Appendix IV

Air Ventilation Assessment – Expert Evaluation

Issue No.	:	1
Issue Date	:	October 2025
Project No.	:	2215

AIR VENTILATION ASSESSMENT

FOR

PROPOSED SCAA SPORTS LINK AT SOUTH CHINA ATHLETIC ASSOCIATION, 88 CAROLINE HILL ROAD, HONG KONG

Prepared by

Allied Environmental Consultants Limited

Document Verification

Project Title	Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong	**Project No.**	2215
Document Title	Air Ventilation Assessment		

Issue No.	Issue Date	Description	Prepared by	Checked by	Approved by
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1. Executive Summary

1.1.1. An Air Ventilation Assessment – Expert Evaluation (AVA-EE) study was conducted for the Section 16 Planning Application for Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong to provide qualitative evaluation of wind performance under Baseline and Proposed Scheme.

2. Introduction

2.1.1. Allied Environmental Consultants Limited ("AEC") has been commissioned to prepare an Air Ventilation Assessment ("AVA") in support of the Section 16 Planning Application for Proposed SCAA Sports Link ("Proposed Development") at South China Athletic Association, 88 Caroline Hill Road, Hong Kong ("Subject Site").

3. Objectives

3.1.1. The main objective of the study is to evaluate potential air ventilation impacts associated with the Proposed Development on pedestrian wind environment within and in the vicinity of the Subject Site using the methodology framework as set out by relevant government standard, guidelines and technical circulars.

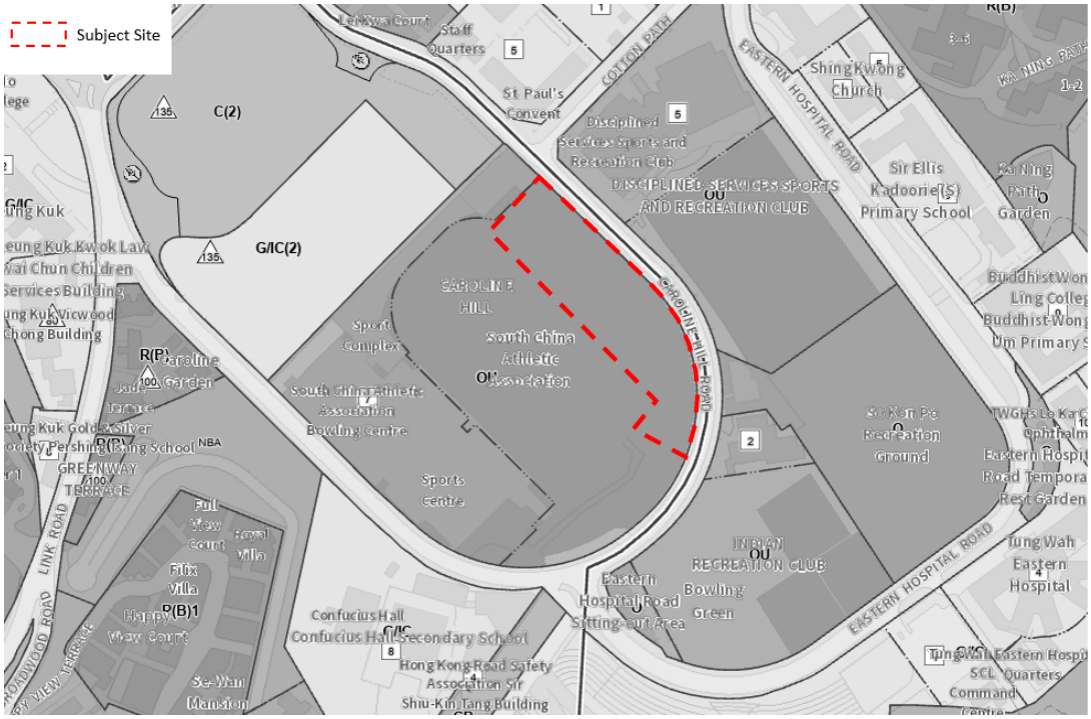
4. Description of the Proposed Development

4.1.1. The Proposed Development is a 4-story complex consist of facilities for sports and recreational usage (i.e., Multi-proposed/ activities Rooms, artificial turf pitches, tennis courts and ancillary office & facilities etc.). The site layout plans for the Proposed Development are provided in ***Appendix 4.1***.

4.1.2. Subject Site falls within Wong Nai Chung Inland Lot No. 9041 zoned Other Specified Uses (Sports and Recreation Club) ("OU (Sports and Recreation Club)") on the Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21. The Proposed Development is expected to be operated in Year 2030.

4.1.3. The Subject Site area is approximately 6,132m^2. It is located at the north of the existing South China Stadium of South China Athletic Association, and at the south of the Disciplined Services Sports and Recreation Club. Its surrounding areas are zoned Other Specified Uses ("OU"), Government, Institution or Community ("G/IC"), Commercial ("C"), Open Space ("O"), Residential (Group B) ("R(B)"), Residential (Group C) ("R(C)") and Green Belt ("GB"). ***Figure 4.1*** shows the location of the Subject Site.

Figure 4.1 Subject Site Location



5. Methodology

5.1.1. The methodology framework of this study is set out in the Technical Circular No. 1/06 and its Annex A - Technical Guide for Air Ventilation Assessment for Development in Hong Kong. The Technical Circular is jointly issued by Housing, Planning and Lands Bureau (HPLB) and Environment, Transport and Work Bureau (ETWB) in July 2006 (Technical Guide).

5.1.2. The scope of this study shall cover the following:

- To identify any major wind corridors which should be preserved or reserved;
- To identify any potentially affected areas due to the Proposed design including the layout and deposition;
- To identify good design features; and
- To provide recommendations for alleviating the potential air ventilation impact identified.

6. Assessment Methodology

6.1. Wind Availability Data

Hong Kong Observatory

6.1.1. The Hong Kong Observatory records the metrological data in Hong Kong. Among all the weather stations in Hong Kong, wind data from Hong Kong Observatory station shall be used for the discussion on overall wind environment in the region.

6.1.2. According to the wind availability data from Hong Kong Observatory station from 1991 - 2020, the annual wind rose revealed winds flowing from the east throughout the year. The wind data from July to September is adopted as the summer prevailing wind, where predominant summer winds are flowing from the east and west. The wind rose during annual and summer conditions are shown in ***Figure 6.1*** and ***Figure 6.2*** respectively.

Figure 6.1 Annual Wind Rose for Hong Kong Observatory Station, 1991 - 2020

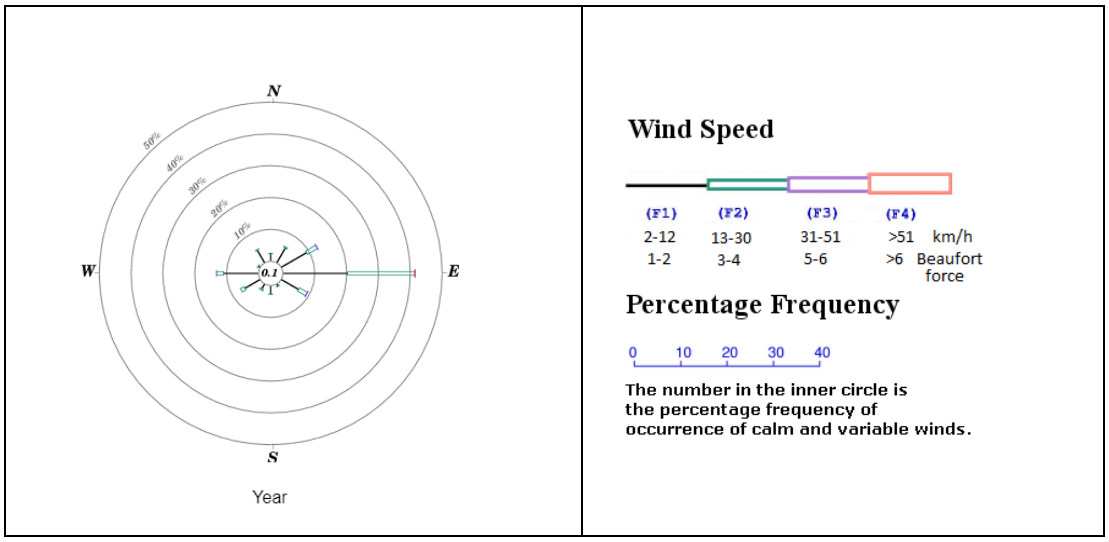
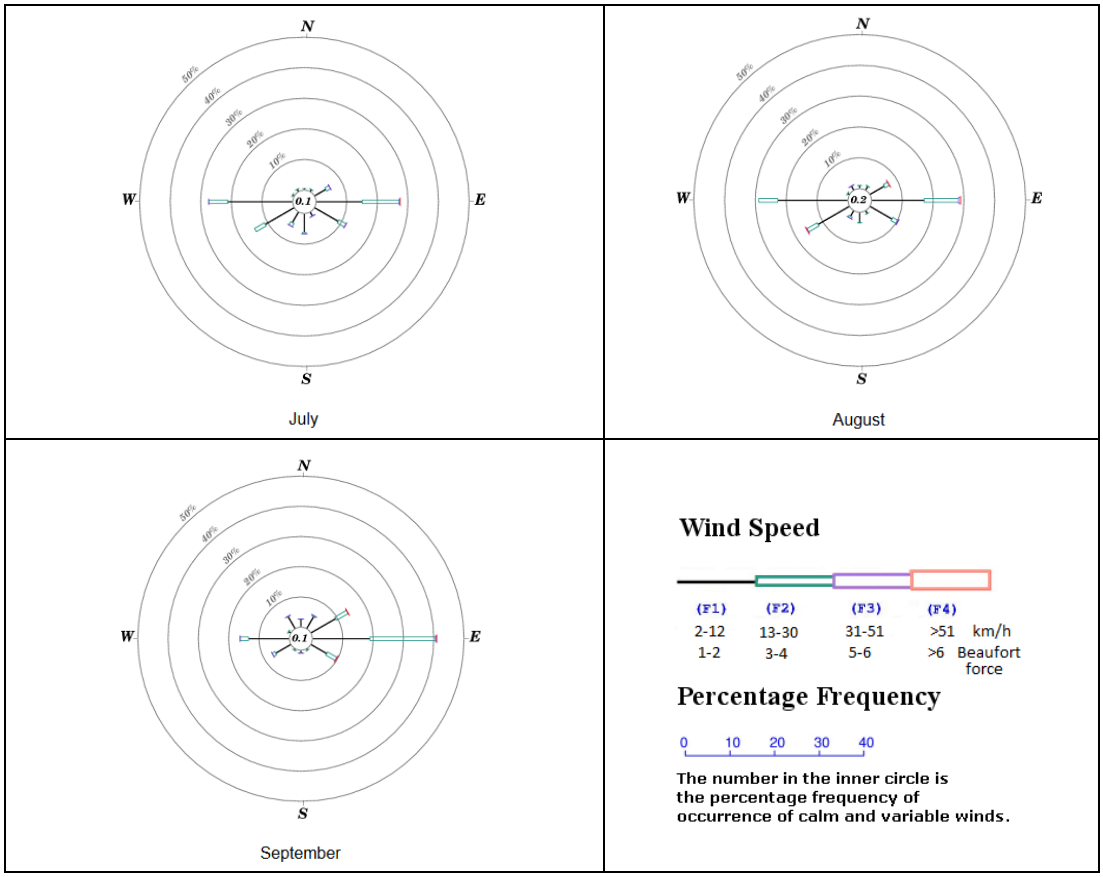


Figure 6.2 Summer Wind Rose for Hong Kong Observatory Station, 1991 - 2020



Regional Atmospheric Modelling System (RAMS)

6.1.3. Wind availability to the Subject Site is evaluated with reference to the "Consultancy Study on Establishment of Simulated Site Wind Availability Data for Air Ventilation Assessments in Hong Kong" simulated by the meso-scale model of Regional Atmospheric Modelling System (RAMS) Version 6.0 at the horizontal resolution of 0.5km * 0.5km.

6.1.4. The Subject Site is located within grid (083,033) in Causeway Bay. Wind availability data at 200m was adopted in this assessment. According to PlanD's simulated data, wind roses, wind direction and wind probability data are provided in ***Figure 6.3*** and ***Table 6.1***.

Figure 6.3 Wind Rose at Grid (083,033)

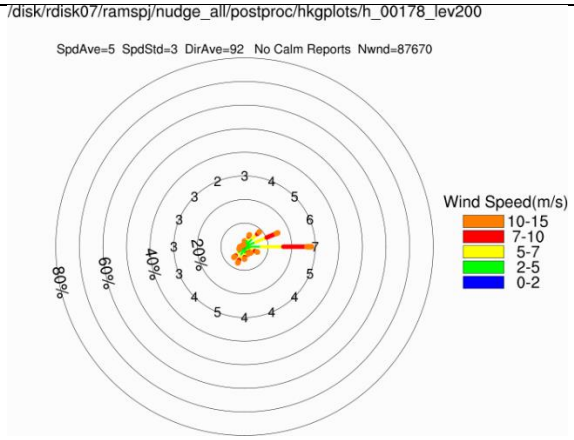
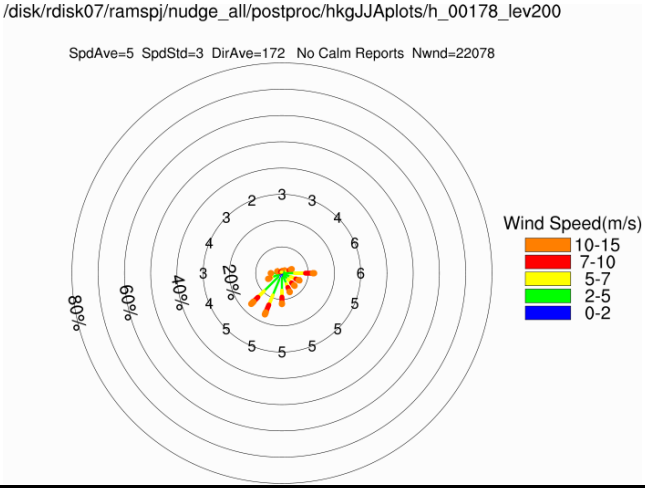
Wind Rose – Annual	
200m	
Wind Rose – Summer	
200m	

Table 6.1 Wind Probability at 200m (Grid 083,033)

Wind Direction	Annual Probability	Summer Probability
N	2%	1%
NNE	5%	1%
NE	**9%**	2%
ENE	**15%**	4%
E	**29%**	**12%**
ESE	6%	7%
SE	4%	7%
SSE	4%	8%
S	5%	**12%**
SSW	7%	**17%**
SW	6%	**17%**
WSW	3%	6%
W	2%	4%
WNW	1%	2%
NW	1%	1%
NNW	1%	1%

6.1.5. According to RAMS wind data, annual prevailing winds are the incoming winds flowing from the northeast quadrant (i.e. NE, ENE, E) while summer prevailing winds are flowing from southwest quadrant (i.e S, SSW, SW) and from E directions.

6.1.6. Among the two sets of wind data, ***Table 6.2*** summarises the identified prevailing wind conditions of in Causeway Bay area. For a comprehensive discussion on air ventilation performance of the Subject Site and the wind environment at pedestrian level, RAMS data is more appropriate as it is the most updated.

Table 6.2 Wind Data Summary

Sources	Annual Wind	Summer Wind
Hong Kong Observatory (Hong Kong Observatory station from 1991 -2020)	E	E, W
RAMS data (Grid 083,033)	NE, ENE, E	E, S, SSW, SW

7. Surrounding Environment

Urban Morphology

7.1.1. The Subject Site is surrounded by low to mid-rise GIC developments (approx. 20-50mPD) and sport centre (approx. 40-90mPD). The building heights near the surrounding and the land use in surroundings are summarized in ***Table 7.1*** and ***Figure 7.1*** respectively.

Table 7.1 Building Heights of Major Development in the Surroundings

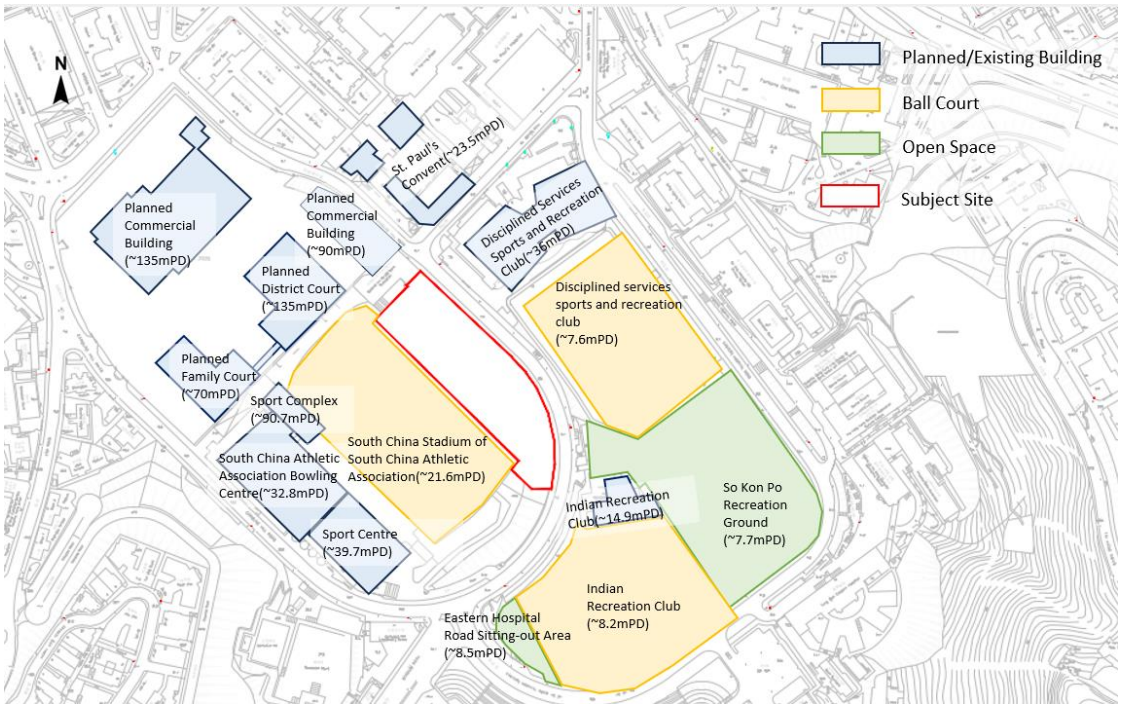
Surrounding Buildings	Building Heights (mPD)
Sport Complex	~90.7
Sports Centre	~39.7
South China Athletic Association Bowling Centre	~32.8
Indian Recreation Club	~8.2-14.9
Disciplined Services Sports and Recreation Club	~36
South China Athletic Association	~21.6
Disciplined services sports and recreation club	~7.6
So Kon Po Recreation Ground	~7.7
Eastern Hospital Road Sitting-out Area	~8.5
St. Paul's Convent	~23.5
Staff Quarters	~16.7
Planned Commercial Buildings	~90-135[1]
Planned District/Family Court	~70-135[2]

Note:

[1] Reference to Application for Permission under Section 16 of The Town Planning Ordinance (A/H7/181).

[2] Reference to Legco Paper "Item for Public Works Subcommittee of Finance Committee (PWSC(2022-23)3) on 33LJ – Construction of a District Court Building at Caroline Hill Road".

Figure 7.1 Surrounding Environment



8. Baseline Scheme and Proposed Scheme

7.1.2. The Subject Site falls within an area of OU (Sports and Recreation Club) on the Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21. The existing condition of the site is incorporated in Baseline Scheme and compared with the Proposed Scheme in the discussion of this report.

7.1.3. The major design parameters of Proposed Scheme are summarized in ***Table 8-1.*** Layout plans and section drawing under Proposed schemes are shown in ***Appendix 3.1.*** Comparison between Baseline Scheme (OZP-Compliant Scheme) and Proposed Scheme are made to evaluate any impacts on the overall air ventilation performance in its surrounding area.

Table 8-1 Major design parameters of Proposed Scheme

	Proposed Scheme
Site Area (m^2)	About 6,132
Gross Floor Area (m^2)	About 31,327.12
No. of Storey	4
Building Height (mPD)	45.4

7.1.4. Special design considerations have been adopted in Proposed Scheme. In particular, good design features including the provision of building setback and increased building permeability have been incorporated in the Proposed Scheme upon the consideration of site and design constraint criterion. These good design features are discussed in the following sections.

Building Setback

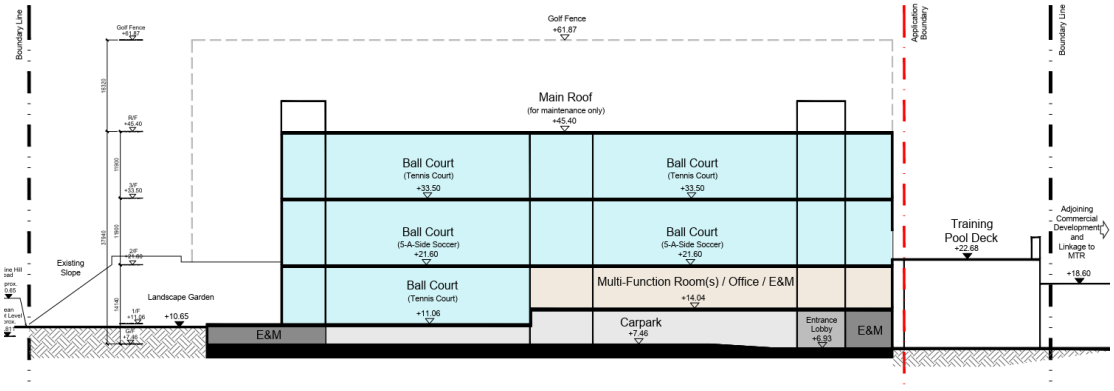
7.1.5. Building setback could reduce blockage in particular the perimeter of a development. The landscape garden at the southeastern portion is located at G/F which setbacks the building façade from the site boundary of over 20m. The building setback allows more wind at pedestrian level to flow across the site along Caroline Hill Road, thus improving wind environment along the road and local areas at the south of the Subject Site. The building setback is indicated in ***Figure 8.1.***

Figure 8.1 Building Setback at G/F

Increased building permeability

7.1.6. Under the Proposed Scheme, perforated movable curtain and fence are adopted for Ball Court from 2/F to 3/F to further increase the wind penetration and decrease the bulkiness of the Proposed Development. It facilitate the penetration of both incoming annual and summer prevailing winds to benefit the wind environment in the surrounding area. The section of the Proposed Development is shown in ***Figure 8.2.***

Figure 8.2 Section of the Proposed Development



9. Expert evaluation

E, ENE and NE wind

9.1.1. Under annual prevailing wind condition, incoming E, ENE and NE wind would flow through the Sport Ground of Disciplined Services Sports and Recreation Club (~7.6mPD) and So Kon Po Recreation Ground (~7.7mPD) at the east of the Subject Site and reach the Subject Site as shown in ***Figure 9.1.***

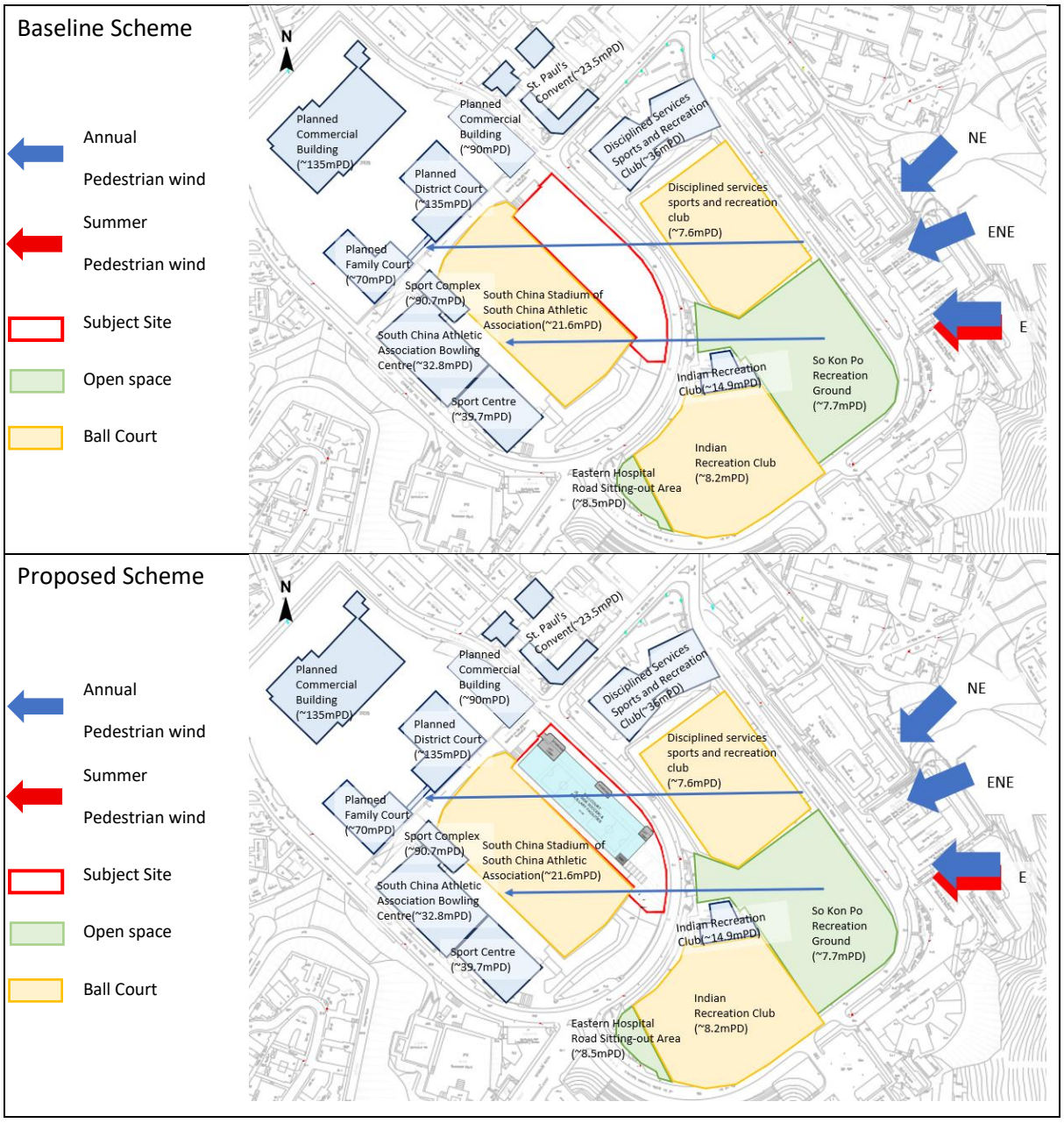
9.1.2. Under the Baseline Scheme, the existing condition of the Subject Site with no obstruction is beneficial to the wind flow from easterly direction. Incoming E, ENE and NE wind could easily penetrate through the Subject Site and reach the downwind area of South China Stadium and Planned GIC building (i.e. Planned Family Court).

9.1.3. Under the Proposed Scheme, the Proposed Development adopt perforated movable curtain and fence at 2/F to 3/F (i.e. 2/F is about 22mPD), which is the same level of the South China Stadium of South China Athletic Association. The perforated fence could allow incoming wind to penetrate across the Proposed Development to reach the downwind area of South China Stadium of South China Athletic Association at pedestrian level. It is expected that the adverse impact on downwind areas will be reduced due to its minimal obstruction.

9.1.4. In addition, the southeastern portion of the Proposed Development is optimized under the Proposed Scheme to facilitate the flow of easterly wind. Under the Proposed Scheme, at least 20m setback from the southeastern site boundary will be provided. The building setback allows more incoming wind to penetrate through the Subject Site at pedestrian level, thus improving wind environment along the road and local areas at the west of the Subject Site.

9.1.5. With the increased building permeability and the provision of building setback from the southeastern site boundary, it is expected that the impacts on wind environment at downwind areas including South China Stadium of South China Athletic Association and Planned family Court under the Proposed Scheme could be minimized.

Figure 9.1 Wind Environment under E, ENE, NE wind



SSW, SW & S Wind

9.1.1. Under summer prevailing wind condition, the incoming SSW, SW and S wind would flow from the South China Stadium of Sports Centre South China Athletic Association at the southeast of the Subject Site and to reach the Subject Site as shown in ***Figure 9.2***.

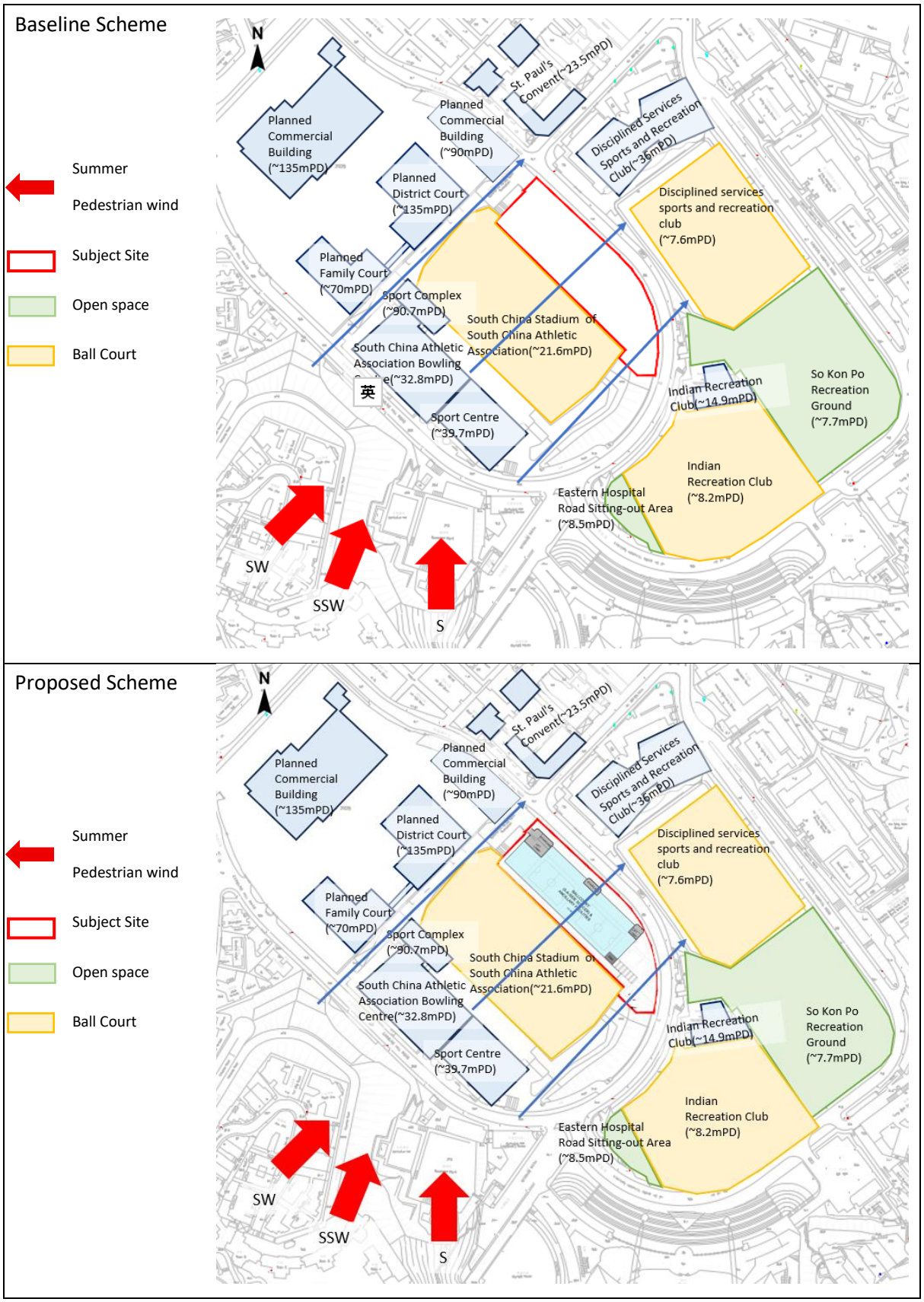
9.1.6. Under the Baseline Scheme, Incoming SSW, SW and S wind could skim over the low-rise South China Athletic Association Bowling Centre (~32.8mPD) and the building gap between the Planned Family Court and Sport Complex Sports Centre. The existing condition of the Subject Site with no obstruction is beneficial to the wind flow from southwestern direction, further reach the downwind area of the Subject Site, Sport Ground of Disciplined Services Sports and Recreation Club and So Kon Po Recreation Ground.

9.1.7. Under the Proposed Scheme, the Proposed Development adopt perforated movable curtain and fence at 2/F to 3/F (i.e. 2/F is about 22mPD), which is the same level of the upwind area of the South China Stadium of South China Athletic Association. The perforated fence could allow incoming wind to penetrate across the Proposed Development to reach the downwind area of Sport Ground of Disciplined Services Sports and Recreation Club at pedestrian level. It is expected that the adverse impact on downwind areas will be reduced due to its minimal obstruction.

9.1.8. In addition, the southeastern portion of the Proposed Development is optimized under the Proposed Scheme to facilitate the flow of southwestern wind. Under the Proposed Scheme, at least 20m setback from the southeastern site boundary will be provided. The building setback allows more incoming SW, SSW, and S wind to penetrate through the Subject Site at pedestrian level, thus improving wind environment along the road and local areas at the east of the Subject Site.

9.1.9. With the increased building permeability and the provision of building setback from the southeastern site boundary, it is expected that the impacts on wind environment at downwind areas including Sport Ground of Disciplined Services Sports and Recreation Club and So Kon Po Recreation Ground under the Proposed Scheme could be minimized.

Figure 9.2 Wind Environment under SW, SSW and S wind



10. Conclusion

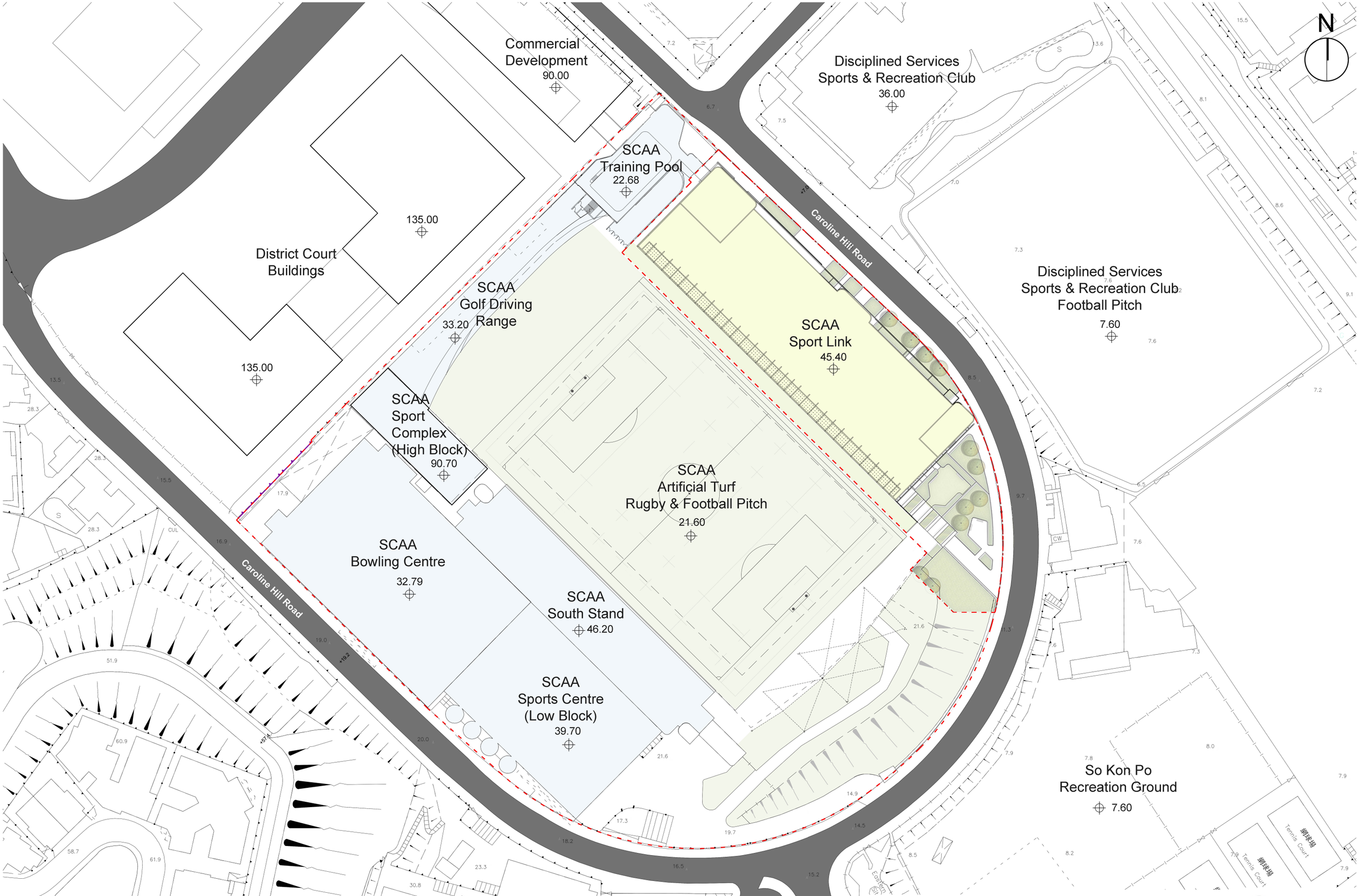
10.1.1. An AVA-EE study was conducted for the for Development of Comprehensive Sports & Recreation Centre to provide qualitative evaluation of wind performance of the proposed development under the Baseline and the Proposed Scheme.

10.1.2. The Proposed Scheme adopts perforated movable curtain and fence at 2/F to 3/F and building setback from the southeastern site boundary. It further increases the wind penetration and decrease the bulkiness of the Proposed Development, facilitating the penetration of both incoming annual and summer prevailing winds to benefit the wind environment in the surrounding area. The incoming winds further reach the downwind areas of South China Stadium of South China Athletic Association and Planned family Court under annual prevailing E, ENE and NE wind, and the Sport Ground of Disciplined Services Sports and Recreation Club and So Kon Po Recreation Ground under summer prevailing SW, SSW and S winds.

10.1.3. With the good design features to improve air ventilation performance, including building setback, and perforated fence adopted in the Proposed Development, it is anticipated that there shall be insignificant impact to the wind environment in the surrounding area associated with the Subject Site.

Appendix 4.1

Site Layout Plan



Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

Master Layout Plan ◦ 1:1000 (A3) ◦ 13 Oct 2025

Design 2 Architects

N

LEGEND
- LOT BOUNDARY
- APPLICATION SITE BOUNDARY
- LANDSCAPED AREA
- CARPARK
- LIFT LOBBY/ STAIRCASE
- E&M
- SPORTS FACILITIES
- MUTI-FUNCTION AREA
- MAINTENANCE ROOF

COTTON PATH

DISCIPLINED SERVICES SPORTS & RECREATION CLUB

DISCIPLINED SERVICES SPORTS & RECREATION CLUB FOOTBALL PITCH

CAROLINE HILL ROAD

+6.93
STAIRCASE
LIFT LOBBY +6.93
E&M
U/UL
LAY-BY AREA
+7.46
+7.55
STAIRCASE
CARPARK +7.46
+8.36
STAIRCASE
LIFT LOBBY
E&M
+9.46
+10.80
+10.65
+12.23
+14.13
+15.83

SCAA TRAINING POOL

UNEXCAVATED AREA

Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong
G/F Plan ◦ 1 : 500 (A3) ◦ 13 Oct 2025

Design 2 (HK) Limited

N

LEGEND

- LOT BOUNDARY
- APPLICATION SITE BOUNDARY
- LANDSCAPED AREA
- CARPARK
- LIFT LOBBY/ STAIRCASE
- E&M
- SPORTS FACILITIES
- MUTI-FUNCTION AREA
- MAINTENANCE ROOF

COTTON PATH

DISCIPLINED SERVICES SPORTS & RECREATION CLUB

DISCIPLINED SERVICES SPORTS & RECREATION CLUB FOOTBALL PITCH

CAROLINE HILL ROAD

SCAA TRAINING POOL

STAIRCASE

LIFT LOBBY

STAIRCASE

MUTI-FUNCTION ROOMS & ANCHILLARY FACILITIES

+14.04

BALLCOURT (TENNIS) & ANCILLARY FACILITIES

+11.06

STAIRCASE

LIFT LOBBY

LANDSCAPE AREA

+11.57

+10.45

+11.06

+10.65

+12.23

+16.69

UNEXCAVATED AREA

Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

1/F Plan ◦ 1 : 500 (A3) ◦ 13 Oct 2025

Design 2 (HK) Limited

N

LEGEND
- LOT BOUNDARY
- APPLICATION SITE BOUNDARY
- LANDSCAPED AREA
- CARPARK
- LIFT LOBBY/ STAIRCASE
- E&M
- SPORTS FACILITIES
- MUTI-FUNCTION AREA
- MAINTENANCE ROOF

COTTON PATH

DISCIPLINED SERVICES SPORTS & RECREATION CLUB

DISCIPLINED SERVICES SPORTS & RECREATION CLUB FOOTBALL PITCH

CAROLINE HILL ROAD

STAIRCASE

STAIRCASE

STAIRCASE

LIFT LOBBY

LIFT LOBBY

+22.68

SCAA TRAINING POOL

BALL COURT
(5-A-SIDE SOCCER)
& ANCILLARY FACILITIES

+21.60

E&M

SCAA GOLF DRIVING RANGE

SCAA ARTIFICIAL TURF RUGBY FOOTBALL PITCH

+21.60

Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

2/F Plan ◦ 1 : 500 (A3) ◦ 13 Oct 2025

Design 2 (HK) Limited

N

LEGEND
- LOT BOUNDARY
- APPLICATION SITE BOUNDARY
- LANDSCAPED AREA
- CARPARK
- LIFT LOBBY/ STAIRCASE
- E&M
- SPORTS FACILITIES
- MUTI-FUNCTION AREA
- MAINTENANCE ROOF

COTTON PATH

DISCIPLINED SERVICES SPORTS & RECREATION CLUB

DISCIPLINED SERVICES SPORTS & RECREATION CLUB FOOTBALL PITCH

CAROLINE HILL ROAD

STAIRCASE

STAIRCASE

STAIRCASE

E&M

LIFT LOBBY

LIFT LOBBY

+22.68

SCAA TRAINING POOL

BALLCOURT (TENNIS) & ANCILLARY FACILITIES

+33.50

E&M

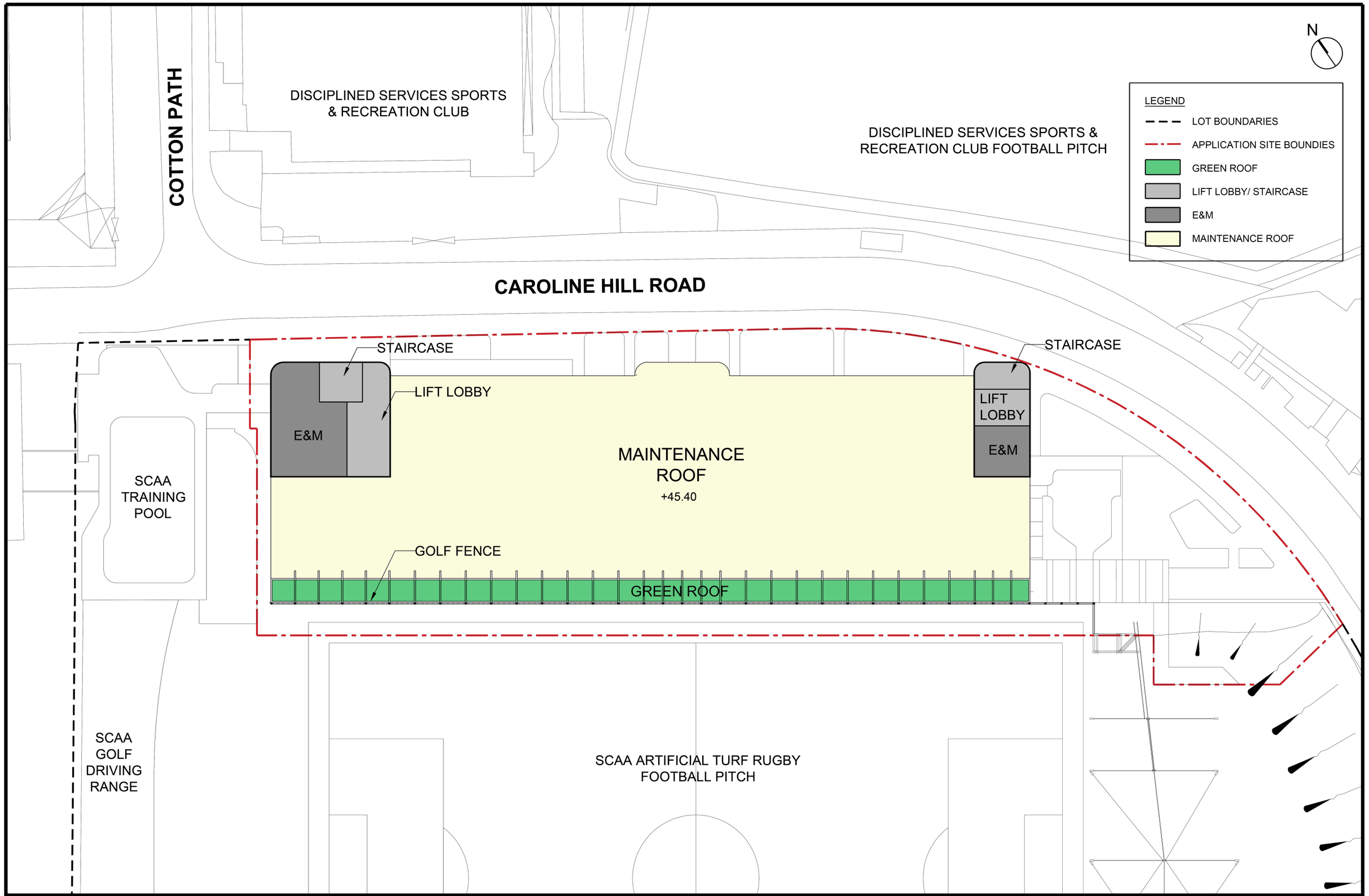
SCAA GOLF DRIVING RANGE

SCAA ARTIFICIAL TURF RUGBY FOOTBALL PITCH

Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

3/F Plan ◦ 1 : 500 (A3) ◦ 13 Oct 2025

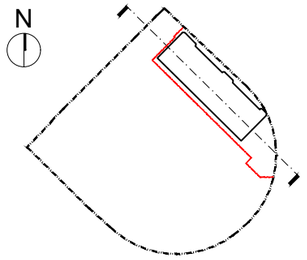
Design 2 (HK) Limited



Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

Design 2 (HK) Limited

UR/F Plan ◦ 1 : 500 (A3) ◦ 13 Oct 2025



Key Plan

LEGEND

- LOT BOUNDARY
- APPLICATION SITE BOUNDARY
- LANDSCAPE AREA
- CARPARK
- LIFT LOBBY
- E/M
- SPORT FACILITIES
- MULTI-FUNCTION AREAS
- MAINTENANCE ROOF

SCAA Sports Link

SCAA Training Pool

Adjoining Commercial Development

Boundary Line

Application Boundary

Boundary Line

Golf Fence +61.60

Golf Fence +61.60

Golf Fence +61.60

16200

11900

11900

10540

3600

37940

R/F +45.40

3/F +33.50

2/F +21.60

1/F +11.06

G/F +7.46

+48.90

Entrance Lobby / E&M

Main Roof (for maintenance only) +45.40

+48.90

Entrance Lobby / E&M

Ball Court (Tennis Court) +33.50

Ball Court (Tennis Court) +33.50

Ball Court (5-A-Side Soccer) +21.60

Ball Court (5-A-Side Soccer) +21.60

Ball Court (Tennis Court) +11.06

Multi-Function Room(s) / Office / E&M +14.04

Carpark +7.46

Entrance Lobby +6.93

E&M

E&M

Carpark

Linkage with Training Pool

Linkage with Adjoining Development

Training Pool +22.68

+18.60

16200

11900

11900

37940

7560

6580

R/F +45.40

3/F +33.50

2/F +21.60

1/F +14.04

G/F +7.46

Caroline Hill Road

Existing Slope

Approx. +10.65

Landscape Garden

+10.65

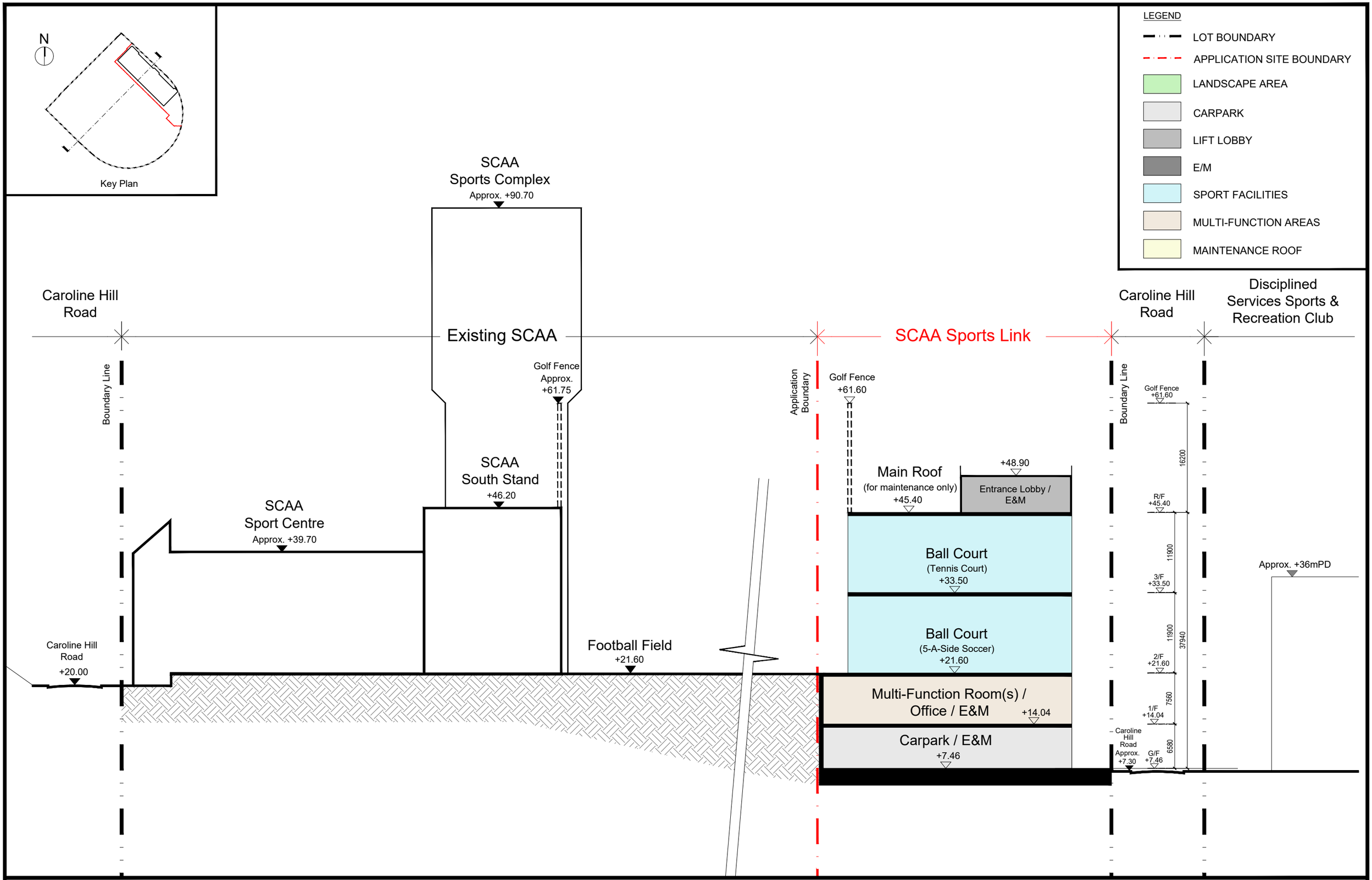
+8.811

Mean Street Level of North Site

Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

Section A-A ○ 1 : 500 (A3) ○ 13 Oct 2025

Design 2 (HK) Limited



Proposed SCAA Sports Link at South China Athletic Association, 88 Caroline Hill Road, Hong Kong

Section B-B ○ 1 : 500 (A3) ○ 13 Oct 2025

Design 2 (HK) Limited