# Subsidized Sale Flats Development at Tseung Kwan O Area 65C2
# Quantitative Air Ventilation Assessment

Prepared by:
**Ramboll Environ Hong Kong Limited**

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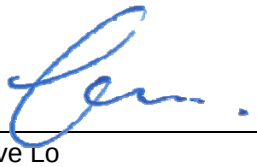
Prepared by: 

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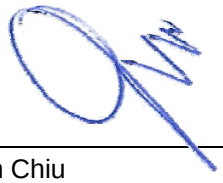
Approved by: 

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# 1. Introduction

## 1.1 Background and Objectives

1.1.1 The Subject Site at Tseung Kwan O Area 65C2 is to be developed as residential development under Home Ownership Scheme.

1.1.2 This quantitative air ventilation assessment report has been prepared to evaluate the potential air ventilation impact of the proposed development scheme Architectural drawings and technical information on the Proposed Development are provided by Hong Kong Housing Authority.

## 1.2 Site Environs

1.2.1 The subject site is situated in Tseung Kwan O Town Centre South (i.e. reclaimed area to the south of Po Yap Road). The subject site is zoned R(A)4 under Tseung Kwan O Outline Zoning Plan (OZP No. S/TKO/21) with two building height restriction of 45 and 85 mPD respectively for the eastern and western portions. The location and environs are shown in **Figure 1**.

1.2.2 The subject site is bounded by Chi Shin Street to the northwest and waterfront to the east. It is located along the waterfront on the east side. To the immediate west is the existing Evangel College. The areas on the northern and southern sides are planned for private residential development. These proposed private residential developments are being implemented. To the further northwest are existing Bauhinia Garden, Yee Ming Estate and Tseung Kwan O Methodist Primary School. The ground elevation around subject site is generally flat and around 6mPD.

## 1.3 Baseline Scheme

1.3.1 **Appendix A** shows the Baseline Scheme for assessment purpose. There are two domestic block with elevation of 44.97mPD or 83.47mPD (i.e. main roofs of higher portion of Block A and Block B are about 83.47mPD; main roofs of lower portion of Block A and Block B about 44.97mPD.). There is a semi-basement carpark between two domestic blocks, a 3-storey Retail/ Commercial Block to the east, and a 5-storey Welfare and Community block to the west.

## 1.4 Proposed Scheme

1.4.1 **Appendix B** shows the proposed building design. Basically, the Proposed Scheme adopted similar building design with the Baseline Scheme, including same building form, building height and disposition. It is noted that some addition ground floor opening (i.e. bicycle parking area) is provided under Block A near the southern boundary.

# 2. Site Wind Availability

## 2.1 Site Wind Availability Data

2.1.1 Wind monitoring data at station such as Waglan Island is not considered suitable to be adopted for the subject site due to completely different topography and building morphology and in turn the effect on the wind availability.

2.1.2 The nearest Hong Kong Observatory weather station is situated at Haven of Hope Hospital at more than 1.3km to the northwest of the Subject Site and elevated at 38m above mean sea level with hill slope to the west. The location where the weather station resides is in inland area and topographically different from the vicinity of the Subject Site at the waterfront.

2.1.3 Experimental site wind data for TKO prepared by The Chinese University of Hong Kong can be found from Planning Department's website. The experimental wind data was prepared for a study area among Po Lam district which is more than 2km to the northwest of the Subject Site. Again, the topography is quite different from the vicinity of the Subject Site as well.

2.1.4 Simulated site wind availability data prepared using the meso-scale numerical model Regional Atmospheric Modeling System (RAMS) and available in Planning Department's website is considered the best appropriate data for this study. RAMS data for grid (x:099;y:039) representing the grid location of the subject site is adopted for study.

2.1.5 **Figure 2** indicates the dominance of each of the 16 wind directions and distribution of wind speed under annual and summer situations.

2.1.6 According to the site wind availability data shown in **Figure 2**, easterly and northeasterly winds are prevailing annually. East and southerly wind are prevailing in summer.

2.1.7 **Table 1** showed the summary of the simulated annual site wind availability data including probability of occurrence and average wind speed. In this quantitative air ventilation assessment, CFD (computational fluid dynamic) tool will be employed. According to the Technical Guide, simplification of wind data for the Initial Study has been adopted. The wind directions with highest probability of occurrence are selected for assessment purpose. Eight wind directions were selected with overall frequency of occurrence over 75% of the time in a year.

**Table 1 Summary of Simulated Site Wind Availability Data (V∞) and Wind Direction based on Annual Prevailing Winds for Initial Study**

| Wind Direction | Probability | | Wind Direction selected for Initial Study | Probability | |
|---|---|---|---|---|---|
| | Annual | Summer | | Annual | Summer |
| N | 3% | 1% | | | |
| NNE | 7% | 2% | NNE | 7% | 2% |
| NE | 11% | 2% | NE | 11% | 2% |
| ENE | 15% | 4% | ENE | 15% | 4% |
| E | 17% | 9% | E | 17% | 9% |
| ESE | 9% | 8% | ESE | 9% | 8% |
| SE | 6% | 7% | SE | 6% | 7% |
| SSE | 5% | 8% | SSE | 5% | 8% |
| S | 5% | 10% | S | 5% | 10% |
| SSW | 6% | 15% | SSW | 6% | 15% |
| SW | 7% | 16% | SW | 7% | 16% |
| WSW | 4% | 9% | WSW | 4% | 9% |
| W | 2% | 5% | | | |
| WNW | 1% | 2% | | | |
| NW | 1% | 2% | | | |
| NNW | 1% | 1% | | | |
| | 100% | 100% | | 91% | 88% |

2.1.8 The wind direction and average wind speed selected for this assessment represents the condition at 500m height.

# 3. Quantitative Assessment Methodology

## 3.1 CFD Code and Major Parameters

3.1.1 A quantitative assessment based on requirement for Initial Study stipulated in the technical guide was conducted for the purpose to verify the air ventilation performance for the Proposed Scheme.

3.1.2 The quantitative assessment was conducted using a commercial CFD code, PHOENICS. PHOENICS employs structured grid with fine-grid embedding to fit small-scale flow features without the computational overhead of fully-unstructured grids. Turbulence models include various versions of K-epsilon model (such as RNG & Low Reynolds Number Model), LVEL, Kolmogorov-Wilcox two- equation k-f model and other models such as RSM and Sub-Grid-Scale LES model.

3.1.3 Modified version of K-epsilon turbulence models which give better prediction of separation and vortexes are adopted for air ventilation assessment. In this study, the Chen-Kim modified KE-EP turbulence model has been employed. The Chen-Kim model is a variant of K-ε based on comparison with experimental data. This model involves a modification which improves the dynamic response of the EP equation by introducing an additional time scale (KE/PK), where PK is the volumetric production rate of KE. The model maintains good agreement with experimental data on classical turbulent shear layers. Moreover, this is based on the KE-EP model which is appropriate for high-reynolds number problem such as external flow. These models are statistical turbulence models and are generally regarded as practical to model steady state condition. It uses different constants, and has an addition term in the ε equation. The effect of the changes is to reduce the turbulent viscosity in regions of high shear - e.g. in recirculation zones. Hence, it predicts a longer recirculation zone, in agreement with experimental evidence. The Chen-Kim model gives better prediction of separation and vortexes. It does not only keep the merits or Renormalization Group (RNG) model but also have nice results happening to jet stream fluid and feather fluid. The equation and parameters adopted in Chen-Kim turbulence model is shown below for reference:

| Equation | $\Phi$ | $\Gamma_\Phi$ | $S_\Phi$ |
|---|---|---|---|
| *Turb. Kin. Energy* | $k$ | $\nu_t / \sigma_k$ | $\rho(G-\varepsilon)$ |
| *Dissipation Rate* | $\varepsilon$ | $\nu_t / \sigma_\varepsilon$ | $\rho(\varepsilon/k)(C_{\varepsilon 1}G - C_{\varepsilon 2}\varepsilon) + \rho C_{\varepsilon 3} G^2 / k$ |

$$G = \nu_t \ (\partial_k U_i + \partial_i U_k) \ \partial_k U_i \ ; \ \nu_t = C_\mu \ k^2 / \varepsilon$$

$$(\sigma_k, \sigma_\varepsilon, C_{\varepsilon 1}, C_{\varepsilon 2}, C_{\varepsilon 3}, C_\mu) = (0.75, 1.15, 1.15, 1.9, 0.25, 0.09)$$

3.1.4 It is understood that LES/DES generally requires careful application by the user, because compared to statistical turbulence modeling, the approach requires more accurate spatial resolution on finer meshes and small time steps, and as a consequence significant amounts of computer time. Typically, the time step should be in the range 1/200 to 1/50 of the large-eddy turnover time. Otherwise, there will be inadequate time resolution. Also, there is always the possibility of numerical damping of the fluctuations. LES and DES have the potential to produce more accurate solutions than statistical turbulence models, but misuse of these methods is fairly common due to inadequate temporal and spatial resolution. Considering the practicability issue, statistical turbulence model is considered a viable choice which can achieve generally acceptable level of accuracy.

3.1.5 The domain (**Appendix C**) covers the model area of 340m (>2H where H, assumed to be 170m which is higher the building height of Oscar by the Sea (167mPD), is the maximum height of buildings within the surrounding area) from the subject site boundary. It is confirmed that all major noise barriers, elevated structures, and planned / committed / existing developments in the model area have been modelled in the simulation. The domain dimension is about 2900m x 2900m and with an elevation of 1000m. 1-phase fluid is modeled at standard pressure. More than 5,000,000 grid cells are defined to simulate the air flow. Cartesian coordinate cell grid system is adopted with refinement within an area which is within about H from the Subject site (and with denser grid near ground level). The grid size is generally smaller within the assessment area (<1m) and coarse outside and within the surrounding area. Grid expansion ratio is not more than 1.2. The grid size near the domain boundary on 4 sides and ceilings are >30m. It is defined in such a way that there will be at least 3 cells within major building gaps. For major streets/roads containing the test point, generally 5 to 7 cells would be defined between walls/objects. The test point will be assigned in such a way that there will be at least 2 to 3 cells from the building façade or major obstacle. Within the level of 0 to 2m aboveground, there will be 3 cells defined (i.e. 3 cell layers along ground surface) so that the result taken would be taken at the 3$^{rd}$ or 4$^{th}$ cell, instead of the cell adjacent to ground. Similarly, all test points would not be taken at the cell adjacent to wall/object.

3.1.6 Lateral clearance is nearly 1000m on each side. The vertical distance between the proposed development and the ceiling of the CFD domain amounts to more than 800m. The distance between the proposed development and the inflow/outflow amounts to more than 1300m. The percentage blockage is less than 3%.

3.1.7 The commonly used hybrid-differencing scheme in PHOENICS is adopted. This scheme employs the 1st-order upwind-differencing scheme (UDS) in high-convection regions; and the 2nd-order central-differencing scheme (CDS) in low-convection regions automatically. It strikes a balance between accuracy and computing efficiency with the low-convection region (which is usually more difficult to predict) using higher order scheme.

3.1.8 The convergence factor is 0.1% (i.e. all simulation result reached the convergence level of 0.1% or lower). Some test spot values (with test point defined and scattered in assessment area, upwind, downwind and aside the development within the assessment area) are also checked to ensure that steady solution is arrived.

## 3.2 Atmospheric Conditions

3.2.1 Wind profile of RAMS site wind availability data is directly adopted. For elevation from 0 to 20m whose wind profile information is not available, the wind speed is assumed based on the Log Law fitted based on the wind speed value of RAMS site wind availability data from 10 to 100m. The wind profile assumption with respect to the selected wind directions for Initial Study is shown in **Figure 4**.

## 3.3 Test Point Location

3.3.1 Test points include 30 numbers of perimeter test point defined along the boundary of the subject site, 64 numbers of overall test points around the subject site within the assessment area (1H from subject site boundary) and 7 special test points within the Subject Site.

3.3.2 The overall test point generally represents important pedestrian areas – Chi Shin Street, path between Bauhinia Garden/Yee Ming Estate and TKO Methodist Primary School, garden to the northwest and waterfront area. Planned developments are taken into account in the simulation with their latest available scheme incorporated into the model (see **Figure 1, 3, 5**).

3.3.3 All these test points are located at 2m aboveground. **Figure 3** showed the location of the test points.

# 4. Assessment Result

## 4.1 Good Design Direction for Site Level

4.1.1 According to the guidelines in Chapter 11 of HKPSG, the key principles to consider in order to improve air ventilation performance in site level include podium structure, building disposition, building permeability, building form, landscaping, projecting obstruction and cool materials.

4.1.2 *Podium Structure*. Compact integrated developments and podium structures with full or large ground coverage on extensive sites typically found in Hong Kong are particularly impeding air movement (e.g. developments in TKO district which adopts large and high podium design). The principle to improve air ventilation at ground pedestrian level is to reduce coverage, provide setback, designate open area and improve building permeability.

4.1.3 *Building Disposition*. Adequate wide gaps should be provided between buildings. The axis of buildings should be in parallel to prevailing wind direction where possible. Staggering building to allow blocks behind to receive wind through gap and erecting towers abut the podium edge facing pedestrian area to enable most of the downwash are also preferred in general.

4.1.4 *Building Permeability*. The focus is to create building gap and highly permeable podium garden.

4.1.5 *Building Form*. Building form to amplify wind around it is preferable.

4.1.6 *Landscaping, Projecting Obstruction and Cool Materials.* Landscaping & use of cool materials would be encouraged whereas projecting obstruction would be avoided.

4.1.7 In addition, it is important to identify and preserve all important air corridors.

## 4.2 Evaluation of Merit/Demerit of Design Features of the Proposed Scheme

*Preservation of Air Space/Air Path*

4.2.1 The Subject Site follows the OZP requirement and preserve the identified air path along the channel and promenade area on the east and southeast sides. In addition, there are Non-building area within the Subject Site.

*Podium Structure*

4.2.2 The proposed development does not include podium building to cover the entire site. The podium-free design can help to avoid excessive near ground building structure that obstructs wind flow at lower elevation and is considered a benefit under all wind directions.

*Building Height*

4.2.3 The towers in the proposed development have a maximum building height of 83.47mPD and 44.97mPD respectively for two parcels of area with respective building height restriction of 85mPD and 45mPD. In other words, the building height requirement under the OZP is fully complied with and not considered excessive.

*Building Disposition and Development Permeability*

4.2.4 There are many buildings required for the proposed development, including two residential towers, a semi-basement Carpark, a retail/ commercial Block and a community & warfare block. To accommodate all these uses, it will result in high building coverage. In spite of this, it is attempted to provide building setback from site boundary including 4.5m non-building area along waterfront on the southeast side, 10m air path along the southern boundary and various building setback from other site boundaries. This results in relatively limited building separation between blocks within the Subject Site. Wind passing around the Subject Site is encouraged whereas wind penetration through the site may be blocked at ground floor pedestrian level in some extent. Nevertheless, apart from the two residential towers, other building blocks are low-rise in nature (1 to 5 storeys) so that it is possible for wind to pass through the site at higher elevation and then down to the pedestrian level at area further apart from the Subject Site.

4.2.5 In the Proposed Scheme, it is noted that some addition ground floor opening is provided under Block A near the southern boundary. It is anticipated that these opening will enhance the building permeability and surrounding wind penetration.

*Landscaping, Projecting Obstruction and Cool Materials*

4.2.6 Greening and use of cool materials can help to reduce heat island effect. In addition to ground floor open space, the proponent will explore to provide greening for area at the roof of a semi-basement Carpark and a retail/ commercial Block to improve the situation as well.

## 4.3 Quantitative Assessment Result - Spatial Average Wind Velocity Ratio

4.3.1 The wind velocity ratio (VR) under a specific wind direction at a test point is calculated by dividing the simulated wind speed at the test point under this wind direction with the velocity at gradient height under the same wind direction.

4.3.2 **Table 2** showed the site spatial average velocity ratio (SVR), local spatial average velocity ratio (LVR) and average VR of other focused areas.

4.3.3 The wind velocity ratios of individual test points are shown in **Figure 6a** and **Figure 6b** respectively for annual condition of the Baseline Scheme and Proposed Scheme, where Figure 7a and Figure 7b respectively for summer condition of the Baseline Scheme and Proposed Scheme. All the test points results are taken at and summer situation.

4.3.4 **Appendix C** shows VR color plot at pedestrian level. **Appendix D** shows detailed VR result for tested wind directions.

**Table 2 Summary of Spatial Average Wind Velocity Ratios (VR)**

| Spatial Average Wind Velocity Ratio (VR) | Annual Condition | | Summer Condition | |
|---|---|---|---|---|
| | Proposed Scheme | Baseline Scheme | Proposed Scheme | Baseline Scheme |
| SVR (P01 – P30) | 0.16 | 0.16 | 0.16 | 0.16 |
| LVR (P01 – P30, T01 – T64) | 0.18 | 0.18 | 0.18 | 0.18 |
| TKO South Waterfront Promenade (P12-P19, T02, T16-T43) | 0.23 | 0.23 | 0.24 | 0.24 |
| Chi Shin Street (P01-P04, T01-T15) | **0.16** | **0.15** | 0.12 | 0.12 |
| Garden to the northwest (T07-T10, T49, T55-T57) | 0.15 | 0.15 | 0.13 | 0.13 |
| Special Test Points within Subject Site (S01-S07) | 0.13 | 0.13 | **0.13** | **0.12** |

Note: bold value represents different VR

4.3.5 According to the spatial average VR result, it is noted that both SVR and LVR are the same under annual and summer condition. Generally, Proposed Scheme and the Baseline are similar in both annual and summer condition, where there are some areas where sligh improvements in VR are found in the Proposed Scheme, i.e. Chi Shin Street (annual condition) and air movement within Subject Site (summer condition).

4.3.6 It is believed that the additional ground floor opening provided under Block A allowed southerly wind penetration under summer condition and enhanced easterly wind flow under annual condition. Therefore some improvement in VR is observed from the CFD simulation.

4.3.7 For other inland areas including Chi Shin Street and the garden to the northwest of the Subject Site, relatively lower VR is predicted in summer. This can be explained by the fact that there is no north-south aligned air path that can facilitate southerly wind penetration to these focused areas. However, in general, the ventilation performance for two design options are very similar.

# 5. Concluding Summary

5.1.1 To summarize, the Subject Site is situated at the waterfront. Regarding the proposed development, building setback from waterfront area is provided. There are also building setback provided from other site boundaries to encourage wind flow around the Subject Site.

5.1.2 Building height restriction stipulated in the OZP is observed and complied with to avoid building of excessive height.

5.1.3 According to the quantitative assessment by means of CFD simulation, Proposed Scheme and the Baseline are similar in both annual and summer condition, where there are some areas where sligh improvements in VR are found in the Proposed Scheme, i.e. Chi Shin Street (annual condition) and air movement within Subject Site (summer condition).

# FIGURES

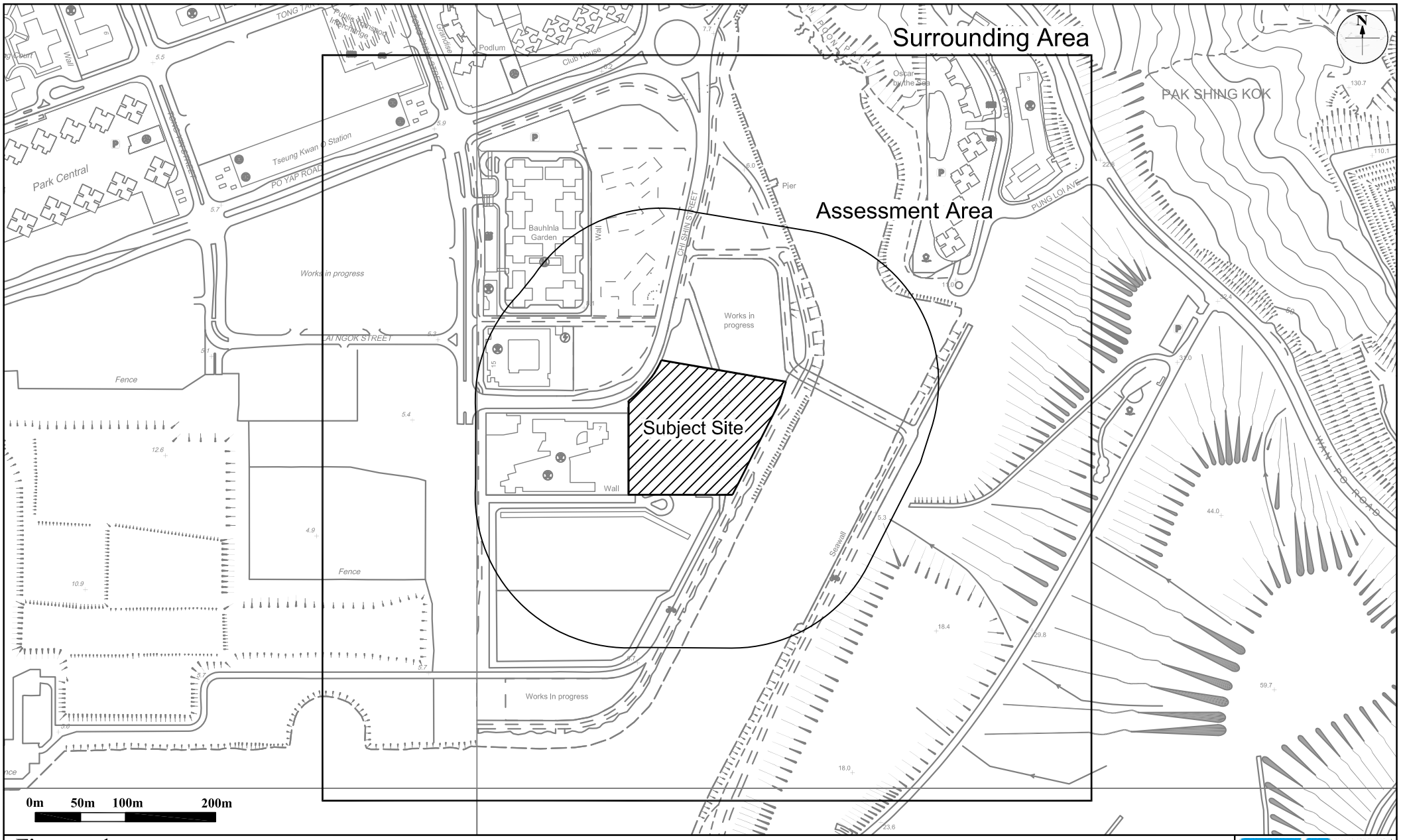


**Figure:** 1

**Title:** Location of Subject Site and Its Environs

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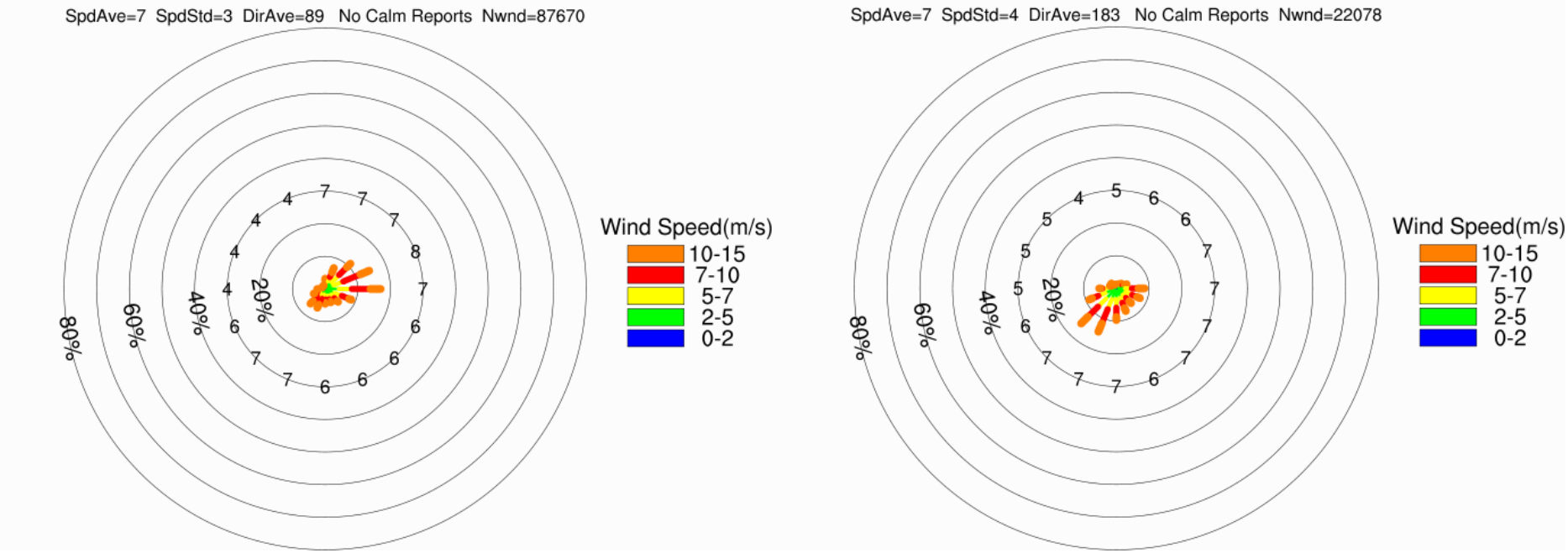


**Annual** **Summer**

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| **Title:** Windrose Diagram representing V∞ of the Area under Concern | Drawn by: JL |
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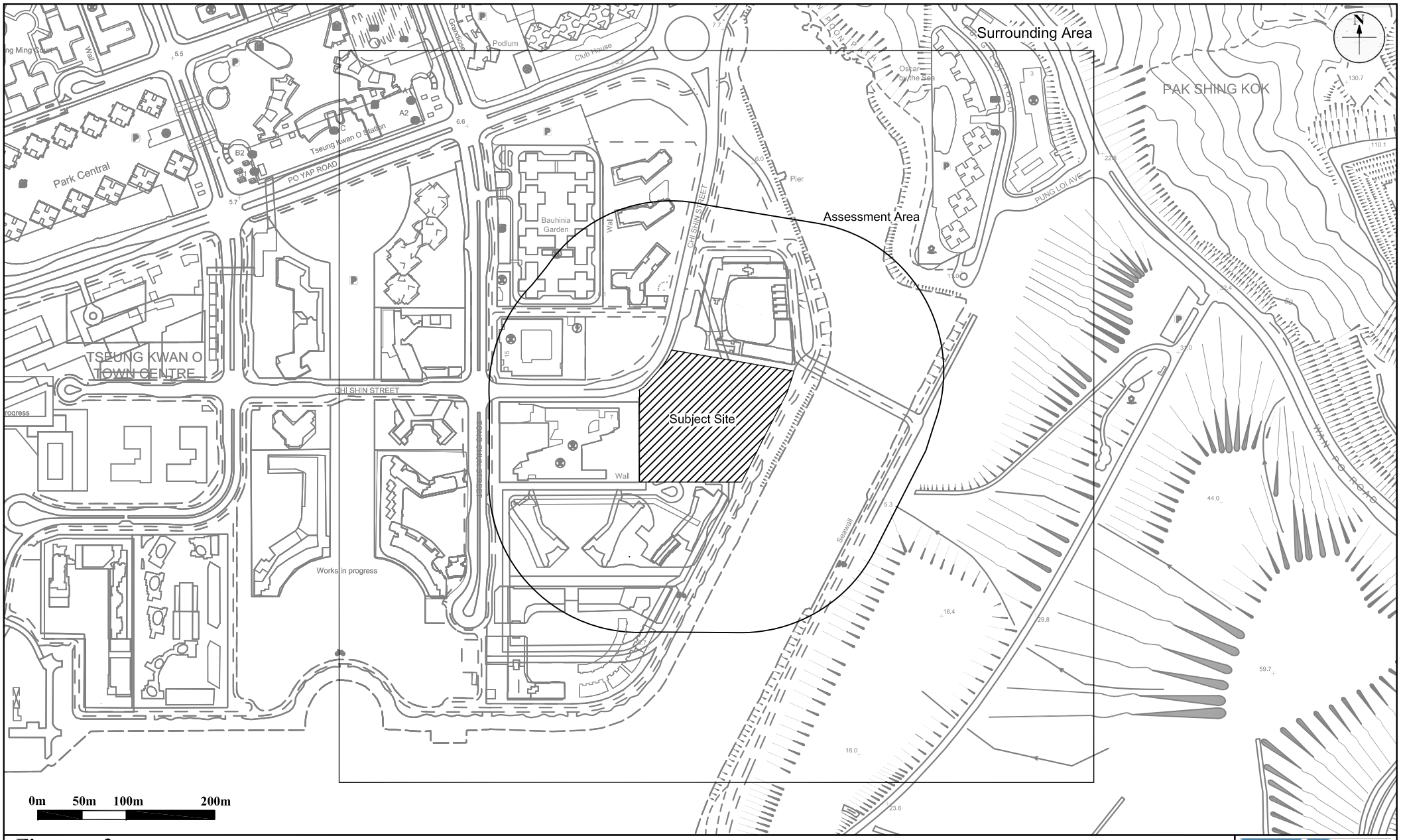


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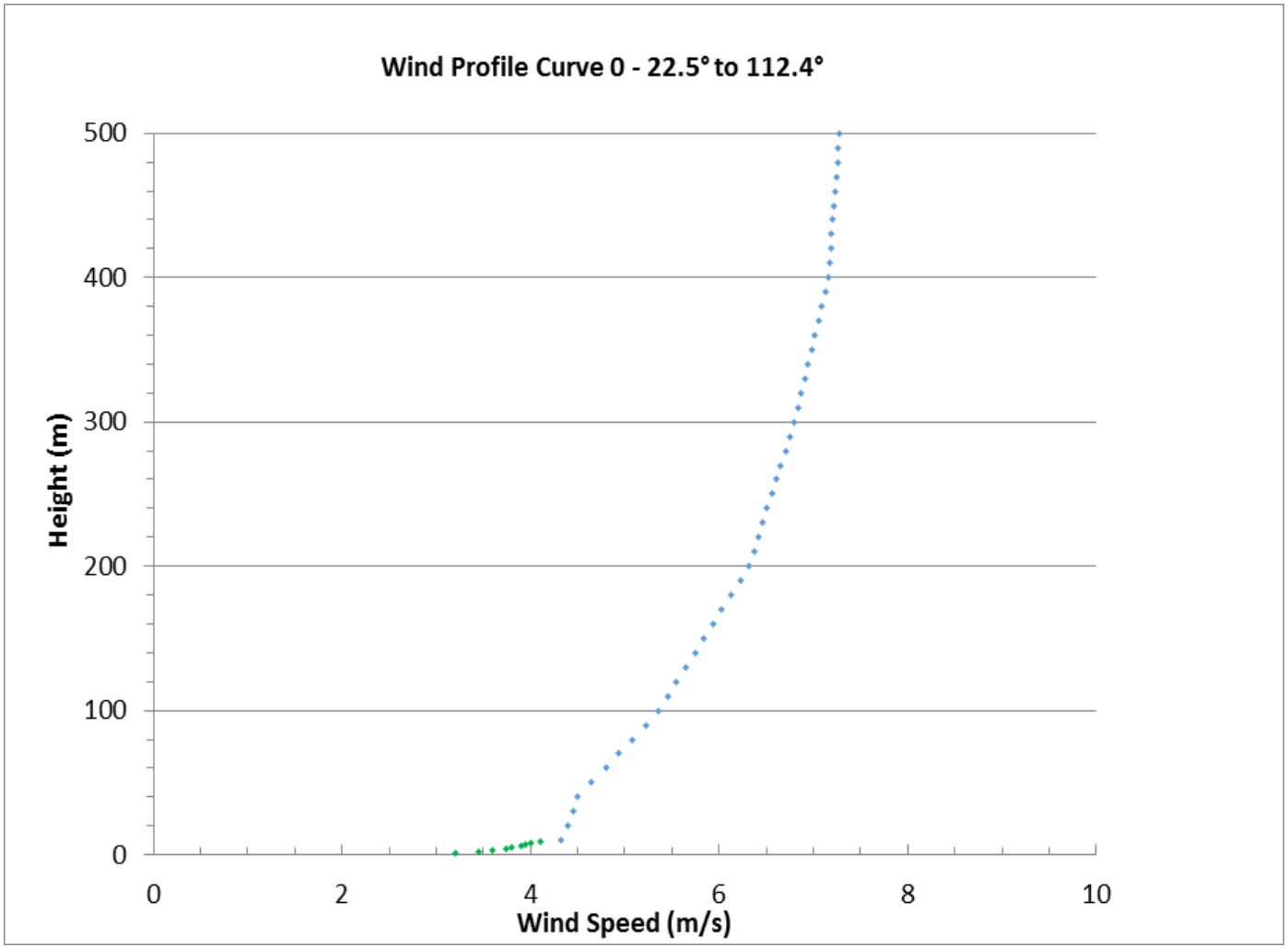


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| **Project:** CB20130690 - Consultancy for Environmental Design Studies of Public Housing Projects in Batch F3 - TKO Area 65C2 | Rev.: 1.0 |
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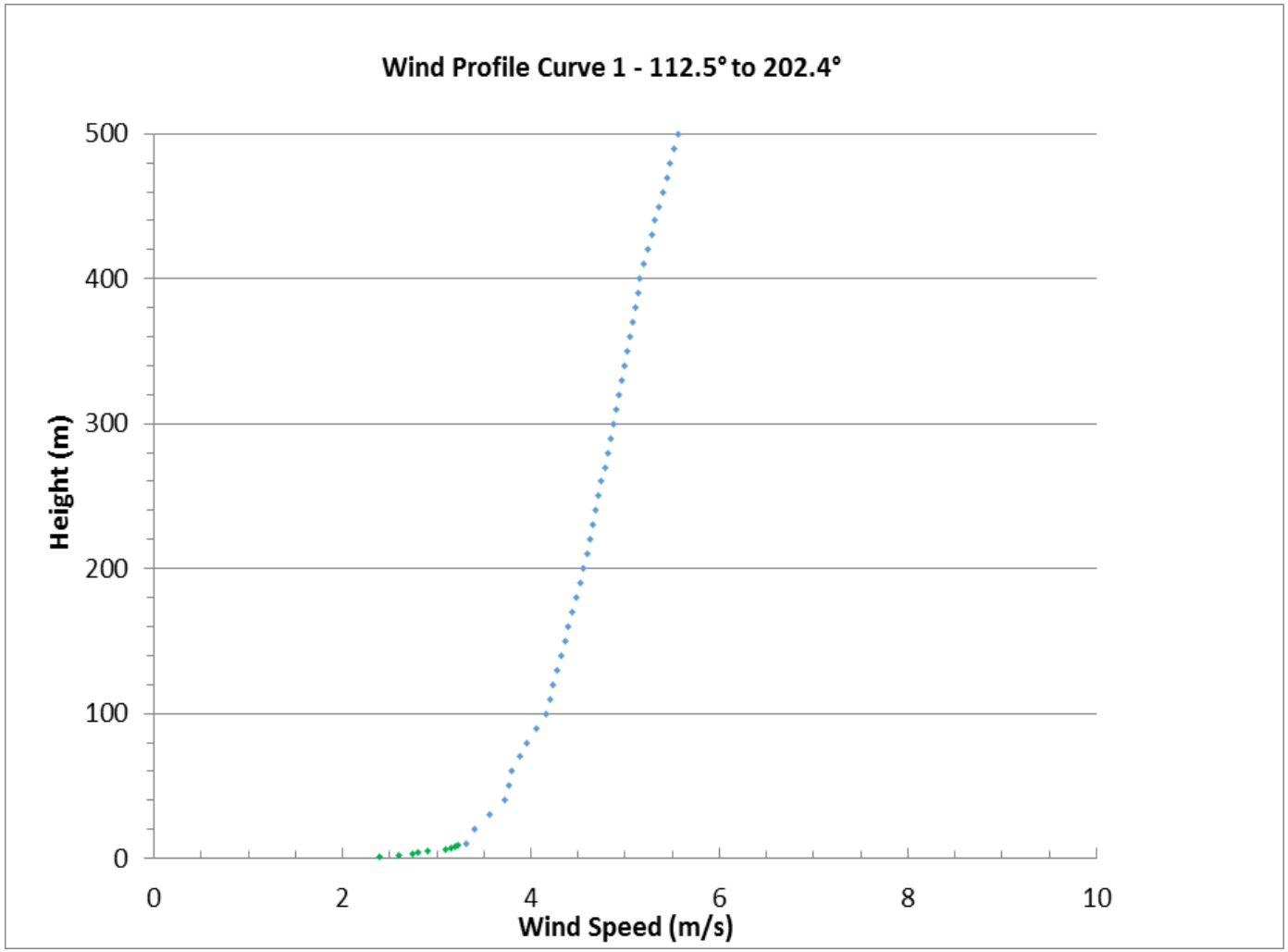


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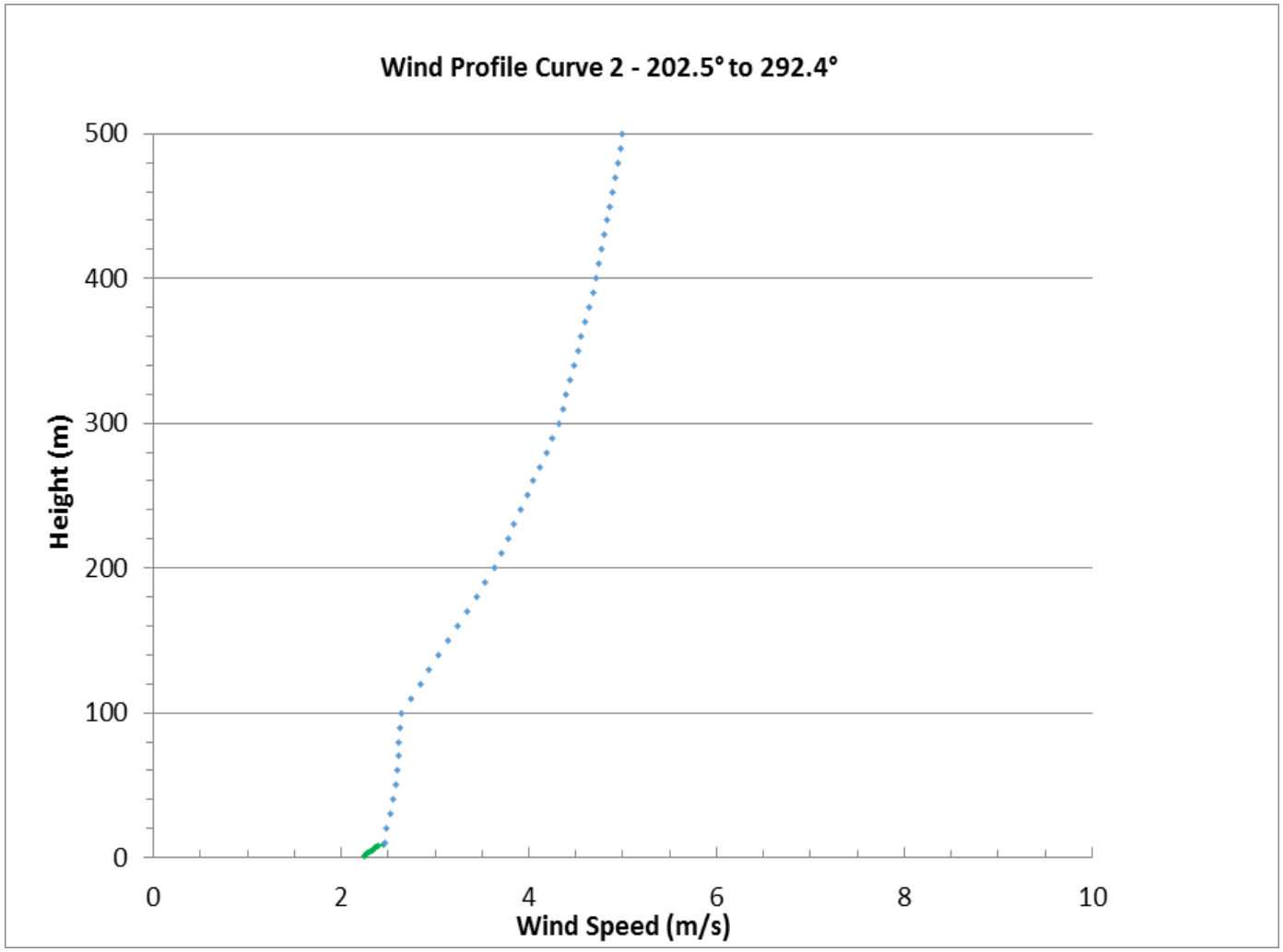


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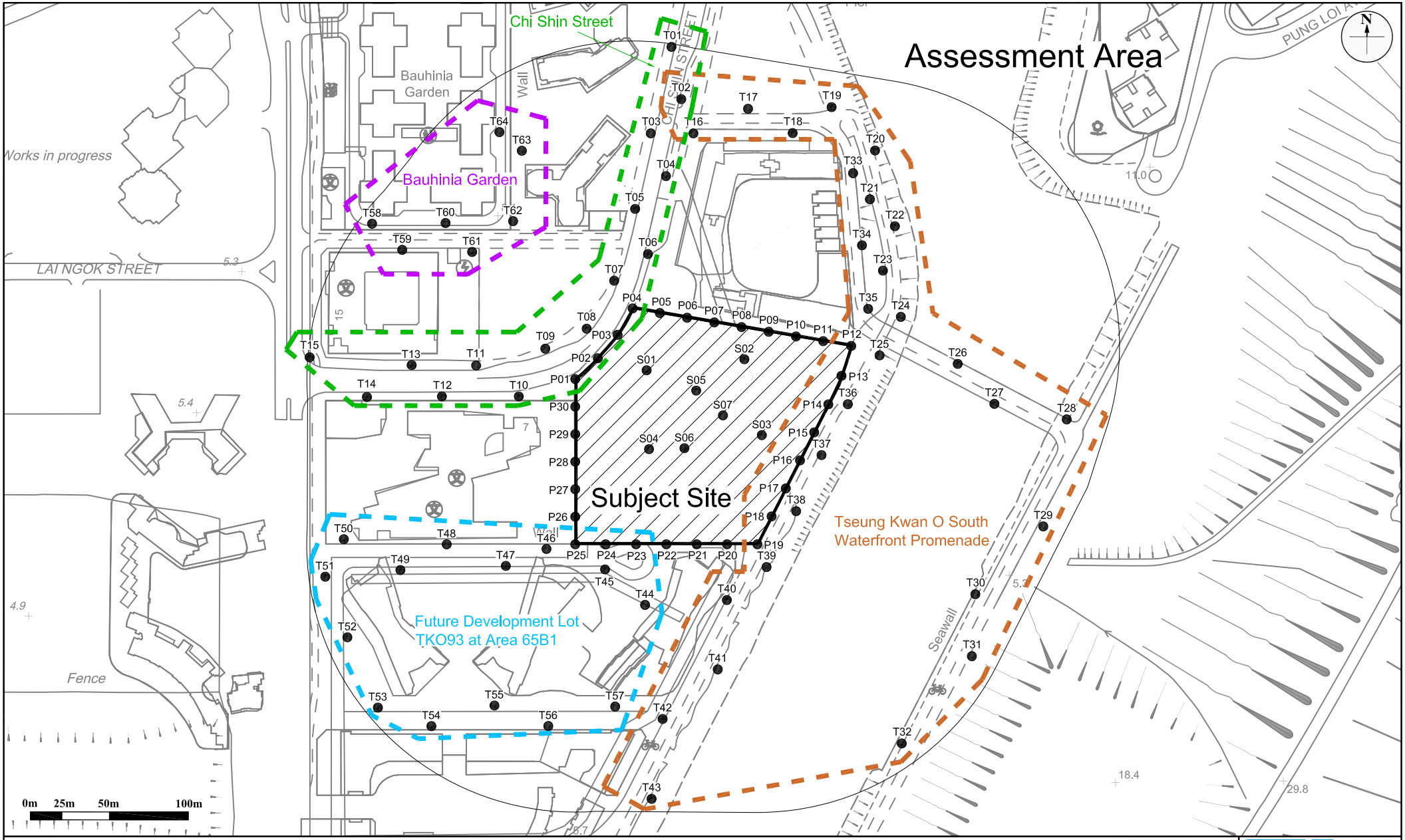


**Figure:** 5

**Title:** Test Points selected for Quantitative Air Ventilation Assessment

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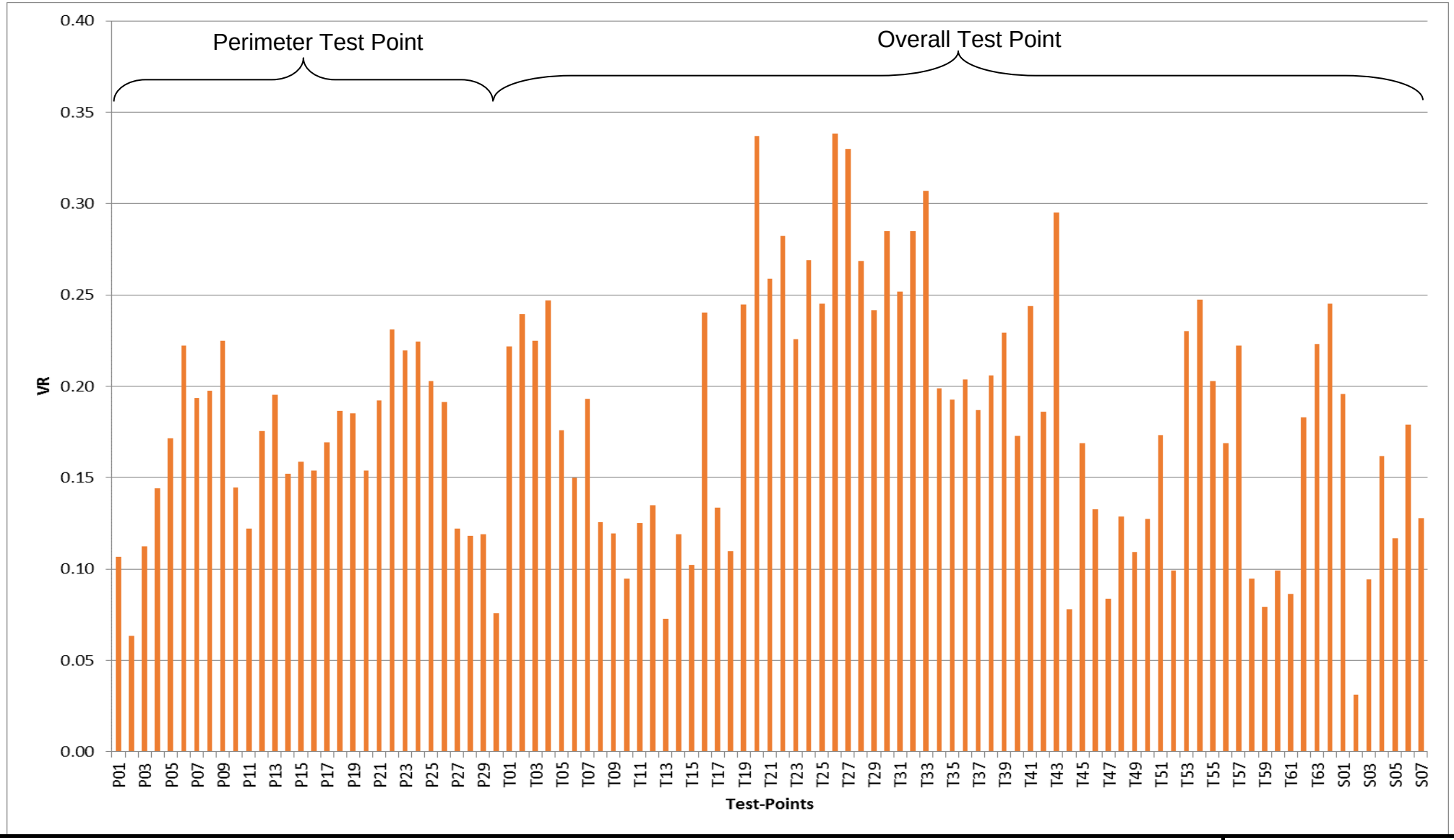


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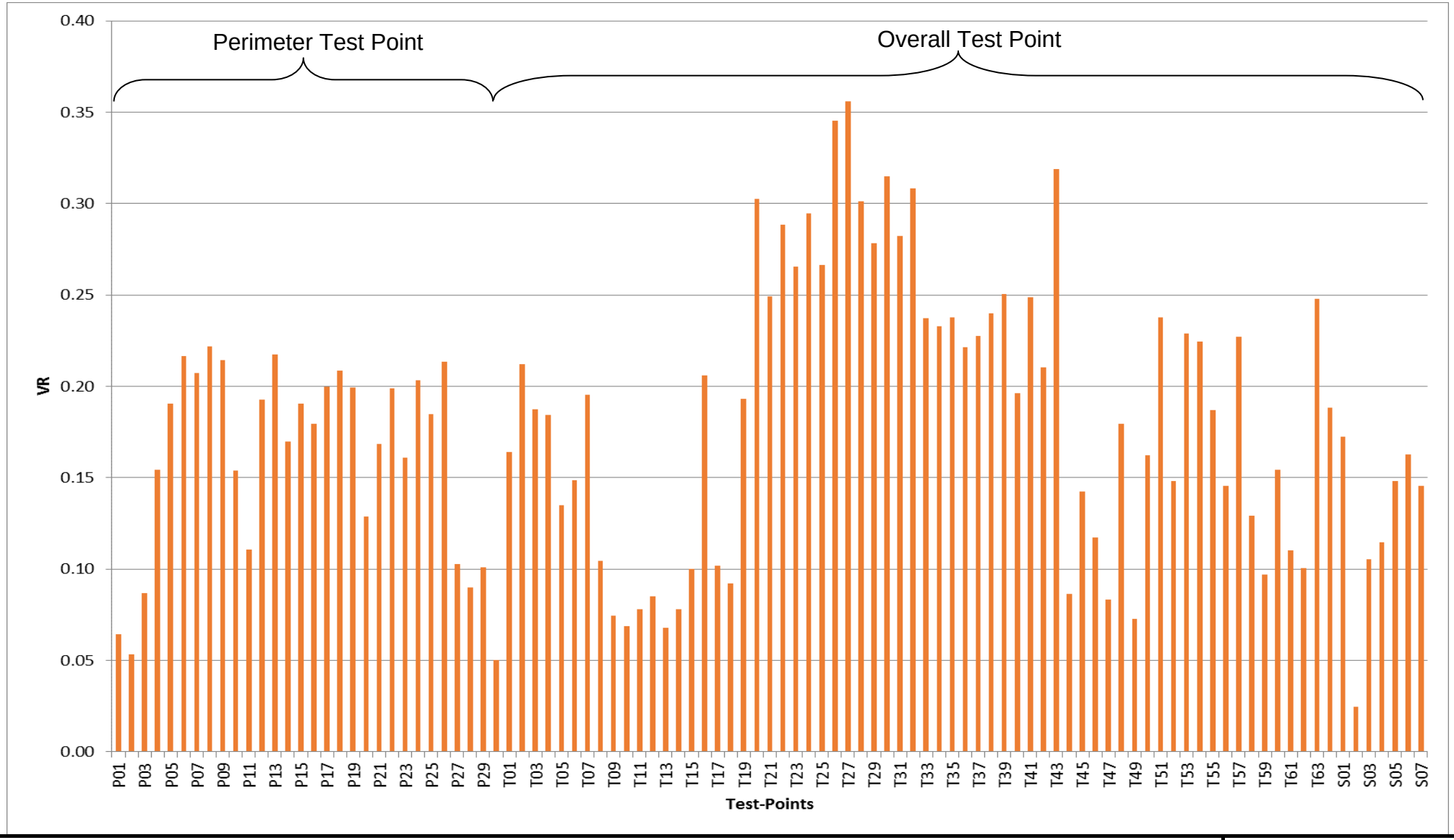


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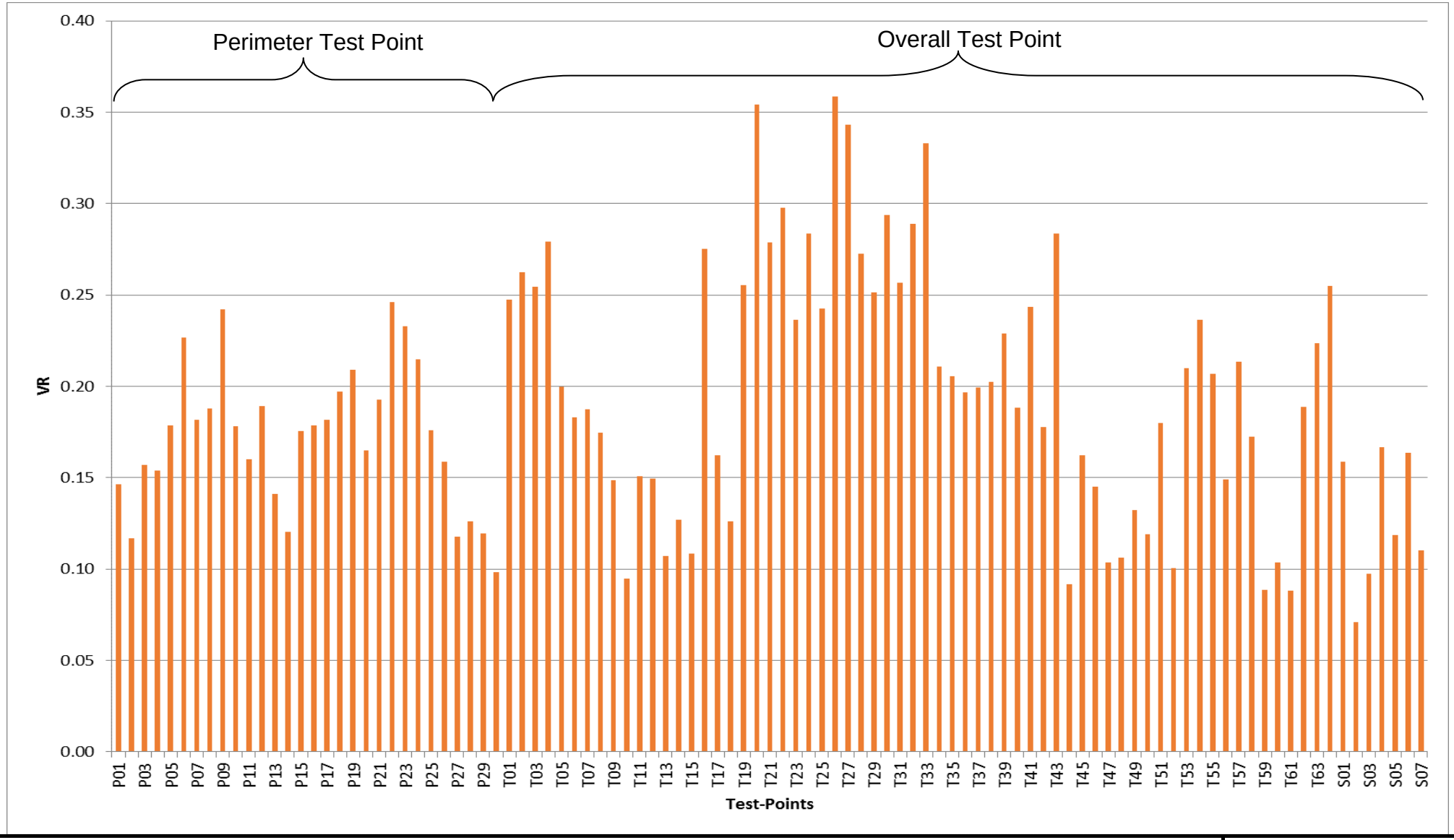


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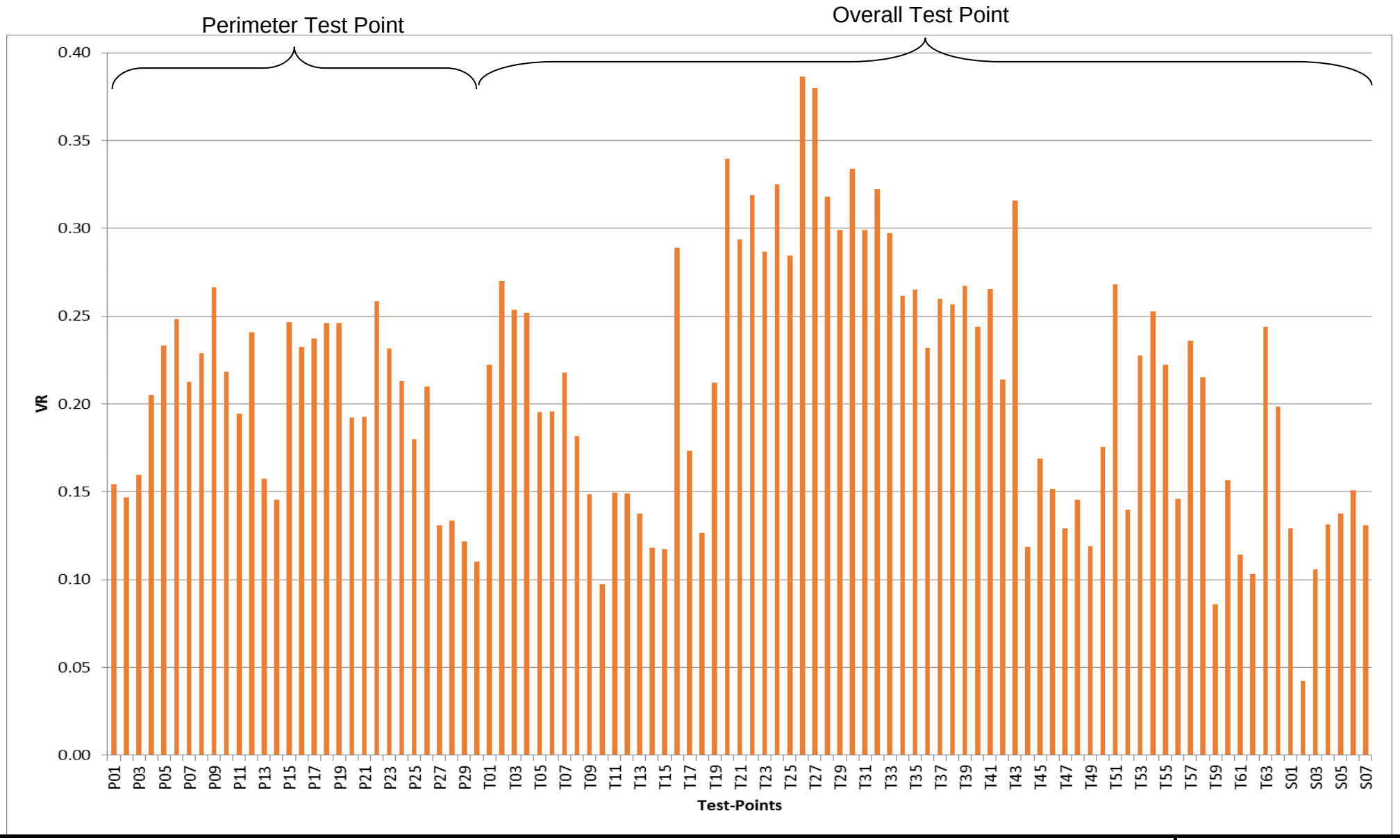


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|---|---|---|
| **Figure:** | **7b** | RAMBOLL ENVIRON |
| **Title:** | **Wind Velocity Ratios of Individual Test Points for Proposed Scheme (Summer)** | Drawn by: JL |
| | | Checked by: SLo |
| **Project:** | **CB20130690 - Consultancy for Environmental Design Studies of Public Housing Projects in Batch F3 - TKO Area 65C2** | Rev.: 1.0 |
| | | Date: May 2016 |

# APPENDIX A:
# MASTER LAYOUT PLAN OF BASELINE SCHEME

寶盈花園
BAUHINIA GARDEN

怡明邨
YEE MING ESTATE

TKO65C1

將軍澳循道衛理小學
TSEUNG KWAN O
METHODIST PRIMARY
SCHOOL

PUBLIC
OPEN
SPACE

至善街
CHI SHIN STREET

播道書院
EVANGEL COLLEGE

TKO68B1

東面水道
EASTERN CHANNEL

A
B
C
D
E
F
G
H
J
K
L
M
N

AREA A
24 HOURS PEDESTRIAN PASSAGE BY ADJACENT DEVELOPMENT
AREA B

PHASE 1
PHASE 2
(SUBMIT SEPARATELY)
PROPOSED WELFARE BLOCK
BLOCK A
BLOCK B
RETAIL / COMMERCIAL BLOCK
COMMUNAL PLAY AREA
ENTRANCE PORTAL
SEMI-BASEMENT CAR PARK ENTRANCE
EVA / DRIVEWAY
GREEN ROOF
PLANTER
COVERED WALKWAY

N

## NOTES

1. NOTES & LEGEND REFER DWG.NO. SK04/1/ICU/A/GBP-1.

TABLE OF COORDINATED FOR SITE BOUNDARY LINE

| POINT | CO-ORDINATES | |
|---|---|---|
| | E (m) | N (m) |
| A | 845204.471 | 818475.362 |
| B | 845342.922 | 818451.529 |
| C | 845339.570 | 818440.766 |
| D | 845334.993 | 818427.070 |
| E | 845326.942 | 818411.235 |
| F | 845325.163 | 818408.012 |
| G | 845299.996 | 818358.511 |
| H | 845299.428 | 818357.117 |
| J | 845283.521 | 818325.829 |
| K | 845168.118 | 818325.829 |
| L | 845168.118 | 818430.543 |
| M | 845174.933 | 818435.331 |
| N | 845189.056 | 818451.199 |
| L-M | 845158.719 | 818451.164 |
| N-A | 845121.631 | 818511.212 |

Plan Approved

Independent Checking Unit

Date : _____

ICU Ref. : HD(ICU)B1 ____/_____/_____

REVISIONS

| NO | DESCRIPTION AND DATE | INITIAL AND DESIGNATION DWN | CKD | AUTH |
|---|---|---|---|---|

*ANN MARY K.Y. TAM*
Chief Architect / *5*
Date :

| | NAME AND DESIGNATION | INITIAL | DATE |
|---|---|---|---|
| AUTHORISED | Ann Mary K.Y. TAM CA/5 | | |
| CHECKED | S.Y. LAU CHIM SA/2 | | |
| | PATRICK H.C. LAM A/74 | | |
| | K.Y. LEUNG STO(A)/20 | | |
| DRAWN | ANDREW H.W. YU TO(A)/93 | | |

PROJECT
SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASE 1

DRAWING TITLE
MASTER LAYOUT PLAN

SCALE 1 : 500

DRAWING NO.
SK04/1/ICU/A/GBP-02

SOURCE

ICU REF.

AutoCAD 2013 AD 841 x 1189

HOUSING DEPARTMENT

PUBLIC OPEN SPACE

至善街
CHI SHIN STREET

播道書院
EVANGEL COLLEGE

TKO AREA 65C1

TKO AREA 68B1

EASTERN CHANNEL

N

2800MM HEIGHT METAL FENCING

EVA / DRIVEWAY

24 HOURS PEDSTRIAN PASSAGE BY ADJACEMENT DEVELOPMENT

BUILDING LINE ABOVE

PHASE 2
(SUBMIT SEPARATELY)

PROPOSED WELFARE BLOCK

PHASE 1

SEMI-BASEMENT CAR PARK
(COMMUNAL PLAY AREA ABOVE)

BLOCK A

RETAIL / COMMERICAL BLOCK

TX. ROOM

LGV PARKING W/ COVER

TAXI LAY-BY

MAIN SWITCH ROOM

MASTER METER ROOM

RS & MRC

LIFT LOBBY

OCC OFFICE

TBE ROOM

F.S. PUMP ROOM

FRESH & FLUSH PUMP ROOM

SERVICE CORRIDOR

SHROFF OFFICE

COVERED PLAY AREA

CANOPY ABOVE

PLANTER

BICYCLE PARKING

SUMP & PUMP ROOM

EV CHARGER

MAIL ROOM

MAIN SWITCH ROOM FOR CAR PARK

TRANSFORMER ROOM FOR CAR PARK

P.D.

ESTATE MANAGEMENT OFFICE

TRELLIS

HOMANTIN COURT

PROMENADE

TREE PIT

CLEANING MACHINE

R.C.P.

REFUSE BIN

R.C.P. (RETAIL / COMMERCIAL)

P.M.A. OFFICE

T.B.E.

SHOP 01

SHOP 02 - CAFE

SHOP 03

SHOP 04

SHOP 05

SHOP 06

NOTIONAL KITCHEN

KINDERGARTEN ENTRANCE

RETAIL / COMMERCIAL ENTRANCE

2800MM HEIGHT METAL FENCING

PEDESTRIAN AND CYCLE ENTRANCE

2 HR FIRE FIRE SHUTTER

+5.35 +5.60 +5.20 +5.80 +6.00 +6.49 +5.90 +3.70 +5.45 +7.55 +6.15 +5.75

NOTES

1. NOTES & LEGEND REFER DWG.NO. SK04/1/ICU/A/GBP-1.

| REVISIONS | | INITIAL AND DESIGNATION | | |
|---|---|---|---|---|
| NO. | DESCRIPTION AND DATE | DWN. | CKD. | AUTH. |

ANN MARY K.Y. TAM
Chief Architect / 5
Date :

| | NAME AND DESIGNATION | INITIAL | DATE |
|---|---|---|---|
| AUTHORISED | Ann Mary K.Y. TAM CA/5 | | |
| CHECKED | S.Y. LAU CHIM SA/2 | | |
| | PATRICK H.C. LAM AI74 | | |
| | K.Y. LEUNG STO(A)/20 | | |
| DRAWN | ANDREW H.W. YU TO(A)/93 | | |

PROJECT
SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASE 1

DRAWING TITLE
SITE LAYOUT PLAN-BASEMENT FLOOR

SCALE 1 : 250

DRAWING NO.
SK04/1/ICU/A/GBP-03

SOURCE

ICU REF.

AutoCAD 2013 A0 841 x 1189

HOUSING DEPARTMENT

Plan Approved

Independent Checking Unit

Date : _____

ICU Ref. : HD(ICU)B1 ____/_____/_____

PUBLIC OPEN SPACE

TKO AREA 65C1

至善街
CHI SHIN STREET

播道書院
EVANGEL COLLEGE

TKO AREA 68B1

EASTERN CHANNEL

N

2800MM HEIGHT METAL FENCING

24 HOURS PEDESTRIAN PASSAGE BY ADJACENT DEVELOPMENT

ENTRANCE PORTAL

EVA / DRIVEWAY

SEMI-BASEMENT CAR PARK ENTRANCE

TAXI LAY-BY

LGV PARKING W/ COVER

L/UL (BLOCK B)

BUILDING LINE ABOVE

COVERED WALKWAY ABOVE

PLANTER

TRANSFORMER ROOM

SFH

MAIN SWITCH ROOM

RS & MRC

LIFT LOBBY

OWNER'S CORPORATION OFFICE

WORKSHOP FOR ARTISANS

T.B.E. ROOM

F.S. PUMP ROOM

FRESH & FLUSH WATER FEED PUMP ROOM

STORE ROOM

METER ROOM

BLOCK B

COVERED PLAY AREA

CANOPY ABOVE

VOID

1100MM HEIGHT METAL RAILING ABOVE PLANTER CURB LEVEL

1100MM HEIGHT METAL RAILING A.F.F.L.

COMMUNAL PLAY AREA

FAN ROOM

BICYCLE PARKING

PHASE 2
(SUBMIT SEPARATELY)

PROPOSED WELFARE BLOCK

RETAIL / COMMERICAL BLOCK

R.C.P.

R.C.P. (RETAIL / COMMERCIAL)

REFUSE BIN

CLEANING MACHINE

P.M.A. OFFICE

LIFT LOBBY

SHOP 05

SHOP 04

SHOP 03

SHOP 02 - CAFE

NOTIONAL KITCHEN

SHOP 01

TX. ROOM

MAIN SWITCH ROOM

RETAIL / COMMERCIAL ENTRANCE

KINDERGARTEN ENTRANCE

CANOPY ABOVE

TREE PIT

L/UL(Retail / Commercial)

2800MM HEIGHT METAL FENCING

PEDESTRIAN AND CYCLE ENTRANCE

PROMENADE

BLOCK A

STORE ROOM

MAIL ROOM

TRANSFORMER ROOM

MAIN SWITCH ROOM

RS & MRC

LIFT LOBBY

F.S. PUMP ROOM

FRESH & FLUSH PUMP ROOM

TBE ROOM

P.D.

ESTATE MANAGEMENT OFFICE

F.S. PUMP ROOM (FOR CAR PARK)

MAIN SWITCH ROOM (FOR CAR PARK)

TRANSFORMER ROOM FOR CAR PARK

COVERED PLAY AREA

COMMUNAL PLAY AREA

TRELLIS

BADMINTON COURT

EVA / DRIVEWAY

CANOPY ABOVE

TREE PIT

## NOTES

1. NOTES & LEGEND REFER DWG.NO. SK04/1/ICU/A/GBP-1.

## REVISIONS

| NO | DESCRIPTION AND DATE | INITIAL AND DESIGNATION DWN | CKD | AUTH |
|---|---|---|---|---|

ANN MARY K.Y. TAM
Chief Architect / 5
Date :

| | NAME AND DESIGNATION | INITIAL | DATE |
|---|---|---|---|
| AUTHORISED | Ann Mary K.Y. TAM CA/5 | | |
| CHECKED | S.Y. LAU CHIM SA/2 | | |
| | PATRICK H.C. LAM AI/4 | | |
| | K.Y. LEUNG STO(A)/20 | | |
| DRAWN | ANDREW H.W. YU TO(A)/93 | | |

PROJECT
SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASE 1

DRAWING TITLE
SITE LAYOUT PLAN- GROUND FLOOR

SCALE 1 : 250

DRAWING NO.
SK04/1/ICU/A/GBP-04

SOURCE

ICU REF.

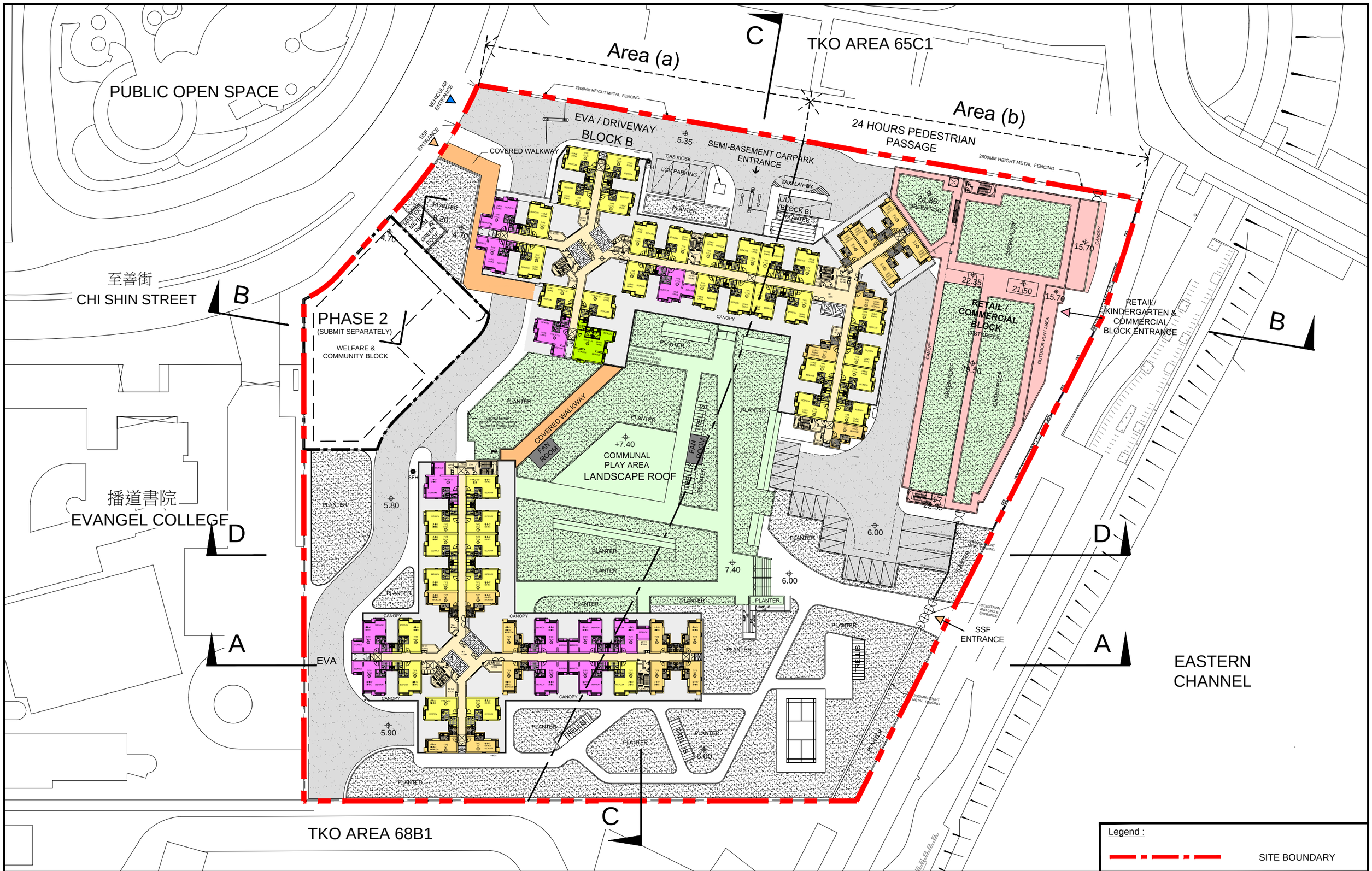
AutoCAD 2013 A0 841 x 1189

HOUSING DEPARTMENT

Plan Approved

Independent Checking Unit
Date :
ICU Ref. : HD(ICU)B1 ____/_____/_____

# APPENDIX B:
# MASTER LAYOUT PLAN OF PROPOSED SCHEME




# SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASE 1

DRAWING TITLE

## SITE LAYOUT PLAN ( AT LEVEL +35.0 )

SCALE 1 : 700(A3)

房 屋 署
HOUSING DEPARTMENT

3

DRAWING NO. SK04/1/D1/SITE/A/PLO-03

日期 DATE: 05.04.2016

PUBLIC OPEN SPACE

至善街
CHI SHIN STREET

播道書院
EVANGEL COLLEGE

TKO AREA 68B1

EASTERN CHANNEL

N

Area (a)

TKO AREA 65C1

Area (b)

24 HOURS PEDESTRIAN PASSAGE

VEHICULAR ENTRANCE

SSF ENTRANCE

EVA / DRIVEWAY

BLOCK B

SEMI-BASEMENT CARPARK ENTRANCE

PHASE 2
(SUBMIT SEPARATELY)
WELFARE & COMMUNITY BLOCK

COMMUNAL PLAY AREA
LANDSCAPE ROOF

COVERED WALKWAY ABOVE

CARPARK FOR RETAIL AND COMMERCIAL

RETAIL/ KINDERGARTEN & COMMERCIAL BLOCK ENTRANCE

SSF ENTRANCE

EVA

Legend:-

REFUSE COLLECTION ROUTE (DOMESTIC)

REFUSE COLLECTION ROUTE (RETAIL / COMMERCIAL)

# SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASE 1

DRAWING TITLE

## REFUSE AND SERVICES ROUTE

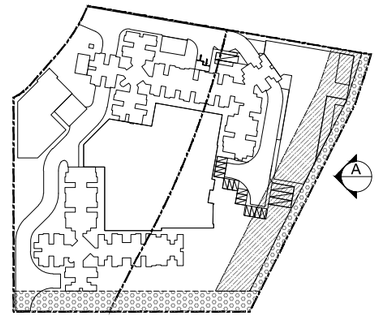
SCALE 1 : 700(A3)

房 屋 署
HOUSING DEPARTMENT

7

DRAWING NO. SK04/1/DDRP1/SITE/A/PLO-07

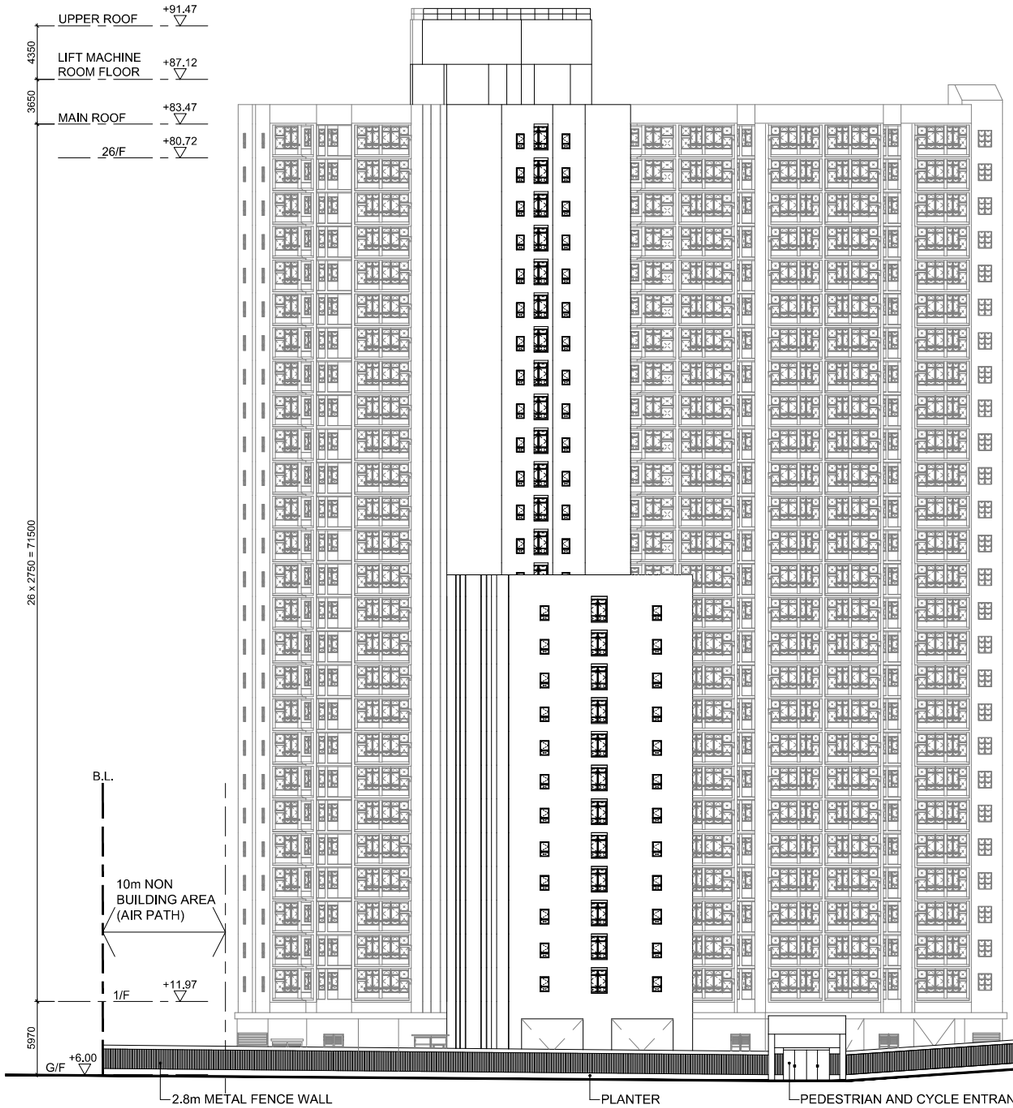
日期 DATE: 01.04.2016



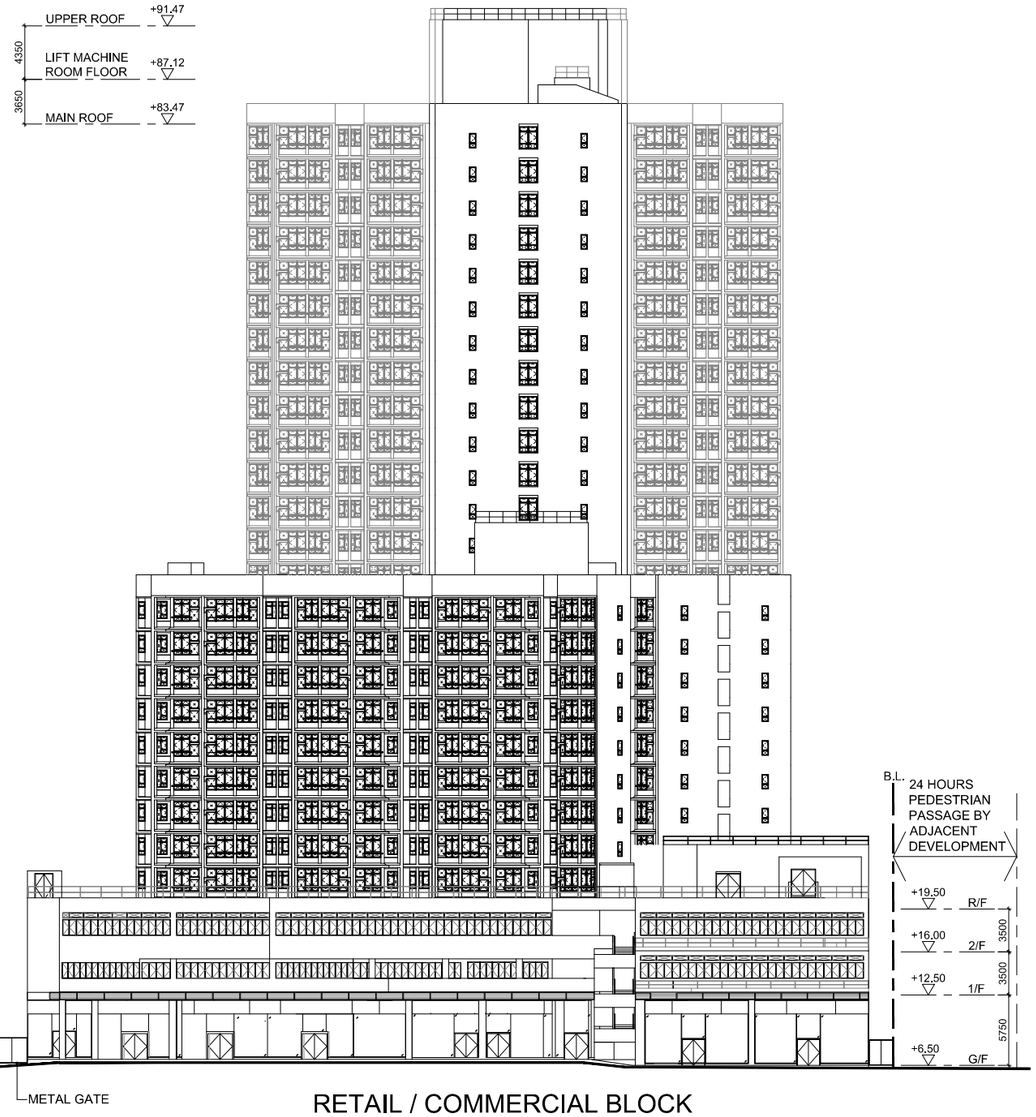

N

KEY PLAN SCALE 1:3000

BLOCK A




BLOCK B




RETAIL / COMMERCIAL BLOCK

# SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASES 1 & 2

DRAWING TITLE

## SITE ELEVATION A

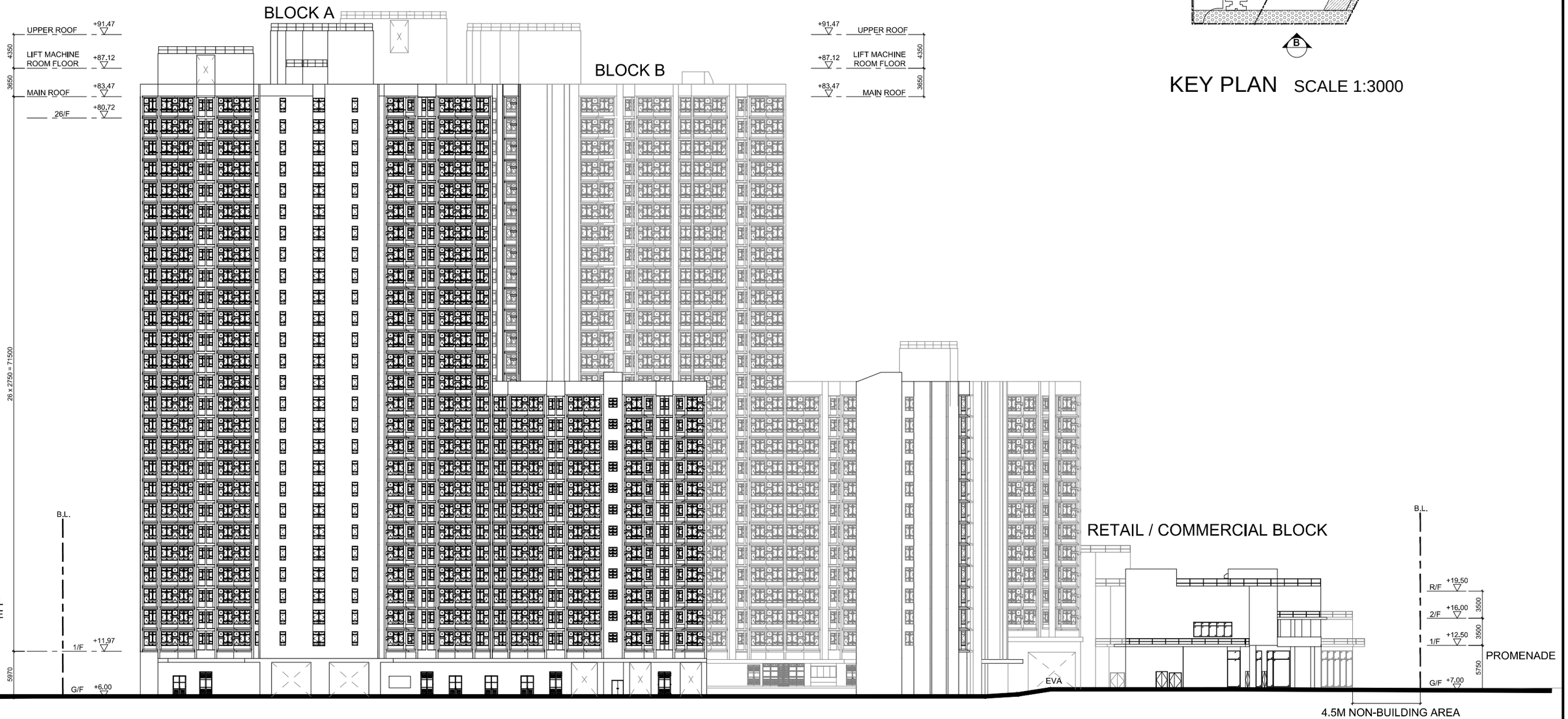
SCALE 1 : 500(A3)

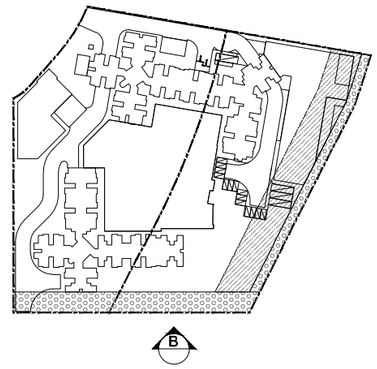
房 屋 署
HOUSING DEPARTMENT

8

DRAWING NO. SK04/1/D1/SITE/A/PLO-08

日期 DATE: 07.04.2016




KEY PLAN SCALE 1:3000

N

# SUBSIDISED SALE FLATS DEVELOPMENT AT TSEUNG KWAN O AREA 65C2 PHASES 1 & 2

DRAWING TITLE

## SITE ELEVATION B

SCALE 1 : 500(A3)

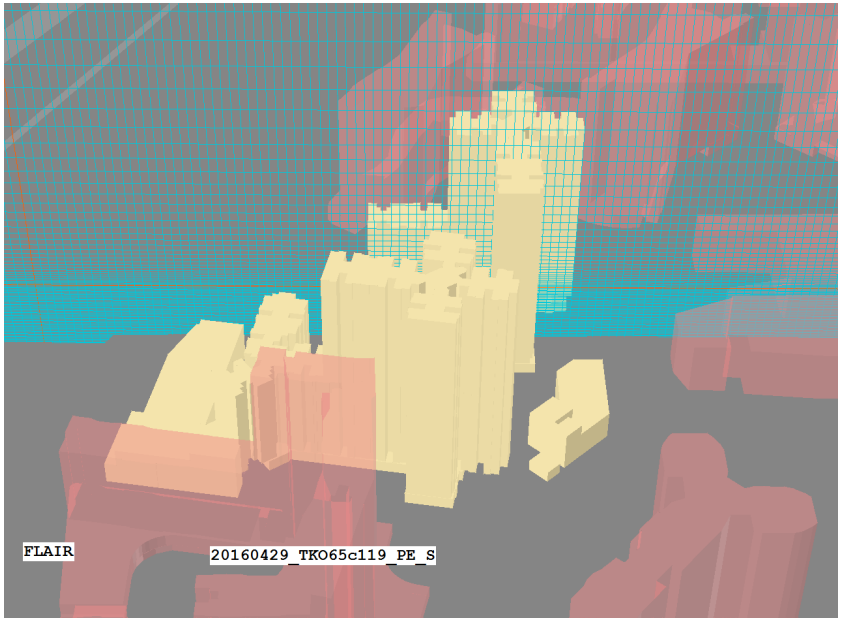
房 屋 署 HOUSING DEPARTMENT

9

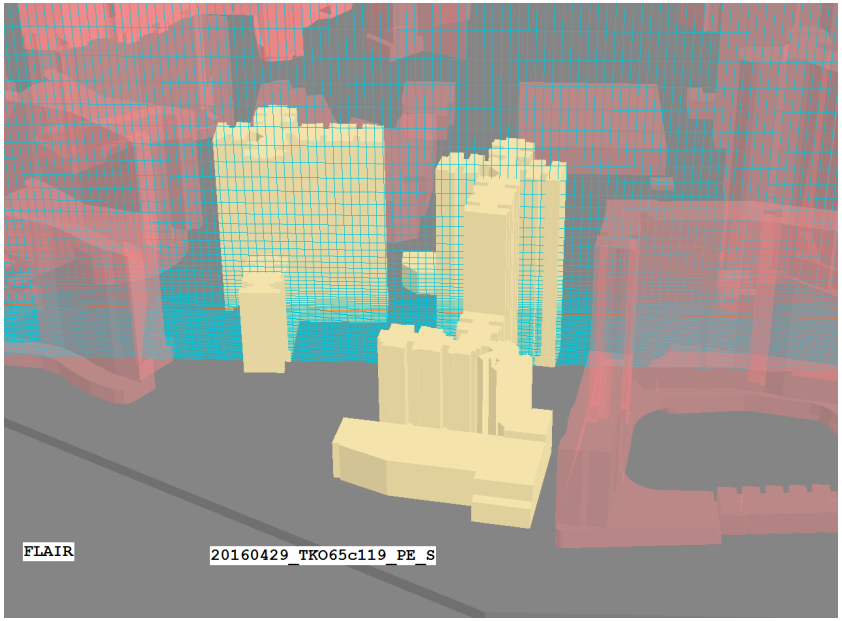
DRAWING NO. SK04/1/D1/SITE/A/PLO-09

日期 DATE: 07.04.2016

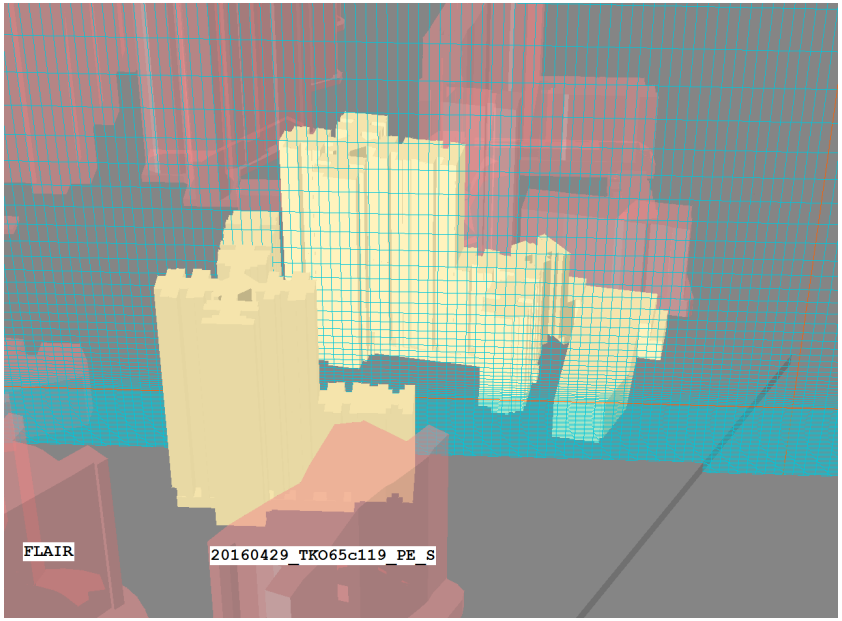
# APPENDIX C:
# DOMAIN SIZE, CFD MODEL IN DIFFERENT VIEWS, CONTOUR PLOTS OF SIMULATION RESULTS



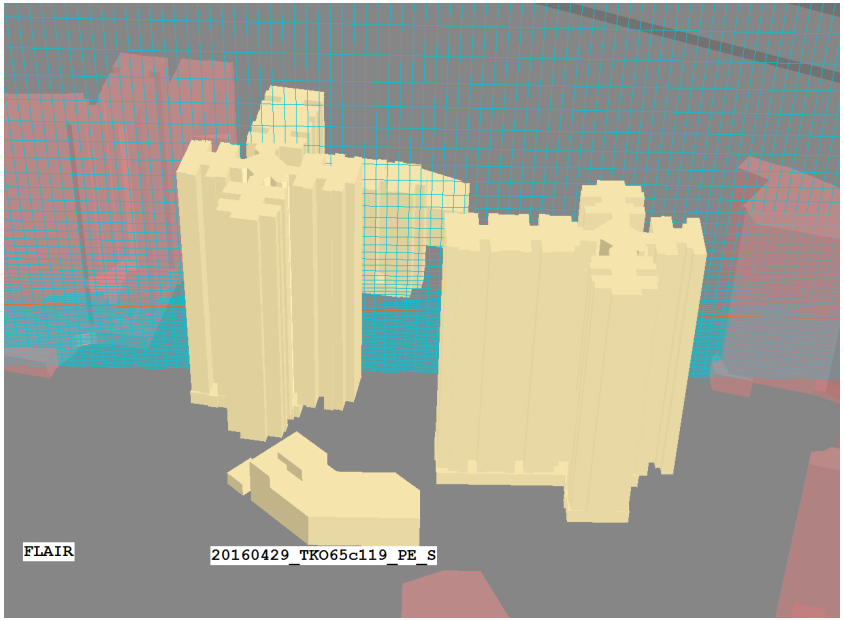

Proposed Scheme - N



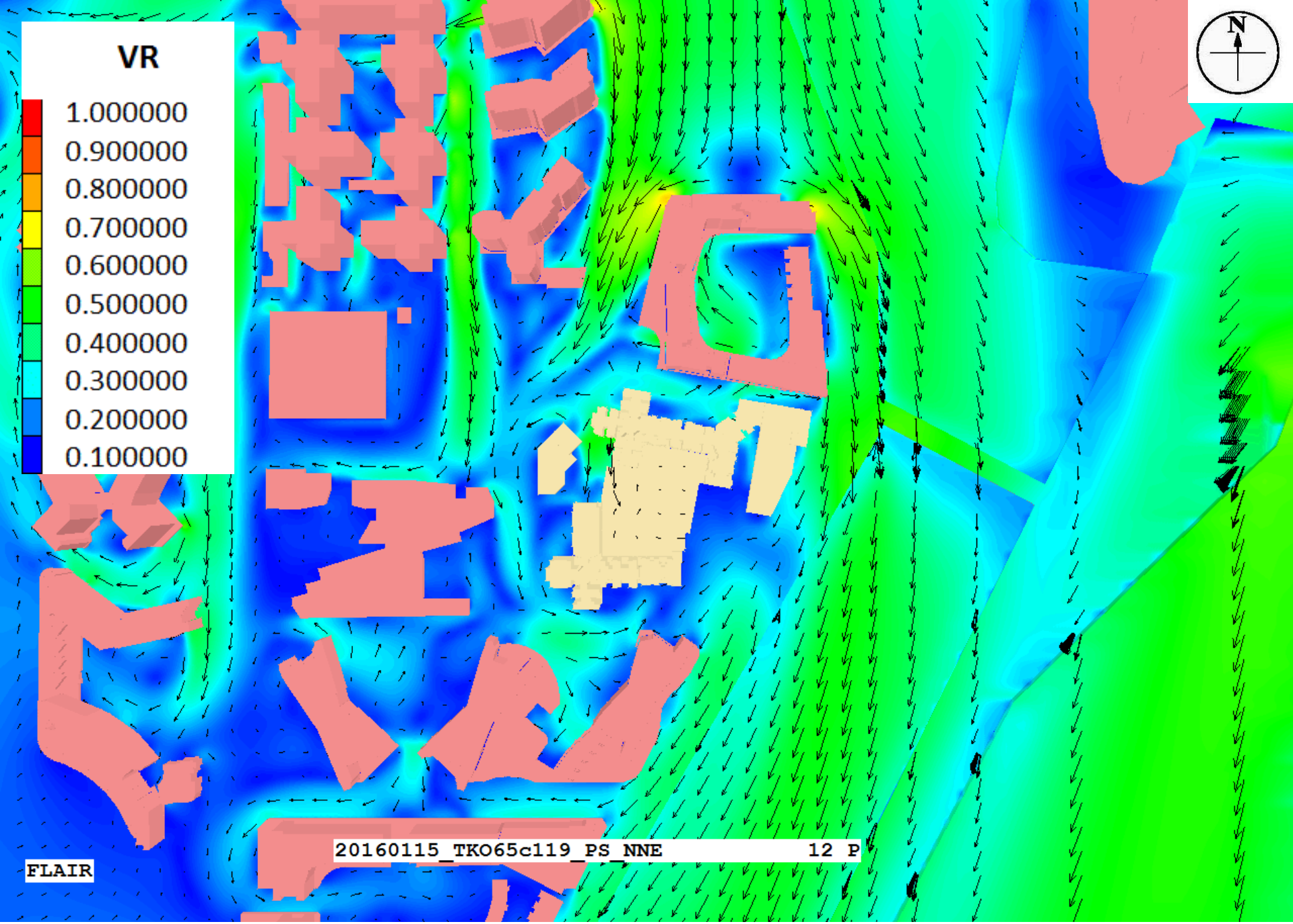

Proposed Scheme - E



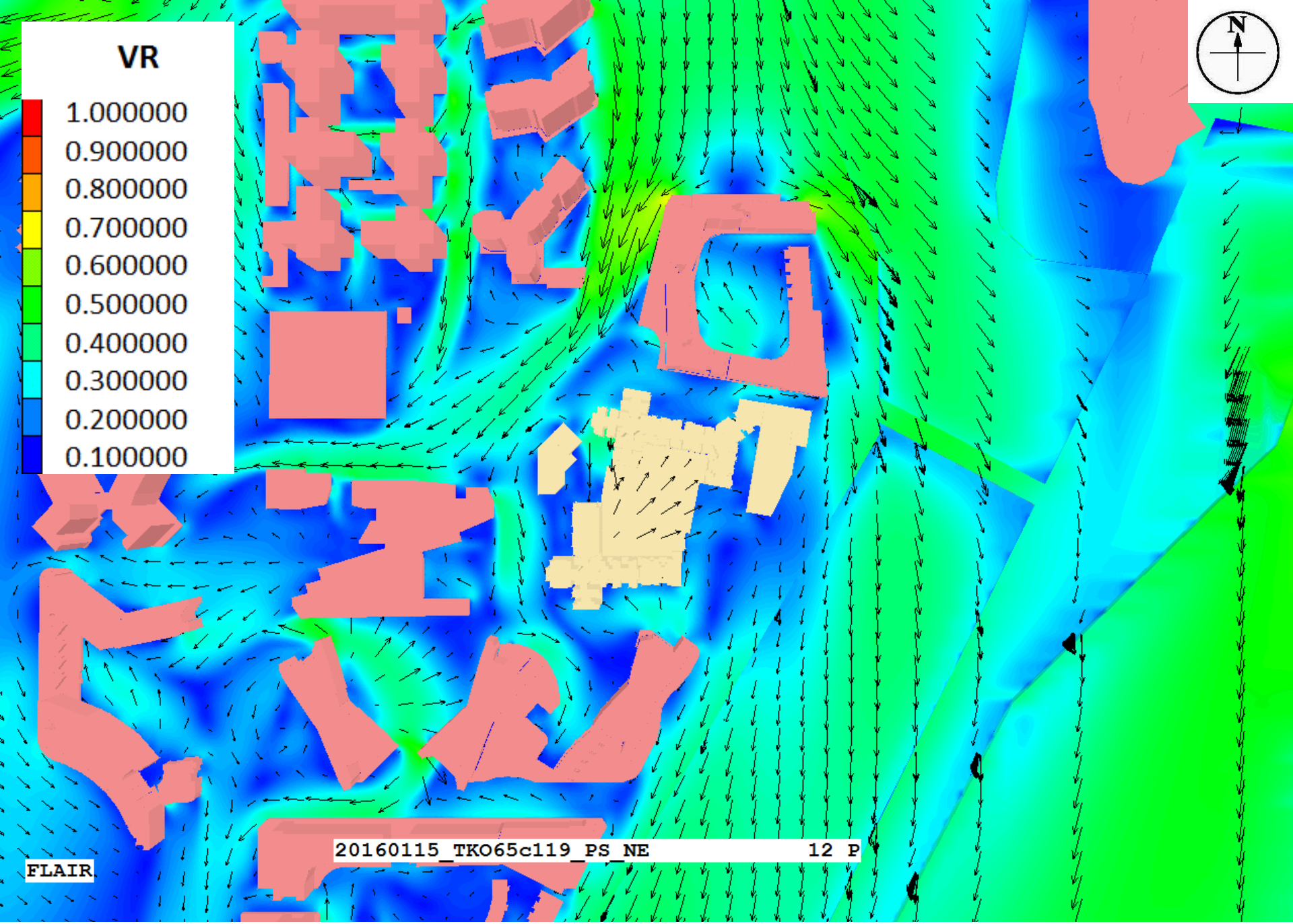

Proposed Scheme -S



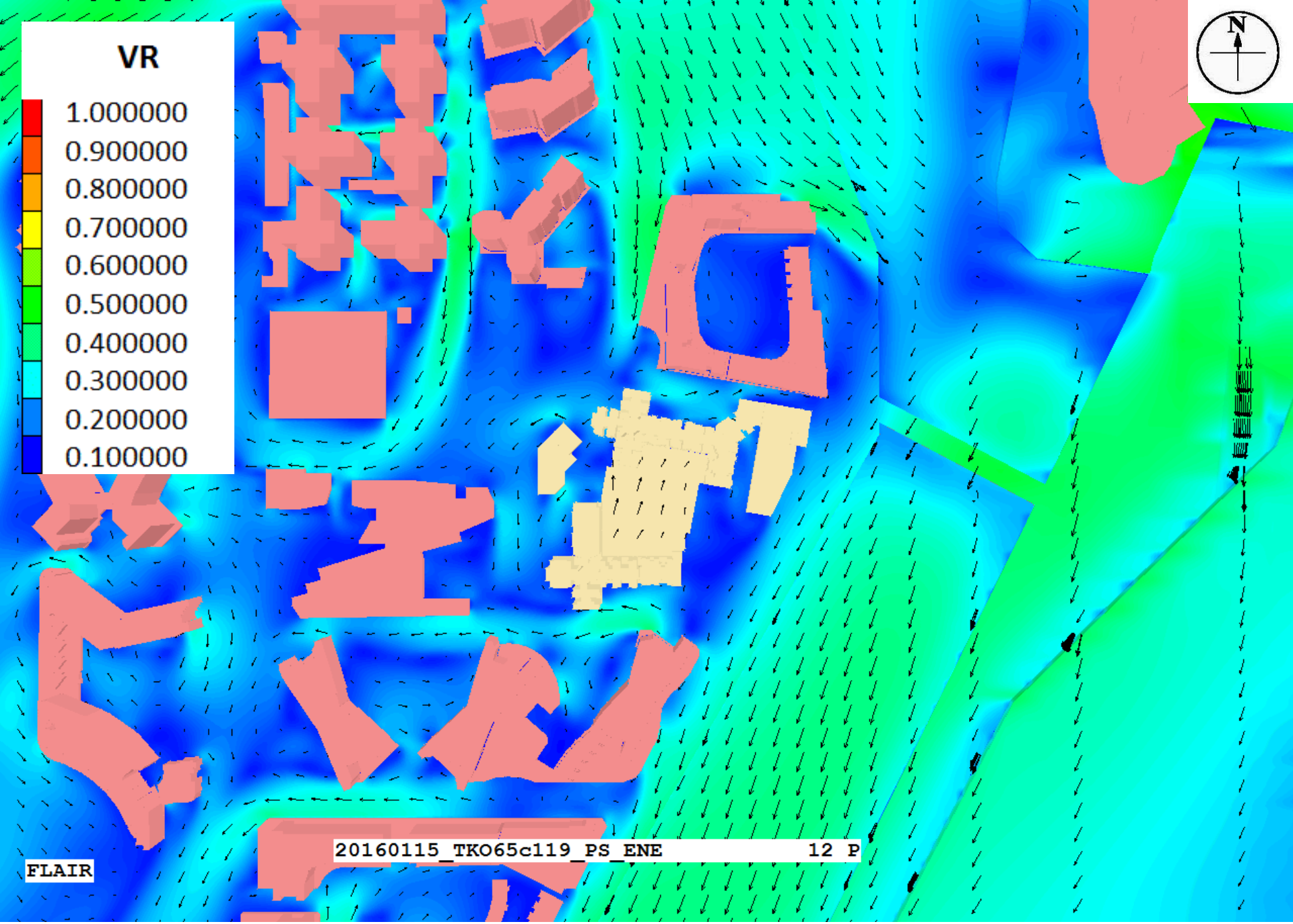

Proposed Scheme -W



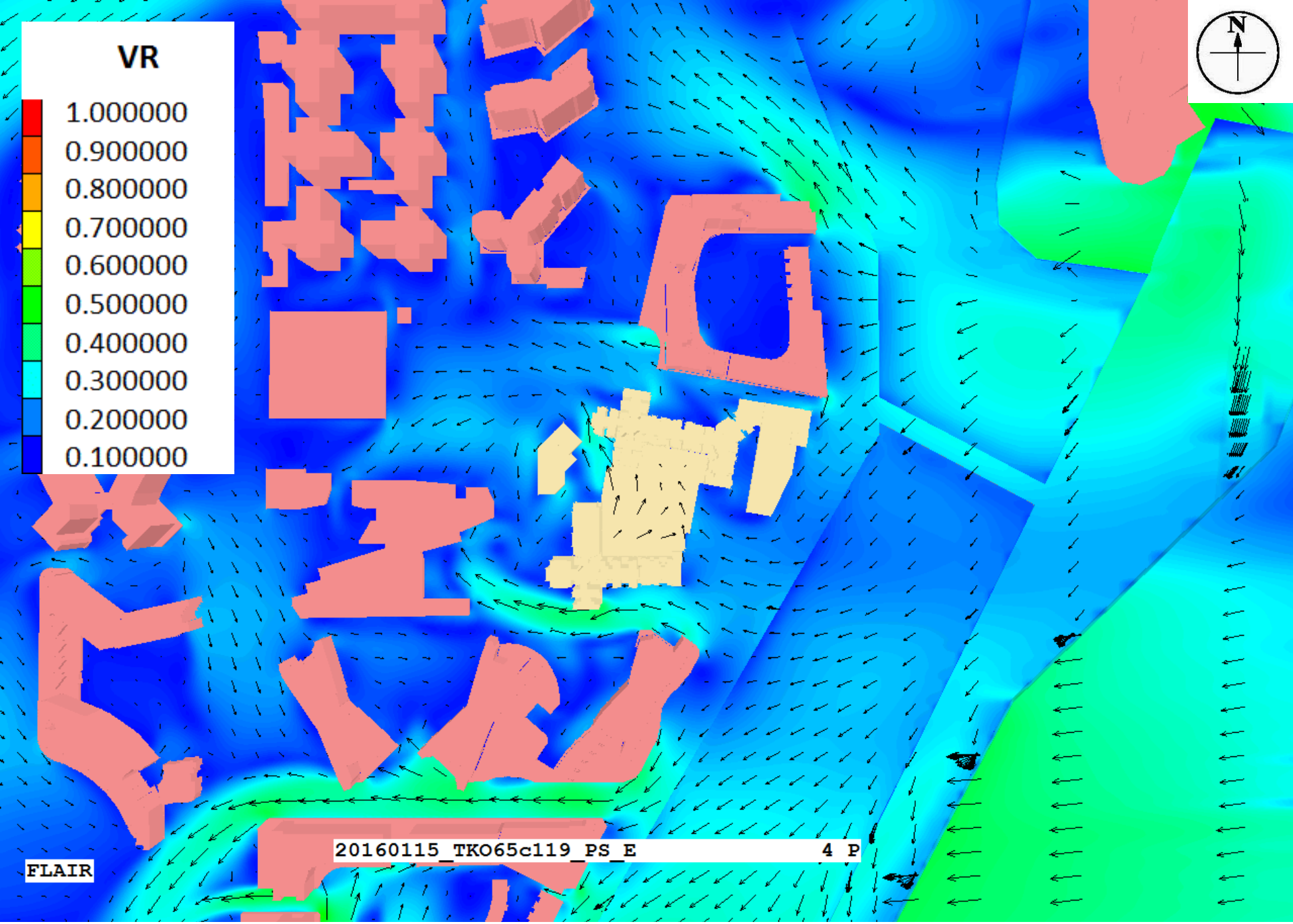

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under NNE Wind**



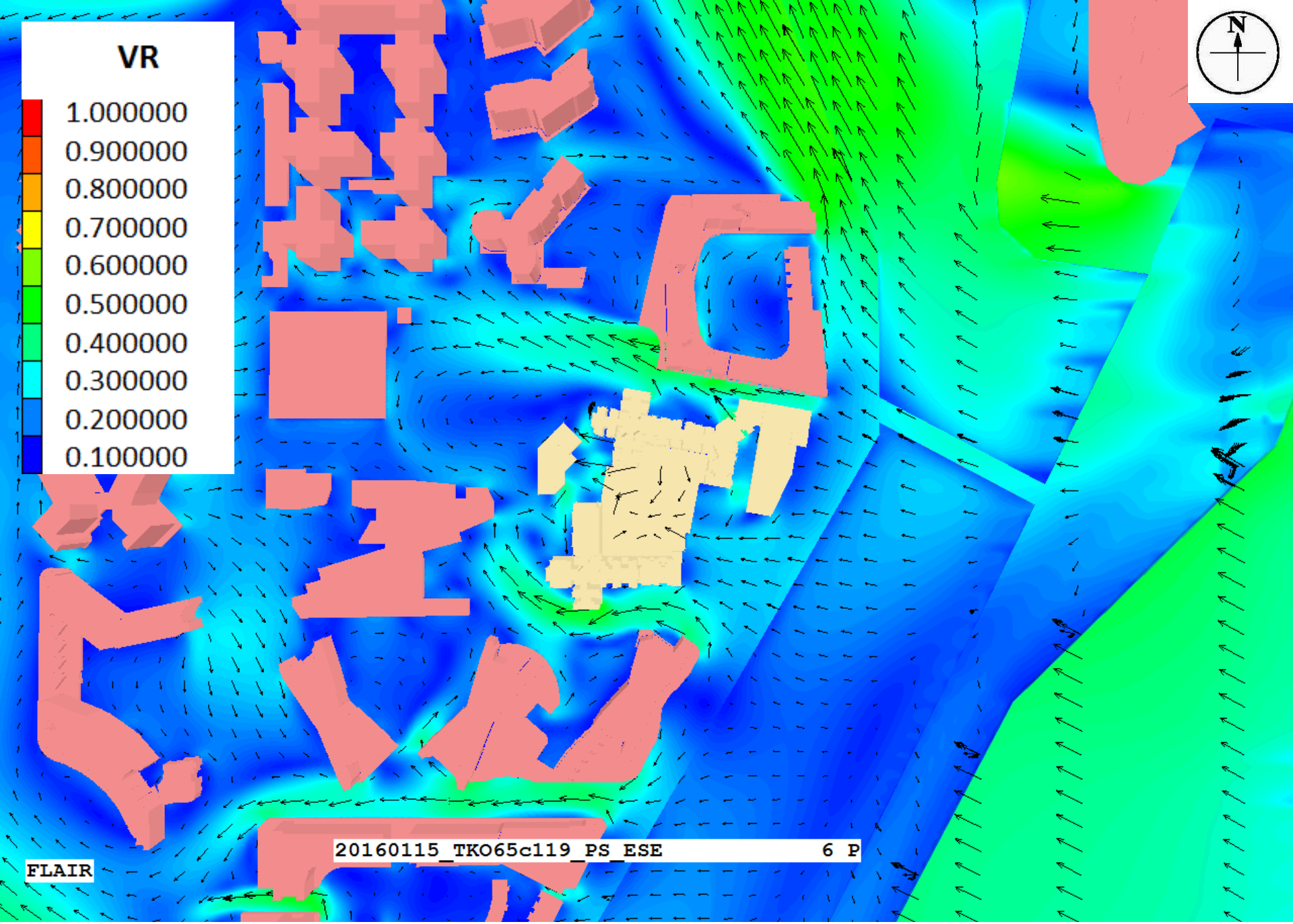

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under NE Wind**



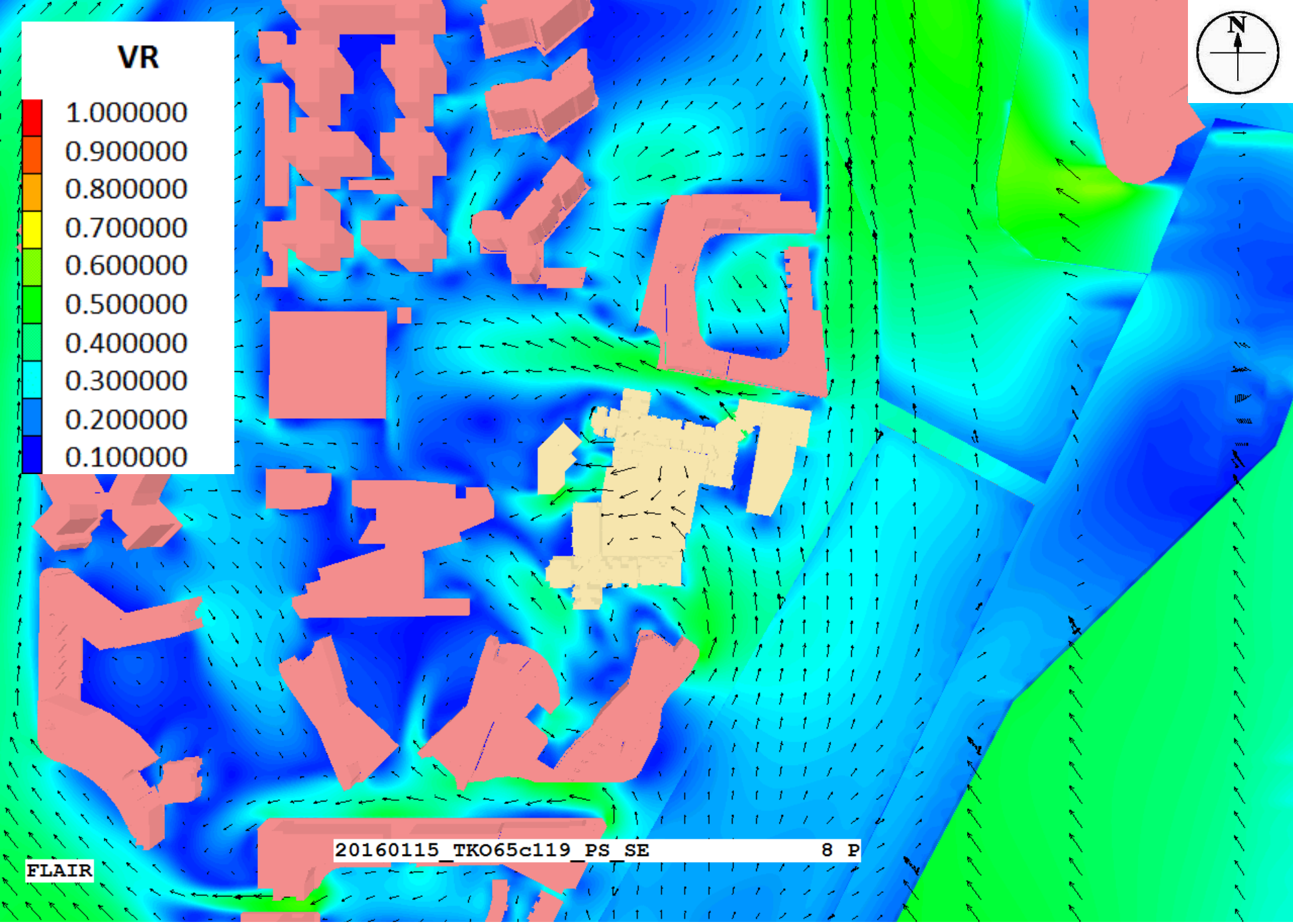

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under ENE Wind**



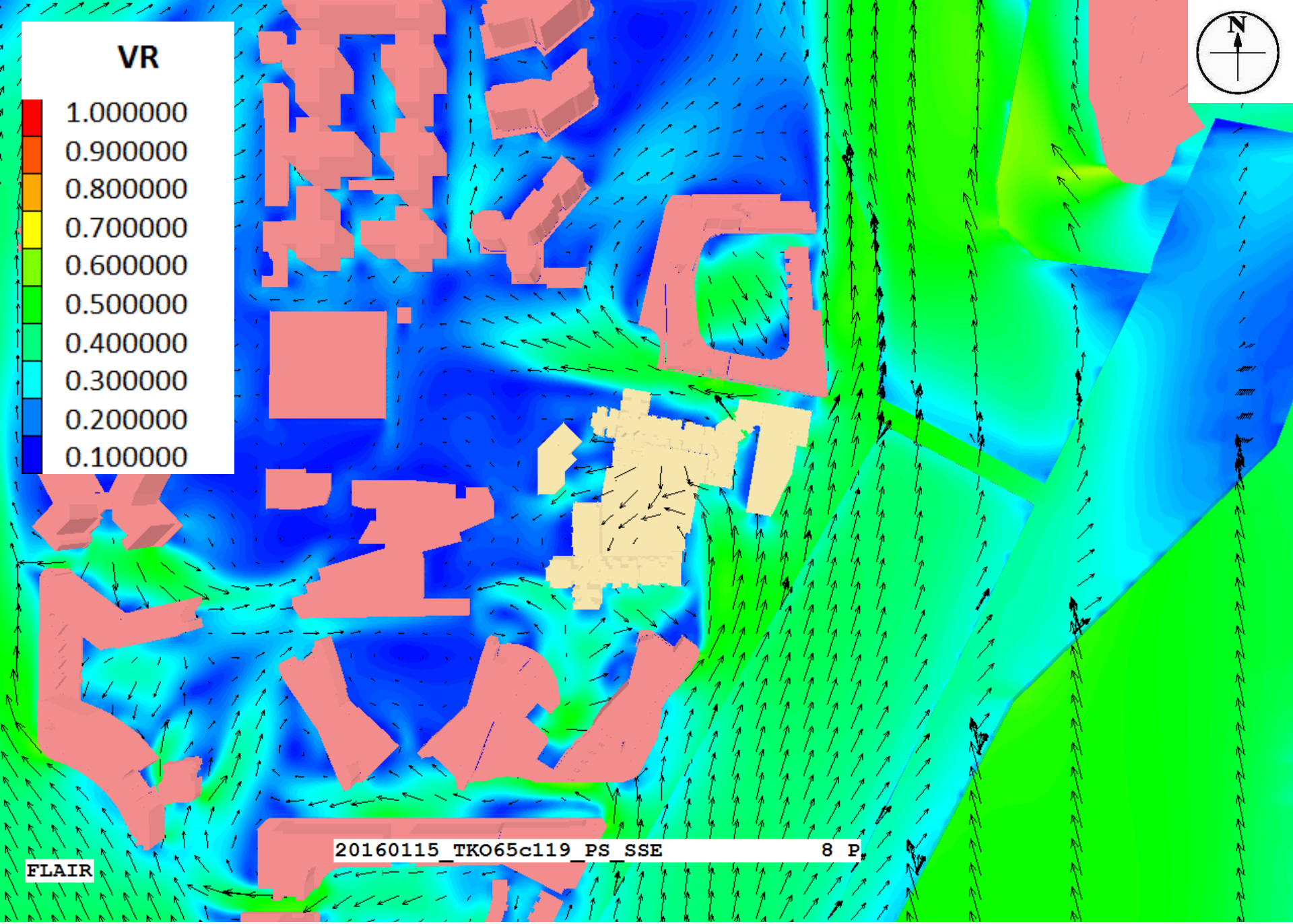

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under E Wind**



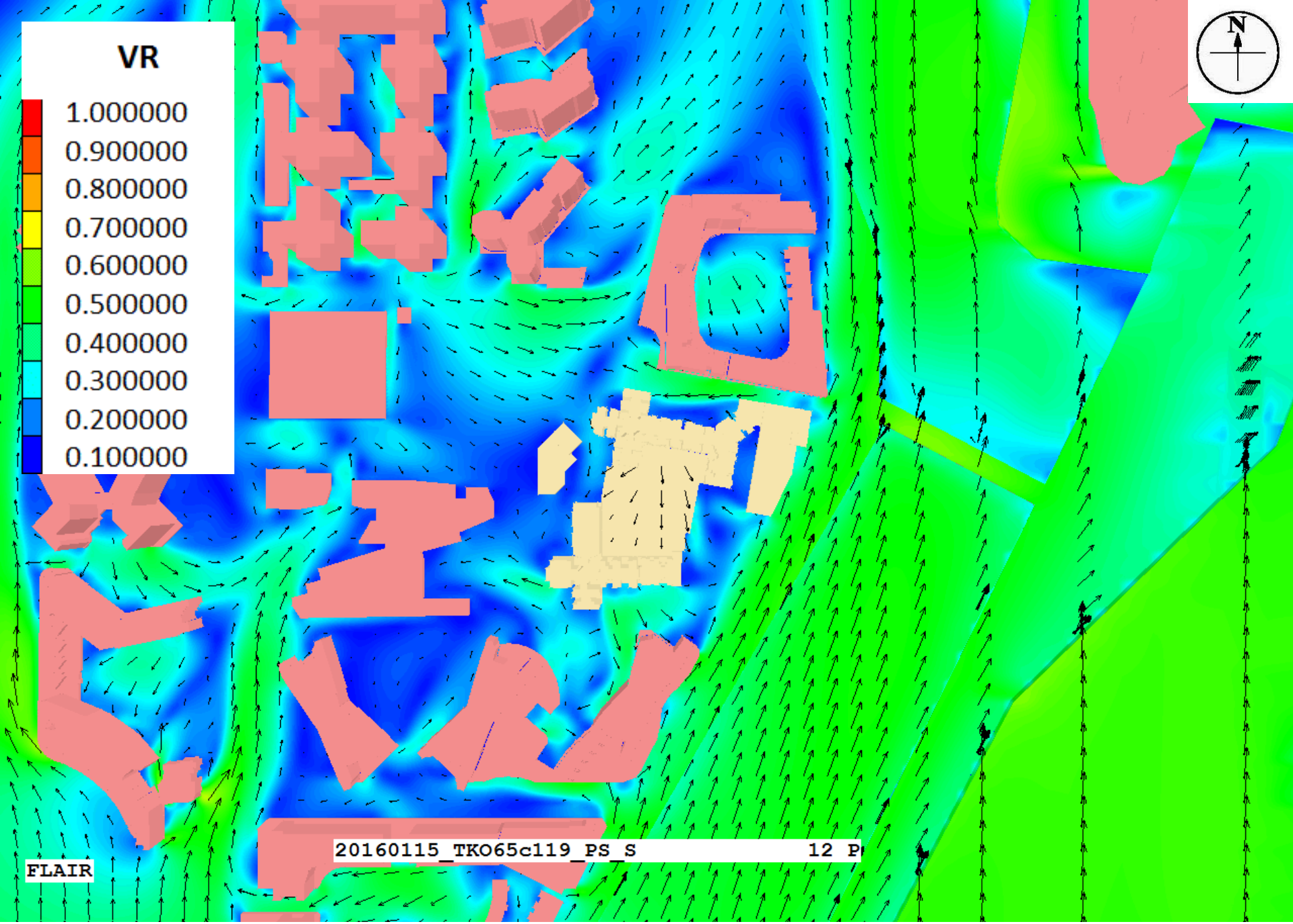

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under ESE Wind**



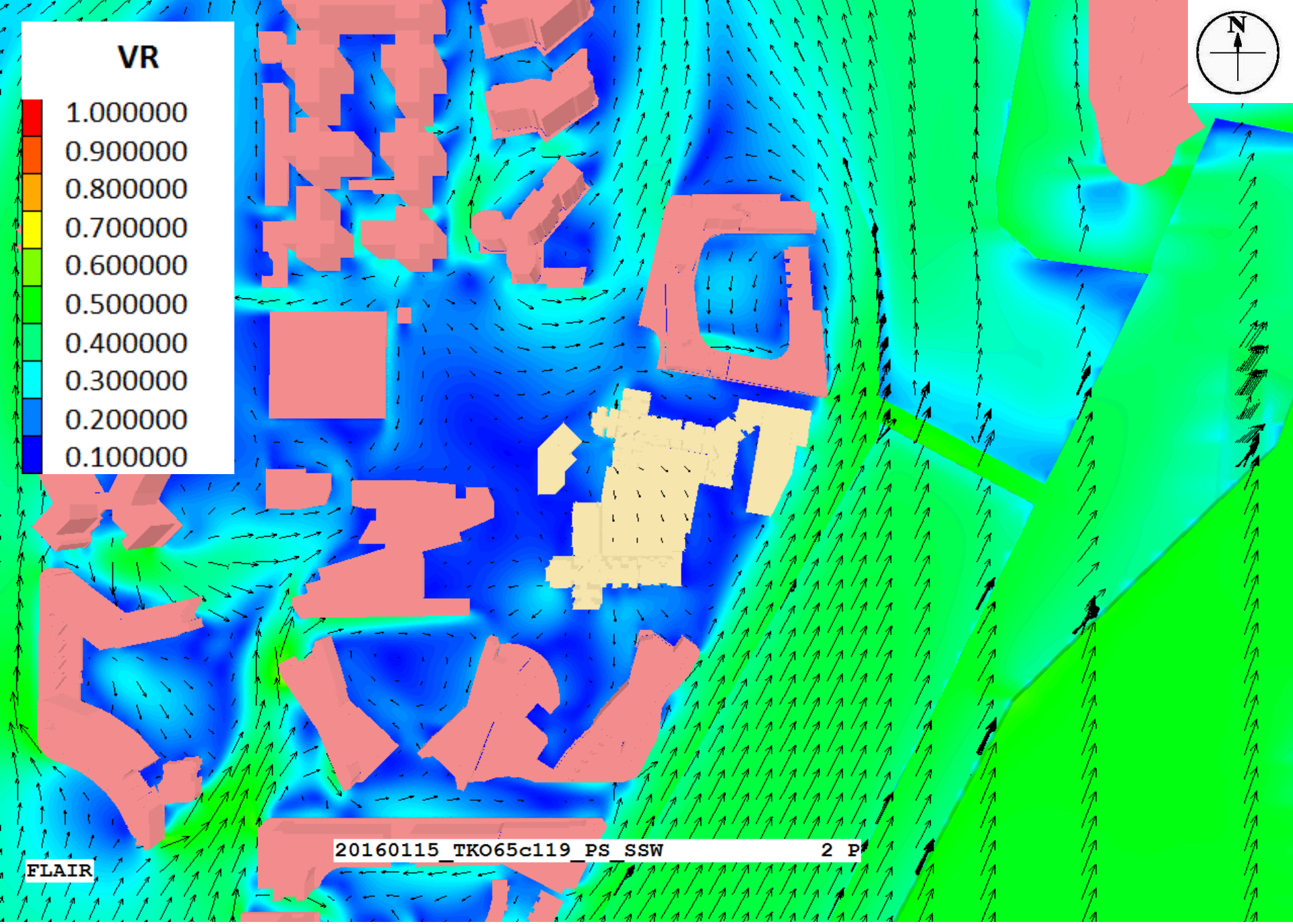

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under SE Wind**



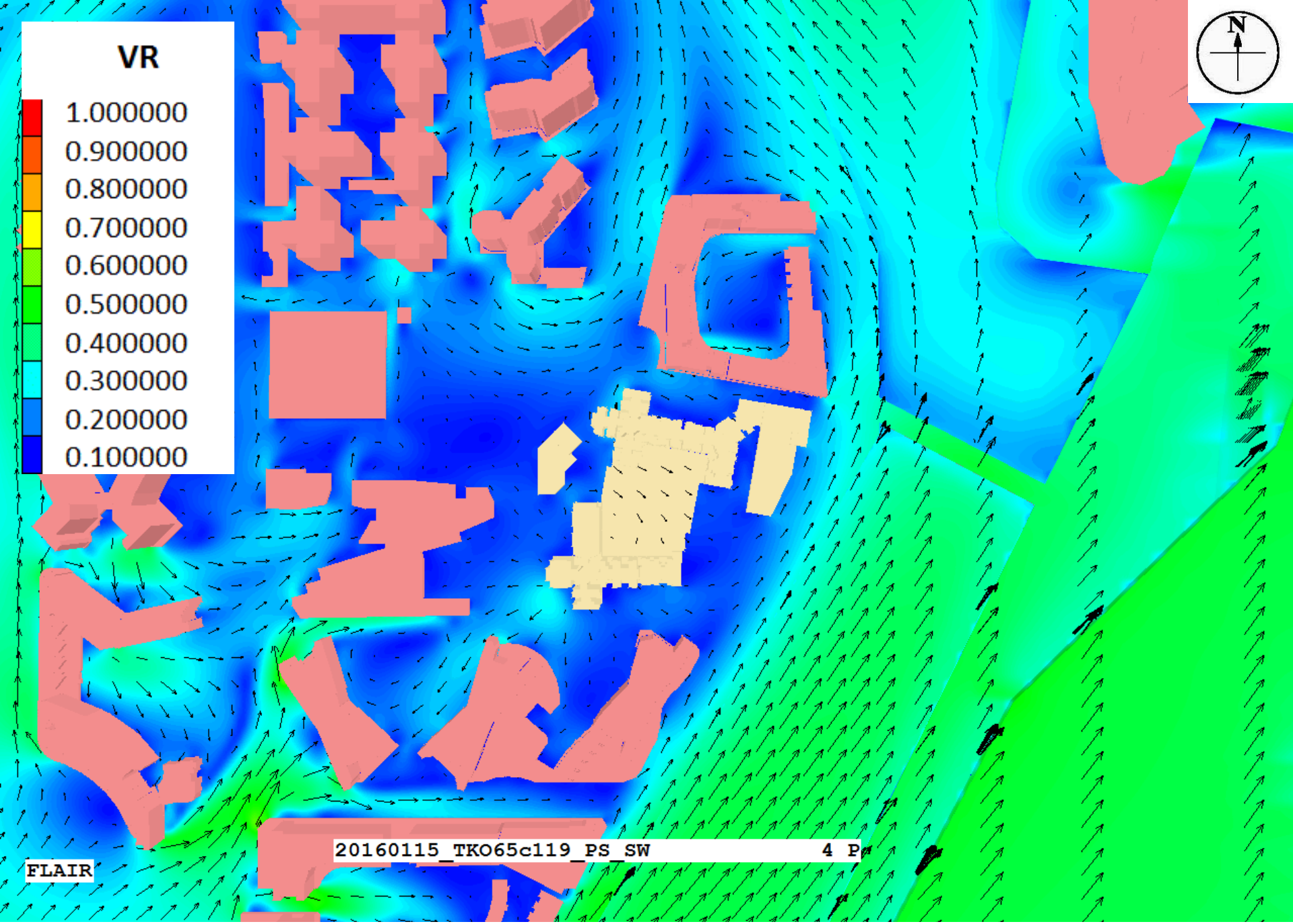

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under SSE Wind**



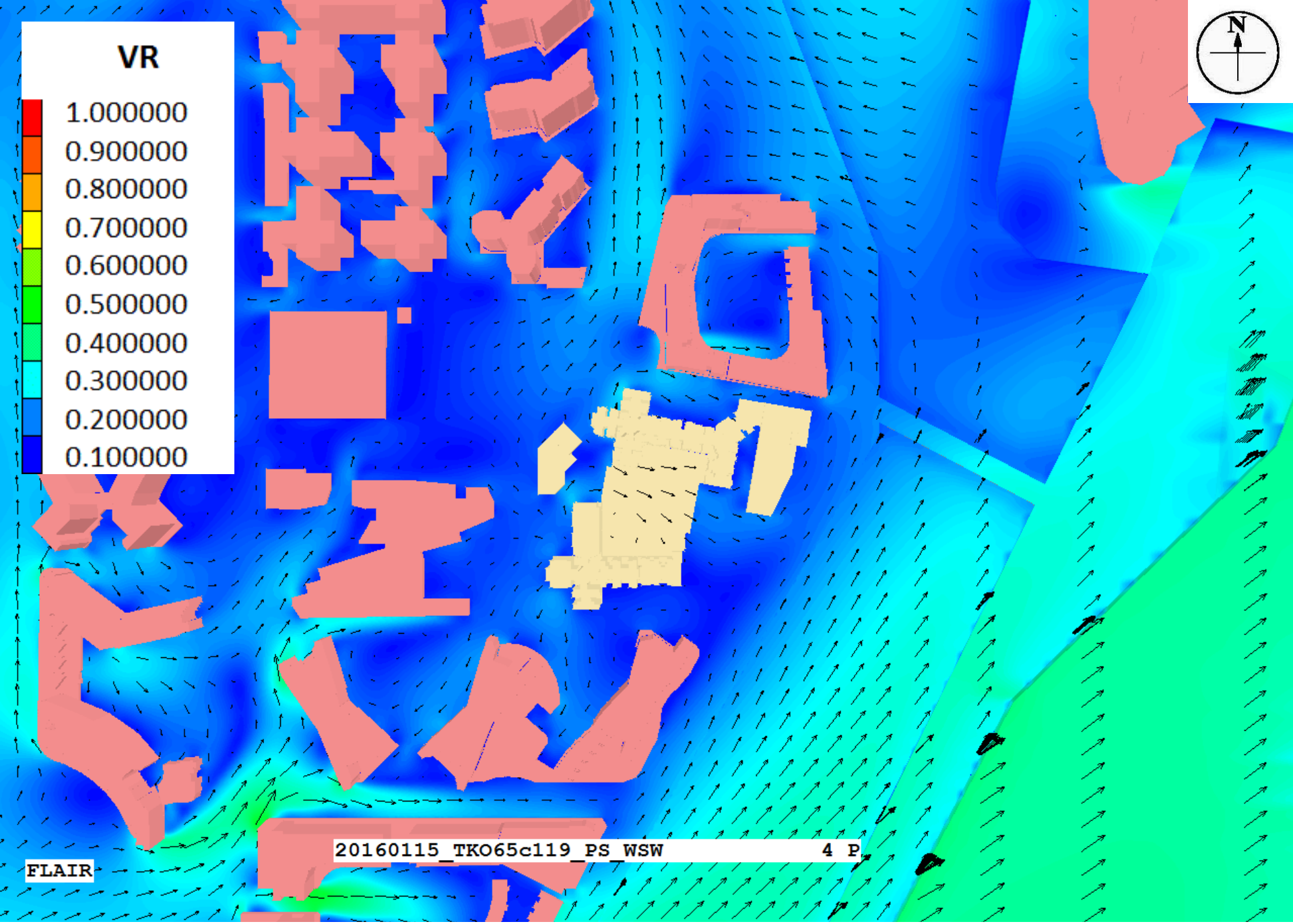

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under S Wind**



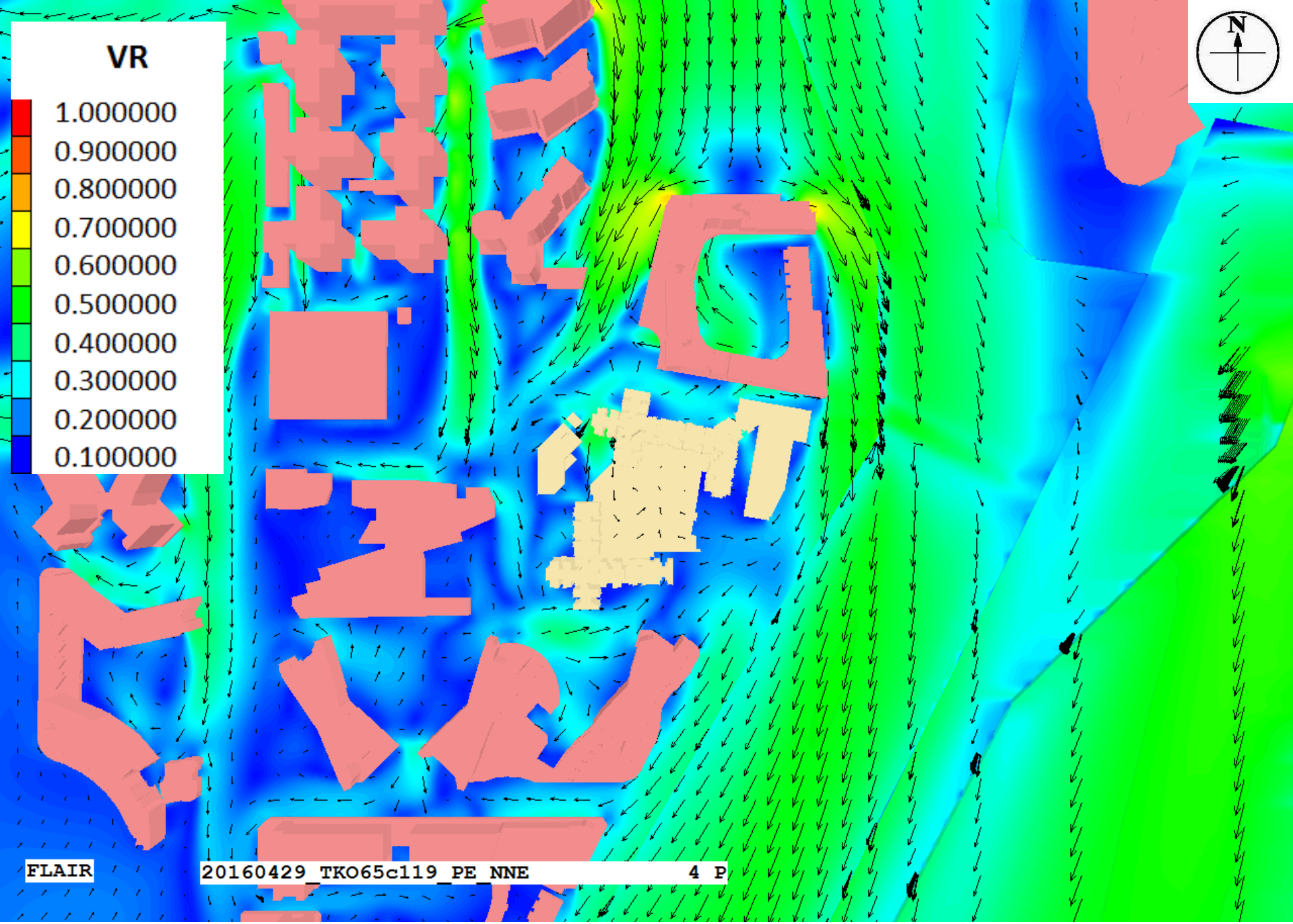

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under SSW Wind**



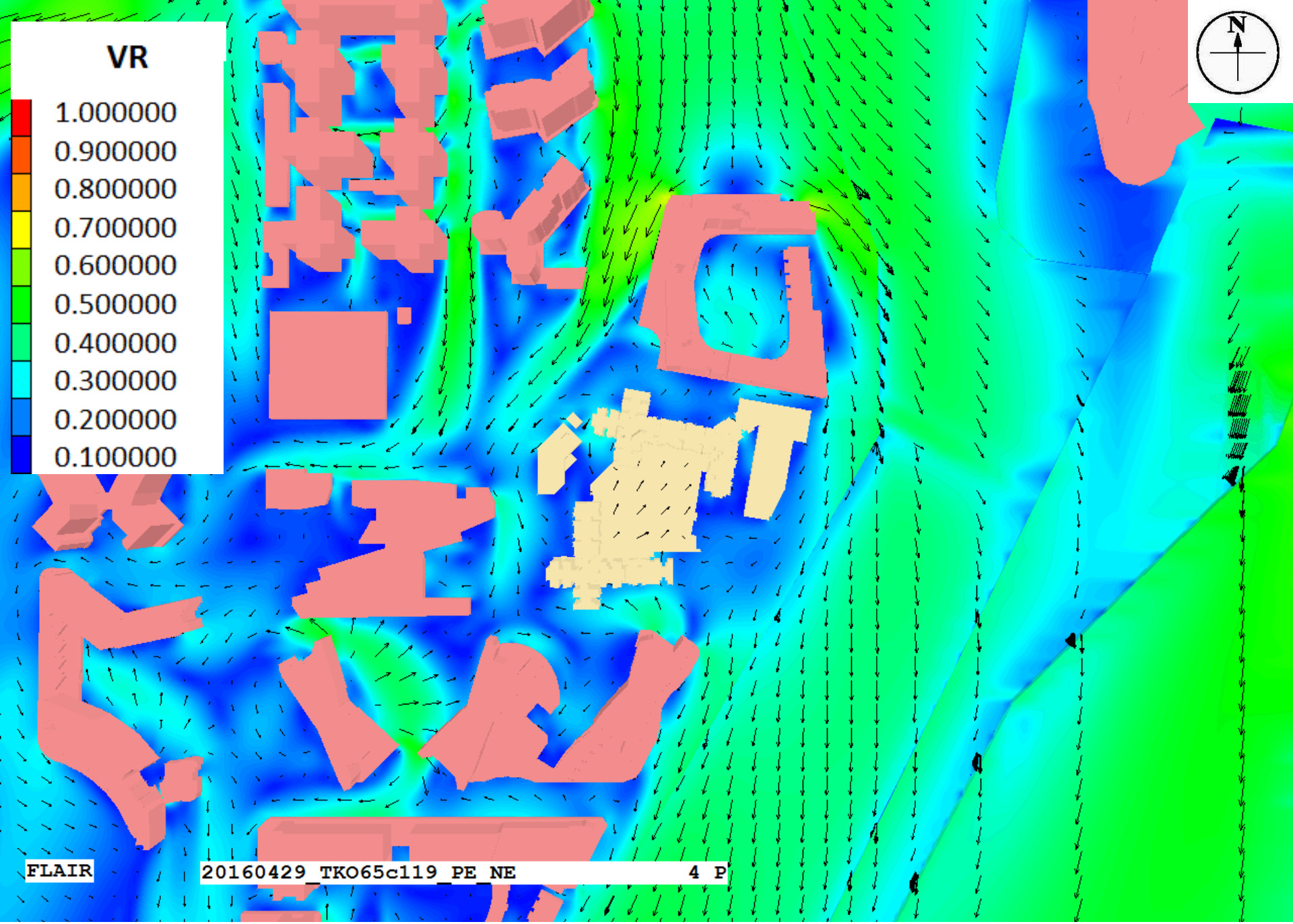

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under SW Wind**



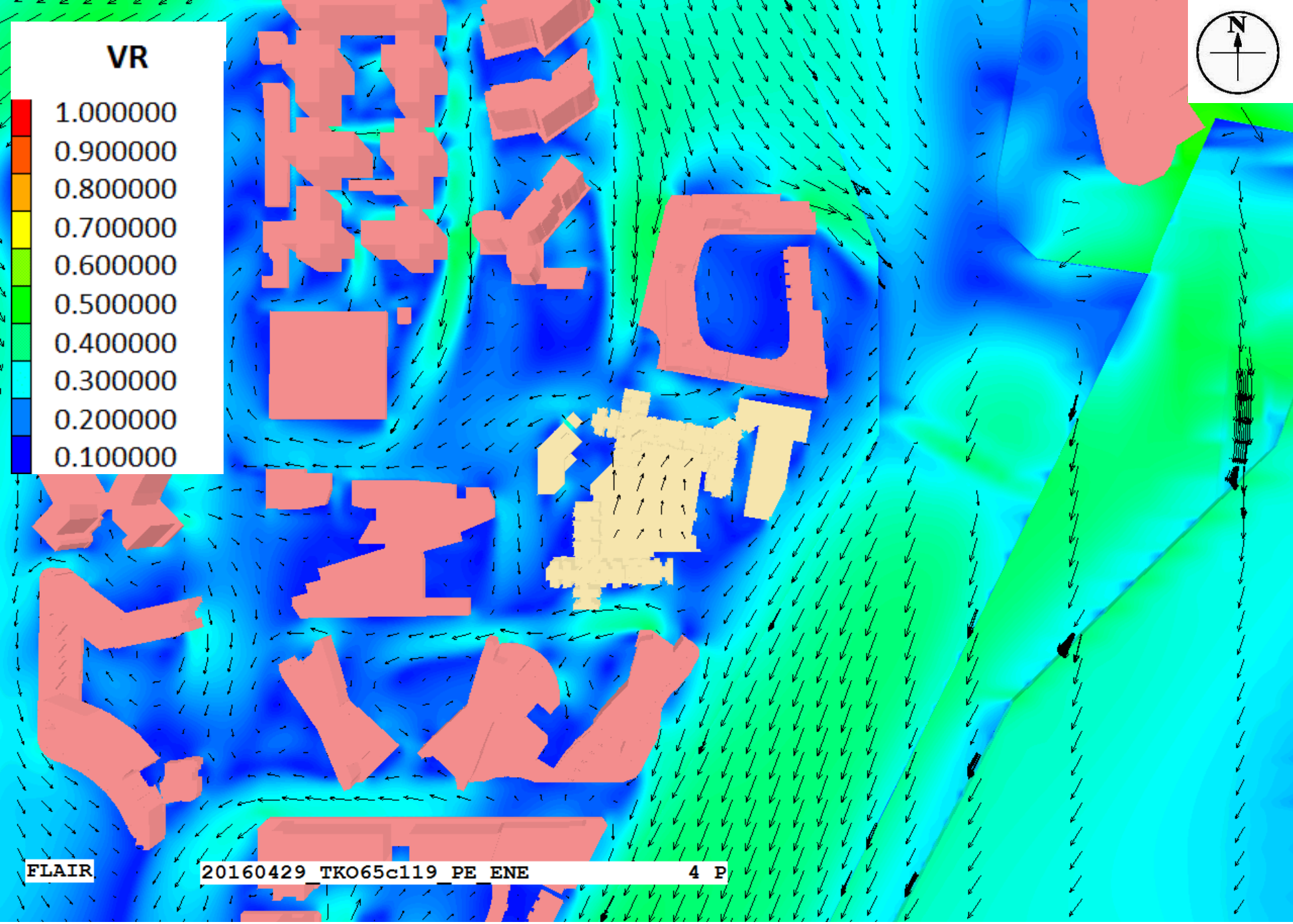

**Baseline Scheme - Wind speed colour and vector plot at pedestrian level under WSW Wind**



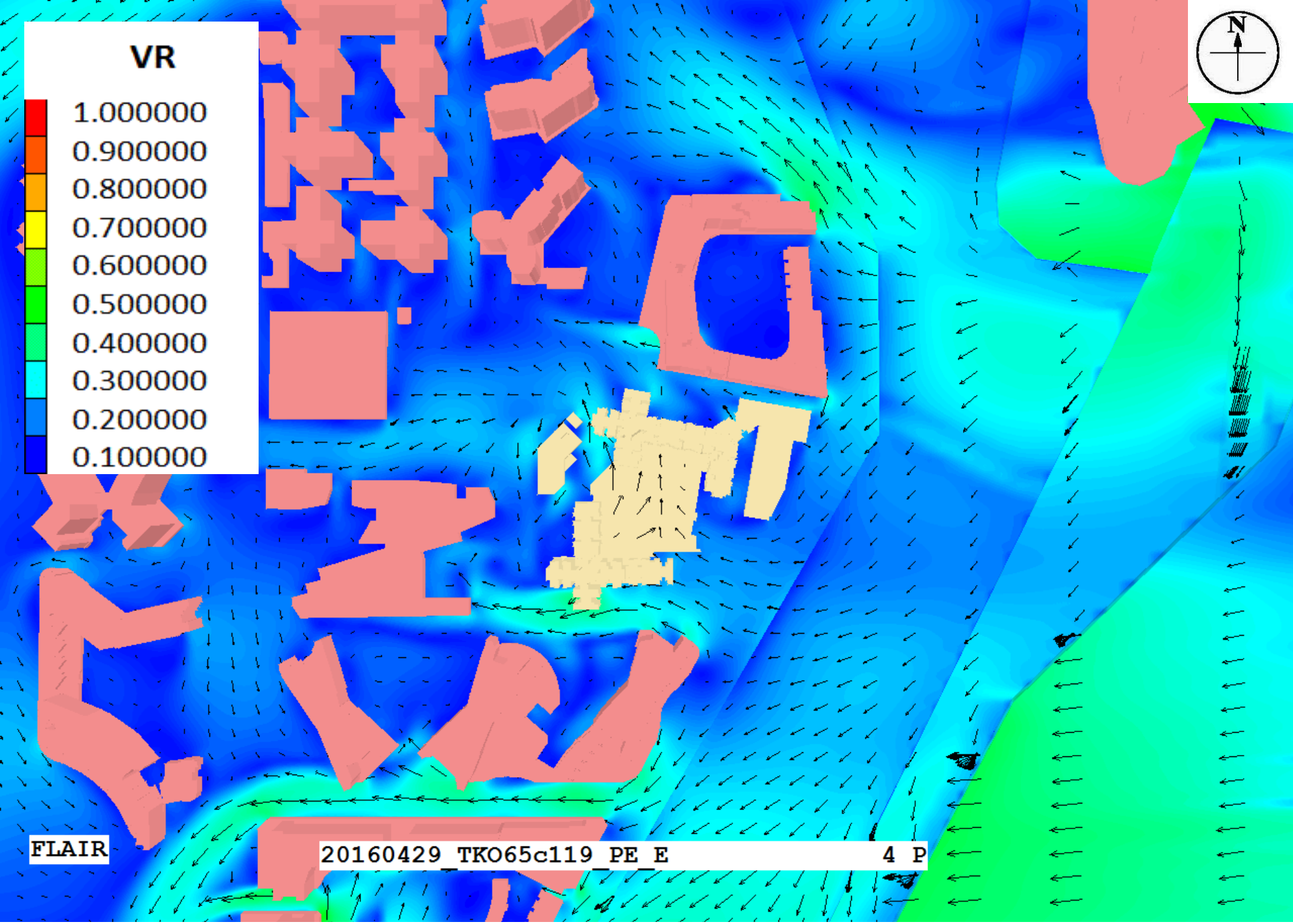

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under NNE Wind**



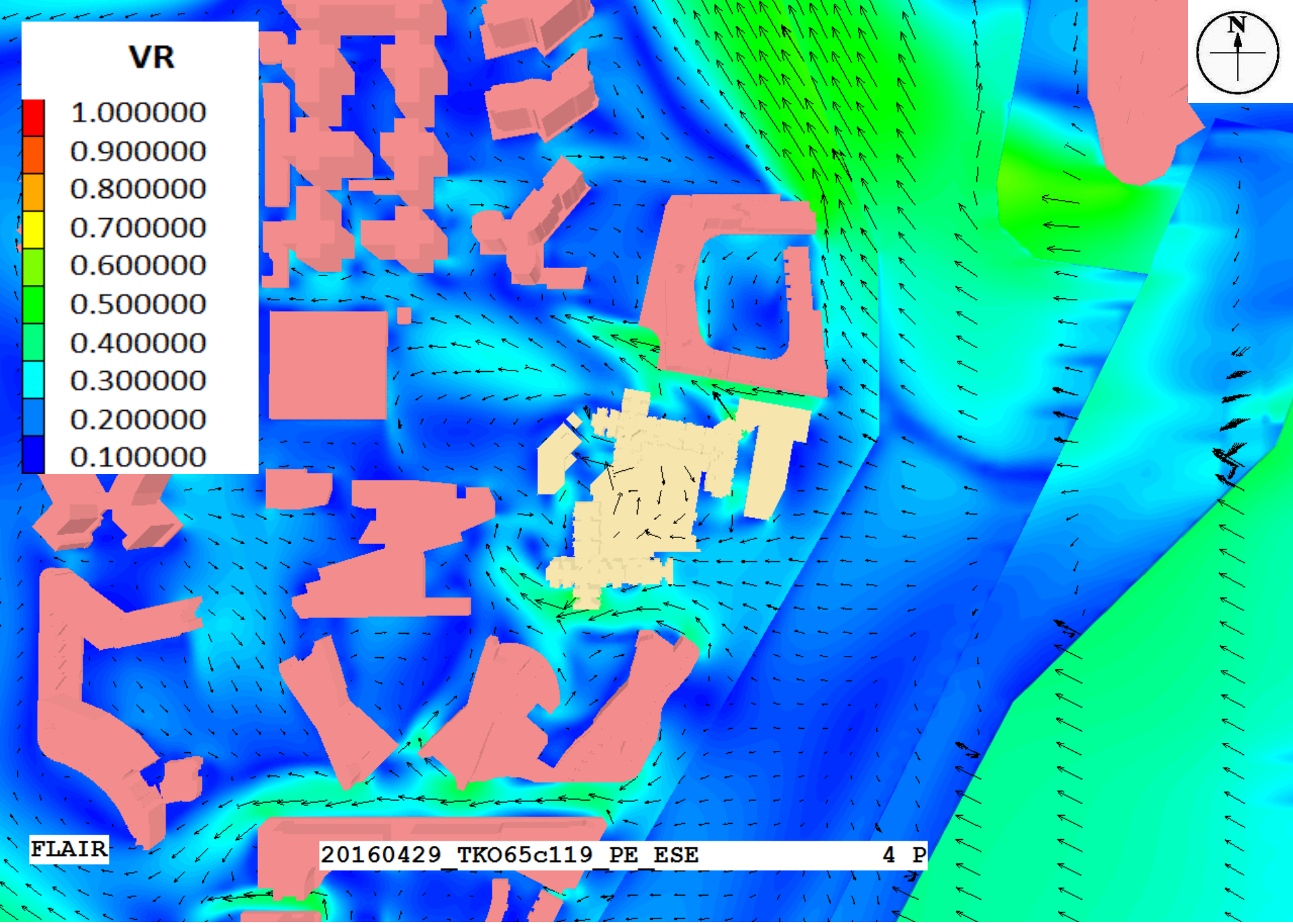

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under NE Wind**



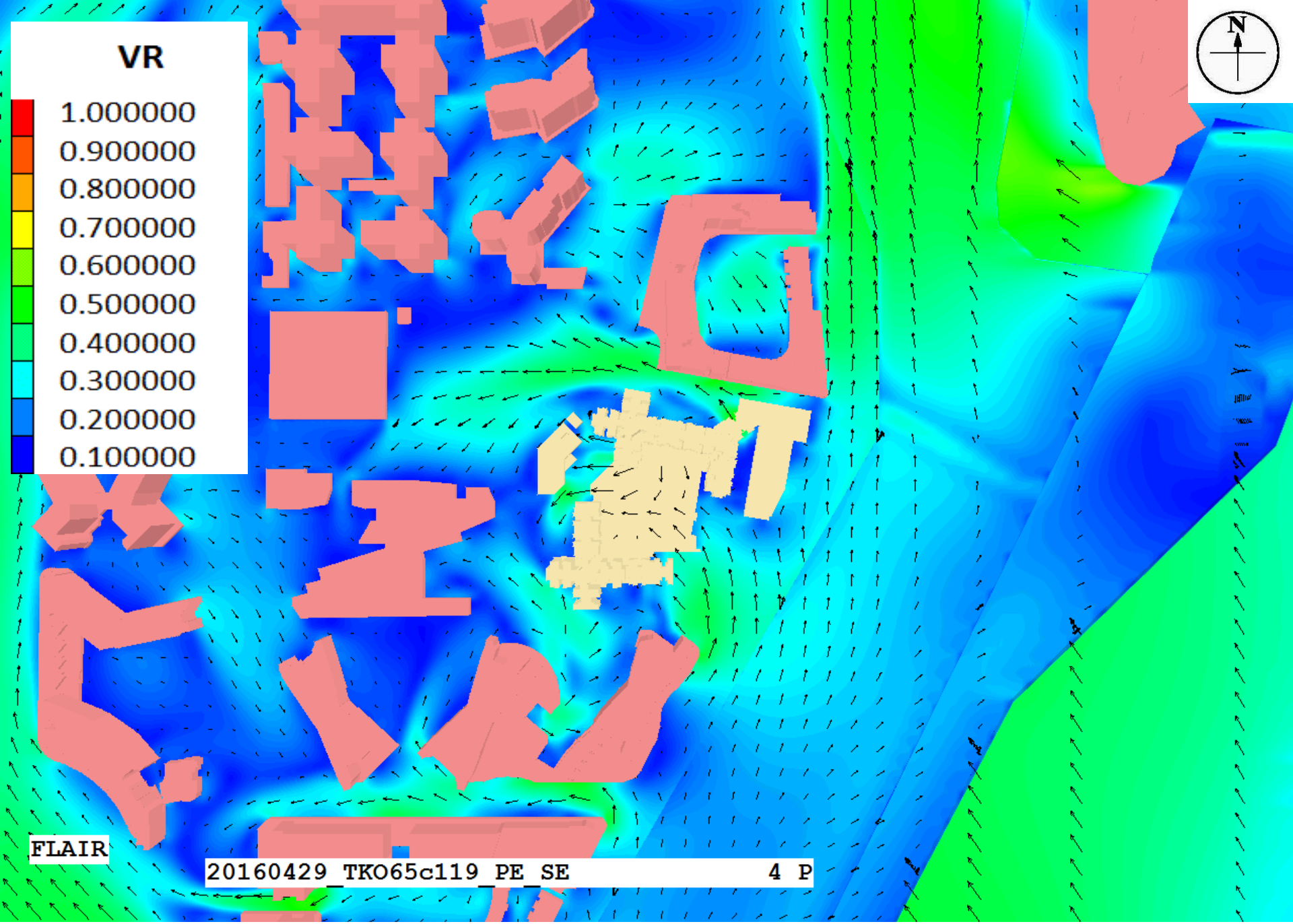

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under ENE Wind**



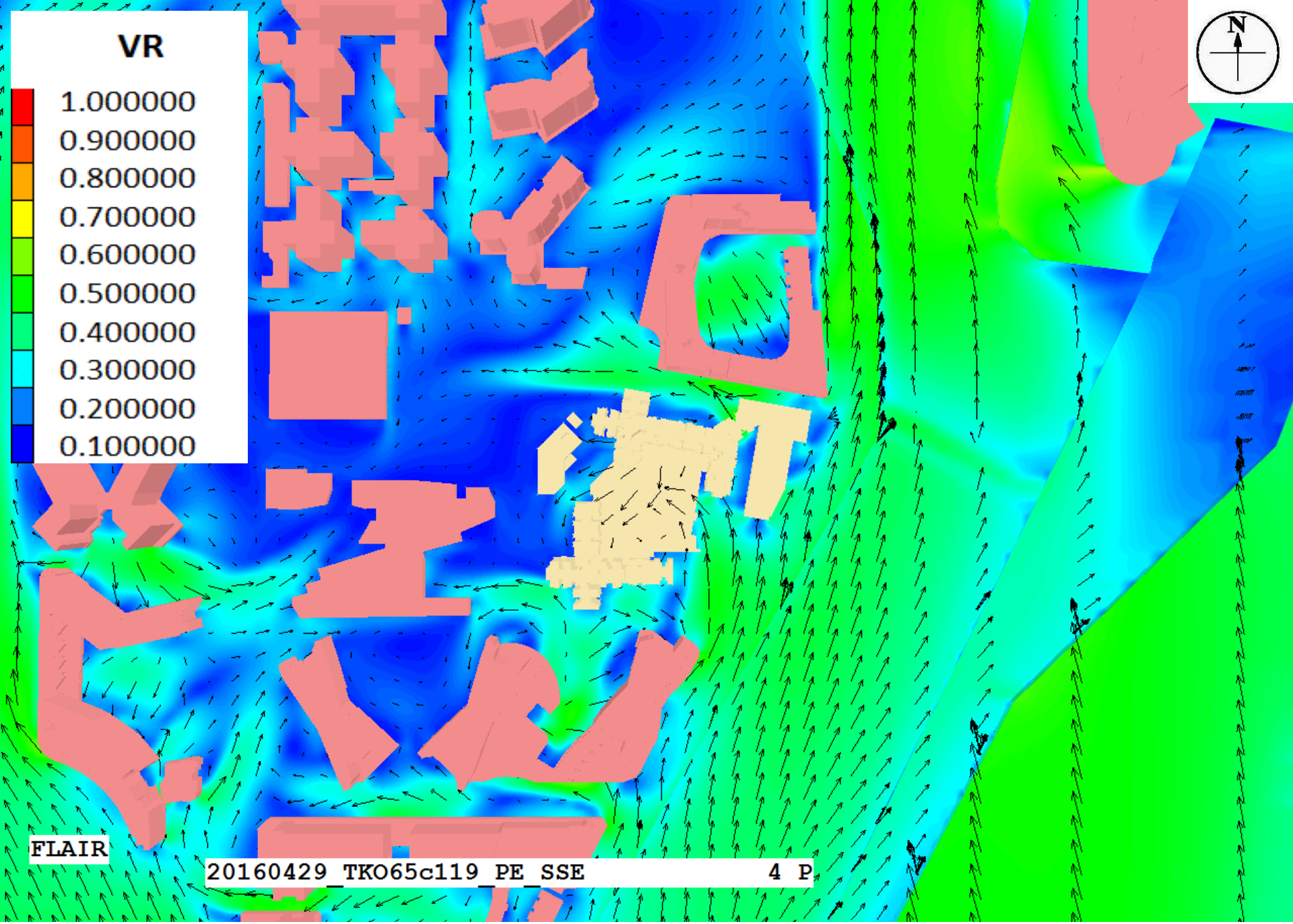

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under E Wind**



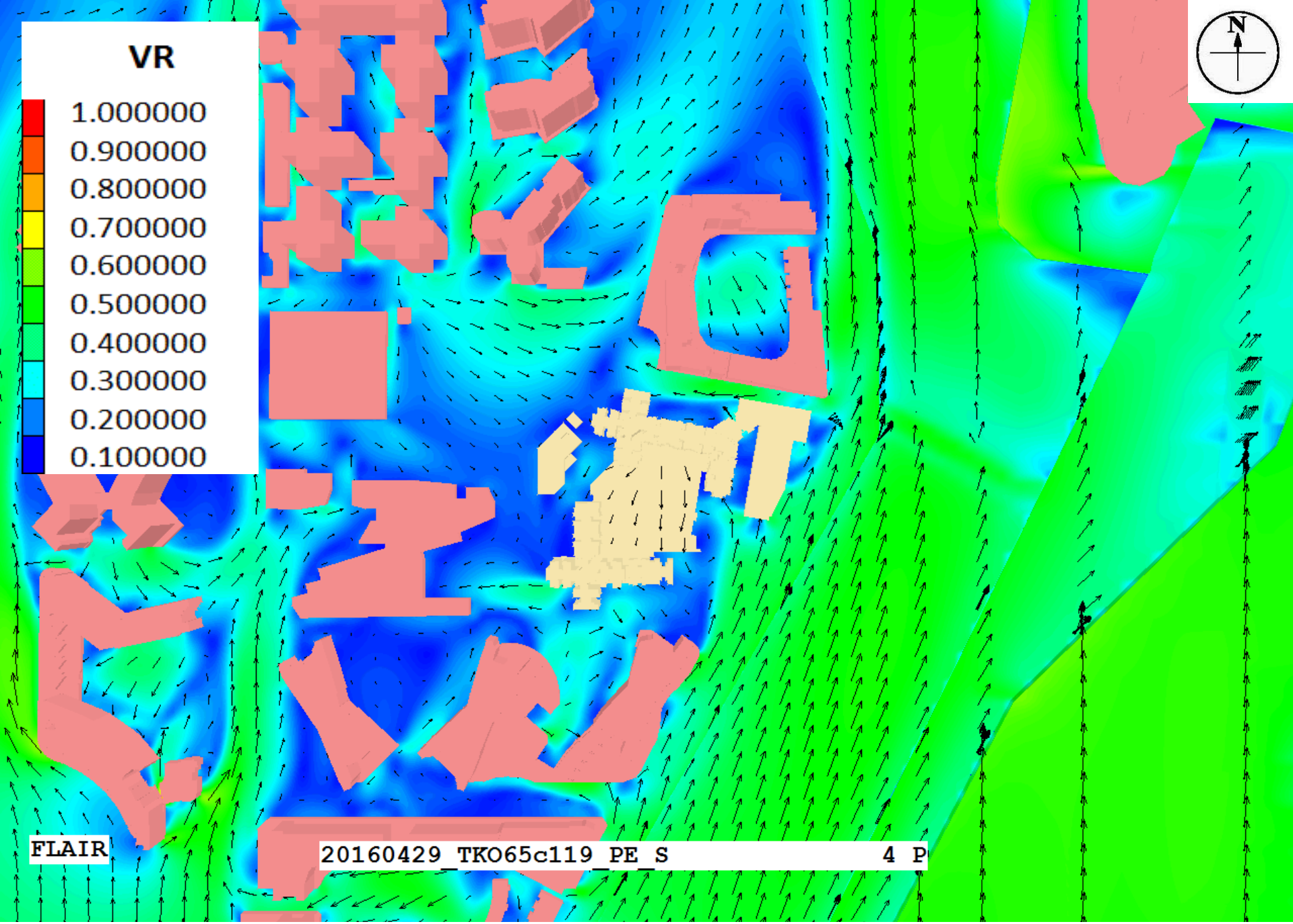

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under ESE Wind**



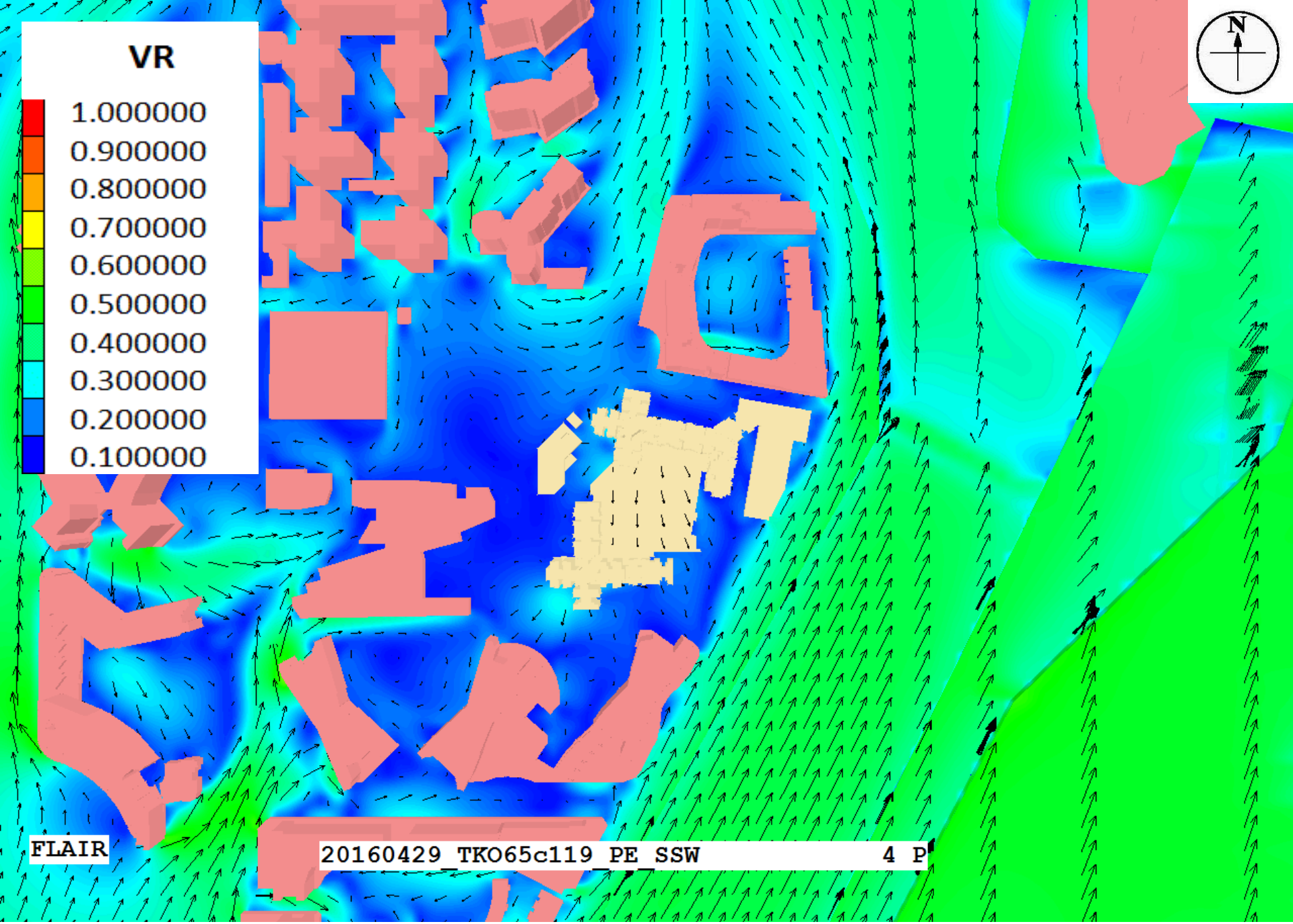

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under SE Wind**



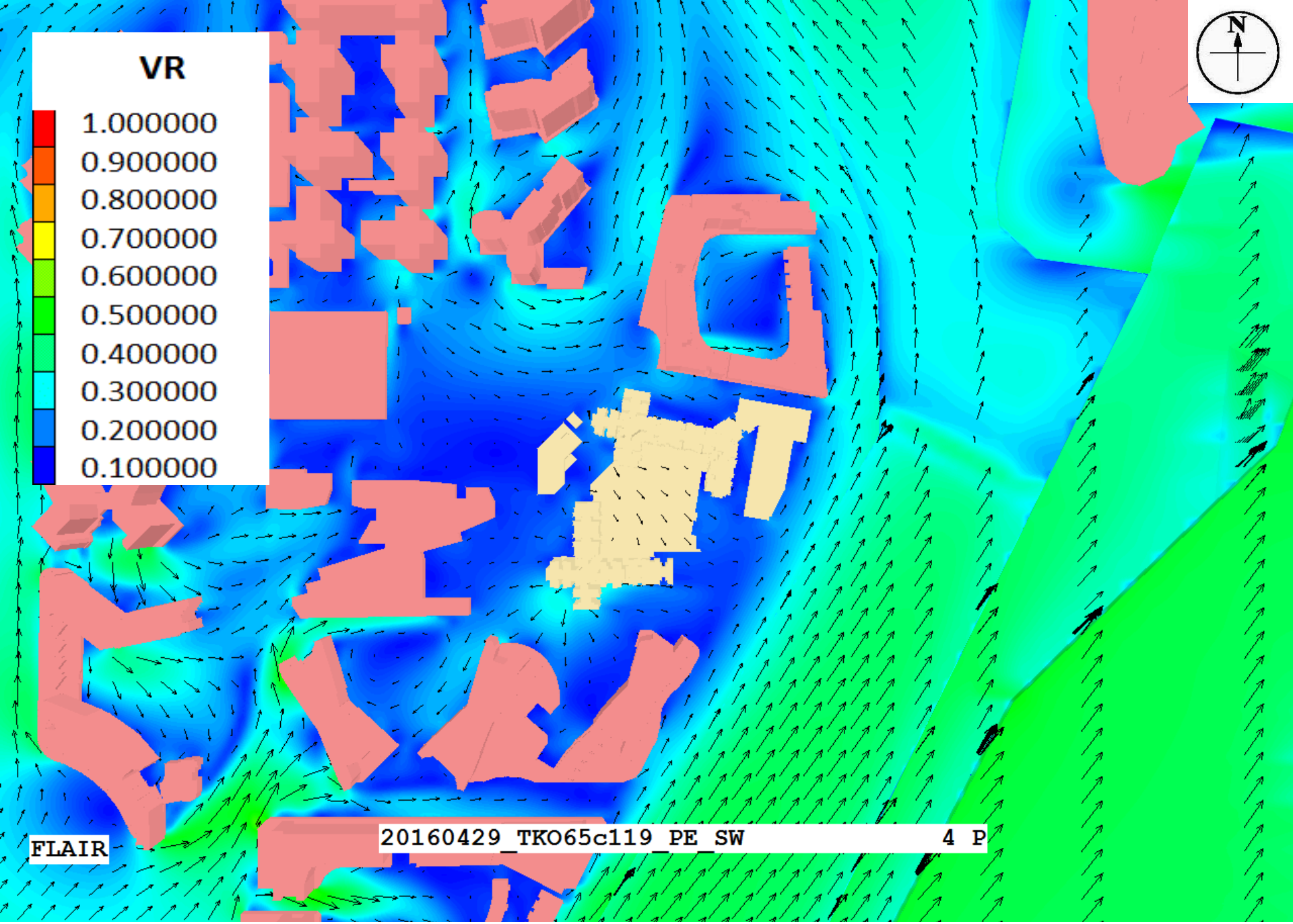

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under SSE Wind**



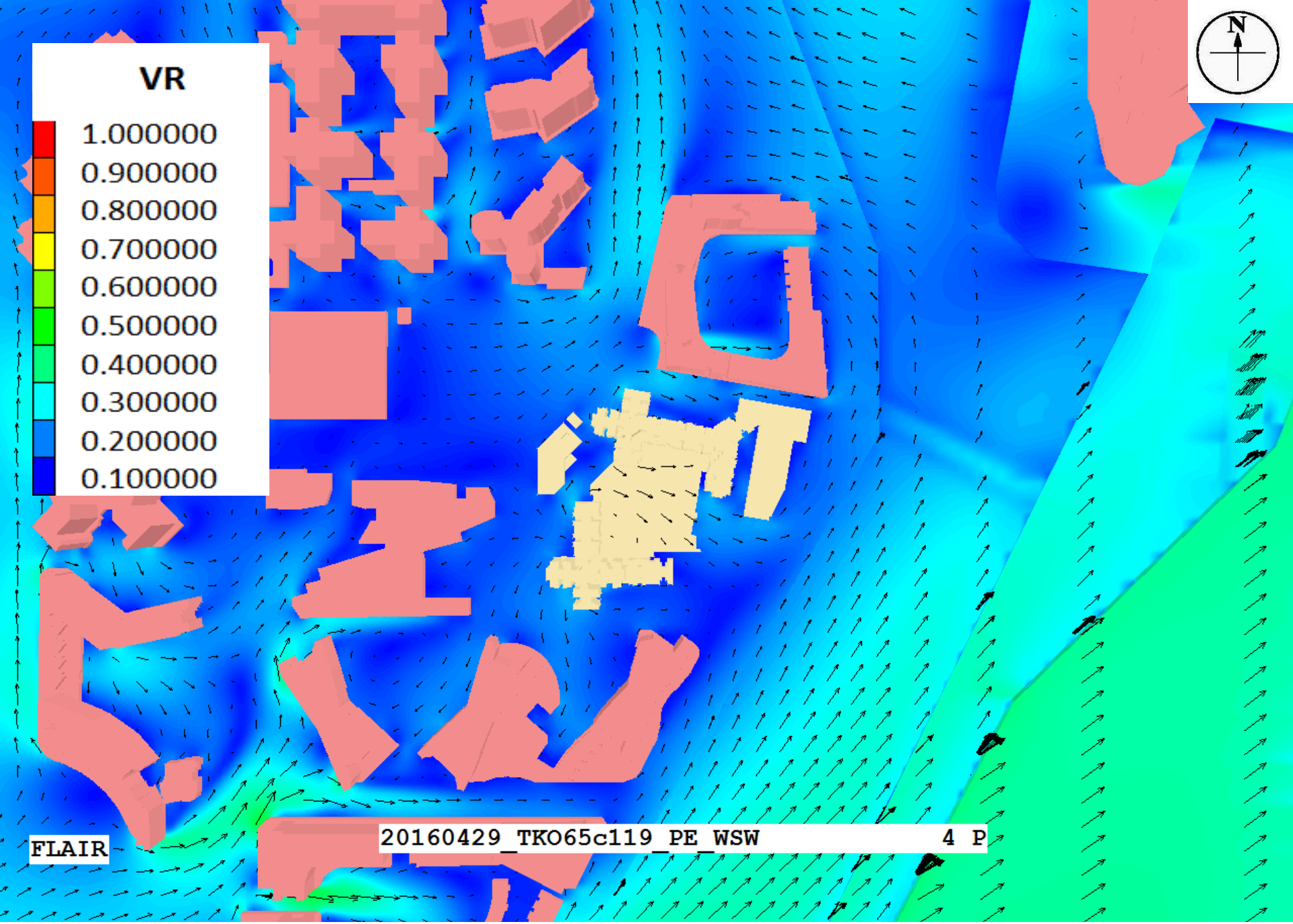

**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under S Wind**




**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under SSW Wind**




**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under SW Wind**




**Proposed Scheme - Wind speed colour and vector plot at pedestrian level under WSW Wind**

# APPENDIX C:
# DETAILED WIND VELOCITY RATIOS

| | Baseline Scheme(VR) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Point | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | Annual | Summer |
| P01 | 0.14 | 0.18 | 0.10 | 0.19 | 0.07 | 0.05 | 0.06 | 0.02 | 0.02 | 0.04 | 0.06 | 0.11 | 0.06 |
| P02 | 0.08 | 0.07 | 0.06 | 0.08 | 0.06 | 0.07 | 0.05 | 0.05 | 0.04 | 0.03 | 0.05 | 0.06 | 0.05 |
| P03 | 0.21 | 0.15 | 0.15 | 0.12 | 0.03 | 0.06 | 0.07 | 0.11 | 0.09 | 0.06 | 0.08 | 0.11 | 0.09 |
| P04 | 0.12 | 0.08 | 0.09 | 0.14 | 0.23 | 0.30 | 0.38 | 0.05 | 0.13 | 0.10 | 0.11 | 0.14 | 0.15 |
| P05 | 0.24 | 0.17 | 0.02 | 0.15 | 0.25 | 0.30 | 0.38 | 0.23 | 0.13 | 0.13 | 0.14 | 0.17 | 0.19 |
| P06 | 0.28 | 0.19 | 0.20 | 0.19 | 0.30 | 0.32 | 0.38 | 0.32 | 0.11 | 0.14 | 0.15 | 0.22 | 0.22 |
| P07 | 0.24 | 0.12 | 0.19 | 0.10 | 0.29 | 0.33 | 0.38 | 0.37 | 0.11 | 0.13 | 0.14 | 0.19 | 0.21 |
| P08 | 0.18 | 0.11 | 0.14 | 0.13 | 0.34 | 0.40 | 0.45 | 0.41 | 0.10 | 0.11 | 0.12 | 0.20 | 0.22 |
| P09 | 0.34 | 0.25 | 0.17 | 0.13 | 0.33 | 0.38 | 0.43 | 0.41 | 0.05 | 0.10 | 0.12 | 0.23 | 0.21 |
| P10 | 0.17 | 0.15 | 0.01 | 0.13 | 0.27 | 0.26 | 0.35 | 0.31 | 0.04 | 0.05 | 0.08 | 0.14 | 0.15 |
| P11 | 0.11 | 0.08 | 0.07 | 0.19 | 0.25 | 0.11 | 0.15 | 0.18 | 0.04 | 0.04 | 0.06 | 0.12 | 0.11 |
| P12 | 0.29 | 0.15 | 0.07 | 0.19 | 0.15 | 0.17 | 0.27 | 0.29 | 0.25 | 0.16 | 0.08 | 0.18 | 0.19 |
| P13 | 0.34 | 0.20 | 0.13 | 0.15 | 0.05 | 0.24 | 0.37 | 0.34 | 0.32 | 0.17 | 0.07 | 0.20 | 0.22 |
| P14 | 0.25 | 0.14 | 0.13 | 0.11 | 0.06 | 0.19 | 0.30 | 0.28 | 0.24 | 0.12 | 0.06 | 0.15 | 0.17 |
| P15 | 0.21 | 0.09 | 0.16 | 0.09 | 0.10 | 0.18 | 0.35 | 0.35 | 0.27 | 0.13 | 0.08 | 0.16 | 0.19 |
| P16 | 0.16 | 0.05 | 0.17 | 0.11 | 0.19 | 0.15 | 0.27 | 0.32 | 0.24 | 0.11 | 0.09 | 0.15 | 0.18 |
| P17 | 0.13 | 0.10 | 0.16 | 0.13 | 0.18 | 0.24 | 0.39 | 0.38 | 0.26 | 0.10 | 0.04 | 0.17 | 0.20 |
| P18 | 0.23 | 0.11 | 0.16 | 0.14 | 0.17 | 0.30 | 0.45 | 0.37 | 0.27 | 0.09 | 0.02 | 0.19 | 0.21 |
| P19 | 0.28 | 0.09 | 0.14 | 0.15 | 0.18 | 0.36 | 0.45 | 0.33 | 0.23 | 0.06 | 0.02 | 0.19 | 0.20 |
| P20 | 0.18 | 0.20 | 0.04 | 0.20 | 0.26 | 0.38 | 0.07 | 0.13 | 0.06 | 0.07 | 0.03 | 0.15 | 0.13 |
| P21 | 0.07 | 0.25 | 0.21 | 0.22 | 0.28 | 0.17 | 0.21 | 0.28 | 0.11 | 0.09 | 0.06 | 0.19 | 0.17 |
| P22 | 0.19 | 0.22 | 0.30 | 0.26 | 0.30 | 0.12 | 0.32 | 0.36 | 0.16 | 0.08 | 0.05 | 0.23 | 0.20 |
| P23 | 0.21 | 0.16 | 0.28 | 0.33 | 0.38 | 0.12 | 0.19 | 0.10 | 0.10 | 0.08 | 0.05 | 0.22 | 0.16 |
| P24 | 0.27 | 0.13 | 0.15 | 0.33 | 0.37 | 0.30 | 0.24 | 0.16 | 0.11 | 0.17 | 0.11 | 0.22 | 0.20 |
| P25 | 0.24 | 0.19 | 0.13 | 0.29 | 0.27 | 0.25 | 0.16 | 0.13 | 0.14 | 0.19 | 0.11 | 0.20 | 0.18 |
| P26 | 0.17 | 0.18 | 0.08 | 0.17 | 0.31 | 0.30 | 0.30 | 0.29 | 0.18 | 0.20 | 0.10 | 0.19 | 0.21 |
| P27 | 0.12 | 0.21 | 0.12 | 0.09 | 0.16 | 0.15 | 0.07 | 0.09 | 0.08 | 0.10 | 0.08 | 0.12 | 0.10 |
| P28 | 0.12 | 0.23 | 0.15 | 0.11 | 0.04 | 0.13 | 0.10 | 0.12 | 0.04 | 0.08 | 0.08 | 0.12 | 0.09 |
| P29 | 0.09 | 0.17 | 0.12 | 0.09 | 0.15 | 0.29 | 0.15 | 0.08 | 0.03 | 0.06 | 0.07 | 0.12 | 0.10 |
| P30 | 0.08 | 0.09 | 0.10 | 0.14 | 0.03 | 0.04 | 0.05 | 0.02 | 0.01 | 0.04 | 0.05 | 0.08 | 0.05 |
| T01 | 0.45 | 0.40 | 0.31 | 0.13 | 0.11 | 0.14 | 0.03 | 0.18 | 0.21 | 0.14 | 0.17 | 0.22 | 0.16 |
| T02 | 0.42 | 0.40 | 0.29 | 0.10 | 0.12 | 0.28 | 0.18 | 0.27 | 0.26 | 0.18 | 0.18 | 0.24 | 0.21 |
| T03 | 0.48 | 0.45 | 0.22 | 0.10 | 0.08 | 0.25 | 0.17 | 0.25 | 0.23 | 0.15 | 0.16 | 0.22 | 0.19 |
| T04 | 0.57 | 0.53 | 0.31 | 0.08 | 0.08 | 0.19 | 0.13 | 0.14 | 0.24 | 0.19 | 0.18 | 0.25 | 0.18 |
| T05 | 0.42 | 0.43 | 0.13 | 0.05 | 0.08 | 0.22 | 0.18 | 0.12 | 0.11 | 0.11 | 0.15 | 0.18 | 0.14 |
| T06 | 0.32 | 0.30 | 0.10 | 0.04 | 0.06 | 0.09 | 0.26 | 0.24 | 0.17 | 0.13 | 0.12 | 0.15 | 0.15 |
| T07 | 0.32 | 0.31 | 0.04 | 0.12 | 0.26 | 0.33 | 0.32 | 0.23 | 0.17 | 0.14 | 0.12 | 0.19 | 0.20 |
| T08 | 0.16 | 0.22 | 0.14 | 0.11 | 0.06 | 0.14 | 0.05 | 0.17 | 0.10 | 0.07 | 0.09 | 0.13 | 0.10 |
| T09 | 0.18 | 0.29 | 0.13 | 0.12 | 0.04 | 0.07 | 0.03 | 0.14 | 0.05 | 0.03 | 0.06 | 0.12 | 0.07 |
| T10 | 0.18 | 0.12 | 0.09 | 0.10 | 0.14 | 0.07 | 0.06 | 0.08 | 0.05 | 0.03 | 0.04 | 0.09 | 0.07 |
| T11 | 0.11 | 0.26 | 0.16 | 0.16 | 0.09 | 0.07 | 0.05 | 0.09 | 0.07 | 0.02 | 0.02 | 0.13 | 0.08 |
| T12 | 0.24 | 0.34 | 0.15 | 0.10 | 0.07 | 0.07 | 0.06 | 0.14 | 0.08 | 0.05 | 0.03 | 0.13 | 0.09 |
| T13 | 0.01 | 0.11 | 0.13 | 0.02 | 0.09 | 0.09 | 0.02 | 0.16 | 0.03 | 0.07 | 0.05 | 0.07 | 0.07 |
| T14 | 0.17 | 0.30 | 0.19 | 0.02 | 0.09 | 0.13 | 0.02 | 0.13 | 0.10 | 0.03 | 0.01 | 0.12 | 0.08 |
| T15 | 0.20 | 0.06 | 0.16 | 0.04 | 0.08 | 0.19 | 0.05 | 0.14 | 0.11 | 0.11 | 0.05 | 0.10 | 0.10 |
| T16 | 0.54 | 0.48 | 0.28 | 0.02 | 0.09 | 0.28 | 0.17 | 0.24 | 0.27 | 0.20 | 0.18 | 0.24 | 0.21 |
| T17 | 0.17 | 0.19 | 0.19 | 0.12 | 0.06 | 0.23 | 0.13 | 0.12 | 0.07 | 0.06 | 0.05 | 0.13 | 0.10 |
| T18 | 0.13 | 0.15 | 0.20 | 0.06 | 0.02 | 0.11 | 0.06 | 0.07 | 0.11 | 0.12 | 0.09 | 0.11 | 0.09 |
| T19 | 0.29 | 0.33 | 0.25 | 0.27 | 0.45 | 0.06 | 0.04 | 0.06 | 0.19 | 0.22 | 0.14 | 0.24 | 0.19 |
| T20 | 0.48 | 0.46 | 0.30 | 0.26 | 0.40 | 0.40 | 0.44 | 0.37 | 0.27 | 0.22 | 0.14 | 0.34 | 0.30 |
| T21 | 0.49 | 0.41 | 0.10 | 0.17 | 0.28 | 0.36 | 0.42 | 0.33 | 0.23 | 0.19 | 0.11 | 0.26 | 0.25 |
| T22 | 0.46 | 0.41 | 0.11 | 0.21 | 0.30 | 0.35 | 0.46 | 0.42 | 0.34 | 0.20 | 0.11 | 0.28 | 0.29 |
| T23 | 0.36 | 0.22 | 0.08 | 0.15 | 0.22 | 0.34 | 0.45 | 0.40 | 0.35 | 0.21 | 0.10 | 0.23 | 0.27 |
| T24 | 0.41 | 0.30 | 0.16 | 0.22 | 0.20 | 0.28 | 0.42 | 0.46 | 0.41 | 0.25 | 0.10 | 0.27 | 0.29 |
| T25 | 0.43 | 0.29 | 0.14 | 0.18 | 0.16 | 0.25 | 0.37 | 0.41 | 0.38 | 0.23 | 0.10 | 0.25 | 0.27 |
| T26 | 0.47 | 0.41 | 0.34 | 0.24 | 0.25 | 0.27 | 0.43 | 0.52 | 0.43 | 0.34 | 0.16 | 0.34 | 0.35 |
| T27 | 0.38 | 0.37 | 0.38 | 0.20 | 0.23 | 0.23 | 0.40 | 0.52 | 0.45 | 0.40 | 0.23 | 0.33 | 0.36 |
| T28 | 0.22 | 0.25 | 0.35 | 0.18 | 0.20 | 0.14 | 0.32 | 0.43 | 0.39 | 0.35 | 0.24 | 0.27 | 0.30 |
| T29 | 0.23 | 0.24 | 0.31 | 0.15 | 0.10 | 0.15 | 0.29 | 0.40 | 0.38 | 0.34 | 0.25 | 0.24 | 0.28 |
| T30 | 0.35 | 0.33 | 0.33 | 0.20 | 0.06 | 0.18 | 0.32 | 0.46 | 0.42 | 0.39 | 0.28 | 0.29 | 0.31 |
| T31 | 0.29 | 0.26 | 0.27 | 0.21 | 0.10 | 0.15 | 0.27 | 0.40 | 0.38 | 0.34 | 0.25 | 0.25 | 0.28 |
| T32 | 0.37 | 0.32 | 0.30 | 0.23 | 0.09 | 0.16 | 0.29 | 0.45 | 0.40 | 0.37 | 0.28 | 0.28 | 0.31 |
| T33 | 0.56 | 0.46 | 0.29 | 0.24 | 0.39 | 0.36 | 0.30 | 0.14 | 0.20 | 0.18 | 0.09 | 0.31 | 0.24 |
| T34 | 0.31 | 0.16 | 0.09 | 0.11 | 0.24 | 0.36 | 0.46 | 0.37 | 0.23 | 0.17 | 0.09 | 0.20 | 0.23 |

| | Baseline Scheme(VR) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Point | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | Annual | Summer |
| T35 | 0.31 | 0.19 | 0.05 | 0.12 | 0.16 | 0.31 | 0.39 | 0.33 | 0.34 | 0.21 | 0.10 | 0.19 | 0.24 |
| T36 | 0.36 | 0.19 | 0.17 | 0.14 | 0.11 | 0.20 | 0.33 | 0.38 | 0.32 | 0.17 | 0.08 | 0.20 | 0.22 |
| T37 | 0.20 | 0.09 | 0.22 | 0.11 | 0.15 | 0.19 | 0.35 | 0.42 | 0.34 | 0.17 | 0.08 | 0.19 | 0.23 |
| T38 | 0.18 | 0.14 | 0.22 | 0.13 | 0.17 | 0.27 | 0.42 | 0.43 | 0.34 | 0.15 | 0.05 | 0.21 | 0.24 |
| T39 | 0.33 | 0.21 | 0.23 | 0.13 | 0.15 | 0.32 | 0.42 | 0.42 | 0.35 | 0.16 | 0.08 | 0.23 | 0.25 |
| T40 | 0.30 | 0.15 | 0.20 | 0.03 | 0.06 | 0.27 | 0.37 | 0.39 | 0.30 | 0.10 | 0.04 | 0.17 | 0.20 |
| T41 | 0.34 | 0.28 | 0.29 | 0.19 | 0.11 | 0.09 | 0.26 | 0.36 | 0.38 | 0.26 | 0.14 | 0.24 | 0.25 |
| T42 | 0.24 | 0.04 | 0.09 | 0.26 | 0.23 | 0.23 | 0.31 | 0.32 | 0.26 | 0.13 | 0.08 | 0.19 | 0.21 |
| T43 | 0.34 | 0.33 | 0.31 | 0.25 | 0.13 | 0.15 | 0.31 | 0.43 | 0.41 | 0.42 | 0.21 | 0.30 | 0.32 |
| T44 | 0.09 | 0.06 | 0.09 | 0.06 | 0.05 | 0.09 | 0.09 | 0.25 | 0.08 | 0.03 | 0.06 | 0.08 | 0.09 |
| T45 | 0.30 | 0.24 | 0.14 | 0.14 | 0.16 | 0.22 | 0.22 | 0.24 | 0.01 | 0.12 | 0.10 | 0.17 | 0.14 |
| T46 | 0.17 | 0.12 | 0.18 | 0.15 | 0.10 | 0.11 | 0.11 | 0.10 | 0.09 | 0.16 | 0.08 | 0.13 | 0.12 |
| T47 | 0.09 | 0.04 | 0.18 | 0.05 | 0.06 | 0.06 | 0.03 | 0.06 | 0.07 | 0.16 | 0.09 | 0.08 | 0.08 |
| T48 | 0.08 | 0.10 | 0.16 | 0.05 | 0.07 | 0.04 | 0.14 | 0.10 | 0.33 | 0.31 | 0.20 | 0.13 | 0.18 |
| T49 | 0.20 | 0.33 | 0.05 | 0.09 | 0.07 | 0.05 | 0.05 | 0.03 | 0.05 | 0.09 | 0.07 | 0.11 | 0.07 |
| T50 | 0.04 | 0.10 | 0.05 | 0.14 | 0.16 | 0.17 | 0.14 | 0.23 | 0.24 | 0.14 | 0.12 | 0.13 | 0.16 |
| T51 | 0.05 | 0.13 | 0.13 | 0.13 | 0.18 | 0.16 | 0.15 | 0.36 | 0.40 | 0.27 | 0.18 | 0.17 | 0.24 |
| T52 | 0.03 | 0.04 | 0.03 | 0.10 | 0.13 | 0.13 | 0.10 | 0.13 | 0.20 | 0.22 | 0.17 | 0.10 | 0.15 |
| T53 | 0.15 | 0.19 | 0.22 | 0.30 | 0.26 | 0.22 | 0.24 | 0.13 | 0.17 | 0.29 | 0.25 | 0.23 | 0.23 |
| T54 | 0.13 | 0.33 | 0.25 | 0.27 | 0.22 | 0.40 | 0.41 | 0.10 | 0.19 | 0.16 | 0.17 | 0.25 | 0.22 |
| T55 | 0.04 | 0.09 | 0.20 | 0.34 | 0.32 | 0.32 | 0.30 | 0.12 | 0.12 | 0.11 | 0.10 | 0.20 | 0.19 |
| T56 | 0.24 | 0.25 | 0.07 | 0.26 | 0.18 | 0.11 | 0.08 | 0.04 | 0.13 | 0.18 | 0.14 | 0.17 | 0.15 |
| T57 | 0.17 | 0.07 | 0.09 | 0.36 | 0.35 | 0.42 | 0.46 | 0.40 | 0.13 | 0.03 | 0.07 | 0.22 | 0.23 |
| T58 | 0.03 | 0.10 | 0.02 | 0.03 | 0.18 | 0.20 | 0.14 | 0.18 | 0.18 | 0.12 | 0.06 | 0.09 | 0.13 |
| T59 | 0.13 | 0.08 | 0.08 | 0.03 | 0.05 | 0.05 | 0.10 | 0.13 | 0.16 | 0.13 | 0.07 | 0.08 | 0.10 |
| T60 | 0.05 | 0.04 | 0.03 | 0.04 | 0.17 | 0.15 | 0.15 | 0.19 | 0.22 | 0.22 | 0.10 | 0.10 | 0.15 |
| T61 | 0.07 | 0.04 | 0.06 | 0.05 | 0.15 | 0.14 | 0.07 | 0.20 | 0.13 | 0.14 | 0.02 | 0.09 | 0.11 |
| T62 | 0.48 | 0.35 | 0.28 | 0.09 | 0.11 | 0.09 | 0.08 | 0.21 | 0.03 | 0.03 | 0.04 | 0.18 | 0.10 |
| T63 | 0.35 | 0.20 | 0.25 | 0.09 | 0.20 | 0.23 | 0.23 | 0.42 | 0.34 | 0.25 | 0.13 | 0.22 | 0.25 |
| T64 | 0.52 | 0.44 | 0.32 | 0.10 | 0.21 | 0.12 | 0.17 | 0.23 | 0.21 | 0.18 | 0.10 | 0.25 | 0.19 |
| S01 | 0.46 | 0.34 | 0.11 | 0.20 | 0.04 | 0.09 | 0.09 | 0.11 | 0.24 | 0.22 | 0.20 | 0.20 | 0.17 |
| S02 | 0.07 | 0.03 | 0.06 | 0.00 | 0.04 | 0.04 | 0.03 | 0.00 | 0.02 | 0.02 | 0.03 | 0.03 | 0.02 |
| S03 | 0.04 | 0.08 | 0.06 | 0.07 | 0.20 | 0.14 | 0.26 | 0.16 | 0.03 | 0.06 | 0.09 | 0.09 | 0.11 |
| S04 | 0.05 | 0.22 | 0.25 | 0.20 | 0.20 | 0.16 | 0.17 | 0.09 | 0.07 | 0.03 | 0.04 | 0.16 | 0.11 |
| S05 | 0.03 | 0.10 | 0.13 | 0.02 | 0.18 | 0.20 | 0.21 | 0.22 | 0.10 | 0.13 | 0.22 | 0.12 | 0.15 |
| S06 | 0.03 | 0.28 | 0.19 | 0.16 | 0.16 | 0.34 | 0.25 | 0.19 | 0.08 | 0.11 | 0.13 | 0.18 | 0.16 |
| S07 | 0.03 | 0.17 | 0.10 | 0.10 | 0.11 | 0.12 | 0.33 | 0.31 | 0.08 | 0.09 | 0.13 | 0.13 | 0.15 |

| | Proposed Scheme(VR) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Point | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | Annual | Summer |
| P01 | 0.13 | 0.19 | 0.11 | 0.19 | 0.05 | 0.12 | 0.03 | 0.09 | 0.04 | 0.48 | 0.05 | 0.15 | 0.15 |
| P02 | 0.06 | 0.06 | 0.10 | 0.15 | 0.03 | 0.21 | 0.04 | 0.03 | 0.07 | 0.45 | 0.07 | 0.12 | 0.15 |
| P03 | 0.24 | 0.14 | 0.17 | 0.18 | 0.08 | 0.07 | 0.04 | 0.09 | 0.10 | 0.42 | 0.09 | 0.16 | 0.16 |
| P04 | 0.11 | 0.08 | 0.09 | 0.12 | 0.09 | 0.36 | 0.36 | 0.04 | 0.13 | 0.45 | 0.12 | 0.15 | 0.20 |
| P05 | 0.23 | 0.14 | 0.07 | 0.12 | 0.13 | 0.31 | 0.38 | 0.16 | 0.12 | 0.51 | 0.14 | 0.18 | 0.23 |
| P06 | 0.25 | 0.16 | 0.20 | 0.19 | 0.29 | 0.27 | 0.38 | 0.27 | 0.12 | 0.37 | 0.17 | 0.23 | 0.25 |
| P07 | 0.19 | 0.12 | 0.17 | 0.09 | 0.25 | 0.29 | 0.37 | 0.37 | 0.11 | 0.22 | 0.15 | 0.18 | 0.21 |
| P08 | 0.16 | 0.07 | 0.13 | 0.12 | 0.30 | 0.35 | 0.42 | 0.42 | 0.10 | 0.22 | 0.13 | 0.19 | 0.23 |
| P09 | 0.31 | 0.21 | 0.18 | 0.15 | 0.33 | 0.34 | 0.41 | 0.41 | 0.06 | 0.39 | 0.14 | 0.24 | 0.27 |
| P10 | 0.18 | 0.13 | 0.02 | 0.16 | 0.31 | 0.27 | 0.36 | 0.34 | 0.03 | 0.34 | 0.09 | 0.18 | 0.22 |
| P11 | 0.12 | 0.07 | 0.07 | 0.20 | 0.29 | 0.14 | 0.17 | 0.21 | 0.06 | 0.42 | 0.08 | 0.16 | 0.19 |
| P12 | 0.21 | 0.15 | 0.09 | 0.19 | 0.16 | 0.13 | 0.23 | 0.34 | 0.17 | 0.52 | 0.08 | 0.19 | 0.24 |
| P13 | 0.23 | 0.16 | 0.12 | 0.12 | 0.04 | 0.13 | 0.08 | 0.03 | 0.12 | 0.46 | 0.07 | 0.14 | 0.16 |
| P14 | 0.16 | 0.11 | 0.10 | 0.09 | 0.03 | 0.15 | 0.09 | 0.08 | 0.10 | 0.41 | 0.06 | 0.12 | 0.15 |
| P15 | 0.15 | 0.10 | 0.17 | 0.07 | 0.10 | 0.18 | 0.31 | 0.31 | 0.23 | 0.54 | 0.07 | 0.18 | 0.25 |
| P16 | 0.16 | 0.12 | 0.18 | 0.10 | 0.18 | 0.11 | 0.18 | 0.22 | 0.24 | 0.51 | 0.12 | 0.18 | 0.23 |
| P17 | 0.13 | 0.09 | 0.17 | 0.12 | 0.16 | 0.20 | 0.29 | 0.33 | 0.24 | 0.42 | 0.07 | 0.18 | 0.24 |
| P18 | 0.18 | 0.13 | 0.17 | 0.13 | 0.16 | 0.26 | 0.36 | 0.36 | 0.24 | 0.40 | 0.02 | 0.20 | 0.25 |
| P19 | 0.24 | 0.18 | 0.15 | 0.14 | 0.17 | 0.32 | 0.40 | 0.34 | 0.20 | 0.39 | 0.01 | 0.21 | 0.25 |
| P20 | 0.18 | 0.04 | 0.07 | 0.19 | 0.24 | 0.35 | 0.34 | 0.06 | 0.07 | 0.37 | 0.03 | 0.17 | 0.19 |
| P21 | 0.07 | 0.30 | 0.21 | 0.19 | 0.25 | 0.02 | 0.13 | 0.10 | 0.04 | 0.54 | 0.07 | 0.19 | 0.19 |
| P22 | 0.18 | 0.26 | 0.28 | 0.23 | 0.25 | 0.12 | 0.26 | 0.22 | 0.07 | 0.65 | 0.07 | 0.25 | 0.26 |
| P23 | 0.20 | 0.19 | 0.25 | 0.26 | 0.27 | 0.20 | 0.21 | 0.18 | 0.13 | 0.43 | 0.10 | 0.23 | 0.23 |
| P24 | 0.26 | 0.14 | 0.17 | 0.26 | 0.28 | 0.27 | 0.23 | 0.14 | 0.20 | 0.24 | 0.13 | 0.21 | 0.21 |
| P25 | 0.25 | 0.07 | 0.11 | 0.25 | 0.23 | 0.21 | 0.18 | 0.14 | 0.15 | 0.23 | 0.10 | 0.18 | 0.18 |
| P26 | 0.09 | 0.05 | 0.06 | 0.14 | 0.28 | 0.26 | 0.32 | 0.32 | 0.15 | 0.26 | 0.10 | 0.16 | 0.21 |
| P27 | 0.11 | 0.14 | 0.10 | 0.10 | 0.11 | 0.13 | 0.05 | 0.05 | 0.04 | 0.37 | 0.09 | 0.12 | 0.13 |
| P28 | 0.10 | 0.18 | 0.13 | 0.10 | 0.13 | 0.05 | 0.07 | 0.07 | 0.02 | 0.40 | 0.08 | 0.13 | 0.13 |
| P29 | 0.11 | 0.17 | 0.13 | 0.08 | 0.13 | 0.07 | 0.07 | 0.08 | 0.01 | 0.34 | 0.07 | 0.12 | 0.12 |
| P30 | 0.07 | 0.10 | 0.11 | 0.11 | 0.04 | 0.03 | 0.02 | 0.10 | 0.01 | 0.37 | 0.04 | 0.10 | 0.11 |
| T01 | 0.44 | 0.41 | 0.30 | 0.14 | 0.12 | 0.13 | 0.04 | 0.18 | 0.19 | 0.46 | 0.17 | 0.25 | 0.22 |
| T02 | 0.41 | 0.40 | 0.29 | 0.11 | 0.12 | 0.27 | 0.21 | 0.25 | 0.24 | 0.52 | 0.18 | 0.26 | 0.27 |
| T03 | 0.48 | 0.44 | 0.23 | 0.10 | 0.09 | 0.24 | 0.22 | 0.24 | 0.21 | 0.51 | 0.16 | 0.25 | 0.25 |
| T04 | 0.57 | 0.54 | 0.32 | 0.09 | 0.08 | 0.20 | 0.13 | 0.15 | 0.23 | 0.55 | 0.19 | 0.28 | 0.25 |
| T05 | 0.42 | 0.44 | 0.12 | 0.06 | 0.09 | 0.22 | 0.06 | 0.11 | 0.12 | 0.50 | 0.15 | 0.20 | 0.20 |
| T06 | 0.35 | 0.35 | 0.16 | 0.04 | 0.06 | 0.07 | 0.20 | 0.22 | 0.16 | 0.44 | 0.13 | 0.18 | 0.20 |
| T07 | 0.33 | 0.34 | 0.03 | 0.08 | 0.11 | 0.31 | 0.20 | 0.22 | 0.16 | 0.44 | 0.13 | 0.19 | 0.22 |
| T08 | 0.17 | 0.22 | 0.16 | 0.13 | 0.19 | 0.22 | 0.03 | 0.15 | 0.10 | 0.41 | 0.09 | 0.17 | 0.18 |
| T09 | 0.17 | 0.22 | 0.14 | 0.11 | 0.10 | 0.24 | 0.01 | 0.14 | 0.05 | 0.37 | 0.06 | 0.15 | 0.15 |
| T10 | 0.06 | 0.07 | 0.10 | 0.12 | 0.09 | 0.14 | 0.02 | 0.08 | 0.03 | 0.24 | 0.01 | 0.09 | 0.10 |
| T11 | 0.14 | 0.25 | 0.12 | 0.16 | 0.05 | 0.21 | 0.06 | 0.08 | 0.07 | 0.39 | 0.04 | 0.15 | 0.15 |
| T12 | 0.24 | 0.23 | 0.14 | 0.11 | 0.04 | 0.10 | 0.05 | 0.10 | 0.08 | 0.44 | 0.03 | 0.15 | 0.15 |
| T13 | 0.01 | 0.10 | 0.11 | 0.11 | 0.06 | 0.06 | 0.01 | 0.16 | 0.02 | 0.47 | 0.03 | 0.11 | 0.14 |
| T14 | 0.10 | 0.22 | 0.15 | 0.10 | 0.09 | 0.09 | 0.06 | 0.11 | 0.10 | 0.25 | 0.02 | 0.13 | 0.12 |
| T15 | 0.13 | 0.06 | 0.16 | 0.09 | 0.08 | 0.05 | 0.05 | 0.18 | 0.08 | 0.24 | 0.06 | 0.11 | 0.12 |
| T16 | 0.53 | 0.48 | 0.29 | 0.03 | 0.10 | 0.27 | 0.23 | 0.22 | 0.26 | 0.65 | 0.19 | 0.28 | 0.29 |
| T17 | 0.16 | 0.19 | 0.19 | 0.12 | 0.05 | 0.21 | 0.18 | 0.10 | 0.07 | 0.46 | 0.05 | 0.16 | 0.17 |
| T18 | 0.14 | 0.16 | 0.20 | 0.07 | 0.02 | 0.11 | 0.07 | 0.06 | 0.10 | 0.31 | 0.09 | 0.13 | 0.13 |
| T19 | 0.31 | 0.34 | 0.26 | 0.28 | 0.45 | 0.06 | 0.04 | 0.06 | 0.20 | 0.31 | 0.14 | 0.26 | 0.21 |
| T20 | 0.49 | 0.47 | 0.30 | 0.27 | 0.39 | 0.39 | 0.44 | 0.37 | 0.28 | 0.41 | 0.14 | 0.35 | 0.34 |
| T21 | 0.49 | 0.41 | 0.10 | 0.17 | 0.28 | 0.35 | 0.43 | 0.36 | 0.24 | 0.40 | 0.11 | 0.28 | 0.29 |
| T22 | 0.47 | 0.42 | 0.12 | 0.21 | 0.30 | 0.35 | 0.45 | 0.39 | 0.33 | 0.40 | 0.11 | 0.30 | 0.32 |
| T23 | 0.37 | 0.23 | 0.08 | 0.15 | 0.23 | 0.34 | 0.43 | 0.39 | 0.32 | 0.36 | 0.10 | 0.24 | 0.29 |
| T24 | 0.42 | 0.31 | 0.17 | 0.21 | 0.22 | 0.27 | 0.40 | 0.39 | 0.38 | 0.49 | 0.12 | 0.28 | 0.33 |
| T25 | 0.39 | 0.27 | 0.15 | 0.17 | 0.16 | 0.23 | 0.32 | 0.28 | 0.34 | 0.50 | 0.11 | 0.24 | 0.28 |
| T26 | 0.48 | 0.41 | 0.34 | 0.24 | 0.26 | 0.28 | 0.44 | 0.55 | 0.45 | 0.52 | 0.17 | 0.36 | 0.39 |
| T27 | 0.39 | 0.38 | 0.40 | 0.21 | 0.23 | 0.22 | 0.39 | 0.53 | 0.46 | 0.52 | 0.23 | 0.34 | 0.38 |
| T28 | 0.21 | 0.25 | 0.35 | 0.18 | 0.19 | 0.13 | 0.31 | 0.42 | 0.38 | 0.47 | 0.24 | 0.27 | 0.32 |
| T29 | 0.23 | 0.25 | 0.31 | 0.15 | 0.10 | 0.15 | 0.28 | 0.39 | 0.36 | 0.48 | 0.25 | 0.25 | 0.30 |
| T30 | 0.35 | 0.32 | 0.34 | 0.20 | 0.08 | 0.17 | 0.31 | 0.45 | 0.41 | 0.50 | 0.28 | 0.29 | 0.33 |
| T31 | 0.29 | 0.26 | 0.26 | 0.21 | 0.10 | 0.14 | 0.26 | 0.39 | 0.37 | 0.47 | 0.25 | 0.26 | 0.30 |
| T32 | 0.37 | 0.31 | 0.30 | 0.23 | 0.10 | 0.15 | 0.28 | 0.44 | 0.39 | 0.47 | 0.27 | 0.29 | 0.32 |
| T33 | 0.56 | 0.46 | 0.29 | 0.25 | 0.39 | 0.35 | 0.34 | 0.20 | 0.20 | 0.45 | 0.09 | 0.33 | 0.30 |
| T34 | 0.30 | 0.17 | 0.09 | 0.11 | 0.24 | 0.35 | 0.47 | 0.41 | 0.24 | 0.29 | 0.09 | 0.21 | 0.26 |

| | Proposed Scheme(VR) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Point | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | Annual | Summer |
| T35 | 0.32 | 0.20 | 0.06 | 0.12 | 0.17 | 0.30 | 0.36 | 0.32 | 0.27 | 0.44 | 0.11 | 0.21 | 0.26 |
| T36 | 0.31 | 0.19 | 0.17 | 0.12 | 0.08 | 0.18 | 0.23 | 0.25 | 0.26 | 0.46 | 0.09 | 0.20 | 0.23 |
| T37 | 0.20 | 0.14 | 0.21 | 0.10 | 0.13 | 0.16 | 0.27 | 0.32 | 0.30 | 0.51 | 0.10 | 0.20 | 0.26 |
| T38 | 0.14 | 0.14 | 0.21 | 0.13 | 0.16 | 0.23 | 0.33 | 0.35 | 0.29 | 0.43 | 0.05 | 0.20 | 0.26 |
| T39 | 0.28 | 0.24 | 0.22 | 0.11 | 0.14 | 0.28 | 0.36 | 0.35 | 0.30 | 0.41 | 0.08 | 0.23 | 0.27 |
| T40 | 0.24 | 0.20 | 0.18 | 0.03 | 0.06 | 0.25 | 0.34 | 0.36 | 0.26 | 0.47 | 0.03 | 0.19 | 0.24 |
| T41 | 0.30 | 0.30 | 0.27 | 0.18 | 0.12 | 0.08 | 0.22 | 0.29 | 0.31 | 0.50 | 0.14 | 0.24 | 0.27 |
| T42 | 0.20 | 0.08 | 0.08 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.20 | 0.35 | 0.06 | 0.18 | 0.21 |
| T43 | 0.32 | 0.30 | 0.30 | 0.24 | 0.15 | 0.15 | 0.28 | 0.38 | 0.34 | 0.54 | 0.20 | 0.28 | 0.32 |
| T44 | 0.09 | 0.07 | 0.09 | 0.05 | 0.05 | 0.11 | 0.10 | 0.16 | 0.04 | 0.31 | 0.06 | 0.09 | 0.12 |
| T45 | 0.26 | 0.10 | 0.12 | 0.15 | 0.18 | 0.21 | 0.26 | 0.25 | 0.05 | 0.22 | 0.11 | 0.16 | 0.17 |
| T46 | 0.17 | 0.11 | 0.16 | 0.19 | 0.07 | 0.03 | 0.10 | 0.08 | 0.07 | 0.41 | 0.08 | 0.15 | 0.15 |
| T47 | 0.11 | 0.04 | 0.20 | 0.02 | 0.01 | 0.09 | 0.10 | 0.08 | 0.06 | 0.40 | 0.09 | 0.10 | 0.13 |
| T48 | 0.06 | 0.12 | 0.01 | 0.11 | 0.13 | 0.03 | 0.12 | 0.10 | 0.27 | 0.18 | 0.17 | 0.11 | 0.15 |
| T49 | 0.18 | 0.34 | 0.09 | 0.07 | 0.09 | 0.08 | 0.05 | 0.03 | 0.04 | 0.35 | 0.06 | 0.13 | 0.12 |
| T50 | 0.04 | 0.08 | 0.04 | 0.11 | 0.10 | 0.16 | 0.12 | 0.17 | 0.21 | 0.36 | 0.11 | 0.12 | 0.18 |
| T51 | 0.10 | 0.12 | 0.12 | 0.11 | 0.14 | 0.15 | 0.16 | 0.29 | 0.35 | 0.57 | 0.17 | 0.18 | 0.27 |
| T52 | 0.03 | 0.09 | 0.05 | 0.08 | 0.09 | 0.12 | 0.10 | 0.14 | 0.18 | 0.21 | 0.17 | 0.10 | 0.14 |
| T53 | 0.15 | 0.12 | 0.20 | 0.25 | 0.28 | 0.20 | 0.23 | 0.05 | 0.18 | 0.39 | 0.22 | 0.21 | 0.23 |
| T54 | 0.11 | 0.32 | 0.22 | 0.19 | 0.18 | 0.34 | 0.35 | 0.11 | 0.20 | 0.45 | 0.14 | 0.24 | 0.25 |
| T55 | 0.02 | 0.08 | 0.19 | 0.29 | 0.35 | 0.31 | 0.27 | 0.06 | 0.11 | 0.41 | 0.07 | 0.21 | 0.22 |
| T56 | 0.20 | 0.21 | 0.08 | 0.19 | 0.11 | 0.09 | 0.15 | 0.04 | 0.08 | 0.32 | 0.10 | 0.15 | 0.15 |
| T57 | 0.16 | 0.09 | 0.07 | 0.31 | 0.32 | 0.38 | 0.44 | 0.38 | 0.14 | 0.17 | 0.05 | 0.21 | 0.24 |
| T58 | 0.40 | 0.25 | 0.03 | 0.02 | 0.20 | 0.16 | 0.16 | 0.16 | 0.15 | 0.53 | 0.15 | 0.17 | 0.22 |
| T59 | 0.25 | 0.10 | 0.09 | 0.02 | 0.05 | 0.07 | 0.10 | 0.09 | 0.14 | 0.08 | 0.06 | 0.09 | 0.09 |
| T60 | 0.02 | 0.05 | 0.04 | 0.08 | 0.16 | 0.07 | 0.17 | 0.20 | 0.23 | 0.21 | 0.11 | 0.10 | 0.16 |
| T61 | 0.04 | 0.02 | 0.12 | 0.04 | 0.14 | 0.01 | 0.14 | 0.20 | 0.14 | 0.14 | 0.06 | 0.09 | 0.11 |
| T62 | 0.47 | 0.43 | 0.26 | 0.11 | 0.07 | 0.10 | 0.06 | 0.21 | 0.03 | 0.06 | 0.04 | 0.19 | 0.10 |
| T63 | 0.33 | 0.27 | 0.23 | 0.09 | 0.19 | 0.20 | 0.21 | 0.39 | 0.33 | 0.26 | 0.16 | 0.22 | 0.24 |
| T64 | 0.52 | 0.48 | 0.32 | 0.11 | 0.22 | 0.11 | 0.19 | 0.22 | 0.22 | 0.20 | 0.12 | 0.25 | 0.20 |
| S01 | 0.36 | 0.23 | 0.07 | 0.21 | 0.17 | 0.04 | 0.04 | 0.07 | 0.17 | 0.13 | 0.12 | 0.16 | 0.13 |
| S02 | 0.15 | 0.08 | 0.15 | 0.03 | 0.06 | 0.10 | 0.09 | 0.05 | 0.01 | 0.01 | 0.01 | 0.07 | 0.04 |
| S03 | 0.05 | 0.04 | 0.07 | 0.10 | 0.25 | 0.08 | 0.14 | 0.15 | 0.05 | 0.07 | 0.11 | 0.10 | 0.11 |
| S04 | 0.03 | 0.19 | 0.23 | 0.23 | 0.26 | 0.09 | 0.17 | 0.14 | 0.12 | 0.04 | 0.04 | 0.17 | 0.13 |
| S05 | 0.02 | 0.08 | 0.13 | 0.10 | 0.15 | 0.19 | 0.22 | 0.19 | 0.10 | 0.08 | 0.19 | 0.12 | 0.14 |
| S06 | 0.11 | 0.20 | 0.17 | 0.20 | 0.11 | 0.30 | 0.03 | 0.20 | 0.14 | 0.12 | 0.14 | 0.16 | 0.15 |
| S07 | 0.02 | 0.13 | 0.10 | 0.06 | 0.14 | 0.13 | 0.17 | 0.27 | 0.15 | 0.07 | 0.12 | 0.11 | 0.13 |