Section 16 Planning Application for Amendments to Approved Scheme (No. A/K20/121) and Proposed Flat Use at West Kowloon Cultural District

APPENDIX 11: Water Supply Impact Assessment

April 2025

Delivering a better world

Prepared by:

AECOM Asia Company Limited
11/F, Tower 2, Grand Central Plaza, 138 Shatin Rural Committee Road, Shatin
Hong Kong
aecom.com

Table of Contents

Tables

Figures

Annexes

1. Introduction

1.1 Background

1.1.1 AECOM Asia Company Limited (AECOM) was commissioned by the project proponent to act as the engineering consultant to conduct a Water Supply Impact Assessment (WSIA) for an Indicative Scheme consisting of **OU(MU)3 North** and **OU(MU)4 North** sub-zones within the West Kowloon Cultural District (WKCD). The locations of WKCD and the Indicative Scheme refer to **WSIA/Figure 1**.

1.1.2 The Indicative Scheme comprises the development of Parcel 28/29 (i.e. Tower 1 and 2), Parcel 19/22/24/27 (i.e. Tower 3, 4 and 5), and Parcel 17 (i.e. Tower 6 and 7) as shown on **WSIA/Figure 2**.

1.1.3 This Planning Application (Application) is submitted under Section 16 (S16) of the Town Planning Ordinance to the Town Planning Board (TPB). The Applicant, the "West Kowloon Cultural District Authority" (the Applicant or the Authority) presents a scheme to develop a mixed-use residential development with Retail/ Dining/ Entertainment (RDE), as well as ancillary clubhouse facilities, on the Approved West Kowloon Cultural District Development Plan No. S/K20/WKCD/2 (DP).

1.1.4 This is presented in the context of the progressive implementation of the WKCD where major Arts and Cultural Facilities (ACF) have already been developed and are operational. Additional theatres and other supporting facilities are under construction and office developments are being implemented. A stage has been reached where the development needs of the DP need to be fine-tuned and reviewed to facilitate implementation of the remaining components of this significant waterfront development.

1.1.5 As part of the unique mixed-use context of the WKCD, a residential component has always been envisaged. The general location and maximum amount of residential development are restricted to specific zones within the WKCD DP and is subject to approval by the TPB. This Application therefore proposes the specific location for some residential development and provides the technical assessments in support of the Indicative Scheme.

1.1.6 The Indicative Scheme of this Application adopts the permitted Building Height Restriction (BHR) and Gross Floor Area (GFA) previously approved in the 2014 S16 Planning Application No. A/K20/121 (2014 Approved Scheme). The 2014 Approved Scheme permitted a relaxation of the BHR and GFA from the original parameters of the DP. The Application Site is therefore the whole of the WKCD as shown on the DP.

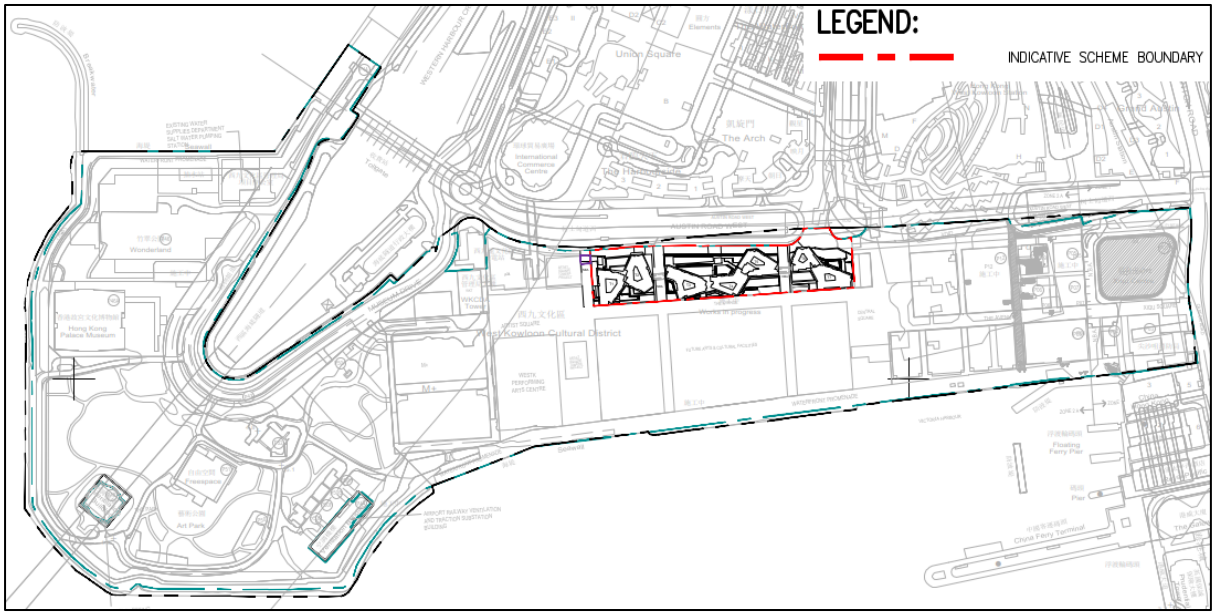


Diagram 1: Indicative Scheme Boundary of WKCD (Current Section 16 Application)

Notes:

For indicative purpose only. Notional layout subject to detailed design. The current Indicative Scheme does not form part of the Application.

1.2 Objective of this Submission

1.2.1 This report outlines the assessment results of the potential water supply impacts caused by the Indicative Scheme within WKCD. The main objectives of this assessment include the followings:

(i) Review the 2014 Approved WIA report under WKCD S16 Planning Application and WIA under Consultancy Services for Design and Administration of the Construction of Public Infrastructure Works for Phase 1 Development of the WKCD.

(ii) Estimates the water demand of the Indicative Scheme;

(iii) Identify any potential water supply impact on the water supply system proposed in 2014 Approved Scheme;

(iv) Propose water supply mitigation measures where appropriate to mitigate the potential water supply impact, if necessary.

1.3 Nomenclature

1.3.1 The following abbreviations and shortened expressions in **Table 1** are adopted in this report.

ADWF	Average Dry Weather Flow
AECOM	AECOM Asia Company Limited
CIFSUS	Commercial and Industrial Floor Space Utilization Survey (PlanD)
DSD	Drainage Services Department
EPD	Environmental Protection Department
GFA	Gross Floor Area
mPD	Metres above Principal Datum
SKMFWSR	Shek Kip Mei Fresh Water Service Reservoir
KSSWPS	Kowloon South Salt Water Pumping Station
YMTSWSR	Yau Ma Tei Salt Water Service Reservoir
PlanD	Planning Department
UFF	Unit Flow Factor
UDD	Unit Daily Demand
WSD	Water Supplies Department
WIA	Waterworks Impact Assessment
WSIA	Water Supply Impact Assessment
PIW	Public Infrastructure Works
RDE	Retail, Dining and Entertainment
BHR	Building Height Restrictions
DP	Development Plan
OU(MU)	“Other Specified Uses” annotated “Mixed Uses”

Table 1 – Nomenclature

2. Development Proposal

2.1 The Indicative Scheme

2.1.1 The Application Site area is 40.91ha. The Indicative Scheme area is not more than 19,999m^2. The Indicative Scheme comprises 7 residential towers, all-encompassing recreational facility ancillary to the domestic building, and RDE facilities to enhance vibrancy of the development.

2.1.2 The Layout Plan of the Indicative Scheme is shown in **WSIA/Figure 2**. The Indicative Scheme parameters are summarized in **Table 2** below.

Development Parameters	Indicative Scheme
Site Area • Application Site Boundary# • Lot Boundary KIL 11260 • Indicative Scheme Boundary@	 40.91 ha (not more than) 38.65 ha (not more than) 19,999 m^2 (not more than)
Gross Floor Area (GFA) of Indicative Scheme • Residential GFA "OU(MU)3" North Sub-zone (Towers 1-5) "OU(MU)4" North Sub-zone (Towers 6-7) • Retail / Dining / Entertainment* GFA "OU(MU)3" North Sub-zone (Towers 1-5) "OU(MU)4" North Sub-zone (Towers 6-7)	134,500 m^2 total (not more than) 108,500 m^2 (not more than) 26,000 m^2 (about) **
Proposed Plot Ratio (PR)	2.08^
No. of Towers	7 Residential Towers
No. of Residential Units	1,995 units (not more than)
Total No. of Storeys (excluding basement floors) • Residential Tower 1-2 • Residential Tower 3-7	 27 storeys (incl. 3 storeys of RDE and Clubhouse##) 22 storeys (incl. 3 storeys of RDE and Clubhouse##)
Maximum Building Heights (Main Roof) • Residential Tower 1-2 • Residential Towers 3-7	 100 mPD 84 mPD

Table 2 – Indicative Scheme Parameters

Notes:

 # The boundary of the WKCD DP, same as the 2014 Approved Scheme boundary

@ The boundary that reflects the location and the layout of the Indicative Scheme in reference to the DP for the purpose of S16 Planning Application. Subject to site survey.

** RDE (Retail / Dining / Entertainment) and other relevant uses permitted under Column 1 of OU(MU) zone*

^ PR adopted from Approved Scheme (with consideration of WKCD being one site)

"Clubhouse" refers to the ancillary recreational facilities for the use and benefit of all the occupiers of the domestic building or domestic part of the building which are ancillary and directly related to the development.

*** The RDE GFA initially proposed to be 26,000 m^2, is now adjusted to 20,500 m^2, subject to confirmation at Detailed Design Stage. With reduced RDE GFA, there would be less demand for water supply, and therefore less impact to surrounding infrastructure.*

3. Assessment Methodology

3.1 Unit Demand

3.1.1 Assumptions have been made for the unit daily demand (UDD) for each type of land use, for both fresh water and flushing water with reference to WSD DI1309. The UDD is used for estimating the total demand of the Indicative Scheme and the required water supply capacity to support the development.

3.1.2 The water supply demand estimation is presented in **Annex 1**.

3.1.3 The unit flow factors adopted for water demand estimation and calculation are summarised in **Table 3**.

Development Type	Flow Type	Fresh Water UDD (L/head/day)	Flushing Water UDD (L/head/day)
Domestic	Private Residential – R1	230	70
Retail, Dining & Entertainment (RDE) and Clubhouse	Service Trades	55	/

Table 3 – Unit Daily Demand adopted in Water Supply Impact Assessment

3.2 Peaking Factors

3.2.1 The peaking demand factors below shall be adopted for design according to WSD DI 1309:

- Peak flow rate in fresh water distribution mains = 3 x mean daily demand
- Peak flow in flushing water distribution mains = 2 x mean daily demand
- Peak flow rate in fresh water trunk mains = 1.5 x mean daily demand
- Peak flow rate in flushing water trunk mains = 1.2 x mean daily demand

3.3 Fire-fighting

3.3.1 In addition to the aforementioned facilities of the Indicative Scheme, water supply for fire-fighting service has been considered in this WSIA. Fire-fighting requirement for residential zone is 6,000m^3/day with discharge pressure of 17m head with reference to WSD DI 1309. **Table 4** summarizes the fire-fighting requirements.

Requirements	Minimum Values
Minimum fresh water supply	6,000 m^3/day
Discharge pressure	17m

Table 4 – Fire-Fighting Requirement

3.4 Residual Heads

3.4.1 The minimum residual heads at extremity of the fresh water and flushing water supply systems for the Indicative Scheme are adopted as follow:

- Fresh water: 20m
- Flushing water: 15m

3.5 Design Velocity

3.5.1 The desirable flow velocities for hydraulic checking are assumed as follows:

Maximum velocity (under peak flow condition)

Fresh water mains:

>DN700	≤ 3 m/s
DN700 – DN525	≤ 2.5 m/s
DN450 – DN375	≤ 2 m/s
DN300 – DN200	≤1.5 m/s

Flushing water mains:

≥DN1000	≤ 3 m/s
DN900 – DN800	≤ 2.5 m/s
DN700 – DN525	≤ 2 m/s
DN450 – DN300	≤ 1.5 m/s

Minimum velocity (under peak flow condition)

Fresh water mains	:	≥ 0.9 m/s
Flushing water mains	:	≥ 0.9 m/s

3.5.2 The pipeline shall have a minimum gradient of 1:400. Pipes shall be laid at a minimum separation of 300mm away from existing utilities and underground structures.

4. Review on Existing Water Supply System

4.1 Existing Water Supply System

Freshwater Reservoir Capacity

4.1.1 Refer to 2014 Approved Scheme Section 16 WIA for WKCD, WKCD falls within the fresh water supply zone of the Shek Kip Mei No. 2 and No. 3 Fresh Water Service Reservoir which have total design capacity of 88,188 m^3.

Salt Water Reservoir and Pumped Supply Capacity

4.1.2 The flushing water supply of the proposed WKCD area will be fed from the existing Kowloon South No. 2 Salt Water Pumping Station and existing Yau Ma Tei Salt Water Service Reservoir. The existing Kowloon South No. 2 Salt Water Pumping Station located inside WKCD with a design capacity of 68,000 m^3 /day can meet a demand of 56,667m^3 /day (68,000 / 1.2 = 56,667 m^3/day).

4.1.3 According to the 2014 Approved Scheme DP and Section 16, the existing Kowloon South No. 2 Salt Water Pumping Station was recommended to be upgraded to about 72,000m^3/day (60,000 x 1.2 = 72,000m^3/day).

4.1.4 The existing capacity of Yau Ma Tei Salt Water Service Reservoir is about 7,830m^3 and was recommended to be upgraded to about 15,000m^3 according to 2014 Approved Scheme DP and WKCD Section 16.

Existing Fresh Water Distribution System

4.1.5 An existing DN450 freshwater main along Austin Road West is available for provision of fresh water supply to the Indicative Scheme. The freshwater main alignment refers to **WSIA/Figure 3** and **WSIA/Figure 5**.

Existing Flushing Water Distribution System

4.1.6 An existing DN450 flushing water main along Austin Road West is available for provision of flushing water supply to the Indicative Scheme. The flushing water main alignment refers to **WSIA/Figure 4** and **WSIA/Figure 6**.

4.2 Impact on Existing Water Supply System

4.2.1 The Indicative Scheme is a portion of WKCD Development Site. The Indicative Scheme consists of Parcel No.: 28, 29, 24, 27, 19, 22, 17. It is currently demoted as Tower 1, Tower 2, Tower 3, Tower 4, Tower 5, Tower 6 and Tower 7. The notation of the Indicative Scheme refers to **WSIA/Figure 2**.

4.2.2 The estimated daily fresh water demand for the Indicative Scheme is 1,421.4 m^3/day and the estimated daily flushing water demand is 349.1 m^3/day. Please refer to **Annex 1** for the detailed water demand estimation calculation.

4.2.3 With reference to Approved Scheme of 2014 Section 16 Planning Application, the total fresh water demand for WKCD was 13,039 m^3/day and the total flushing water demand was 4,620 m^3/day. The fresh water and flushing water demand for areas in the previous development scheme were 2,115.4 m^3/day and 723 m^3/day respectively.

4.2.4 Based on the estimated water demand mentioned in Section 4.2.2 and 4.2.3, the total fresh water demand and flushing water demand for the Indicative Scheme is 12,345 m^3/day and 4,246 m^3/day respectively. The hydraulic checking of fresh water and flushing water main for WKCD is attached in **Annex 3** for reference.

4.2.5 The comparison table showing the total fresh water and flushing water demand for WKCD between 2014 Approved Scheme and this Application is shown in **Table 5**.

2014 Approved Scheme		Indicative Scheme	
Total Fresh Water Demand for WKCD (m^3/d)	Total Flushing Water Demand for WKCD (m^3/d)	Total Fresh Water Demand for WKCD (m^3/d)	Total Flushing Water Demand for WKCD (m^3/d)
13,039	4,620	12,345	4,246

Table 5 - Comparison table for water demand between 2014 Approved Scheme and the Indicative Scheme

4.2.6 This Application for the Indicative Scheme is the first development change within WKCD site since the approval of the 2014 application. The total water demand from other sub-zones from the 2014 Approved Scheme remains valid. There is no change to the total water demand from other sub-zones, the reduced fresh and flushing water demand under the Indicative Scheme results in reduction of total fresh and flushing water demand compared to the 2014 Approved Scheme. No adverse impact is anticipated against the existing water supply system.

5. Review on Previous Preliminary Waterworks Design

5.1.1 This section presents the preliminary waterworks related to the Indicative Scheme following the proposals of WKCD DP and Section 16 with reference to WIA under Consultancy Services for Design and Administration of the Construction of Public Infrastructure Works for Phase 1 Development of the WKCD.

Proposed Fresh Water Lead-in

5.1.2 The existing fresh water distribution system consists of DN450 and DN600 fresh water mains.

5.1.3 Fresh water lead-in is proposed near Tower 2 of the Indicative Scheme to acquire the fresh water from an existing DN450 fresh water main along Austin Road West.

5.1.4 The portion of planned DN600 along the Promenade connected to existing fresh water system near Xiqu Centre will be constructed in the future for other WKCD Development.

5.1.5 The as constructed fresh water supply system layout for WKCD corresponding to the Indicative Scheme refers to **WSIA/Figure 3** and **WSIA/Figure 5** for reference.

5.1.6 According to WSD DI 1309, the required conveying capacity for the distribution main should be 3 times of the mean daily demand. According to the hydraulic checking of water mains in **Annex 2**, the peak flow (0.0494m^3/s) of the Indicative Scheme utilising about 23% of the as-constructed DN450 fresh water main.

5.1.7 Proposed DN250 fresh water lead-in, drawing water from existing ring network to ensure the stability of the water supply, is required for the Indicative Scheme. The estimated peak flow velocity is 1.15m/s, which meets WSD's requirements.

Proposed Flushing Water Lead-in

5.1.8 The existing flushing water distribution system consists of DN450 flushing water main.

5.1.9 Flushing water lead-in is proposed between of Tower 2 and Tower 3 of the Indicative Scheme to acquire flushing water from an existing DN450 flushing water main along Austin Road West.

5.1.10 The portion of planned DN450 along the Promenade connected to existing flushing water system near Xiqu Centre will be constructed in the future for other WKCD Development.

5.1.11 The as-constructed flushing water supply system layout for WKCD corresponding to the Indicative Scheme refers to **WSIA/Figure 4** and **WSIA/Figure 6** for reference.

5.1.12 According to WSD DI 1309, the required conveying capacity for the distribution main should be 2 times of the mean daily demand. According to the hydraulic checking of water mains in **Annex 2**, the peak flow (0.0081m^3/s) utilising about 4% of the as-constructed DN450 flushing water main.

5.1.13 Proposed DN100 flushing water lead-in, drawing water from existing ring network to ensure the stability of the water supply, is required for the Indicative Scheme. The estimated peak flow velocity is 1.16m/s, which meets WSD's requirements.

5.1.14 The fresh water and flushing water supply arrangement for WKCD is subjected to WSD's agreement.

6. Conclusion

6.1.1 The WSIA has been carried out to assess the impact on the existing water supply system due to the Indicative Scheme.

6.1.2 Under the 2014 Approved Scheme, the fresh water and flushing water demand for the entire WKCD development were 13,039 m^3/d and 4,620 m^3/d respectively. Narrow down to the sub-zones under this Application, the **OU(MU)3 North** and **OU(MU)4 North** sub-zones would require fresh water demand of 1,421.4 m^3/d and flushing water demand of 349.1 m^3/d, which is considered less than the approved water demand of the same sub-zones. A new DN250 fresh water pipe and a new DN100 flushing water pipe is proposed to tee-off from existing watermain along Austin Road West for supply to the Indicative Scheme. The proposed connection will draw water from existing ring network to ensure the stability of the water supply.

6.1.3 The WSIA report focused on the Indicative Scheme within **OU(MU)3 North** and **OU(MU)4 North** sub-zones, updated the water demand according to the Indicative Scheme and then incorporate the changes to the total water demand estimation for the entire WKCD development. Hydraulic calculation confirmed existing and proposed fresh and flushing water mains would have adequate flow capacities to support the Indicative Scheme, no adverse water supply impact is anticipated due to the development.

6.1.4 The RDE GFA initially proposed to be 26,000 m^2, is now adjusted to 20,500 m^2, subject to confirmation at Detailed Design Stage. With reduced RDE GFA, there would be less demand for water supply, and therefore less impact to surrounding infrastructure.

End of Report

Figures

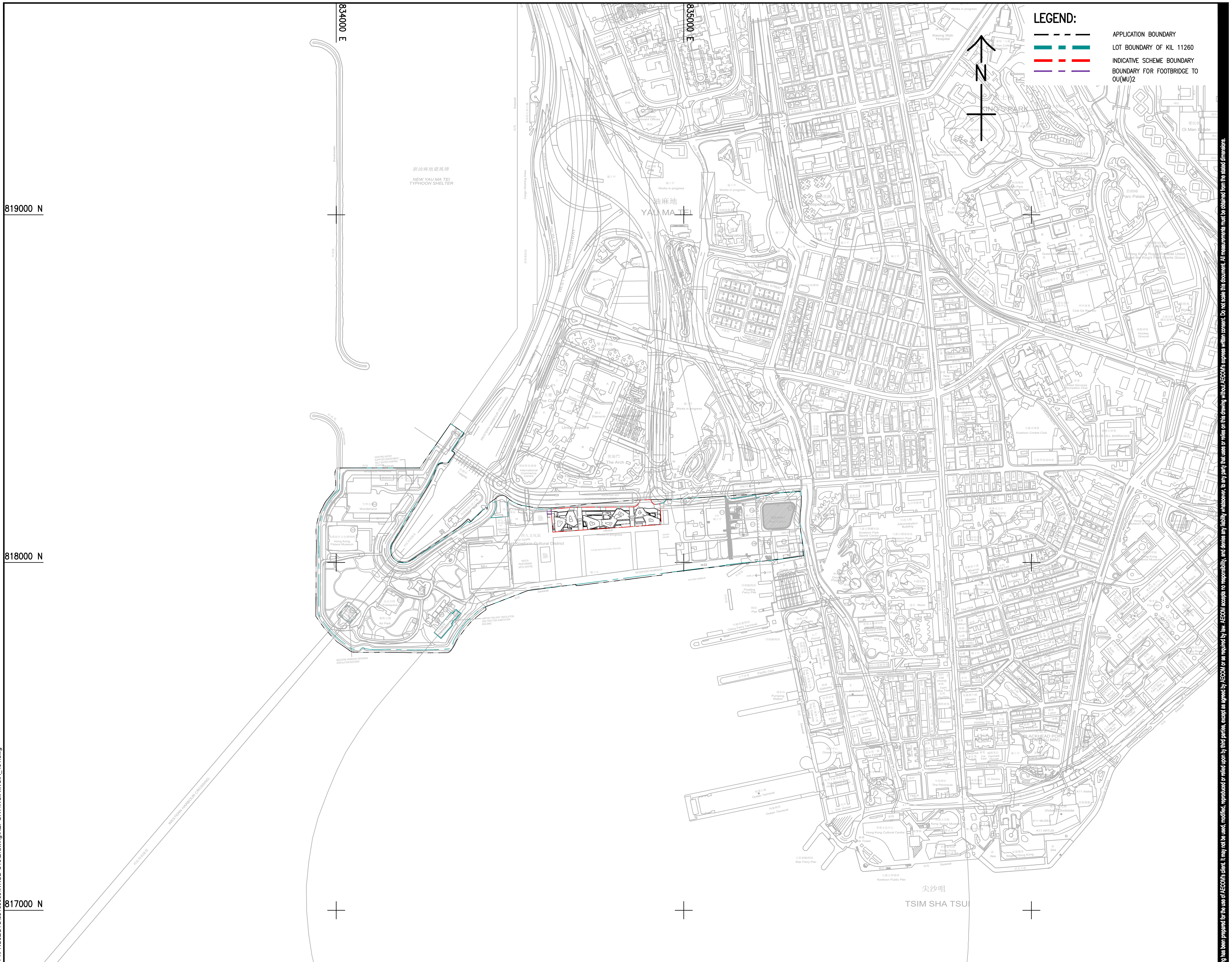
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

Plot File by: CaiJ2 11/04/2025

PATH P:\PROJECTS\60810000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_401.dwg

AECOM

PROJECT

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.
-	FEB. 23	-	-

STATUS

SCALE

A3 1 : 10000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

AGREEMENT NO.

WKCD OU(MU)3 NORTH AND OU(MU)4 NORTH

SHEET TITLE

LOCATION PLAN

SHEET NUMBER

WSIA\FIGURE 1

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

834600 E

834750 E

834900 E

N

LEGEND:

APPLICATION BOUNDARY

LOT BOUNDARY OF KIL 11260

INDICATIVE SCHEME BOUNDARY

BOUNDARY FOR FOOTBRIDGE TO OU(MU)2

AUSTIN ROAD WEST

VOID

ASB

818150 N

NBA

T1

T2

T3

T4

T5

T6

T7

NBA

NBA

P34

ARTIST SQUARE TOWERS PROJECT

THE AVENUE

CENTRAL SQUARE

ARTIST SQUARE

ARTIST SQUARE TOWERS PROJECT

FUTURE ARTS & CULTURAL FACILITIES

818000 N

WESTK PERFORMING ARTS CENTRE

WATERFRONT PROMENADE

OMENADE

* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

Plot File by: CauJ2 11/04/2025
PATH P:\PROJECTS\08100000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_402.dwg

AECOM

PROJECT

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

-	FEB. 23	-	-
I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE

A3 1 : 1500

DIMENSION UNIT

METRES

KEY PLAN A3 1 : 5000

PROJECT NO.

AGREEMENT NO.

WKCD OU(MU)3 NORTH
AND OU(MU)4 NORTH

SHEET TITLE

INDICATIVE SCHEME - LAYOUT PLAN

SHEET NUMBER

WSIA\FIGURE 2

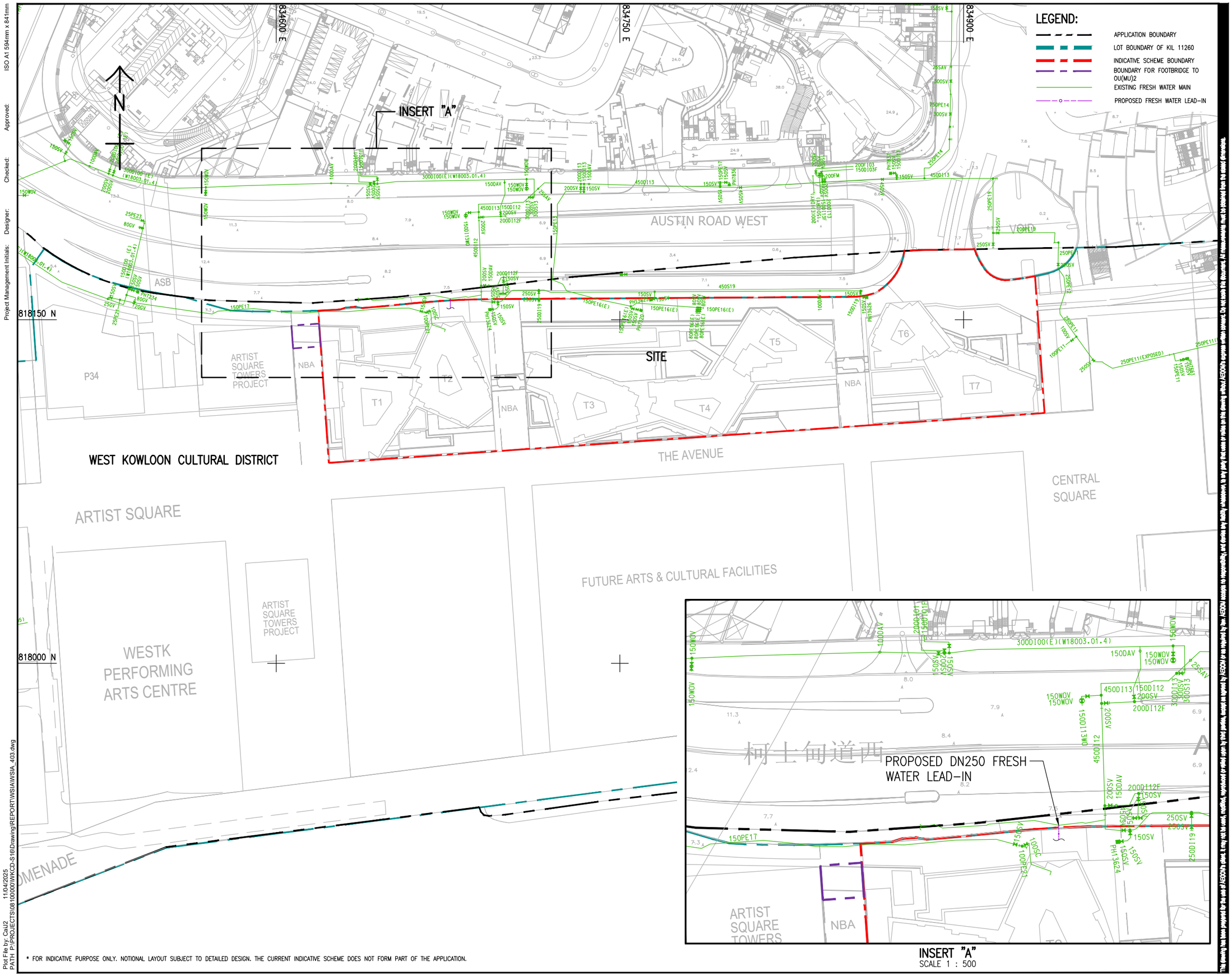
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



INSERT "A"
SCALE 1 : 500

* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

Plot File by: CauU2
PATH: P:\PROJECTS\08100000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_403.dwg
11/04/2025

AECOM

PROJECT

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

-	FEB. 23	-	-
	DATE	DESCRIPTION	CHK.

STATUS

SCALE A3 1 : 1500

DIMENSION UNIT METRES

KEY PLAN A3 1 : 5000

PROJECT NO.

AGREEMENT NO.

WKCD OU(MU)3 NORTH AND OU(MU)4 NORTH

SHEET TITLE

EXISTING FRESH WATER SUPPLY RECORD PLAN

SHEET NUMBER

WSIA\FIGURE 3

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

Plot File by: CaiJ2 11/04/2025
PATH P:\PROJECTS\60810000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_404.dwg

AECOM

PROJECT
項目

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT
業主

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

-	SEP. 24	-	-
I/R **修訂**	**DATE** **日期**	**DESCRIPTION** **內容摘要**	**CHK.** **複核**

STATUS
階段

SCALE **比例**	**DIMENSION UNIT** **尺寸單位**
A3 1 : 15000	METRES

KEY PLAN A3 1 : 5000
索引圖

PROJECT NO. **項目編號**	**AGREEMENT NO.** **協議編號**
WKCD OU(MU)3 NORTH AND OU(MU)4 NORTH	

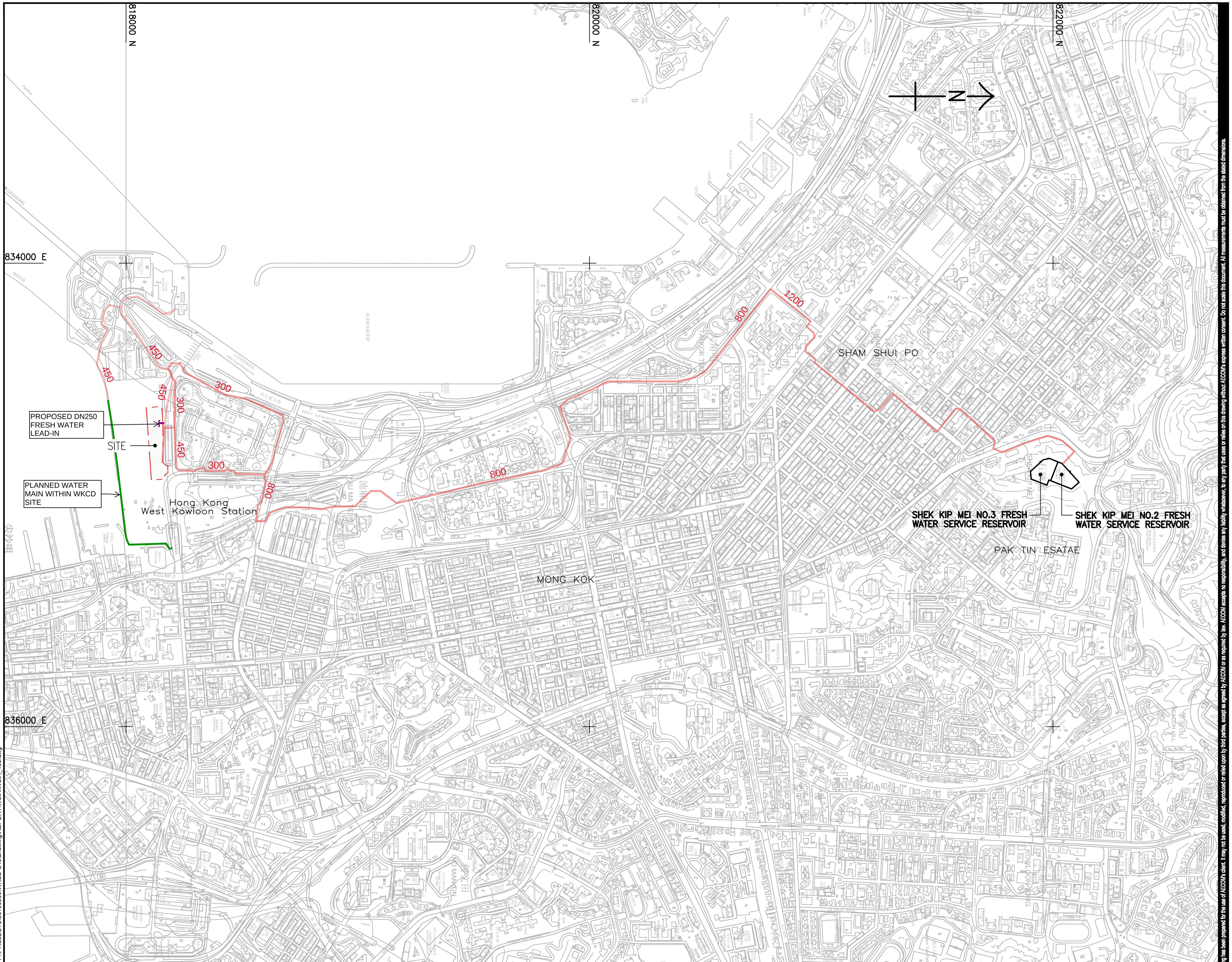
SHEET TITLE
圖紙名稱

EXISTING FLUSHING WATER SUPPLY RECORD PLAN

SHEET NUMBER
圖紙編號

WSIA\FIGURE 4

Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

Plot File by: ZHILZ 11/04/2025
PATH P:\PROJECTS\08100000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_405.dwg

AECOM

PROJECT 項目

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT 業主

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 審核
-	FEB. 23	-	-

STATUS 階段

SCALE 比例 A3 1 : 6500

DIMENSION UNIT 尺寸單位 METRES

KEY PLAN 索引圖

PROJECT NO. 項目編號

WKCD OU(MU)3 NORTH AND OU(MU)4 NORTH

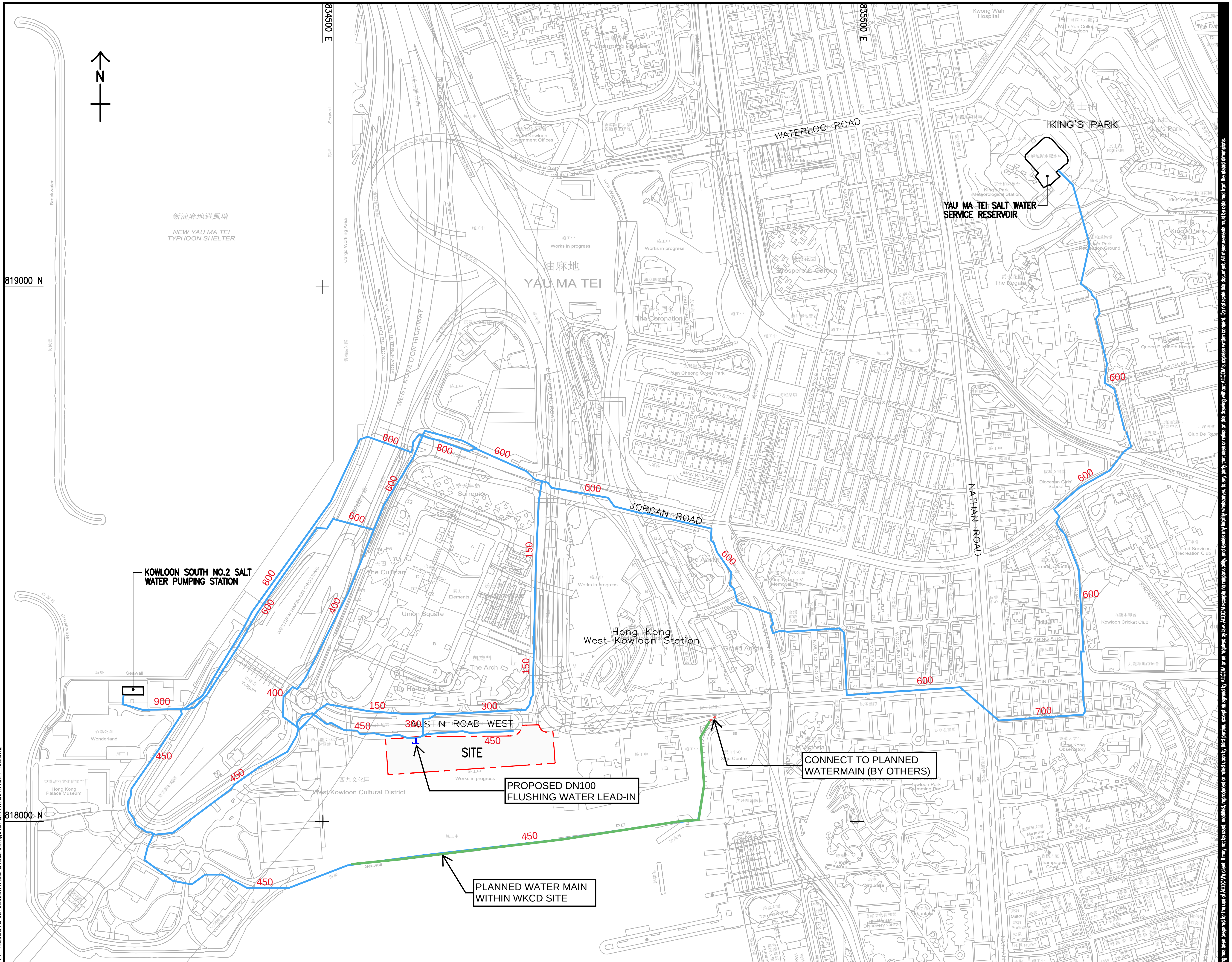
AGREEMENT NO. 協議編號

SHEET TITLE 圖紙名稱

INDICATIVE FRESHWATER SUPPLY NETWORK PLAN

SHEET NUMBER 圖紙編號

WSIA\FIGURE 5



* FOR INDICATIVE PURPOSE ONLY. NOTIONAL LAYOUT SUBJECT TO DETAILED DESIGN. THE CURRENT INDICATIVE SCHEME DOES NOT FORM PART OF THE APPLICATION.

ISO A1 594mm x 841mm

Project Management Initials: Designer: Checked: Approved:

Plot File by: CaiJ2 11/04/2025
PATH: P:\PROJECTS\60810000\WKCD-S16\Drawing\REPORT\WSIA\WSIA_406.dwg

AECOM

PROJECT 項目

SECTION 16 PLANNING APPLICATION FOR AMENDMENTS TO APPROVED SCHEME (NO. A/K20/121) AND PROPOSED FLAT USE AT WEST KOWLOON CULTURAL DISTRICT

CLIENT 業主

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 審核
-	FEB. 23	-	-

STATUS 階段

SCALE 比例: A3 1 : 6500

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN 索引圖

PROJECT NO. 項目編號

AGREEMENT NO. 協議編號

WKCD OU(MU)3 NORTH AND OU(MU)4 NORTH

SHEET TITLE 圖紙名稱

INDICATIVE FLUSHING WATER SUPPLY NETWORK PLAN

SHEET NUMBER 圖紙編號

WSIA\FIGURE 6

Annex 1

Water Demand Estimation

Annex 1 - Summary of Water Demand for the Indicative Scheme

Water Demand Compare with Approved S16 WIA

Total fresh water is calculated / updated from approved S16 WIA report (2014). This updated WSIA estimated fresh water demand of 1,421.4 m3/day for the Indicative Scheme (Parcel 17, 19, 22, 24, 27, 28 and 29), after updating the fresh water demand for these parcels. The total fresh water demand for WKCD becomes 12,345 m3/day.

Updated Total Fresh Water Demand for WKCD is estimated below:

			Total Fresh Water demand under Approved S16	-	Fresh Water demand of relevant WKCD parcels	+	Current Fresh Water demand of the Indicative Scheme
Equals to:	12,345 m3/d	=	13,039 m3/d	-	2,115.4 m3/d	+	1,421.4 m3/d

Similarly, total flushing water demand is calculated / updated from approved S16 WIA report (2014). The updated flushing water demand is 349.1 m3/day for the Indicative Scheme (Parcel 17, 19, 22, 24, 27, 28 and 29), after updating the flushing water demand for these parcels. The total flushing water demand for WKCD becomes 4,246 m3/day.

Updated Total Flushing Water Demand for WKCD is estimated below:

			Total Flushing Water demand under Approved S16	-	Flushing Water demand of relevant WKCD parcels	+	Current Flushing Water demand of the Indicative Scheme
Equals to:	4,246 m3/d	=	4,620 m3/d	-	723 m3/d	+	349.1 m3/d

Water Demand Estimation for the Indicative Scheme

					Unit Demand (L/h/d)			Indicative Scheme		2014 Approved Scheme S16 Planning Application	
Location (Parcel no. in 2014 Approved Scheme S16 WIA)		No. of Units	Person/Unit	Population	Fresh Water	Flushing Water	Service Trade	Fresh Water Demand (m^3/d)	Flushing Water Demand (m^3/d)	Fresh Water Demand (m^3/d)	Flushing Water Demand (m^3/d)
Tower 1 and 2 (CP28/29)	Residential (R1)	741	2.5	1,853	230	70		528.0	129.7	617.3	195.1
	Service Trade			1,853			55				
Tower 3, 4 and 5 (CP19/22/24/27)	Residential (R1)	836	2.5	2,090	230	70		595.7	146.3	908.1	315.8
	Service Trade			2,090			55				
Tower 6 and 7 (CP17)	Residential (R1)	418	2.5	1,045	230	70		297.8	73.15	590.0	212.1
	Service Trade			1,045			55				
							Total	1421.4	349.1	2115.4	723.0

Remark:
(1) Assume water demand for employee of clubhouse, RDE facilities have been taken in account as Service Trade using 100% domestic population
(2) Refer to DI1309 Table 2, the unit daily demand for Shum Shui Po is adopted for service trade

Annex 2

Hydraulic Review of Water Mains and Lead-in for the Indicative Scheme

Annex 2 - Hydraulic Review of Existing Fresh and Flushing Water Main along Austin Road West for the Indicative Scheme

Fresh Water Demand

Estimated Fresh Water Demand	1421.4	m^3/day
	0.0165	m^3/s

Flushing Water Demand

Estimated Flushing Water Demand	349.1	m^3/day
	0.0040	m^3/s

Hydraulic Review for Existing DN450 fresh water main		
Fresh water demand	1421.4	m^3/day
Peak factor[(1)]	3.0	
Peak flow rate from the Indicative Scheme	0.0494	m^3/s
Size of proposed water main	450	mm
Size of proposed water main (inner diameter)	424	mm
Cross section area (inner diameter)	0.141	m^2
Peak flow velocity	0.35	m/s
Flow velocity limit for DN450 [(2)]	1.50	m/s
Capacity of DN 450	0.212	m^3/s
Utilization	23	%

Hydraulic Review for Existing DN450 flushing water main		
Flushing water demand	349.1	m^3/day
Peak factor[(1)]	2.0	
Peak flow rate from the Indicative Scheme	0.0081	m^3/s
Size of proposed water main	450	mm
Size of proposed water main (inner diameter)	424	mm
Cross section area	0.141	m^2
Peak flow velocity	0.06	m/s
Flow velocity limit for DN450 [(2)]	1.50	m/s
Capacity of DN 450	0.212	m^3/s
Utilization	4	%

Remark:

(1) Peak factor for distribution main is assumed to be 3 for fresh water main and 2 for flushing water main

(2) Velocity limit of water main is assumed to be 1.5m/s for DN 450

(3) Inner diameter of proposed water main is referenced from https://www.pland.gov.hk/pland_en/p_study/comp_s/SaiYeeStreetStudy/MKE-txt.pdf

Annex 2 - Hydraulic Review of Proposed Fresh and Flushing Water Lead-in for the Indicative Scheme

Fresh Water Demand

Estimated Fresh Water Demand	1421.4	m^3/day
	0.0165	m^3/s

Flushing Water Demand

Estimated Flushing Water Demand	349.1	m^3/day
	0.0040	m^3/s

Hydraulic Review for DN250 fresh water main		
Fresh water demand	1421.4	m^3/day
Peak factor[(1)]	3.0	
Peak flow rate from the Indicative Scheme	0.0494	m^3/s
Size of proposed water main	250	mm
Size of proposed water main (inner diameter)	233	mm
Cross section area (inner diameter)	0.043	m^2
Peak flow velocity	1.15	m/s
Flow velocity limit for DN300 [(2)]	1.50	m/s
	ok	

Hydraulic Review for DN100 flushing water main		
Flushing water demand	349.1	m^3/day
Peak factor[(1)]	2.0	
Peak flow rate from the Indicative Scheme	0.0081	m^3/s
Size of proposed water main	100	mm
Size of proposed water main (inner diameter)	95	mm
Cross section area	0.007	m^2
Peak flow velocity	1.16	m/s
Flow velocity limit for DN100 [(2)]	1.50	m/s
	ok	

Remark:

(1) Peak factor for distribution main is assumed to be 3 for fresh water main and 2 for flushing water main

(2) Velocity limit of water main is assumed to be 1.5m/s for DN 250 and 1.5m/s for DN100

(3) Inner diameter of proposed water main is referenced from https://www.pland.gov.hk/pland_en/p_study/comp_s/SaiYeeStreetStudy/MKE-txt.pdf

Annex 3

Hydraulic Review of Water Mains for WKCD (For Reference)

Annex 3 - Hydraulic Review of Fresh and Flushing Water Main for WKCD

Fresh Water Demand

Estimated Fresh Water Demand	12345	m^3/day
	0.1429	m^3/s

Flushing Water Demand

Estimated Flushing Water Demand	4246	m^3/day
	0.0491	m^3/s

Hydraulic Review for Existing DN600 fresh water main		
Fresh water demand	12345	m^3/day
Peak factor[(1)]	3.0	
Peak flow rate from development site	0.4286	m^3/s
Size of proposed water main	600	mm
Size of proposed water main (inner diameter)	586	mm
Cross section area (inner diameter)	0.270	m^2
Peak flow velocity	1.59	m/s
Flow velocity limit for DN600 [(2)]	2.50	m/s
Capacity of DN 600	0.675	m^3/s
Utilization	63	%

Hydraulic Review for Existing DN450 flushing water main		
Flushing water demand	4246	m^3/day
Peak factor[(1)]	2.0	
Peak flow rate from development site	0.0983	m^3/s
Size of proposed water main	450	mm
Size of proposed water main (inner diameter)	424	mm
Cross section area	0.141	m^2
Peak flow velocity	0.70	m/s
Flow velocity limit for DN450 [(2)]	1.50	m/s
Capacity of DN 450	0.212	m^3/s
Utilization	46	%

Remark:

(1) Peak factor for distribution main is assumed to be 3 for fresh water main and 2 for flushing water main

(2) Velocity limit of water main is assumed to be 1.5m/s for DN 450 and 2.5m/s for DN600

(3) Inner diameter of proposed water main is referenced from https://www.pland.gov.hk/pland_en/p_study/comp_s/SaiYeeStreetStudy/MKE-txt.pdf