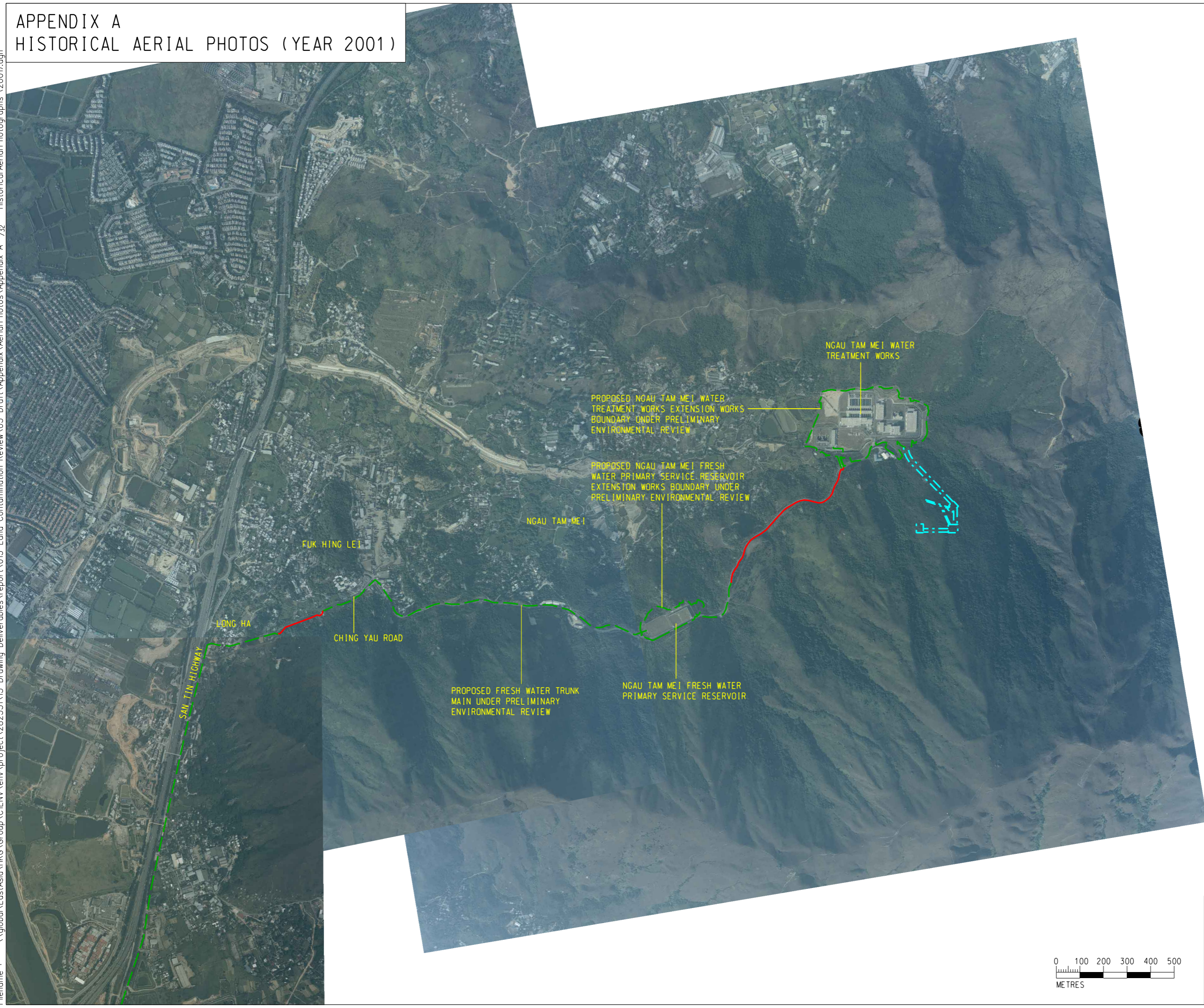
- PROPOSED FRESH WATER TRUNK MAIN
- PROPOSED MODIFICATION OF CHAMBER G
- PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW



APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 2001)



Printed by : 5/2/2024
 Filename : \\global\EastAsia\HKG\Group\CIENV\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Appendix\Aerial Photos\Appendix A 13/32 Historical Aerial Photographs (2001).dgn

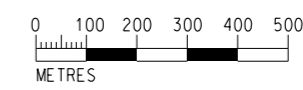


LEGEND	
	PROPOSED FRESH WATER TRUNK MAIN
	PROPOSED MODIFICATION OF CHAMBER G
	PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 2010)

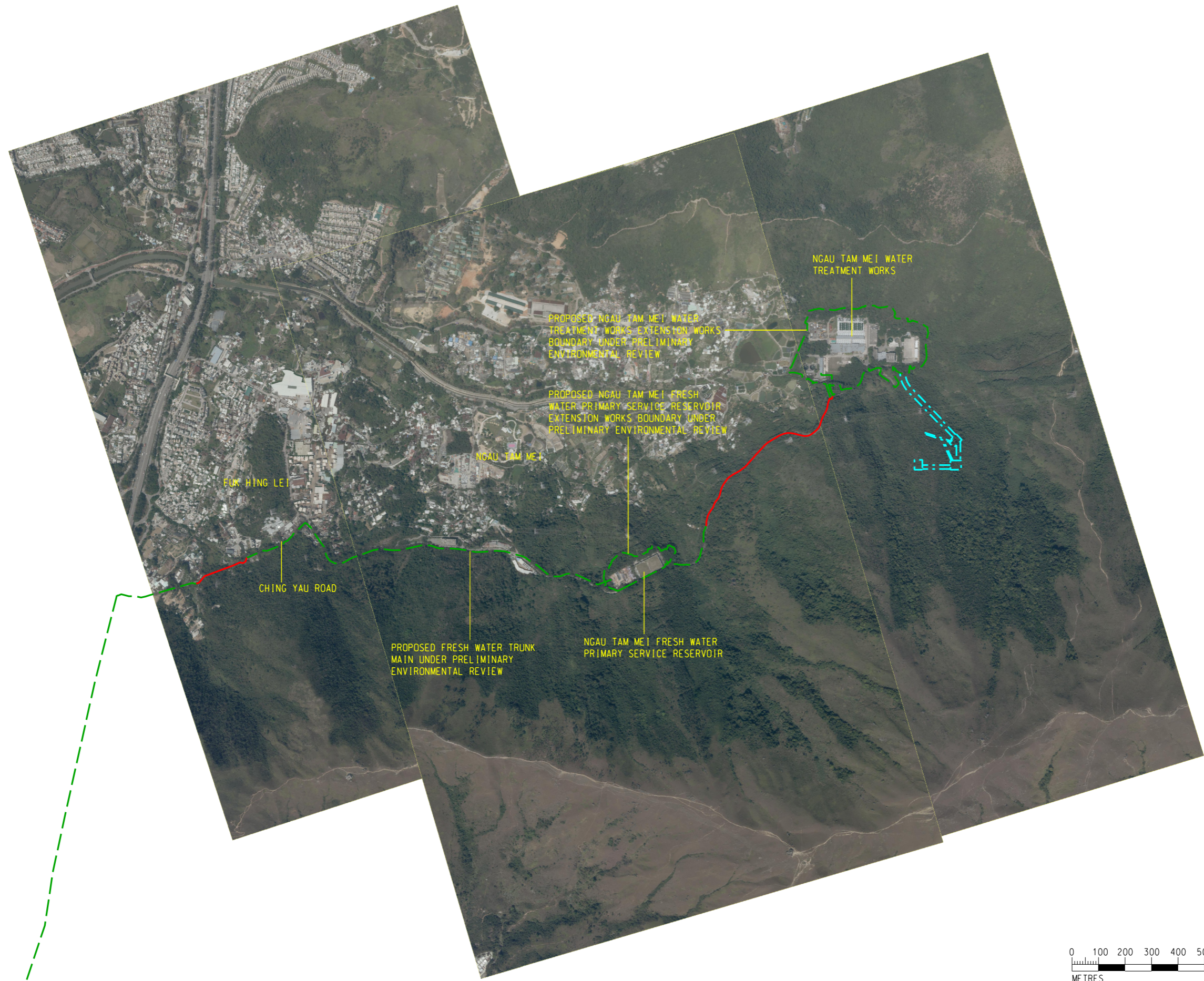


Printed by : 5/2/2024
 Filename : \\global\EastAsia\HKG\Group\C\EN\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Report\013 Draft\Appendix Aerial Photos\Appendix A 13/32 Historical Aerial Photographs (2010).dgn

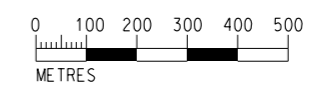


LEGEND	
	PROPOSED FRESH WATER TRUNK MAIN
	PROPOSED MODIFICATION OF CHAMBER G
	PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

APPENDIX A
HISTORICAL AERIAL PHOTOS (YEAR 2022)



Printed by : 5/2/2024
 Filename : \\global\EastAsia\HKG\Group\CIENV\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Appendix\Aerial Photos\Appendix A 13/32 Historical Aerial Photographs (2022).dgn



LEGEND	
	PROPOSED FRESH WATER TRUNK MAIN
	PROPOSED MODIFICATION OF CHAMBER G
	PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

Appendix B

Site Photo Record

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © 2024 ARUP & PARTNERS HONG KONG LIMITED.



- LEGEND**
- PROPOSED FRESH WATER TRUNK MAIN
 - - - PROPOSED MODIFICATION OF CHAMBER G
 - PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW

APPENDIX B3

APPENDIX B2

PROPOSED NGAU TAM MEI WATER TREATMENT WORKS EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

NGAU TAM MEI

CHING YAU ROAD

LONG HA

PROPOSED FRESH WATER TRUNK MAIN UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED NGAU TAM MEI FRESH WATER PRIMARY SERVICE RESERVOIR EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

Rev	Description	By	Date
C	THIRD ISSUE	GL	02/24
B	SECOND ISSUE	GL	11/23
A	FIRST ISSUE	GL	07/23

Consultant
ARUP

Project title
 Ngau Tam Mei Water Treatment Works Extension

Drawing title
 SITE PHOTO RECORD
 WATER TRUNK MAINS ALIGNMENT
 (SHEET 1 OF 3)

Drawing no.		APPENDIX B1		Rev.	C
Drawn	Date	Checked	Approved		
GL	02/24	EL	FC		
Scale	AS SHOWN	Status	PRELIMINARY		

COPYRIGHT RESERVED



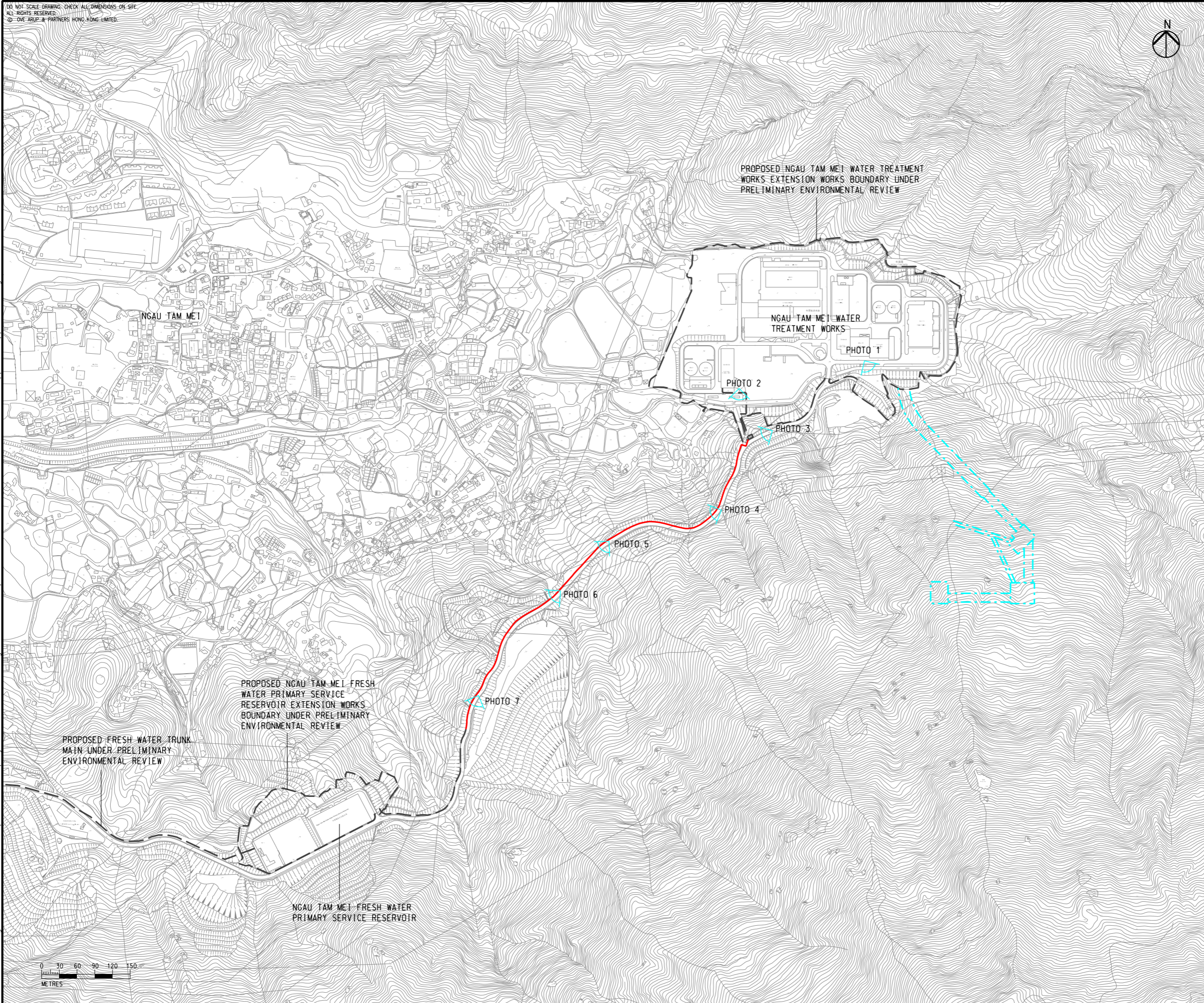
Printed by : richard-kh.lau
 File name : \\global\EastAsia\HK\Group\C\EN\env\project\282551\13 Drawing Deliverables\Report\013 Land Contamination Review\03 Draft Appendix Appendix B1.dgn
 5/2/2024

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © OVE ARUP & PARTNERS HONG KONG LIMITED.



- LEGEND**
- PROPOSED FRESH WATER TRUNK MAIN
 - - - PROPOSED MODIFICATION OF CHAMBER G
 - PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW
 - VIEW ANGLE

5/2/2024
 Printed by : richard-kh.lau
 Filename : \\global-east\asia-hkg\group\cienv\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft Appendix Appendix B2.dgn



PROPOSED NGAU TAM MEI WATER TREATMENT WORKS EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

NGAU TAM MEI

NGAU TAM MEI WATER TREATMENT WORKS

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PHOTO 5

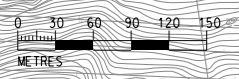
PHOTO 6

PHOTO 7

PROPOSED NGAU TAM MEI FRESH WATER PRIMARY SERVICE RESERVOIR EXTENSION WORKS BOUNDARY UNDER PRELIMINARY ENVIRONMENTAL REVIEW

PROPOSED FRESH WATER TRUNK MAIN UNDER PRELIMINARY ENVIRONMENTAL REVIEW

NGAU TAM MEI FRESH WATER PRIMARY SERVICE RESERVOIR



Rev	Description	By	Date
C	THIRD ISSUE	GL	02/24
B	SECOND ISSUE	GL	11/23
A	FIRST ISSUE	GL	07/23

Consultant
ARUP

Project title
 Ngau Tam Mei Water Treatment Works Extension

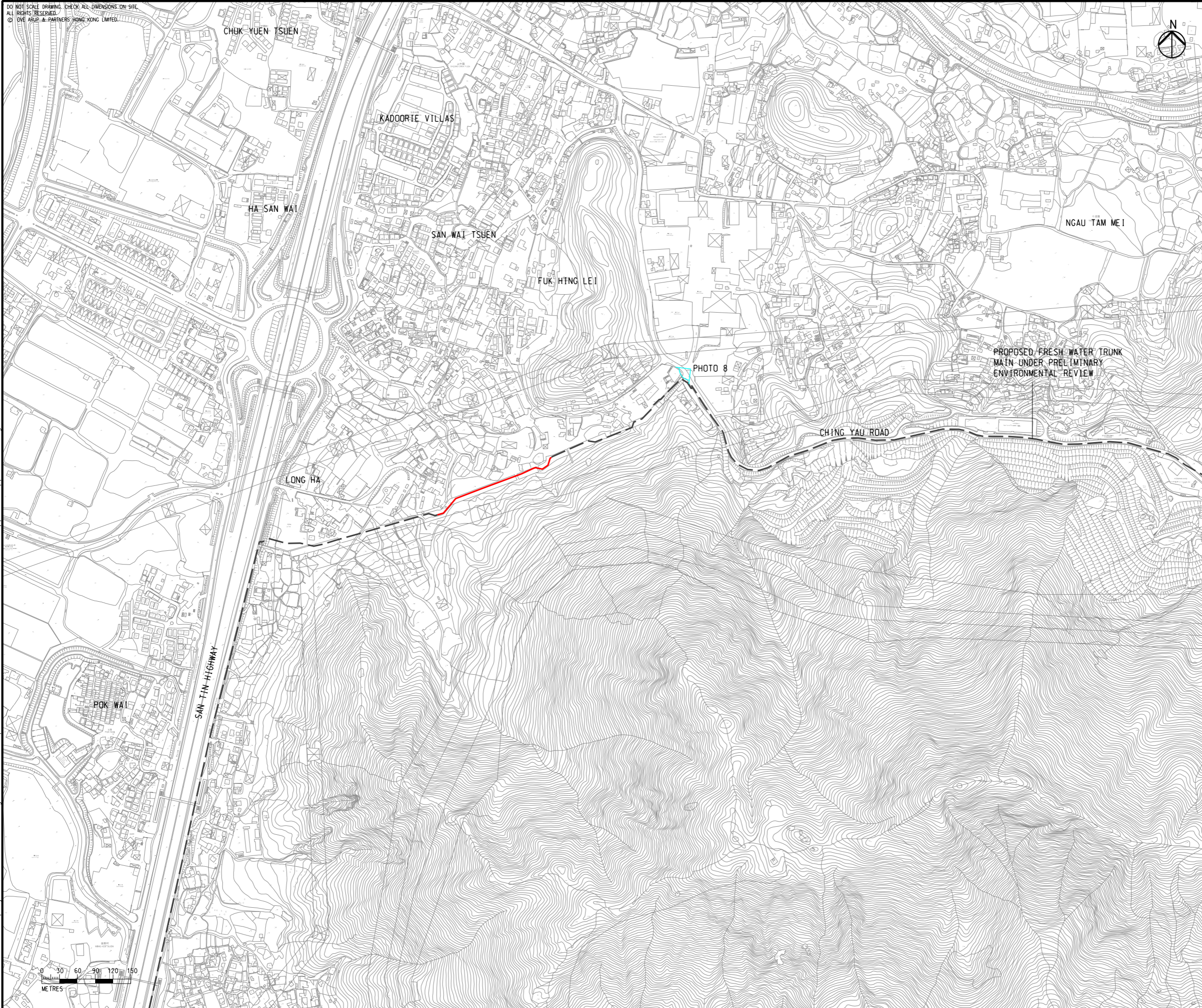
Drawing title
 SITE PHOTO RECORD
 WATER TRUNK MAINS ALIGNMENT
 (SHEET 2 OF 3)

Drawing no. APPENDIX B2		Rev. C	
Drawn GL	Date 02/24	Checked EL	Approved FC
Scale AS SHOWN		Status PRELIMINARY	

COPYRIGHT RESERVED



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © 016 ARUP & PARTNERS HONG KONG LIMITED.



LEGEND

- PROPOSED FRESH WATER TRUNK MAIN
- - - PROPOSED ELEMENT UNDER PRELIMINARY ENVIRONMENTAL REVIEW
- ▲ VIEW ANGLE



Printed by : richard-kh-lau 23/11/2023
 Filename : G:\env\project\282551\13 Drawing Deliverables\report\013 Land Contamination Review\03 Draft\Appendix\Appendix B3.dgn



B	SECOND ISSUE	GL	11/23
A	FIRST ISSUE	GL	07/23
Rev	Description	By	Date

Consultant **ARUP**

Project title
 Ngau Tam Mei Water Treatment Works Extension

Drawing title
 SITE PHOTO RECORD
 WATER TRUNK MAINS ALIGNMENT
 (SHEET 3 OF 3)

Drawing no. APPENDIX B3		Rev. B	
Drawn GL	Date 11/23	Checked EL	Approved FC
Scale AS SHOWN		Status PRELIMINARY	

COPYRIGHT RESERVED

Photo Records along Proposed Freshwater Trunk Mains Alignment within CA & Chamber G



Photo 1.



Photo 2.



Photo 3.



Photo 4.



Photo 5.



Photo 6.



Photo 7.



Photo 8.

Appendix C

Relevant Correspondence with FSD

Your ref (112) in FSD GR 6-5/4 R Pt. 36
Our ref 282551/03-20/KK/ST/CC/NS/AY-0404
File ref

ARUP

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong

t +852 2268 3511
f +852 2268 3955

kenneth.kwok@arup.com
www.arup.com

BY EMAIL (hkfsdenq@hkfsd.gov.hk) AND BY POST

Fire Services Department
Headquarters Command
Management Group (MG)
9/F, Fire Services Headquarters Building
1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon

Attention: Mr. NG Wing Chit
(Asst Div Offr (Management Group)1)

19 June 2023

Dear Sir,

Agreement No. CE 78/2020 (WS)
Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension –
Investigation, Design and Construction

Request for Information of Dangerous Goods and Incident Records

Further to our previous letter (ref: 282551/03-20/KK/ST/CC/NS/AY-0066) and your reply letter referenced above, we are writing to inform you that the assessment area as shown in enclosed **Figure 1.1** has been updated. Proposed fresh water trunk main and proposed modification of chamber G would be assessed. In this connection, we would like to request the following information for our land contamination review as part of the Environmental Impact Assessment (EIA) in accordance with the EIA Study Brief No. ESB-333/2020:

- The records of Dangerous Goods License issued to the updated assessment area as shown in **Figure 1.1**;
- Any other information related to the use and/or storage of dangerous goods in the updated assessment area as shown in **Figure 1.1**; and
- Past and present incident records of the updated assessment area as shown in **Figure 1.1**.

We would be grateful if you could provide the above-mentioned information by **3 July 2023**. Should you require any further information, please feel free to contact Ms. Carrie Chu at 2908 4347 (carrie.chu@arup.com) for general project information or Dr. Elvis Lau at 2268 3482 (elvis.lau@arup.com) for EIA- related issues.

Yours faithfully



Kenneth Kwok
Project Manager

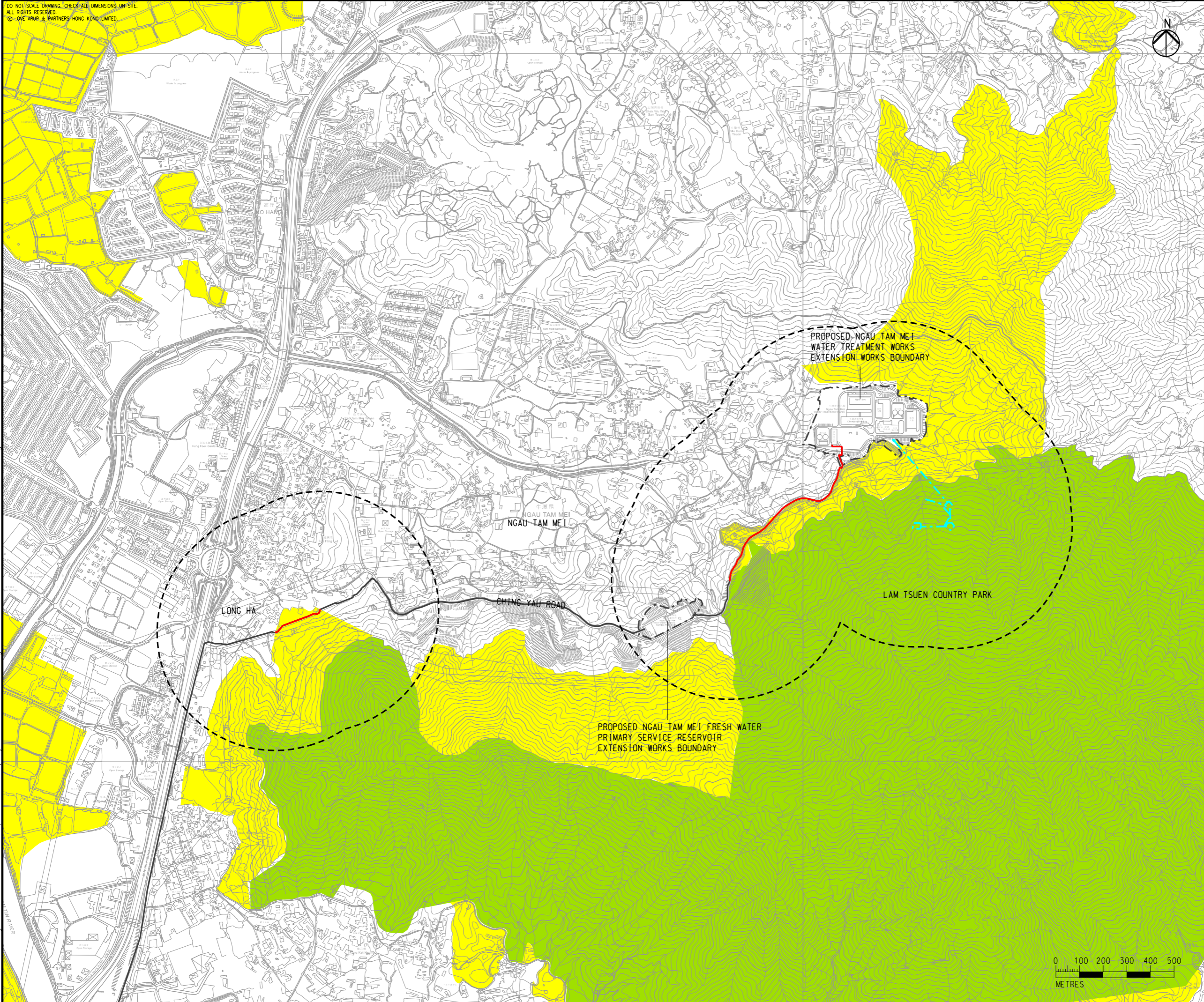
Encl.

c.c. WSD/CM - Ms. Ellie JIANG, E/CM(4) - by email (w/e)

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © OVE ARUP & PARTNERS HONG KONG LIMITED.



- LEGEND**
- PROPOSED FRESH WATER TRUNK MAIN
 - - - PROPOSED MODIFICATION OF CHAMBER G
 - CONSERVATION AREA
 - COUNTRY PARK



A	FIRST ISSUE	GL	05/23
Rev	Description	By	Date

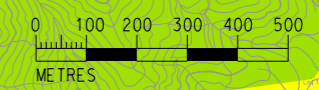
Consultant
ARUP

Project title
 Ngau Tam Mei Water Treatment Works Extension

Drawing title
 LOCATION OF PROJECT

Drawing no.		Rev.	
FIGURE 1.1		A	
Drawn	Date	Checked	Approved
GL	05/23	EL	FC
Scale	Status		PRELIMINARY
1:15000 @A3			

COPYRIGHT RESERVED



Printed by : HKGTRAD14
 File name : \\global\EastAsia\HKG\Group\C\ENV\env\project\282551\13 Drawing Deliverables\other\20230529 New DP (EIA)\Figure 1.1 - Location of Project.dgn
 6/1/2023

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (200) in FSD GR 6-5/4 R Pt. 47
來函檔號 YOUR REF. : 282551/03-20/KK/ST/CC/NS/AY-0404
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

3 August 2023

ARUP
Level 5, Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
(Attn: Mr. Kenneth KWOK, Project Manager)

Dear Mr. KWOK,

Agreement No. CE 78/2020 (WS)
Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension
- Investigation, Design and Construction
Request for Information of Dangerous Goods & Incident Records

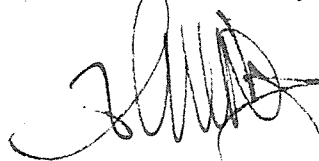
I refer to your letter of 19.6.2023 regarding the captioned request and reply below in response to your questions:-

According to our record, dangerous goods licenses have been issued by this department to the subject address, with details as shown in **Appendix A**. No incident record was found at the aforesaid location with your given conditions.

If you have further questions, please feel free to contact the undersigned.

Inf.1	Date	By	ARUP
	Job no.	282551	
File no.	02-10	File original: Yes/No	
Registration no.	IN-1073		
Received	10 AUG 2023		
Initials	NTM		
Action	encl		
Info.			
Copy	/		
Archive	Dispose	Scan	

Yours sincerely,


(NG Wing-chit)
for Director of Fire Services

Agreement No. CE 78/2020 (WS)
Ngau Tam Mei Water Treatment Works and Primary Service Reservoir
Extension – Investigation, Design and Construction
Request for Information of Dangerous Goods & Incident Records

No.	Type of DG	Quantity	Storage Location
1.	Sodium Hypochlorite Solution	2 x 10,281L	Ngau Tam Mei Water Treatment Works
2.	Sodium Hypochlorite Waste	1 x 10,281L	
3.	Hydrochloric Acid Solution	1 x 2,040L	
4.	Sodium Hydroxide	1 x 20,400L	
5.	Sodium Hypochlorite Solution	1 x 5,300L 1 x 17,400L	
6.	Sodium Bisulfite	1 x 2,250L	
7.	Liquid Chlorine	388 tonnes	

Appendix D

Relevant Correspondence with EPD

Your ref EP910/G1/1/YLW
Our ref 282551/03-20/KK/ST/CC/NS/AY-0405
File ref

ARUP

BY EMAIL AND BY POST

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F, Shatin Government Offices
No.1 Sheung Wo Che Road
Sha Tin, New Territories

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
t +852 2268 3511
f +852 2268 3955
kenneth.kwok@arup.com
www.arup.com

Attention: Mr. LAI Ho Leung (EPO (Regional N)24)
Mr. TSE Siu Fai (SEPI(Regional N)27)

19 June 2023

Dear Sir,

Agreement No. CE 78/2020 (WS) Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension – Investigation, Design and Construction

Request for Information of Chemical Spillage Accident Records

Further to our previous letter (ref: 282551/03-20/KK/ST/CC/NS/AY-0065) and your reply letter referenced above, we are writing to inform you that the assessment area as shown in enclosed **Figure 1.1** has been updated. Proposed fresh water trunk main and proposed modification of chamber G would be assessed. In this connection, we would like to request the following information for our land contamination review as part of the Environmental Impact Assessment (EIA) in accordance with the EIA Study Brief No. ESB-333/2020:

- The records of Chemical Waste Producers Registration of the updated assessment area as shown in **Figure 1.1**; and
- Past and present chemical spillage / leakage records of the updated assessment area as shown in **Figure 1.1**.

We would be grateful if you could provide the above-mentioned information by **3 July 2023**. Should you require any further information, please feel free to contact Ms. Carrie Chu at 2908 4347 (carrie.chu@arup.com) for general project information or Dr. Elvis Lau at 2268 3482 (elvis.lau@arup.com) for EIA- related issues.

Yours faithfully



Kenneth Kwok
Project Manager

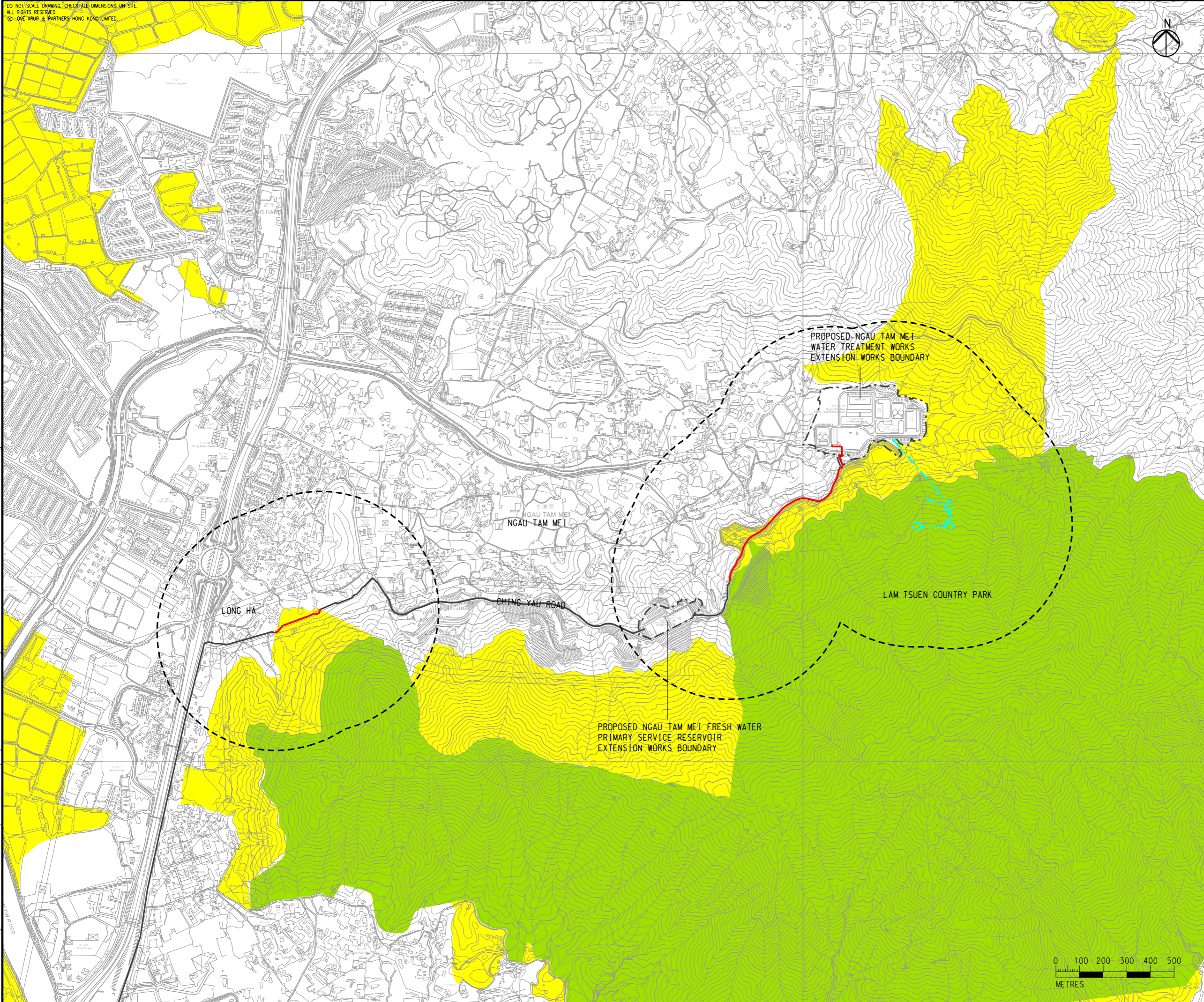
Encl.

c.c. WSD/CM - Ms. Ellie JIANG, E/CM(4) - by email (w/e)

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © OVE ARUP & PARTNERS HONG KONG LIMITED.



- LEGEND**
- PROPOSED FRESH WATER TRUNK MAIN
 - - - PROPOSED MODIFICATION OF CHAMBER G
 - CONSERVATION AREA
 - COUNTRY PARK



A	FIRST ISSUE	GL	05/23
Rev	Description	By	Date

Consultant
ARUP

Project title
 Ngau Tam Mei Water Treatment Works Extension

Drawing title
 LOCATION OF PROJECT

Drawing no.		Rev.	
FIGURE 1.1		A	
Drawn	Date	Checked	Approved
GL	05/23	EL	FC
Scale	Status		PRELIMINARY
1:15000 @A3			

COPYRIGHT RESERVED



Printed by : HKGTRAD14
 File name : \\global\EastAsia\HKG\Group\C\ENV\env\project\282551\13 Drawing Deliverables\other\20230529 New DP (EIA)\Figure 1.1 - Location of Project.dgn
 6/1/2023

From: waikeungwong@epd.gov.hk
Sent: Wednesday, June 28, 2023 5:03 PM
To: Alan Yip
Cc: Kenneth Kwok; Elvis Lau; Carrie Chu; arthurlau@epd.gov.hk
Subject: Fw: CE 78/2020 (WS) Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension – IDC: Request for Information of Chemical Spillage Accident Records

Your ref. : 282551/03-20/KK/ST/CC/NS/AY-0405

Our ref. : (9) in N06/RN00003790-23

Dear Mr. Alan YIP,

Request for Information of Chemical Spillage Accident Records

I refer to your e-mail with enclosure letter dated 19 June 23 concerning the captioned subject. This is to inform you that according to our record, there is no chemical spillage accident records at the concerned location, as delineated in the map provided by you, in the past five years. Should there be any further questions, please contact the undersigned at 2158 5833.

(WONG Wai-keung)
for Director of Environmental Protection
Tel: 2158 5833