

Appendix E Air Ventilation Assessment – Initial Study

Application for Amendment of Plan under S12A of the Town Planning Ordinance (Cap. 131), to Rezone the Application Site from “Open Space” to “Residential (Group A) 11” at Sha Tin Town Lot 310 in D.D. 184, Sha Tin

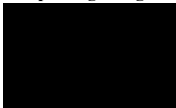
Air Ventilation Assessment - Initial Study

Issue | 8 July 2026

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Job number

Arup Hong Kong Limited



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1. Introduction

Ove Arup & Partners Hong Kong Limited (Arup) was instructed to conduct an Air Ventilation Assessment (AVA) for the Application for Amendment of Plan under S12A of the Town Planning Ordinance (Cap. 131), to Rezone the Application Site from “Open Space” to “Residential (Group A) 11” at Sha Tin Town Lot 310 in D.D. 184, Sha Tin.

The Technical Guide for Air Ventilation Assessment for the Developments in Hong Kong (Annex A of Technical Circular No.1/06 for Air Ventilation Assessments)^[1] (termed as AVA Technical Circular hereafter) dated 19 July 2006 lay down the foundation of this method statement.

1.1 Objective of the Study

The Applicant proposes amendments to the Application for Amendment of Plan under S12A of the Town Planning Ordinance (Cap. 131), to Rezone the Application Site from “Open Space” to “Residential (Group A) 11” at Sha Tin Town Lot 310 in D.D. 184, Sha Tin.

An AVA Initial Study was conducted by using Computational Fluid Dynamic (CFD) techniques. It aims to achieve the following tasks:

- Initially assess the characteristics of the wind availability of the site;
- Give a general pattern and a rough quantitative estimation of the wind performance at the pedestrian level reported using Velocity Ratio (VR);
- Identify the air paths within the site and ascertain their effectiveness; and
- Identify good design features and problem areas, if any, and recommend mitigation measures.

2. Application Site

2.1 Characteristic of Application Site and its Surrounding Area

The Application Site is located in Sha Tin, situated on a relatively flat topography near the junction of Lion Rock Tunnel Road and Tai Chung Kiu Road. The topography of Sha Tin are valley like, where from southeast to north are surrounding by mountains.

In all directions except the west, the surroundings of the Application Site are relatively unobstructed with open spaces and low-rise buildings. To the north and northeast are the Shing Mun River and Sha Tin Park. To the east are Ng Yuen (max. ~15 mPD) and Shing Mun River Promenade Garden No. 1. To the south and southwest are Tsang Tai Uk Recreation Ground and Sha Tin Tau (max. ~25 mPD). In contrast, the west side is the high-rise building The Riverpark (max. ~155 mPD).

Further away from the Application Site are high-rise buildings and hilly terrain. Across the Shing Mun River, to the north are mid to high-rise buildings such as Sha Tin Town Hall (max. ~30mPD), New Town Plaza (max. ~98mPD) and Hilton Plaza (max. ~98mPD). To the east and southeast are high-rise buildings such as Jat Min Chuen (max. ~95mPD) and Pok Hong Estate (max. ~85mPD). To the south and southwest are low-rise villages and high-rise buildings such as Tsang Tai Uk New Village (max. ~14mPD)), Shan Ha Wai (max. ~15mPD), Sha Tin Tau (max. ~25mPD) and Chun Shek Estate (max. ~83mPD). To the northwest are mid-rise building of Hong Kong Heritage Museum (max. ~45mPD).

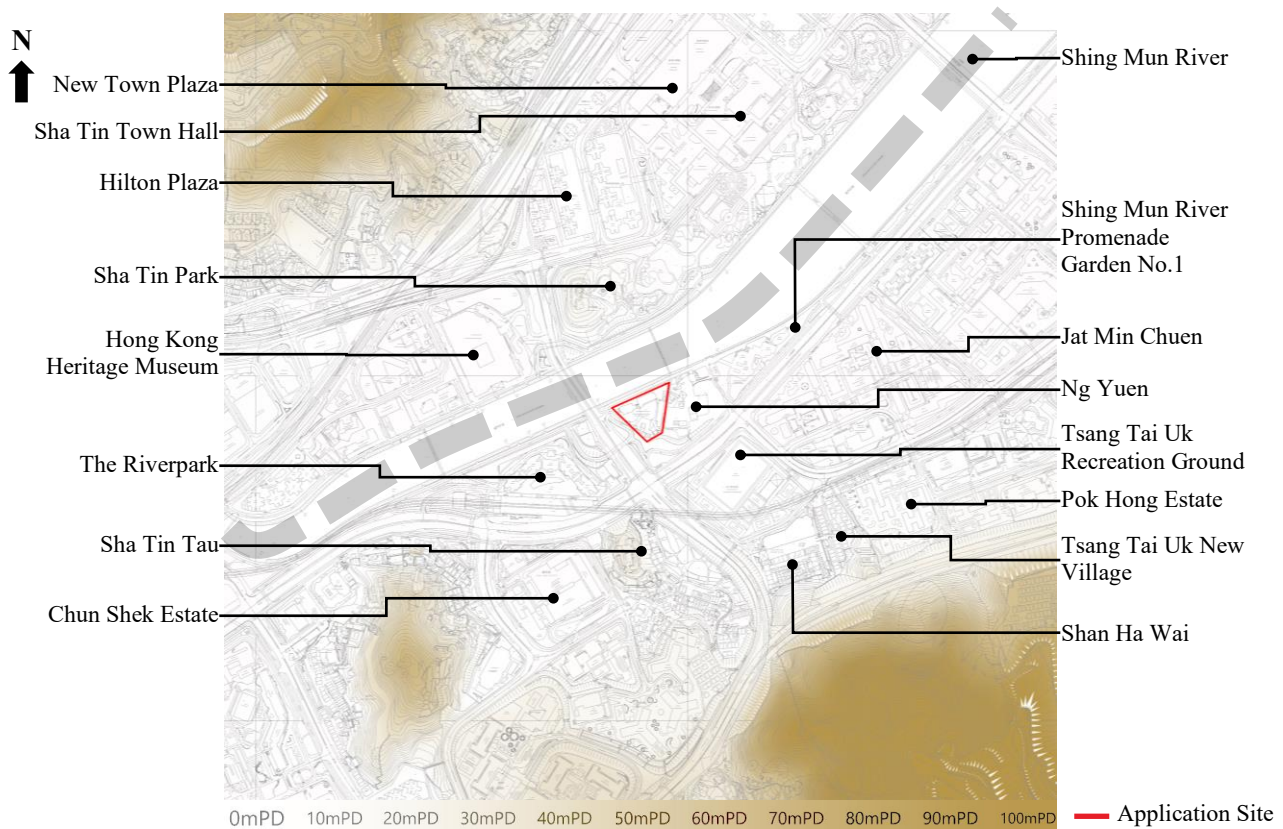


Figure 1 Application Site and Surrounding Environment

3. Assessment Area and Surrounding Area

With reference to the AVA Technical Circular^[1], Assessment Area and Surrounding Area are extended beyond 1H and 2H from the application site boundary. With the tallest building near the Application Site being The Riverpark at about 150m, H would be 150m. However, to assess impact on Sha Tin Park and to include the impact of high-rise buildings in vicinity, Assessment Area and Surrounding Area are extended to 2H and 4H, which are 300m and 600m, respectively. Please refer to Figure 2 for the extend of Assessment Area and Surrounding Area.

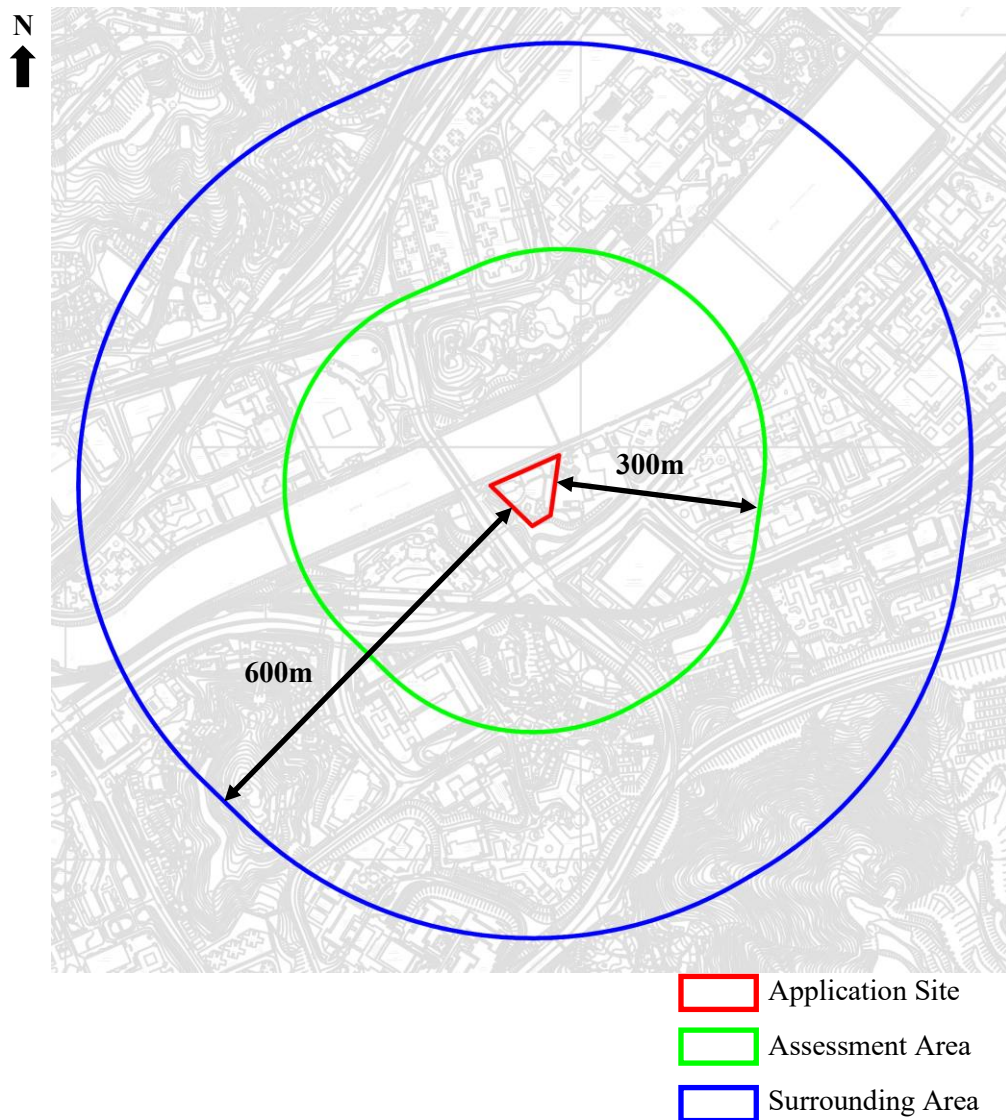


Figure 2 Assessment Area and Surrounding Area

4. Planned/Work-in-Progress (WIP)/Committed Developments, Major Noise Barriers and Major Elevated Structures

4.1 Planned/Work-in-Progress (WIP)/Committed Developments

Total 2 nos. of Planned/WIP/Committed Developments are identified within the Surrounding Area. The locations are shown in Figure 3. The layouts are shown in Appendix B.

1. Sha Tin Stormwater Storage Facility under Planning Application No. A/ST/1025
2. Trunk Road T4 in Sha Tin and Associated Works

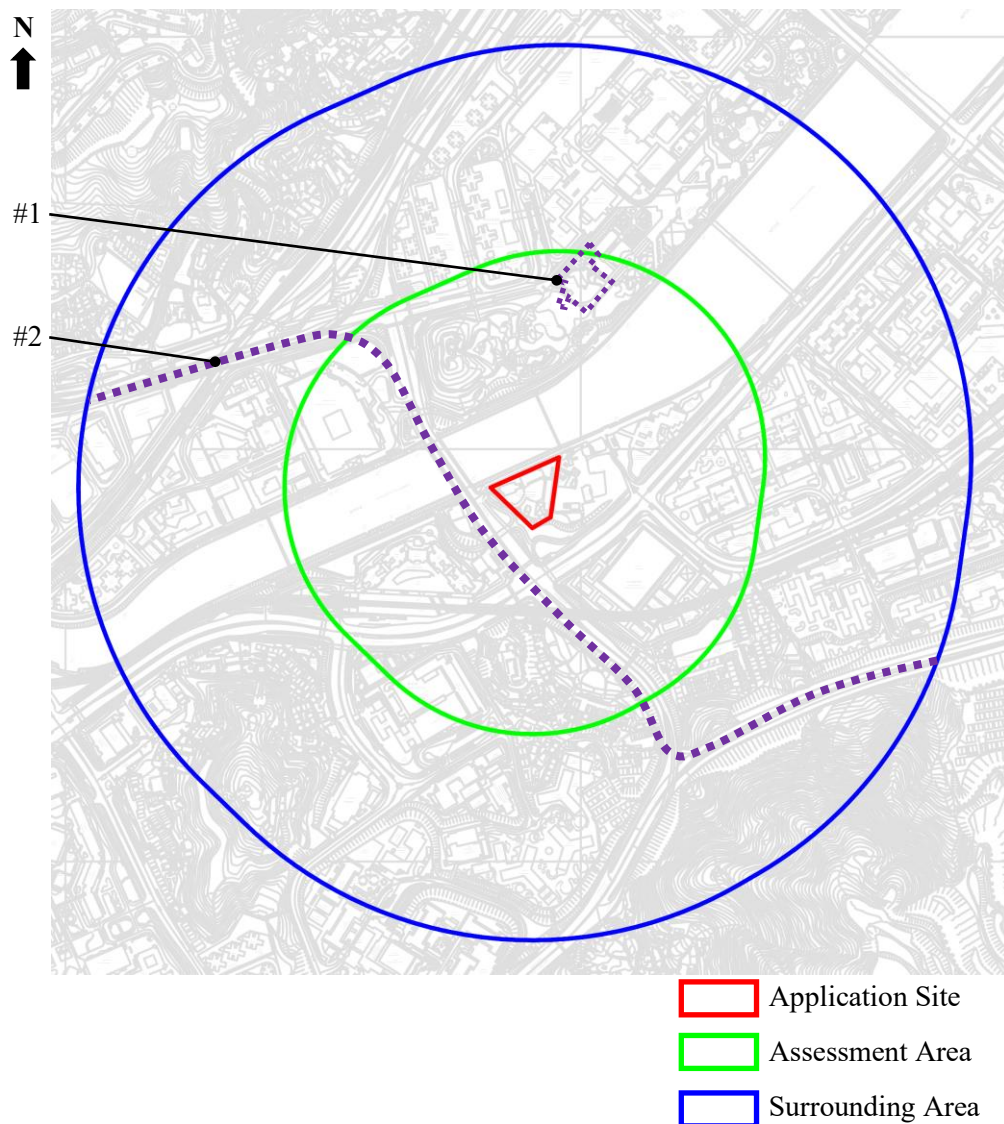


Figure 3 Location of Planned/WIP/Committed Developments

4.2 Major Elevated Structure

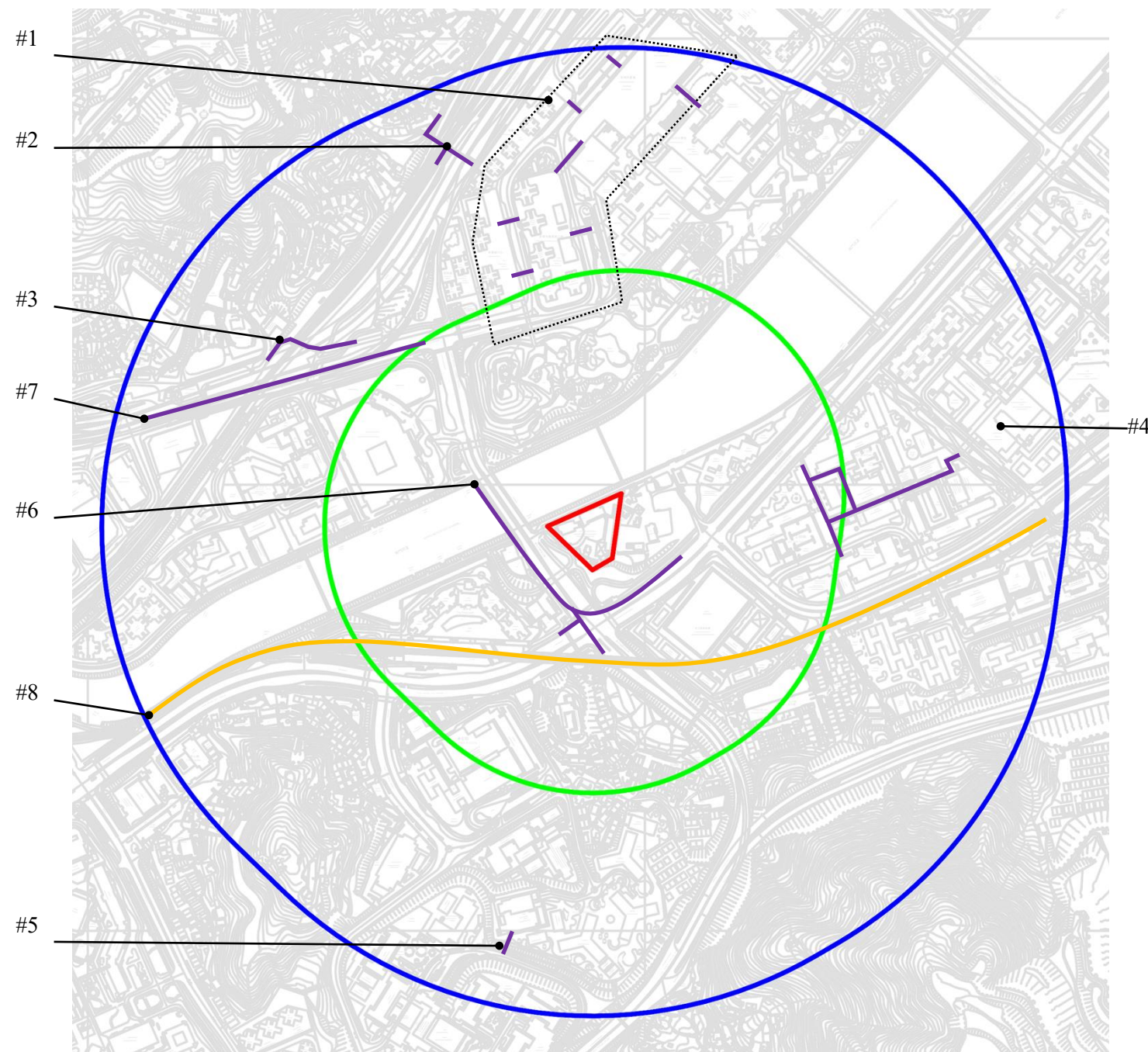
Total 14 no. of major Elevated Structure including pedestrian walkway, elevated road and elevated track are identified within the Surrounding Area. The locations are shown in Figure 4.

Major Elevated Walkways

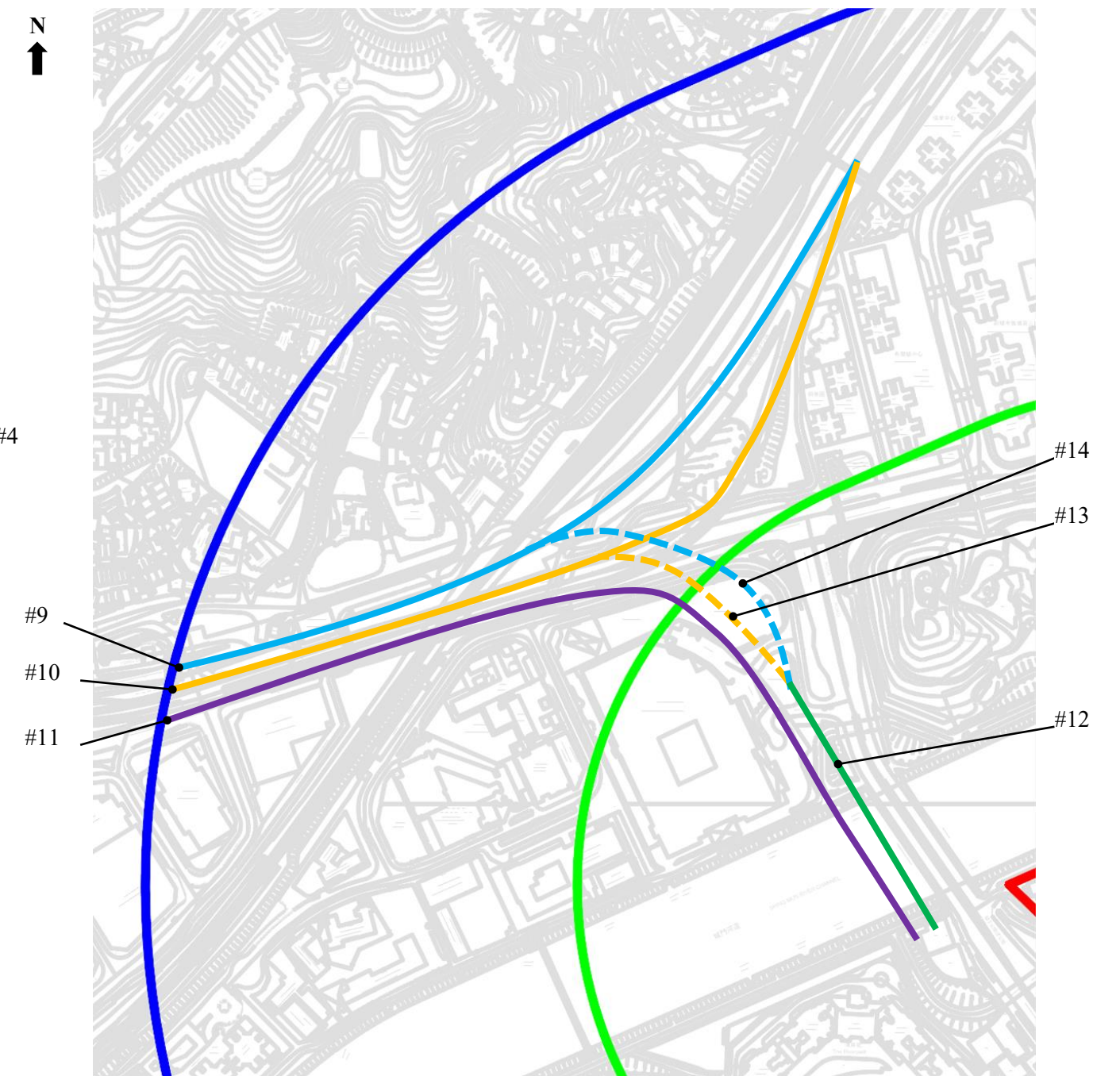
1. 8 nos. of elevated walkway interconnected between New Town Plaza, Sha Tin Town Hall and Hilton Plaza.
2. Elevated walkway crossing Tai Po Road – Sha Tin
3. Elevated walkway under the elevated Shing Mun Tunnel Road
4. Elevated walkway within Jat Min Chuen
5. Elevated walkway connected to Sha Tin Tau Road
6. Planned elevated and cross river walkway near Lion Road Tunnel Road under the Trunk Road T4 study

Major Track and Roads

7. Elevated road of Tai Po Road Tai Wai
8. Elevated track of MTR Tuen Ma Line
9. Elevated road of Shing Mun Tunnel Road
10. Elevated road of Tsing Sha Highway
11. Planned elevated road (south-bound) under the Trunk Road T4 study
12. Planned Trunk Road T4 (north-bound) under the Trunk Road T4 study
13. Planned Trunk Road T4 (north-bound) connected to Tsing Sha highway under the Trunk Road T4 study
14. Planned Trunk Road T4 (north-bound) connected to Shing Mun Tunnel Road under the Trunk Road T4 study



Overview



Zoomed Image near Hong Kong Heritage Museum

- Application Site
- Assessment Area
- Surrounding Area

Figure 4 Major Elevated Structures

4.3 Major Noise Barrier

Total 11 nos. of major noise barriers including vertical noise barriers, vertical noise barrier with cantilever and noise enclosure are identified within the Surrounding Area. The locations are as shown in Figure 5.

Vertical Noise Barriers

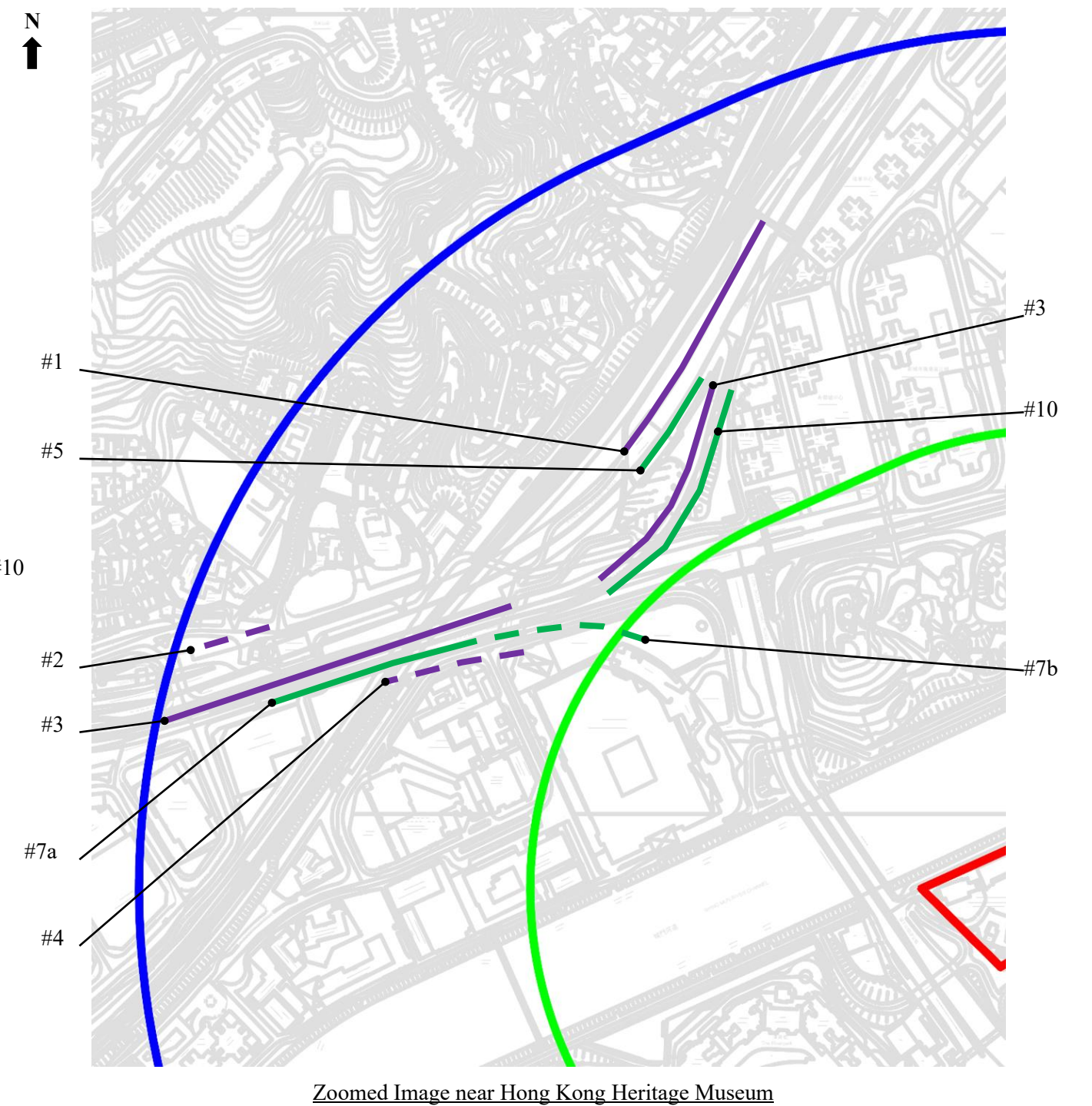
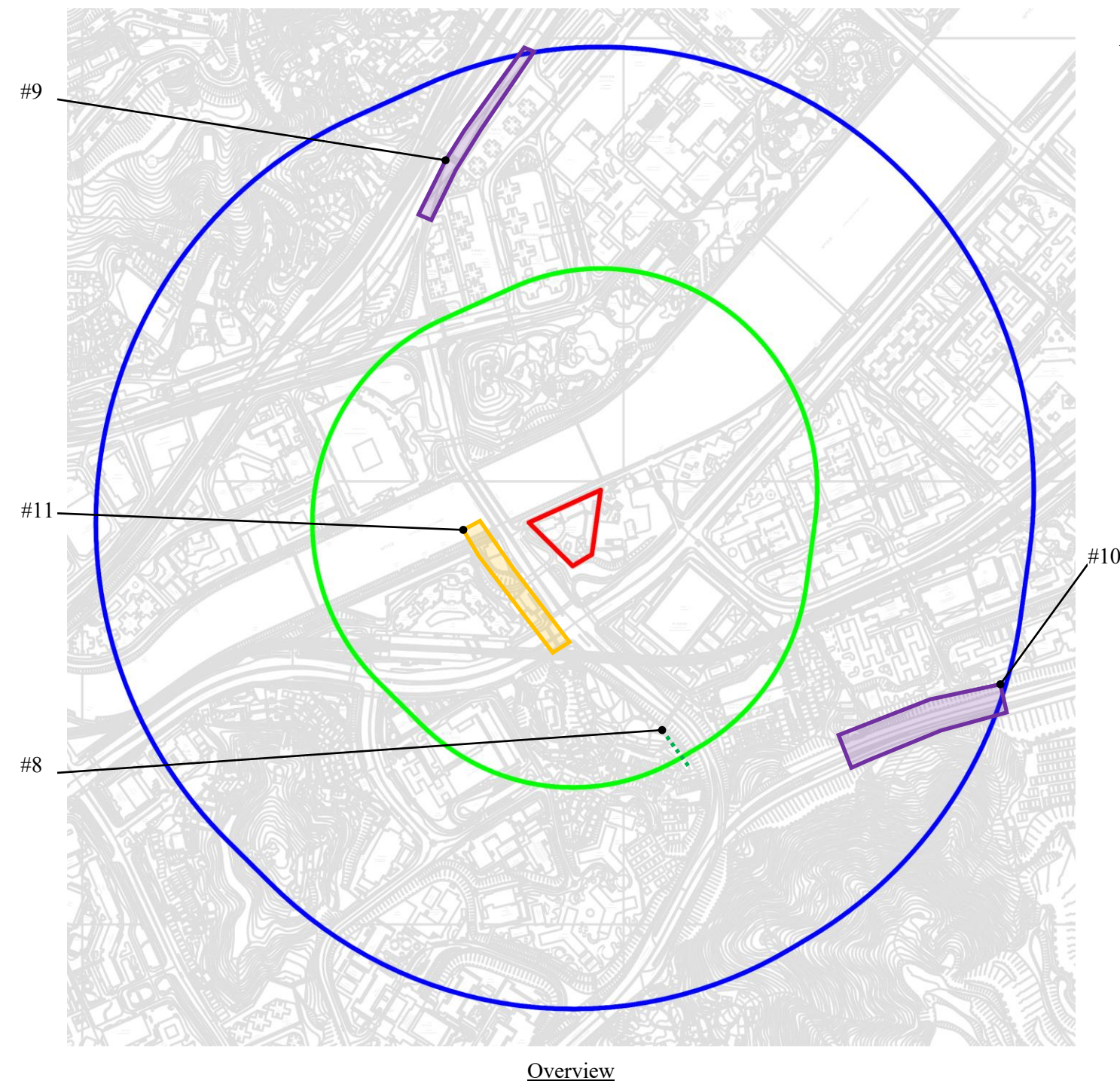
1. Noise barrier on Tai Po Road – Sha Tin and elevated Shing Mun Tunnel Road
2. Planned noise barrier on elevated Shing Mun Tunnel Road under the Trunk Road T4 study
3. 2 sections of noise barrier on elevated Tsing Sha Highway
4. Planned noise barrier on planned elevated road (south-bound) under the Trunk Road T4 study

Vertical Noise Barriers with Cantilever

5. Noise barrier with cantilever on elevated Shing Mun Tunnel Road
6. Noise barrier with cantilever on elevated Tsing Sha Highway
7. Noise barrier with cantilever on elevated Tsing Sha Highway
8. Planned noise barrier with cantilever on planned elevated road (north-bound) under the Trunk Road T4 study
9. Planned noise barrier with cantilever on Sha Tin Tau Village Sitting-out Area under Trunk Road T4 study

Noise Enclosure

10. Noise enclosure on Tai Po Road – Sha Tin
11. Planned noise enclosure on planned Trunk Road T4 near Sha Tin Road under the Trunk Road T4 study
12. Planned semi-noise enclosure on planned Trunk Road T4 near Lion Road Tunnel Road under the Trunk Road T4 study



- Application Site
- Assessment Area
- Surrounding Area

Figure 5 Major Noise Barriers

5. Studied Schemes

5.1 Baseline Scheme

Baseline Scheme of the Application Site is constructed based on exiting condition. The Application Site is currently zoned as “O”, and occupied by Hong Kong Bible Research Education Centre with 5 nos. of low-rise buildings ranging from 5.2mPD to 14mPD. The building outlines are as shown in Figure 6. For enlarged building outlines, please refer to Appendix A. Four directional views of the 3D model are shown in Figure 7 to Figure 10.

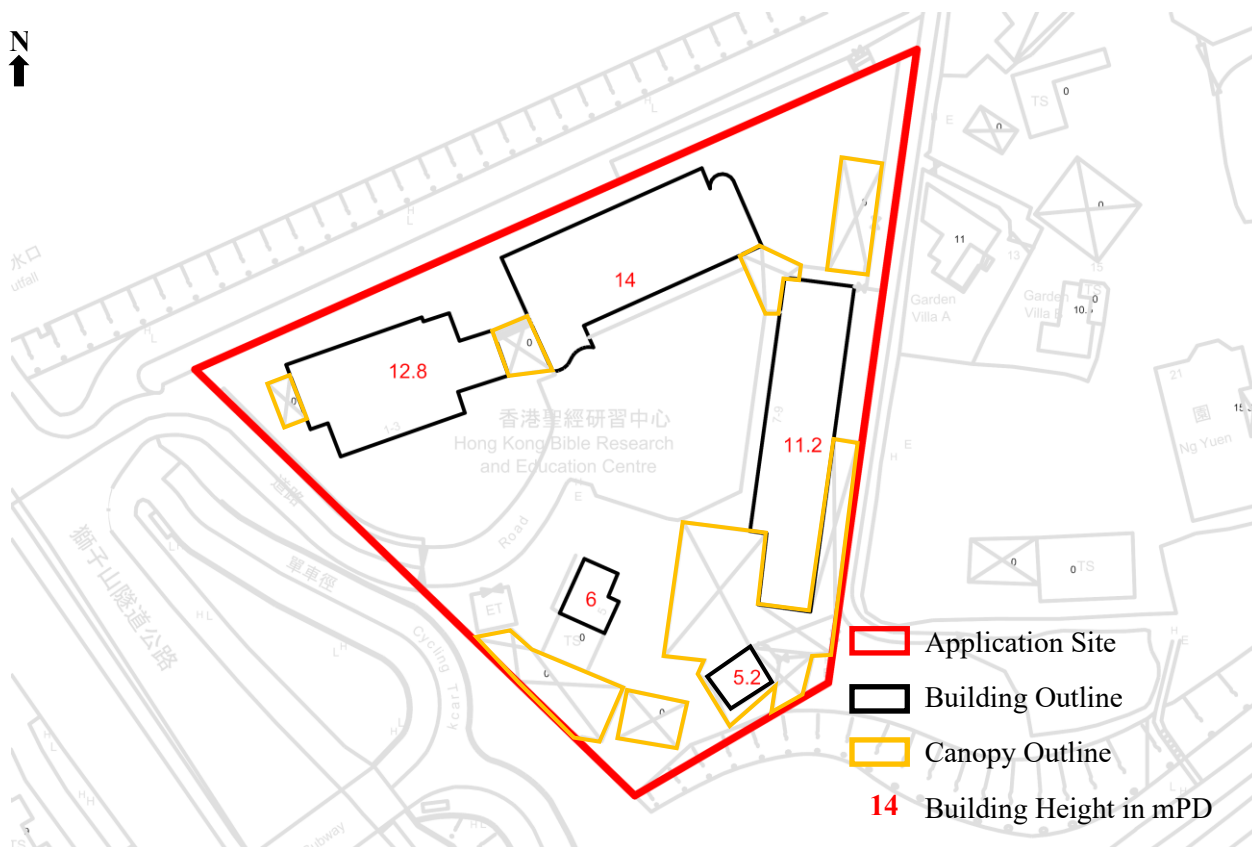


Figure 6 Building Outline of Baseline Scheme.

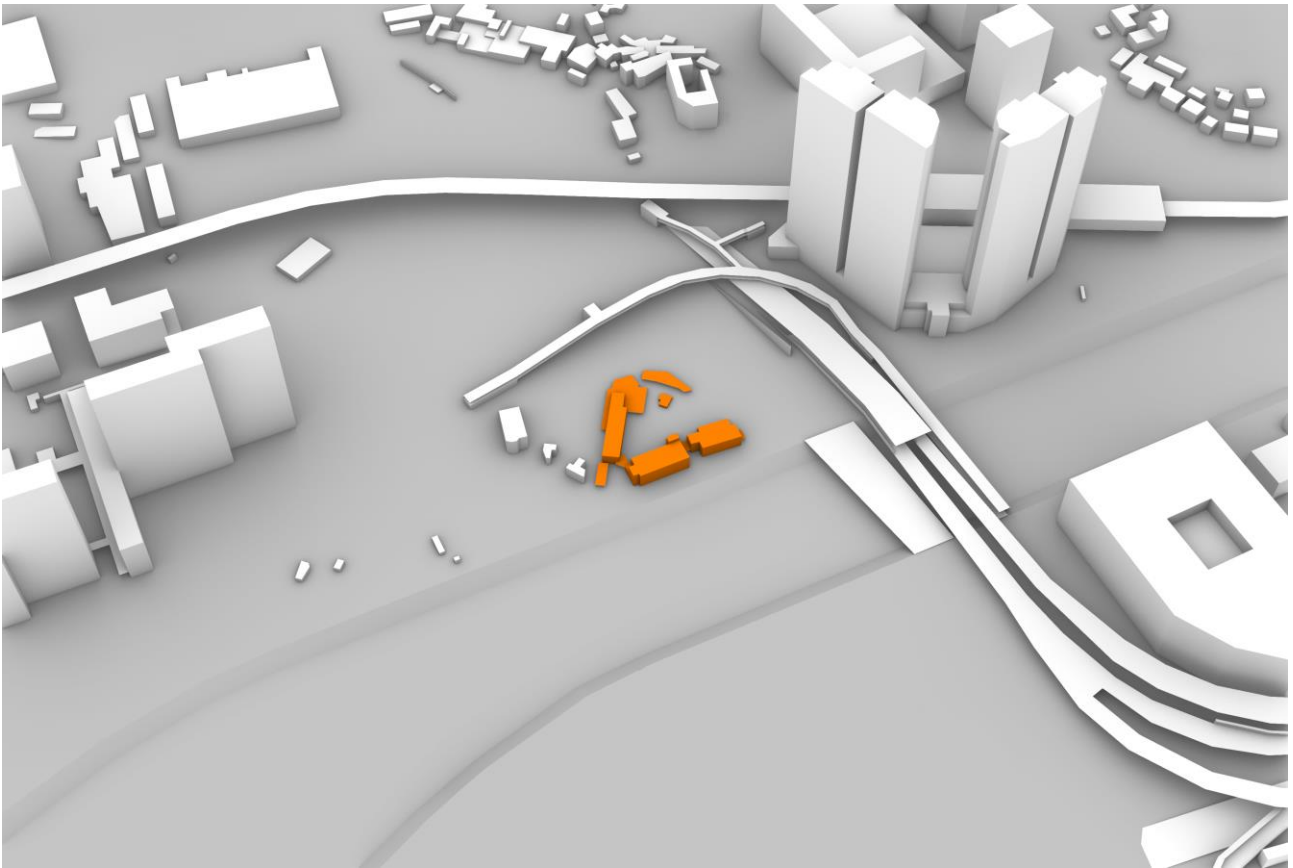


Figure 7 Northerly View of Baseline Scheme



Figure 8 Easterly View of Baseline Scheme

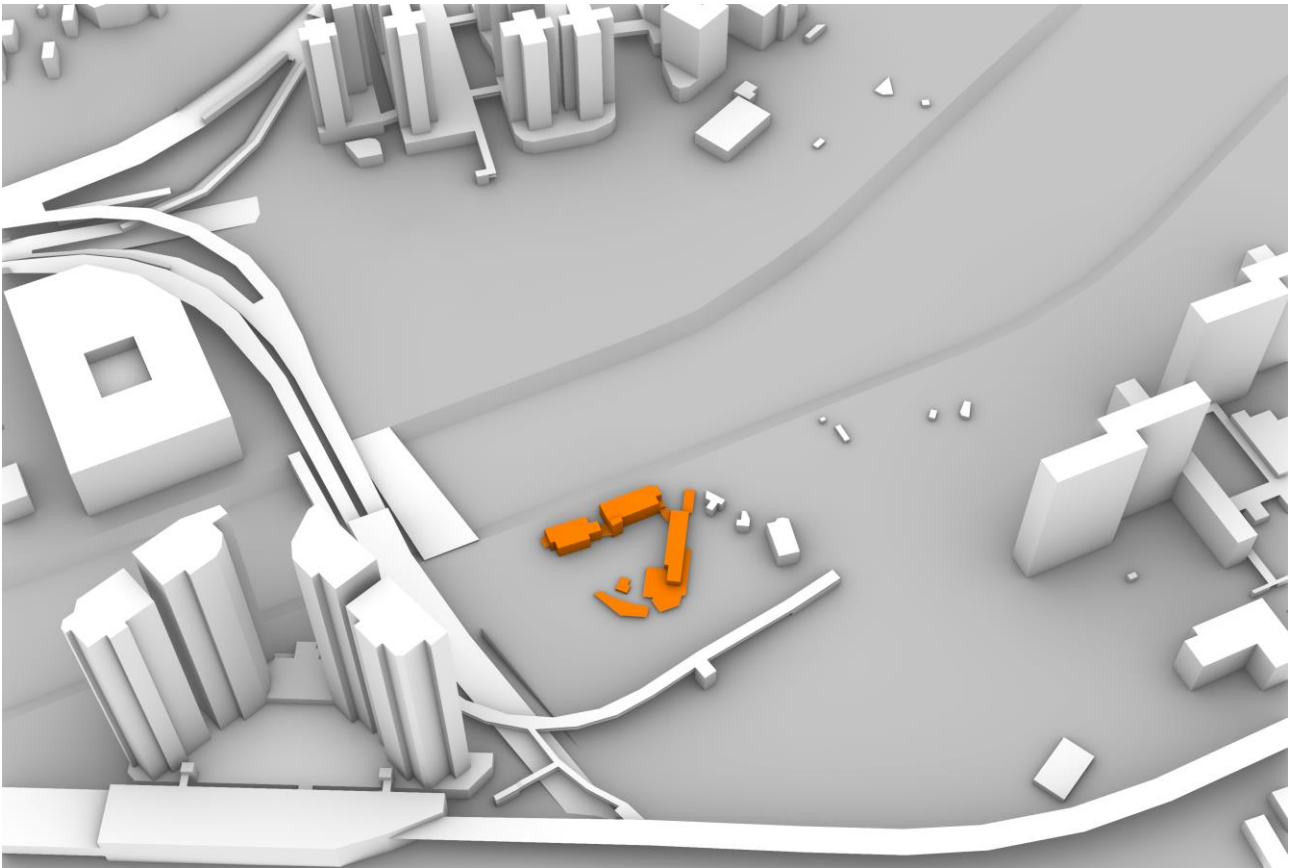


Figure 9 Southerly View of Baseline Scheme

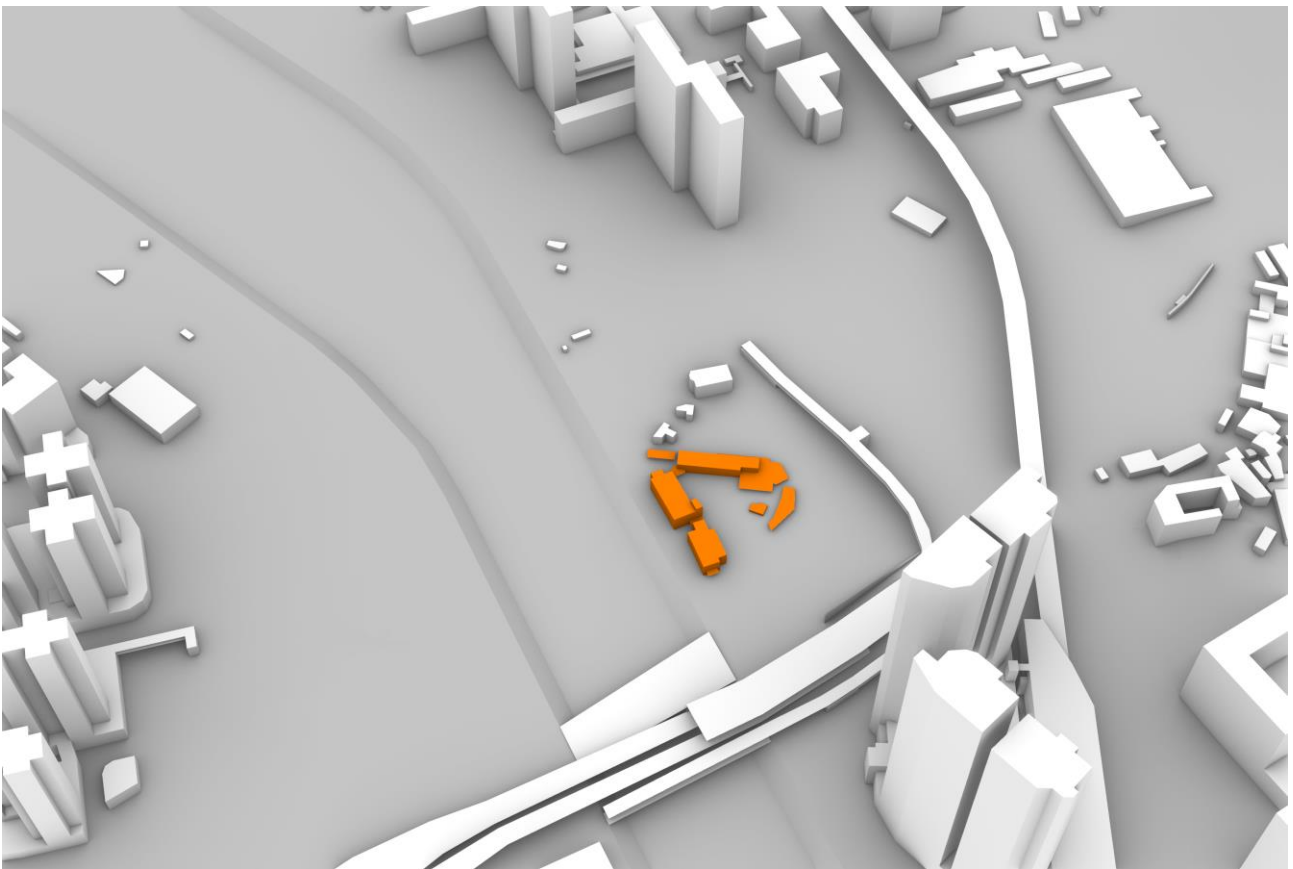


Figure 10 Westerly View of Baseline Scheme

5.2 Proposed Scheme

Proposed Scheme is the intended development scheme consist of two residential towers at 109mPD atop of a common podium at 27.2mPD and a clubhouse at 31.5mPD. The master layout plan are shown in Figure 11. For enlarged layout, please refer to Appendix A.

Wind enhancement features are implemented to enhance the ventilation performance of the Proposed Scheme as follow:

1. 15m (W) air path on podium level aligned in SSE-NNW direction.
2. At least 15m podium setback from northwestern site boundary
3. At least 25m podium setback from southeastern site boundary

Table 1 Development Parameters of Proposed Scheme

Plot Ratio	Domestic	5
	Non-domestic	1.28
GFA	Domestic	About 26,125 m ²
	Non-domestic	About 6,680 m ²
Site Coverage	-	Not more than 33.33%

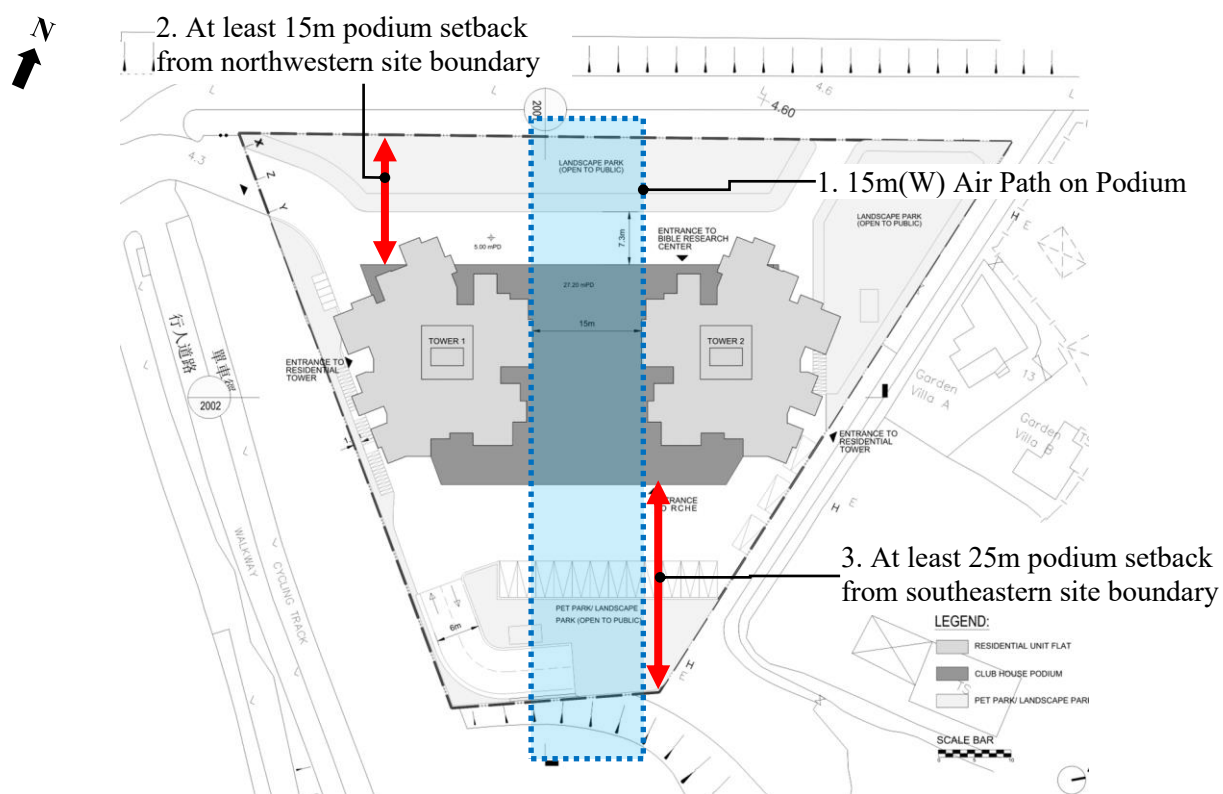


Figure 11 Master Layout Plan of Proposed Scheme+



Figure 12 Northerly View of Proposed Scheme

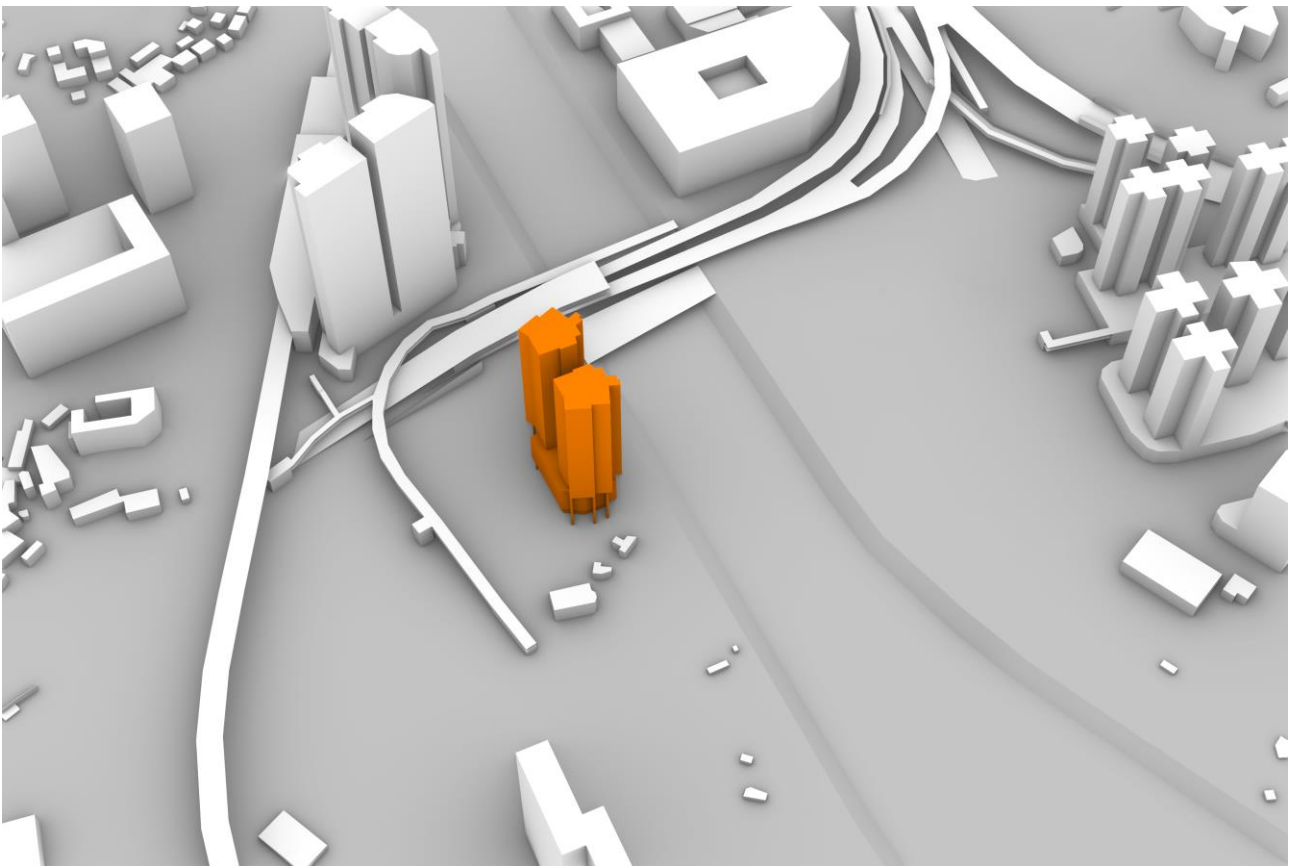


Figure 13 Easterly View of Proposed Scheme

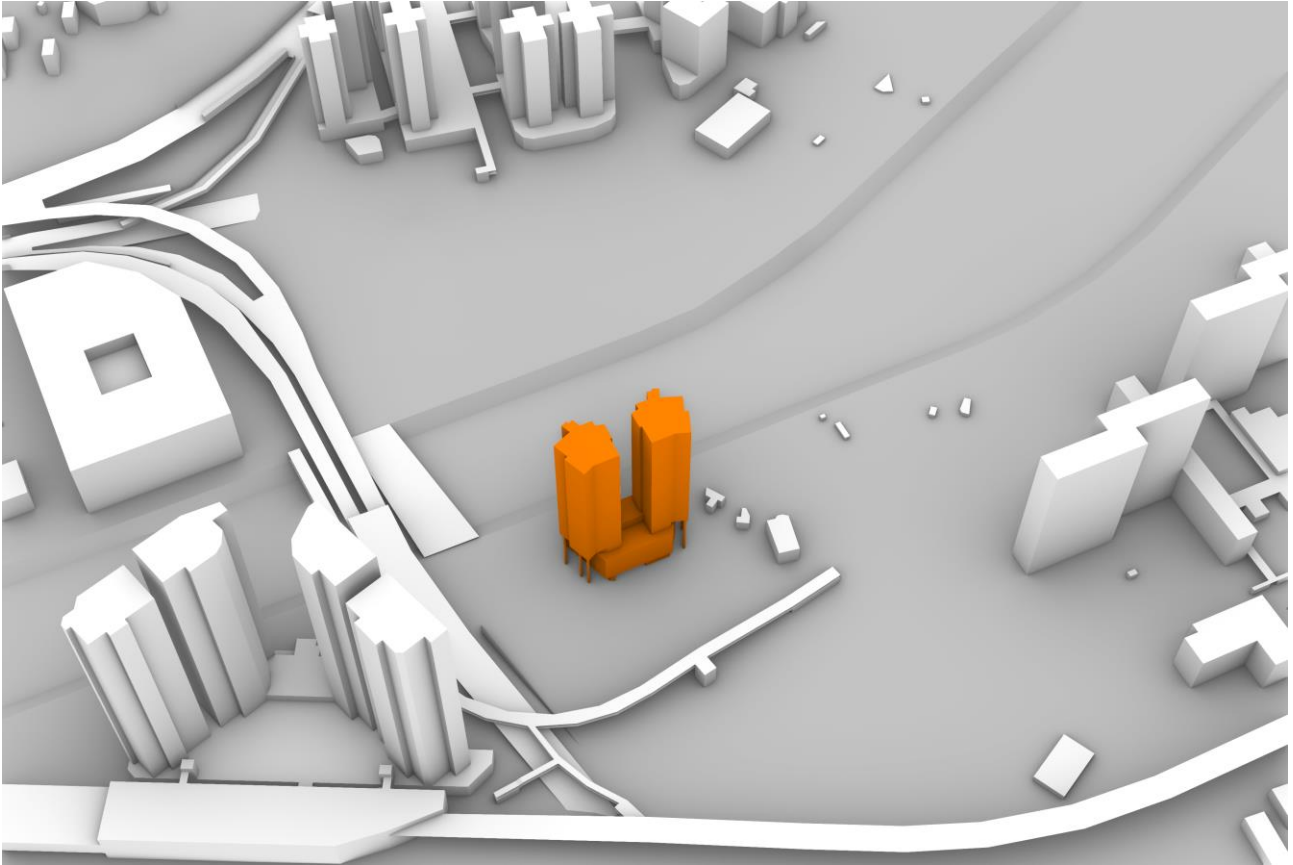


Figure 14 Southerly View of Proposed Scheme

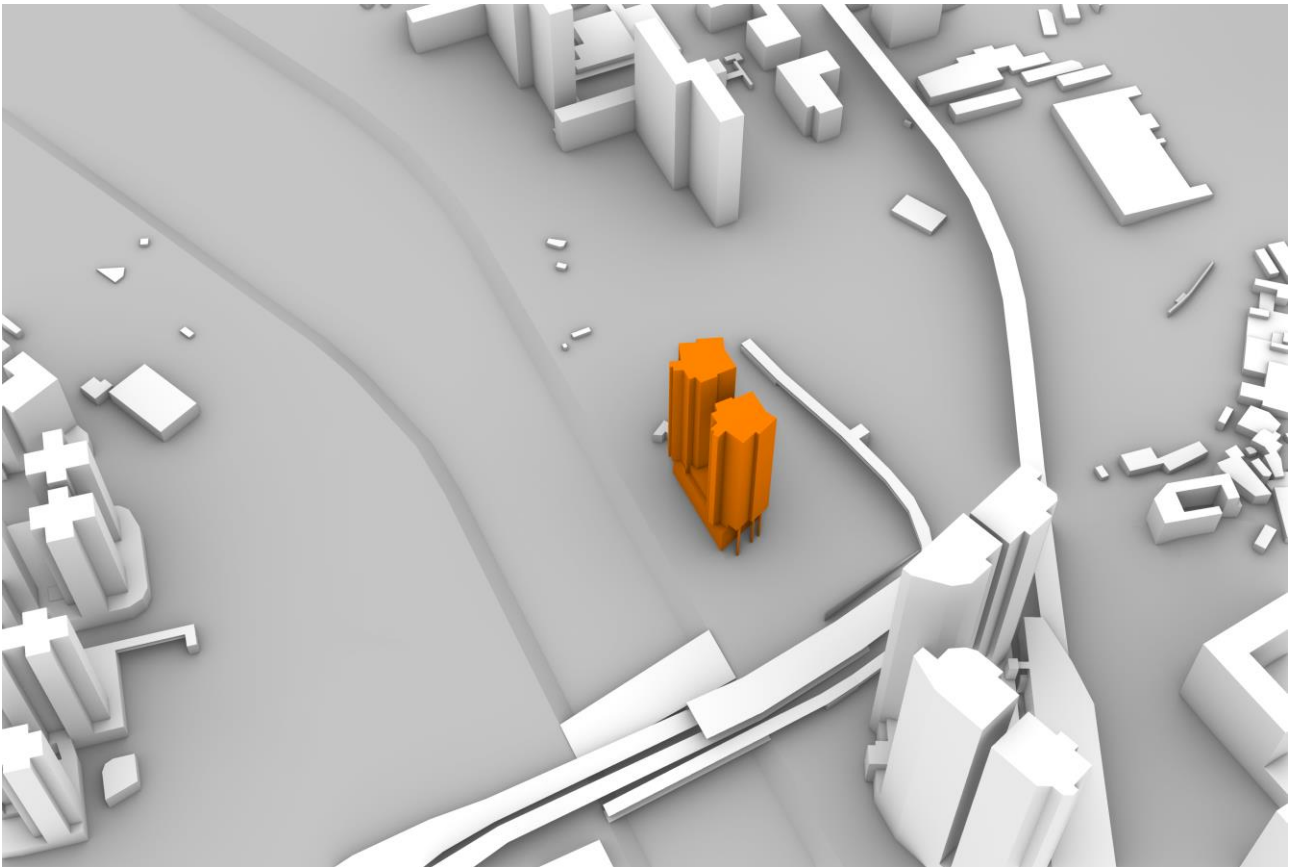


Figure 15 Westerly View of Proposed Scheme

6. Methodology

6.1 Site Wind Availability

As per the AVA Technical Circular ^[1], at least 75% of the time in a typical reference year (frequency of occurrence) would be studied under both annual and summer wind condition in the Initial Study when using a Computational Fluid Dynamics (CFD) modelling technique.

The site wind availability of the Application Site and its surrounding is an essential parameter for AVA. As stipulated in the AVA Technical Circular ^[1], the site wind availability would be presented by using appropriate mathematical models. Planning Department (PlanD) has set up a set of simulated meso-scale data of Regional Atmospheric Modelling System (RAMS) of the territory for AVA study, which could be downloaded at Planning Department Website ^[2]. Simulated meso-scale data of Regional Atmospheric Modelling System (RAMS) from PlanD will therefore be adopted in this AVA Study.

The Application Site fall within the RAMS data grid (x:087,y:040) as indicated in Figure 16. The 500m wind rose is illustrated in Figure 17 and Figure 18.

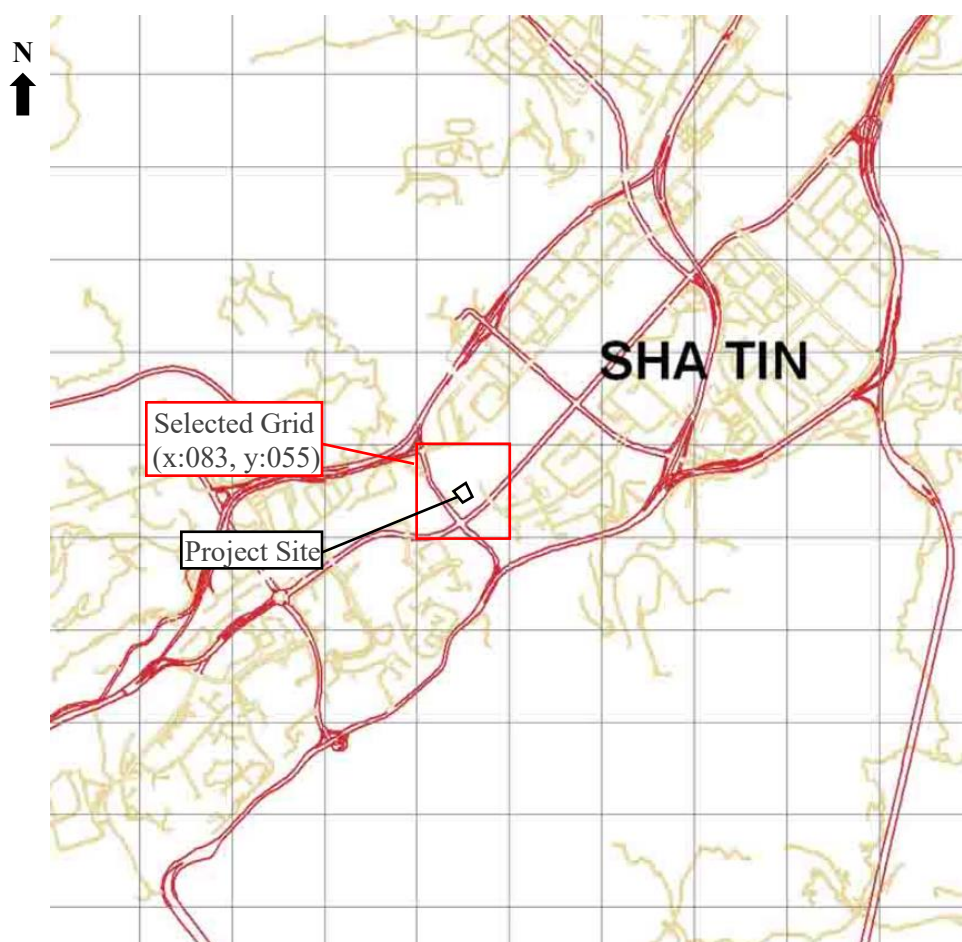


Figure 16 Selected RAMS Data Grid

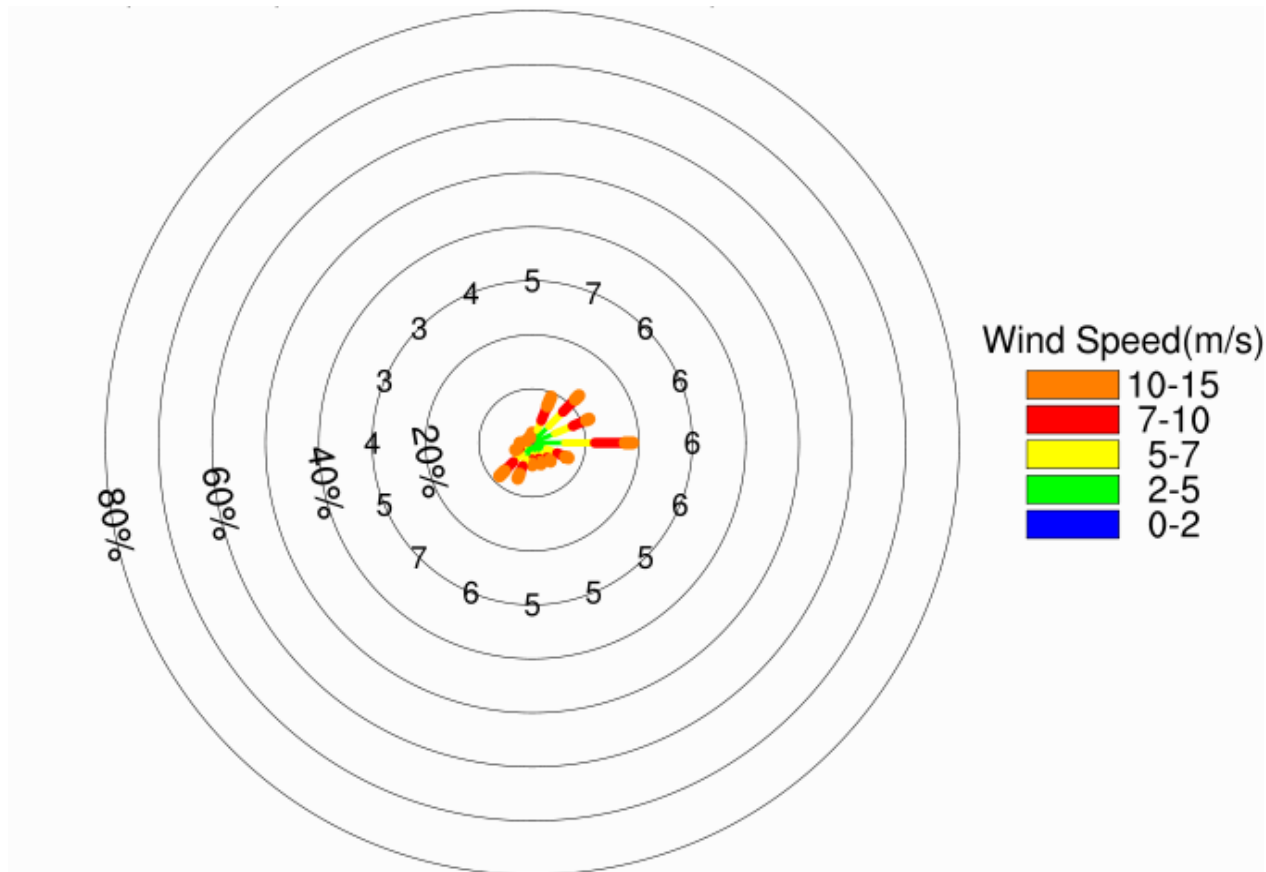


Figure 17 RAMS Annual Wind Rose at 500mPD

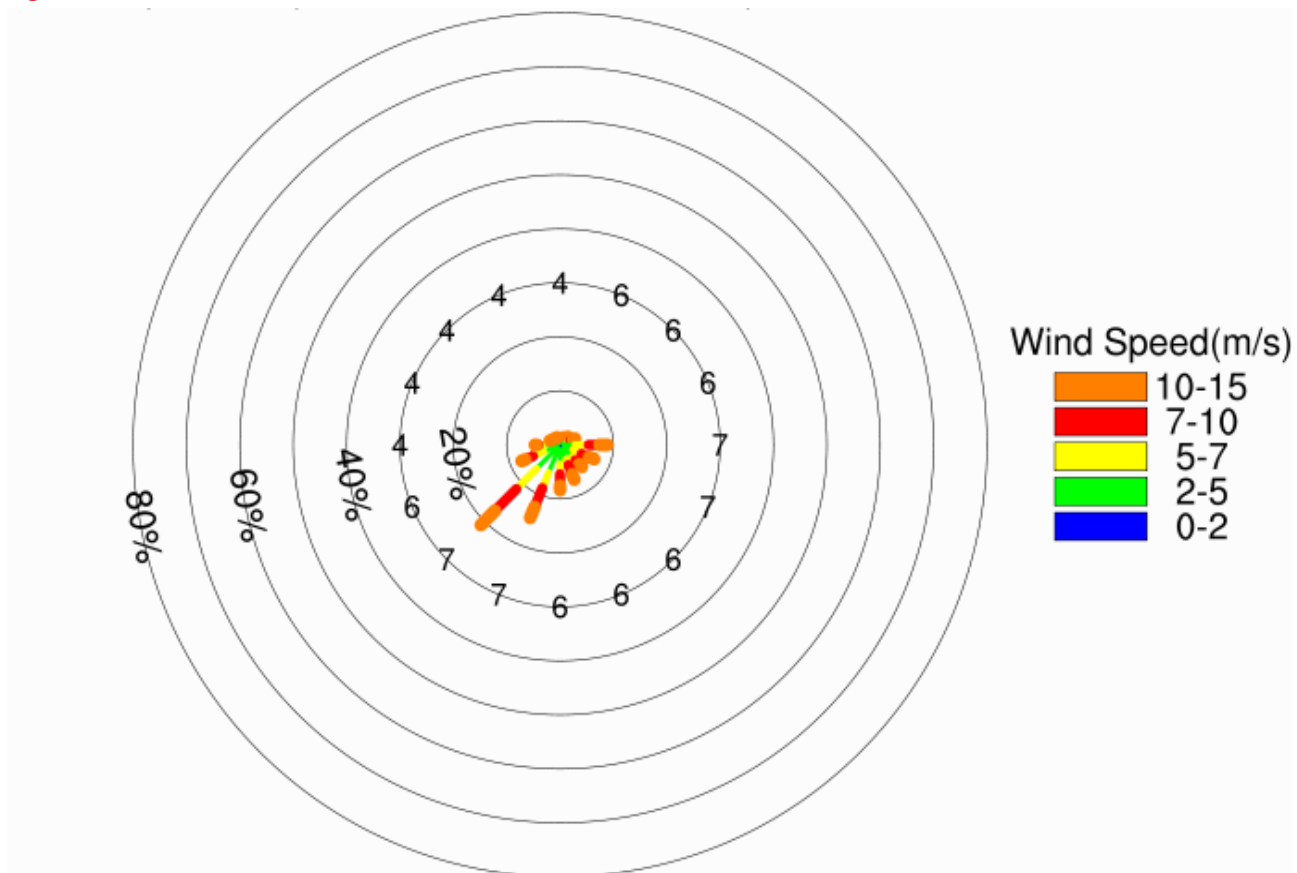


Figure 18 RAMS Summer Wind Rose at 500mPD

6.1.1 Wind Direction

6.1.1.1 Annual Prevailing Wind

7 prevailing wind directions (highlighted in bold in Table 2) are considered in this AVA Study which covers 75.8% of the total annual wind frequency. They are north-north-easterly (9.3%), north-easterly (12.5%), east-north-easterly (11.6%), easterly (19.0%), east-south-easterly (7.4%), south-south-westerly (7.2%) and south-westerly (8.8%).

Table 2 Annual Prevailing Wind Frequency

Wind Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	
Frequency	1.9%	9.3%	12.5%	11.6%	19.0%	7.4%	4.9%	4.3%	
Wind Direction	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
Frequency	4.2%	7.2%	8.8%	3.4%	2.3%	1.1%	0.9%	1.1%	75.8%

* The wind frequency showing in **Bold** represents the selected winds for the CFD simulation.

6.1.1.2 Summer Prevailing Wind

8 prevailing wind directions (highlighted in bold in Table 3) are considered in this AVA Study which covers 75.9% of the total annual wind frequency. They are easterly (9.1%), east-south-easterly (7.1%), south-south-easterly (7.0%), southerly (8.5%), south-south-westerly (14.9%), south-westerly (21.5%), west-south-westerly (7.8%).

Table 3 Summer Prevailing Wind Frequency

Wind Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	
Frequency	1.2%	1.5%	2.2%	3.2%	9.1%	7.1%	6.0%	7.0%	
Wind Direction	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
Frequency	8.5%	14.9%	21.5%	7.8%	4.7%	2.1%	1.6%	1.5%	75.9%

* The wind frequency showing in **Bold** represents the selected winds for the CFD simulation.

6.1.2 Wind Profile

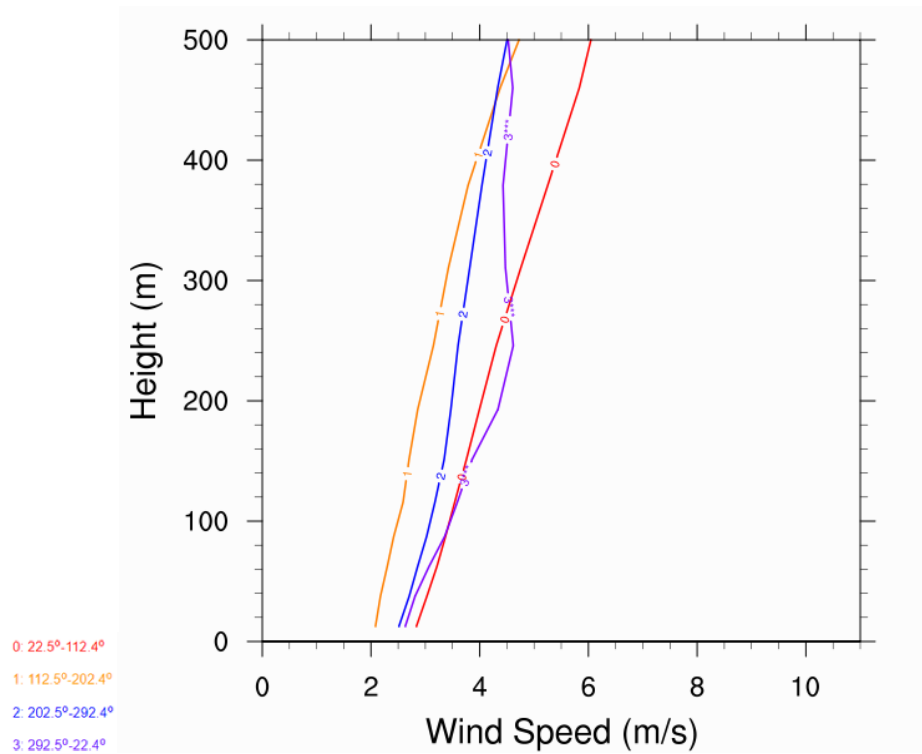


Figure 19 Normalized Mean Wind Speed Profile Measured in 16 Directions

The RAMS wind data is to be adopted in the AVA Initial study. It is recommended to extract the RAMS wind profile data directly as it can reflect the exact wind data. For wind data above 500m height, the velocity is assumed the same as the data at 500m. These wind data will be the input parameters in the CFD simulation.

6.2 Technical Details for CFD Simulation

Since there is no internationally recognized guideline or standard on using CFD for outdoor urban scale studies, reference was made to other CFD guidelines on different wind flow aspects to suggest a study approach for current study. The detail parameters are summarized in Table 4. The computational domain will be about 3900m (L) x 3900m (W) x 4000m (H), as shown in Figure 20. The surrounding model is shown in Figure 21 to Figure 24.

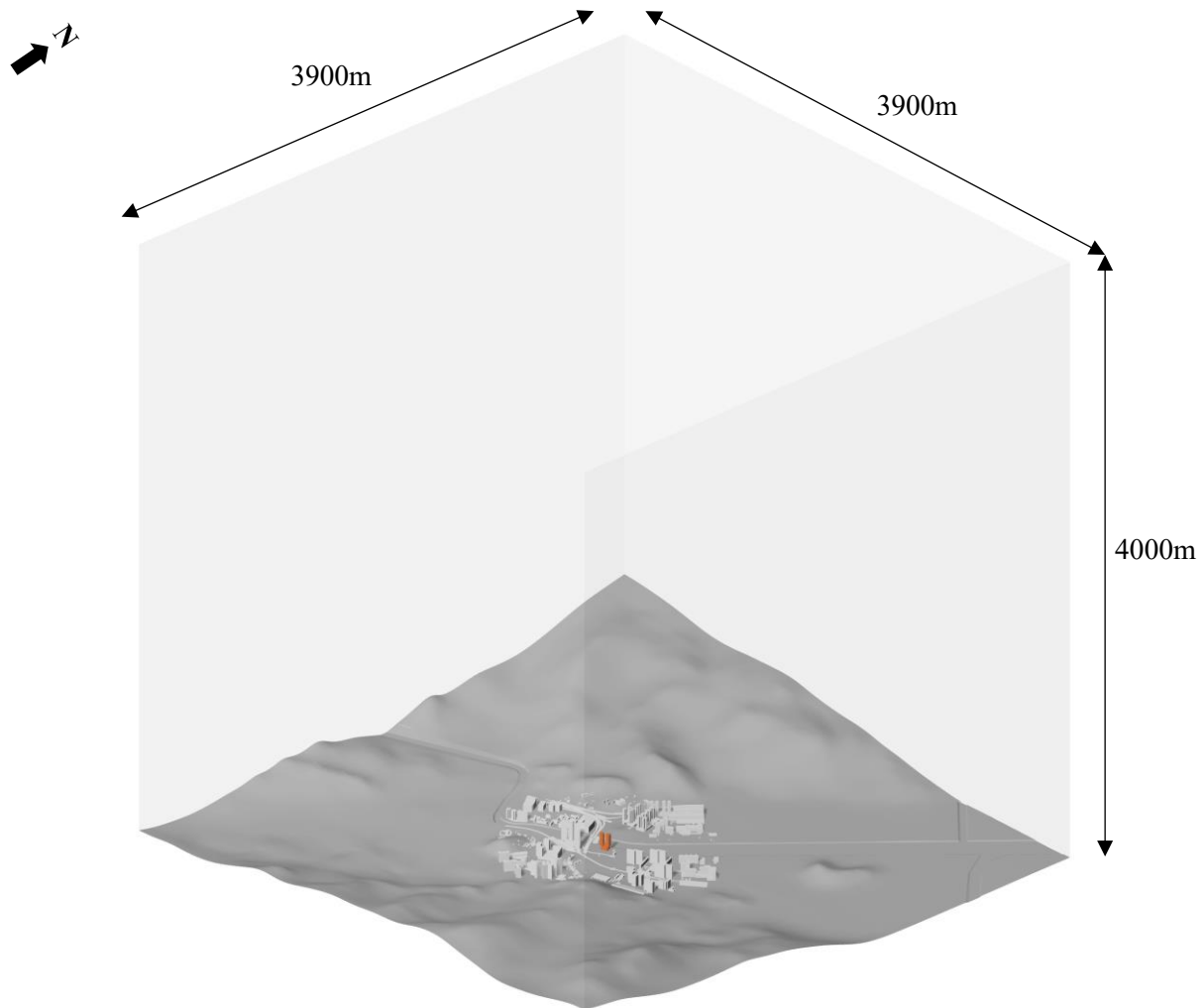


Figure 20 Prism Layers Near Pedestrian Level

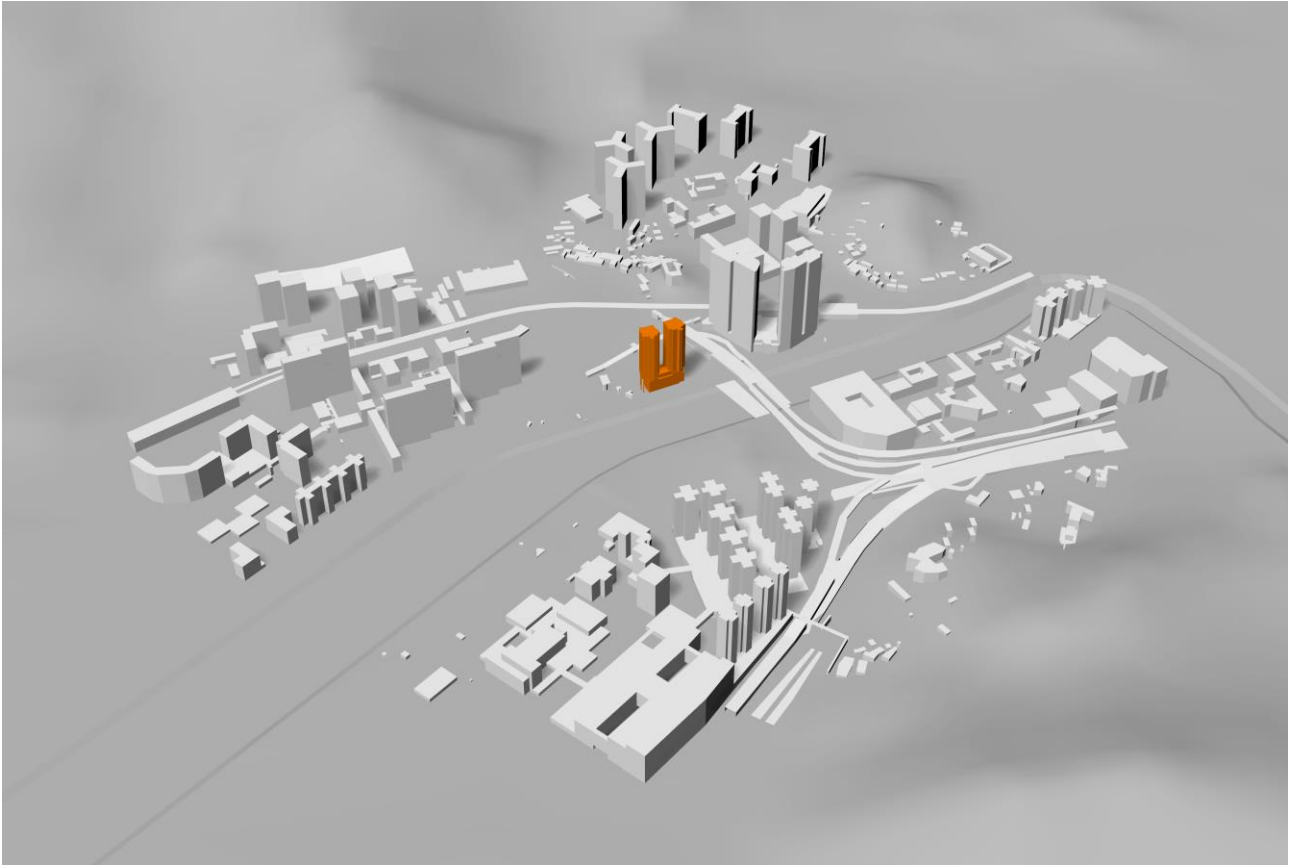


Figure 21 Northerly View of Surrounding



Figure 22 Easterly View of Surrounding

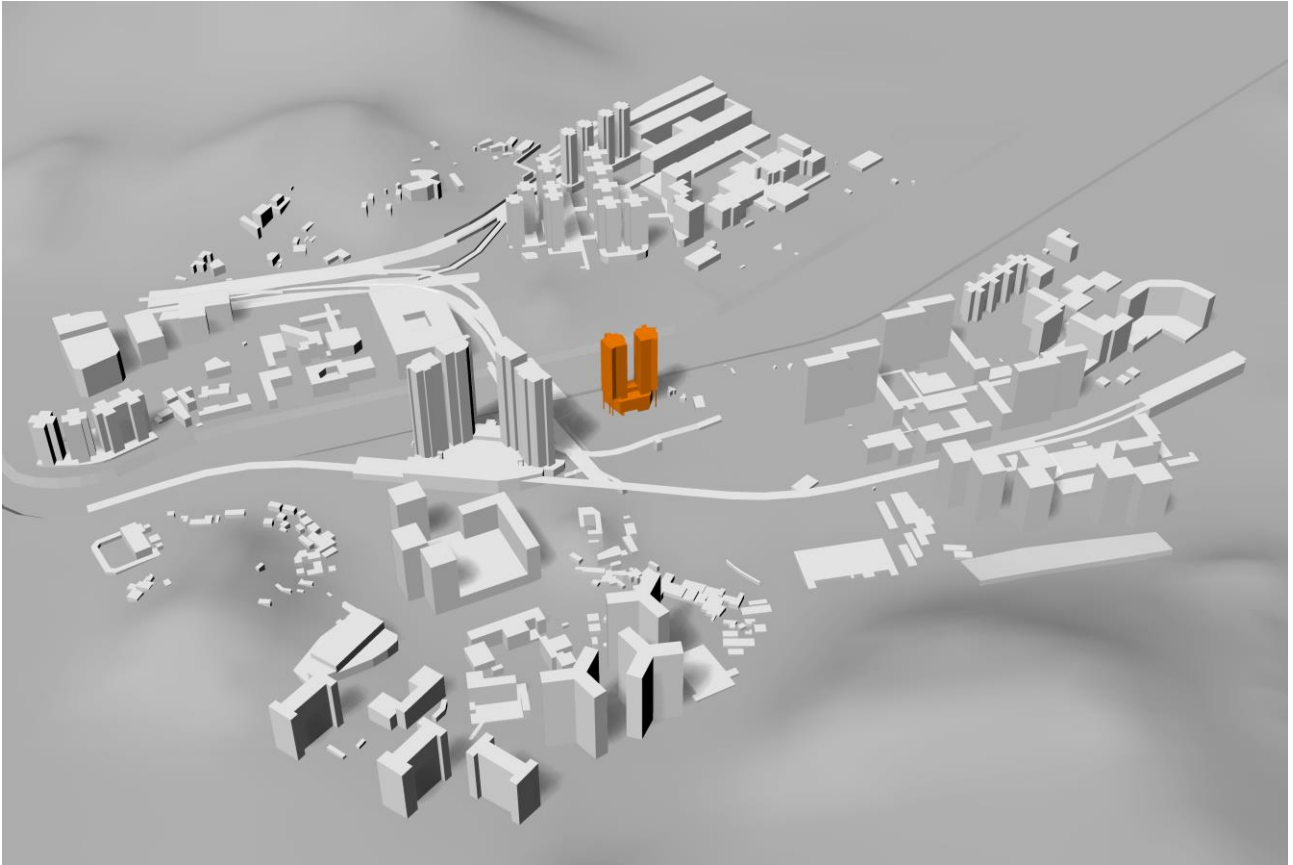


Figure 23 Southerly View of Surrounding

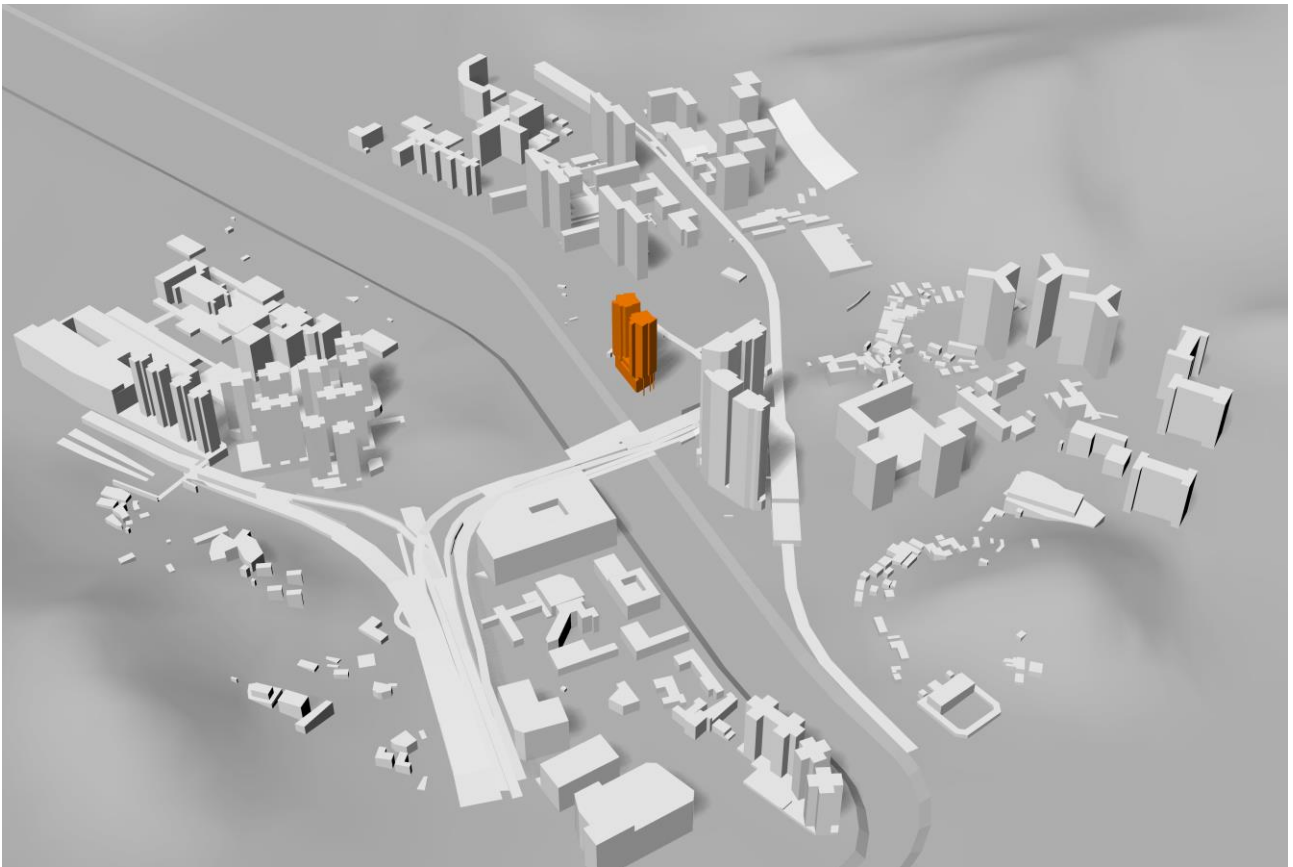


Figure 24 Westerly View of Surrounding

6.2.1 Assessment Tool

Computational Fluid Dynamics (CFD) technique is adopted for the AVA Initial Study. A well-recognised commercial CFD package ANSYS ICEM-CFD and Ansys-Fluent are used. Both software are widely used in the industry for AVA studies. With the use of three-dimensional CFD method, the local airflow distribution can be visualised in detail. The air velocity distribution within the flow domain, being affected by the site-specific design and the surrounding buildings, is simulated under the prevailing wind condition in a year.

6.2.2 Mesh Setup

Body-fitted unstructured grid technique is used to fit the geometry to reflect the complexity of the Application Site geometry. Prism layers of 3m above ground (totally 6 layers and each layer is 0.5m) are incorporated in the meshing to better capture the approaching wind as shown in Figure 25. The expansion ratio is 1.2 while the maximum blockage ratio is 3%. Finer grid system is applied to the most concerned area based on preliminary judgement, while coarse grid system is applied to the area of surrounding buildings for better computational performance while maintaining satisfactory result. The mesh for the computational model is shown in Figure 26.

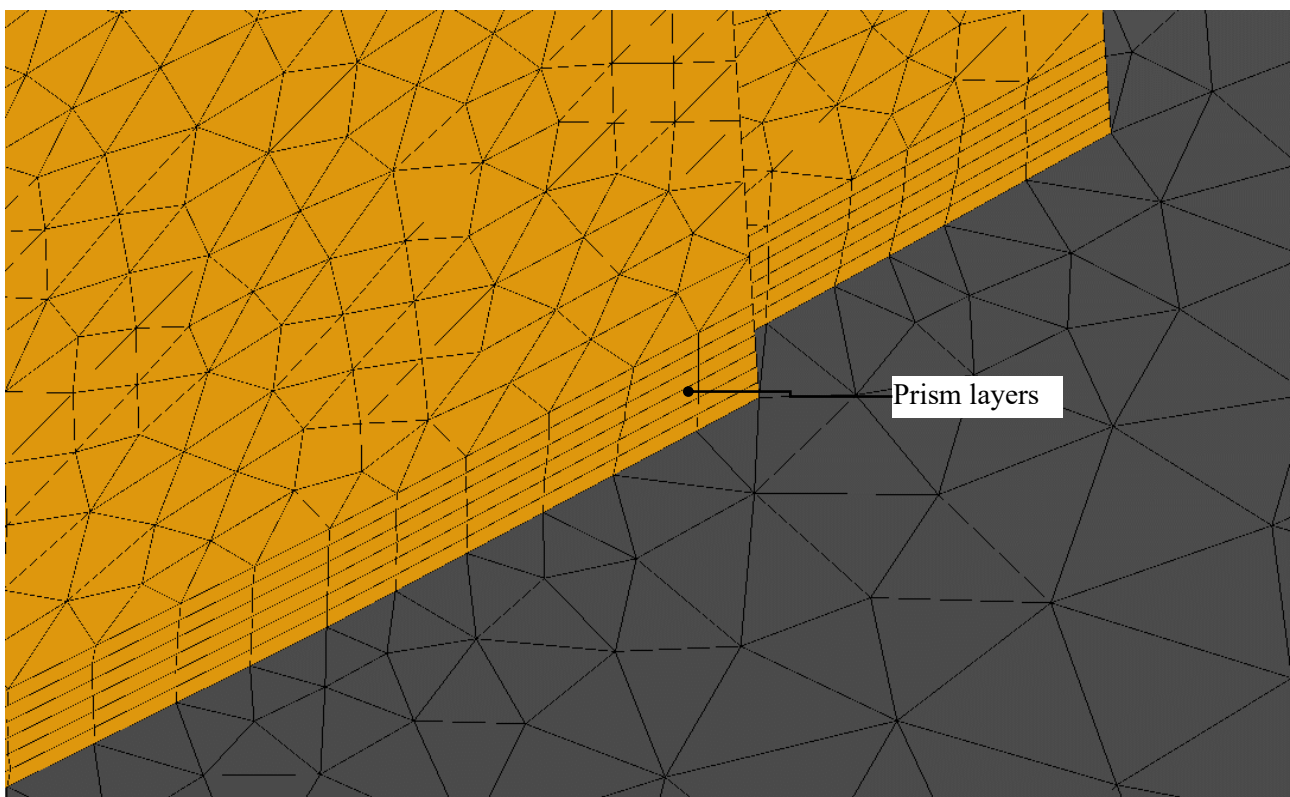


Figure 25 Prism Layers Near Pedestrian Level

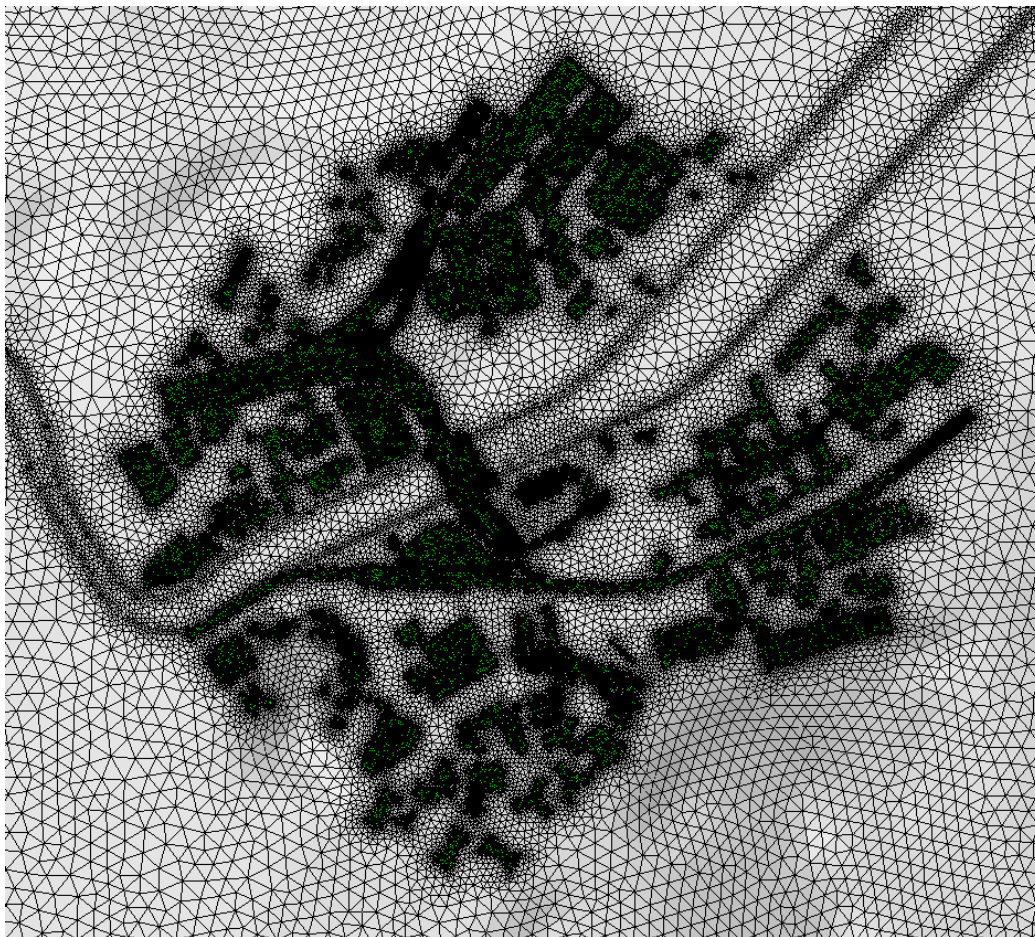


Figure 26 Mesh for the Computational Model

6.2.3 Turbulent Model

As highlighted in the recent academic and industrial research literatures by CFD practitioners, the widely used Standard $k - \epsilon$ turbulence model technique may not adequately model the effects of large-scale turbulences around buildings and ignored the wind gusts leading to the relatively poor prediction in their circulation regions around buildings. Therefore, in this CFD simulation, realizable $k - \epsilon$ turbulence modelling method is applied. This technique provides more accurate representation of the levels of turbulence that can be expected in an urban environment.

6.2.4 Calculation Method

The Segregated Flow model solves the flow equations in a segregated manner. The linkage between the momentum and continuity equations is based on the predictor-corrector approach. A collocated variable arrangement and a Rhie-and-Chow-type pressure-velocity coupling combined with a SIMPLE-type algorithm is adopted. A higher order differencing scheme is applied to discretize the governing equations. The convergence criterion is set to 0.0001 on mass conservation. The calculation repeat until the solution satisfies this convergence criterion. The prevailing wind directions are set to inlet boundaries of the model with wind profile as detailed in Section 6.1. The downwind boundaries are set to pressure with value of atmospheric pressure. The top and side boundaries are set to symmetry. In addition, to eliminate the boundary effects, the computational domain is built beyond the Surrounding Area as required in the Technical Circular.

6.2.5 Summary

Table 4 Summary of CFD Model

CFA Model	
Model Scale	Real Scale model
Model details	Only include Topography, Buildings blocks, Streets/Highways, no landscape is included
Domain	3900m(L) x 3900m(W) x 4000m(H)
Assessment Area	300m
Surrounding building Area	600m
Grid Expansion Ratio	The grid should satisfy the grid resolution requirement with maximum expansion ratio = 1.3
Prismatic layer	6 layers of prismatic layers and 0.5m each (i.e. total 3m above ground)
Inflow boundary Condition	Incoming wind profile as measured from RAMS
Outflow boundary	Pressure boundary condition with dynamic pressure equal to zero
Wall boundary condition	Logarithmic law boundary
Turbulence Model	Realisable k- ϵ turbulence model
Turbulence Model	Rhie and Chow SIMPLE for momentum equation Hybrid model for all other equations
Blockage ratio	< 2%
Convergence Criteria	Below 1.0E-5

6.3 AVA Indicator

The wind Velocity Ratio (VR) as defined in AVA Technical Circular ^[1] was employed to assess the ventilation performance of the proposed Scheme and surrounding area. The calculation of VR is given by the following formula:

$$VR = \frac{V_p}{V_\infty}$$

where V_p is the wind speed at the pedestrian height (2m above ground) and
 V_∞ is the wind speed at the top of the boundary layer (defined as the height where wind is unaffected by urban roughness and determined by the topographical studies)

Higher VR implies that less impact due to the Proposed Scheme on ventilation performance. The average VR is defined as the weighted average VR with respect to the percentage of occurrence of all considered wind directions, which gives a general idea of the ventilation performance at the considered location under both annual and summer wind conditions. Site spatial average velocity ratio (SVR) and Local spatial average velocity ratio (LVR) are determined as show in Table 5

Table 5 Terminology of the AVA Indicator

Terminology	Description
Velocity Ratio (VR)	The VR represents the ratio of the air speed at the measurement position to the value at the reference points.
Site Spatial Average Velocity Ratio (SVR)	The SVR represent the average VR of all perimeter test points at the site boundary which identified in the report.
Local Spatial Average Velocity Ratio (LVR)	The LVR represent the average VR of all points, i.e. perimeter and overall test points at the site boundary which identified in the report.

6.4 Location of Test Points

As per the technical circular, three types of test points – perimeter test points, overall test points and special test points will be adopted to assess the wind performance. The allocation of these test points will be distributed evenly as per the requirement stated in the AVA Technical Circular ^[1].

6.4.1 Perimeter Test Points

A total number of 31 perimeter test points (**Brown spots**), namely P points, are positioned at intervals of around 30m along the Application Site boundary at 2m above ground level. The locations of the perimeter test points are shown in Figure 27.

6.4.2 Overall Test Points

A total number of 261 overall test points (**Blue spots**), namely O points, are evenly distributed in open areas at 2m above ground level within the assessment area where pedestrian frequently access, The locations of the overall test points are shown in Figure 30.

6.4.3 Special Test Points

A total number of 14 special test points (**Pink spots**), namely S points, are evenly distributed in open areas at 2m above ground and podium level within the Application Site. Their locations are shown in Figure 28 and Figure 29.

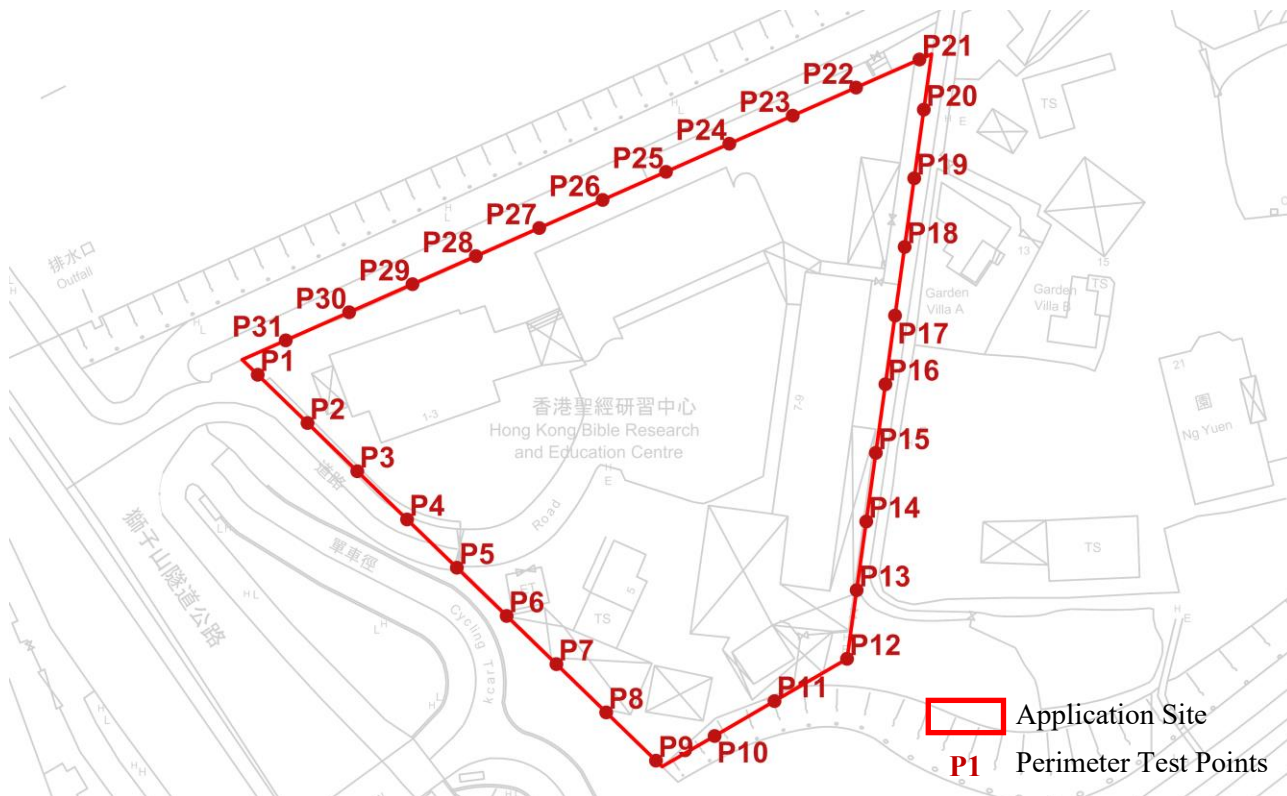


Figure 27 Perimeter Test Points

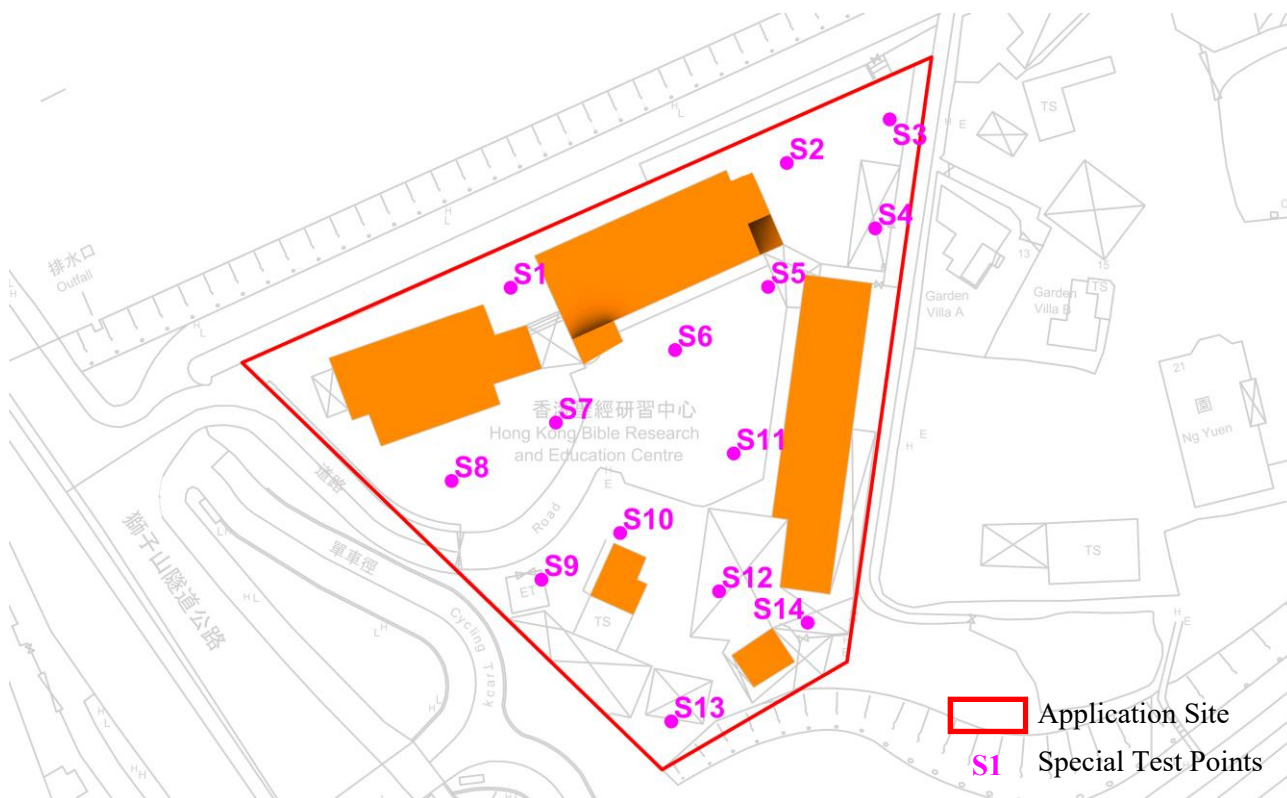


Figure 28 Special Test Point of Baseline Scheme

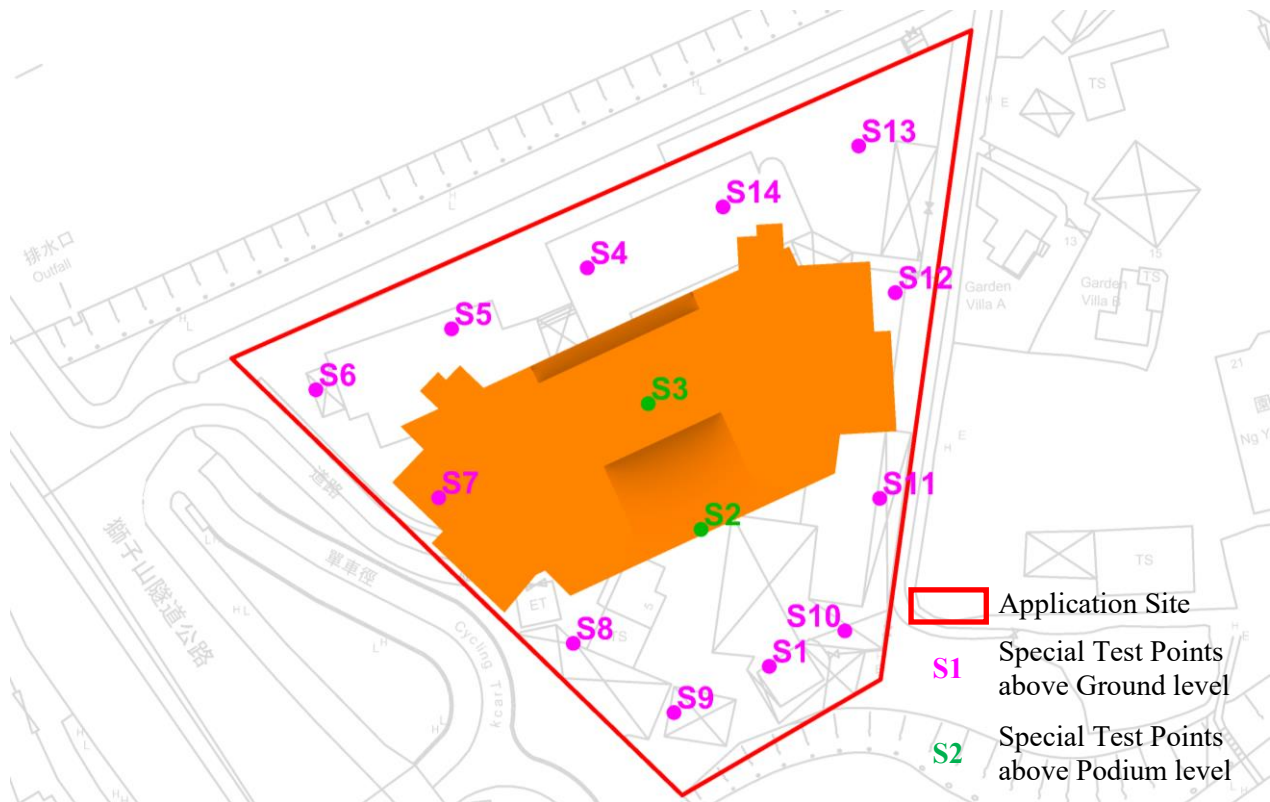


Figure 29 Special Test Points of Proposed Scheme

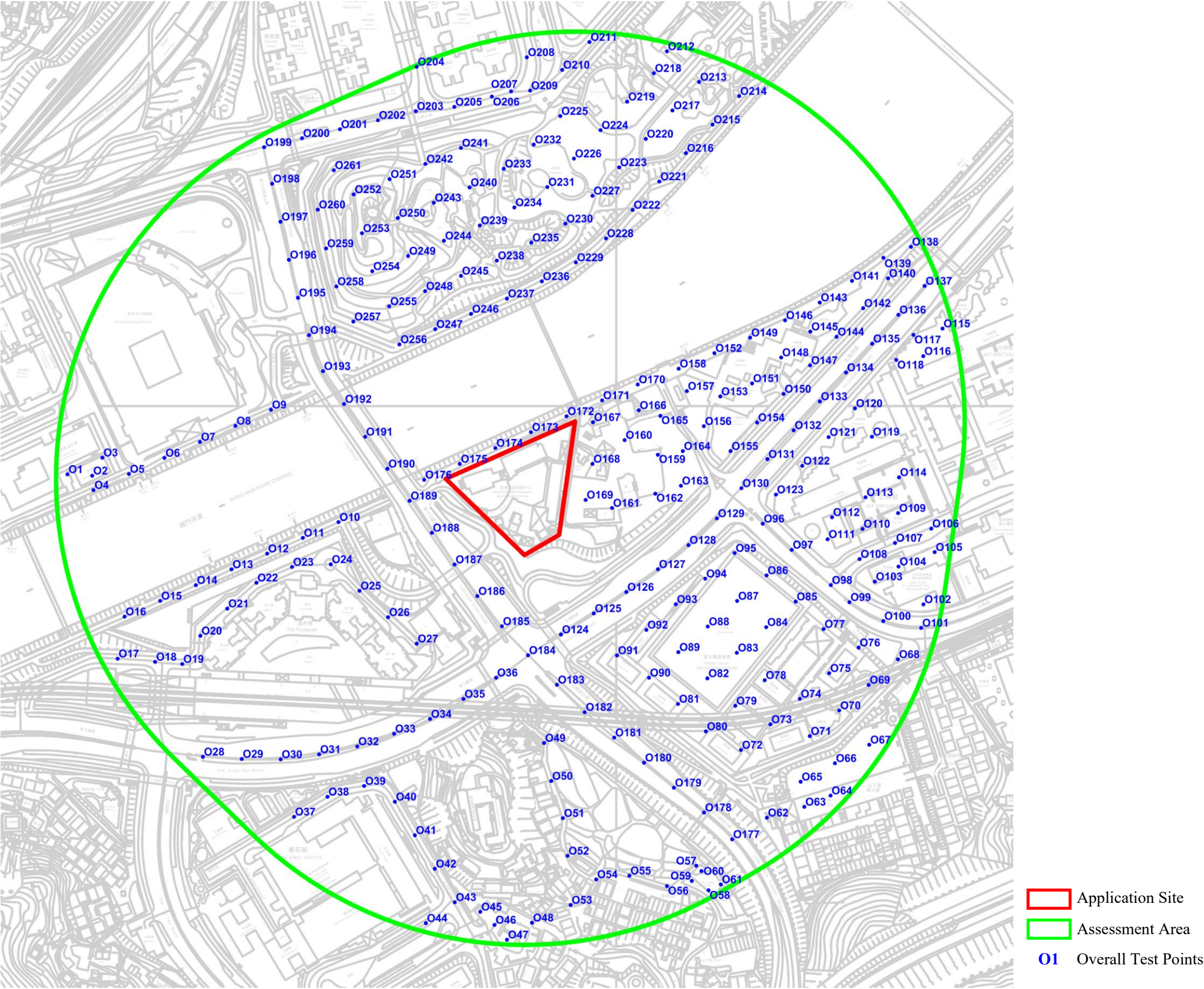


Figure 30 Overall Test Points

7. Result and Discussion

The detailed contour and vector plots for each wind directions are shown in Appendix C and Appendix D respectively.

7.1 Overall Pattern of Ventilation Performance under Annual Wind Condition

The overall wind performance of the Baseline Scheme and the Proposed Scheme under annual wind conditions are presented in Figure 31 and Figure 32 respectively. The SVR and LVR are summarized in Table 6.

Table 6 Annual SVR and LVR

	Baseline Scheme	Proposed Scheme
SVR	0.16	0.24
LVR	0.22	0.22

Higher SVR of the Proposed Scheme indicate the ventilation performance along the site boundary is better than that of the Baseline Scheme, it is mainly due to more prominent downwash effect from the Application Site under Proposed Scheme. Similar LVR in both Schemes indicates the ventilation performance are similar within the Assessment Area.

Annual prevailing winds are mostly from NE, ENE and E directions. Although the Application Site is located at the leeward side of high-rise residential cluster such as Jat Min Chuen (max. ~95mPD) especially under ENE and E directions, openness by Ng Yuen, Shing Mun River Promenade Garden No. 1 and Shing Mun River provide relatively unobstructed upwind environment. Incoming wind would reach the Application Site from the NE direction along Shing Mun River, providing relatively sufficient wind availability. The incoming wind direction is illustrated with **Black Arrow** in Figure 31 and Figure 32.

Under the Baseline Scheme, mid and high-level wind would skim over the Application Site, reaching The Riverpark (max. ~155mPD) and induce prominent downwash effect. The downwashed wind would ventilate waterfront, Che Kung Miu Road and waterfront on the other side of the Shing Mun River (especially under NE wind), where slightly higher VR would be observed (**Red Arrows** in Figure 31).

Under the Proposed Scheme, due to taller building height, the Application Site would partially shield The Riverpark, reducing the downwash effect on it, hence slightly lower VR would be observed in areas mentioned in above paragraph. On the other hand, additional downwash effect would be induced from the Application Site, ventilating northwestern, and utilising the setback from southeastern boundary to ventilate southeastern open spaces within the Application Site, Lion Rock Tunnel Road and Che Kung Miu Road (**Red Arrows** in Figure 32).

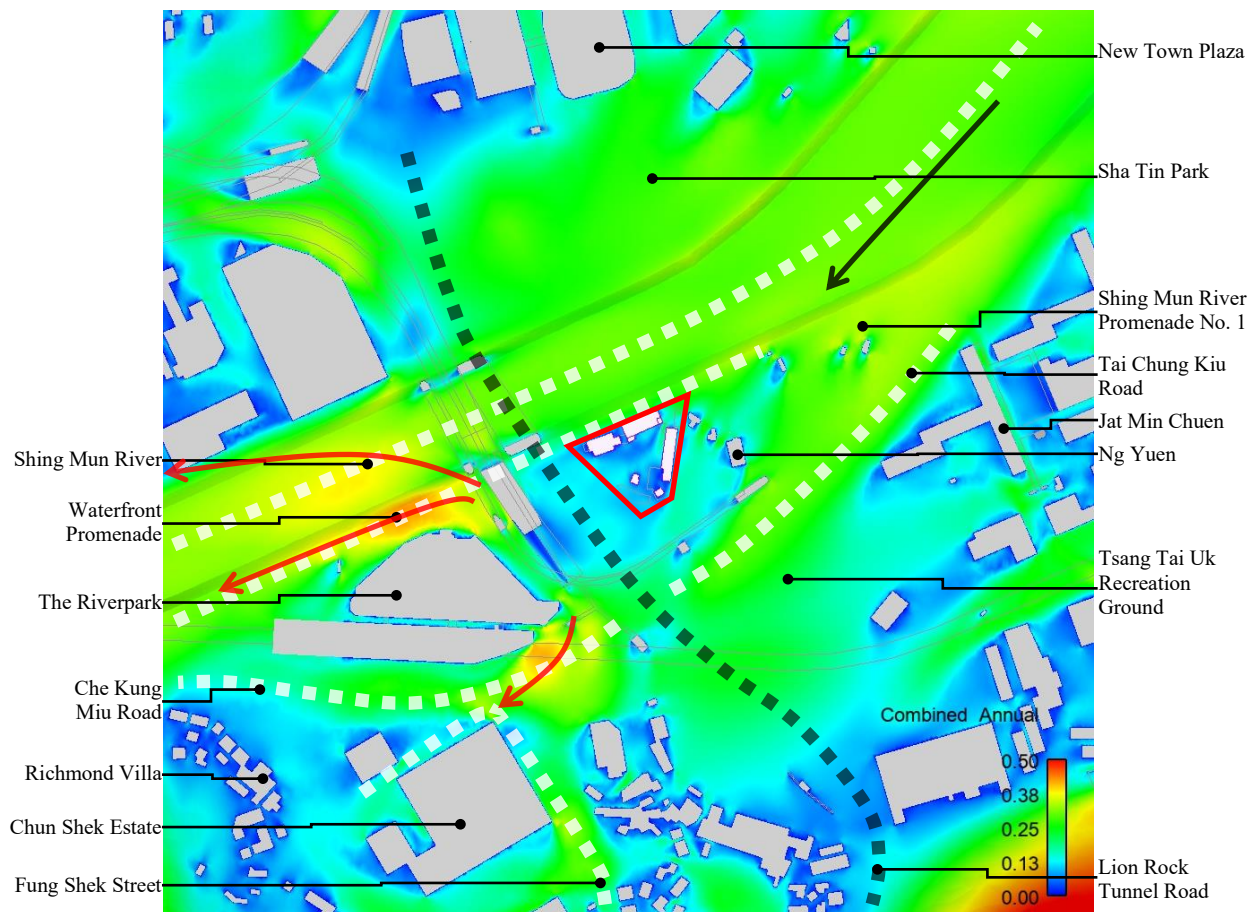


Figure 31 Contour Plot of Baseline Scheme under Annual Prevailing Wind

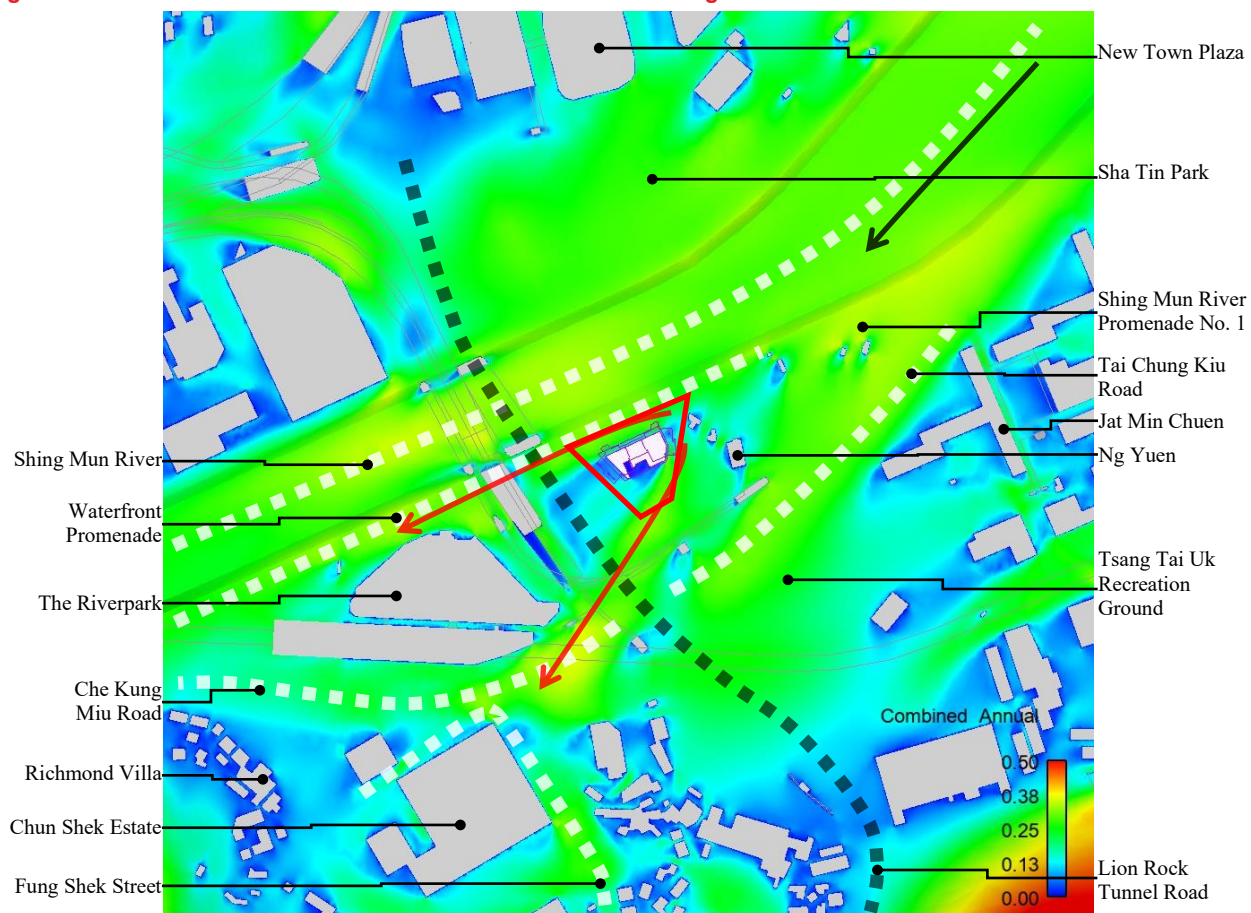


Figure 32 Contour Plot of Proposed Scheme under Annual Prevailing Wind

Application for Amendment of Plan under S12A of the Town Planning Ordinance (Cap. 131), to Rezone the Application Site from "Open Space" to "Residential (Group A) 11" at Sha Tin Town Lot 310 in D.D. 184, Sha Tin

7.2 Overall Pattern of Ventilation Performance under Summer Wind Condition

The overall wind performance of the Baseline Scheme and the Proposed Scheme under annual wind conditions are presented in Figure 33 and Figure 34 respectively. The SVR and LVR are summarized in Table 7.

Table 7 Summer SVR and LVR

	Baseline Scheme	Proposed Scheme
SVR	0.15	0.18
LVR	0.22	0.22

Higher SVR of the Proposed Scheme indicate the ventilation performance along the site boundary is better than that of the Baseline Scheme, it is mainly due to more prominent downwash effect from the Application Site under Proposed Scheme. Similar LVR in both Schemes indicates the ventilation performance are similar within the Assessment Area.

Summer prevailing wind are mostly from SW and SSW directions , with some from E direction. The Application Site are mostly shielded by The Riverpark (max. ~155mPD), and the wind availability is limited by the hilly terrain on the far side such as Lion Rock. Surrounding wind environment near the Application Site are dominated by upwind environment with minor difference in both Schemes. Incoming wind, together with downwashed wind from The Riverpark, would reach the Application Site via Lion Rock Tunnel Road and via Shing Mun River. The incoming wind direction is illustrated by **Black Arrows** in Figure 33 and Figure 34.

Under the Baseline Scheme, incoming wind from both Shing Mun River and Lion Rock Tunnel Road would penetrate deeper into the Application Site due to the larger open area on the southwestern side, where slightly higher VR would be observed (**Black Circle** in Figure 33).

On the other hand, under the Proposed Scheme, downwash effect from the Application Site ventilate southeastern and northwestern open spaces within the Application Site, waterfront and Ng Yuen, where slightly higher VR would be observed (**Black Circles** in Figure 34).

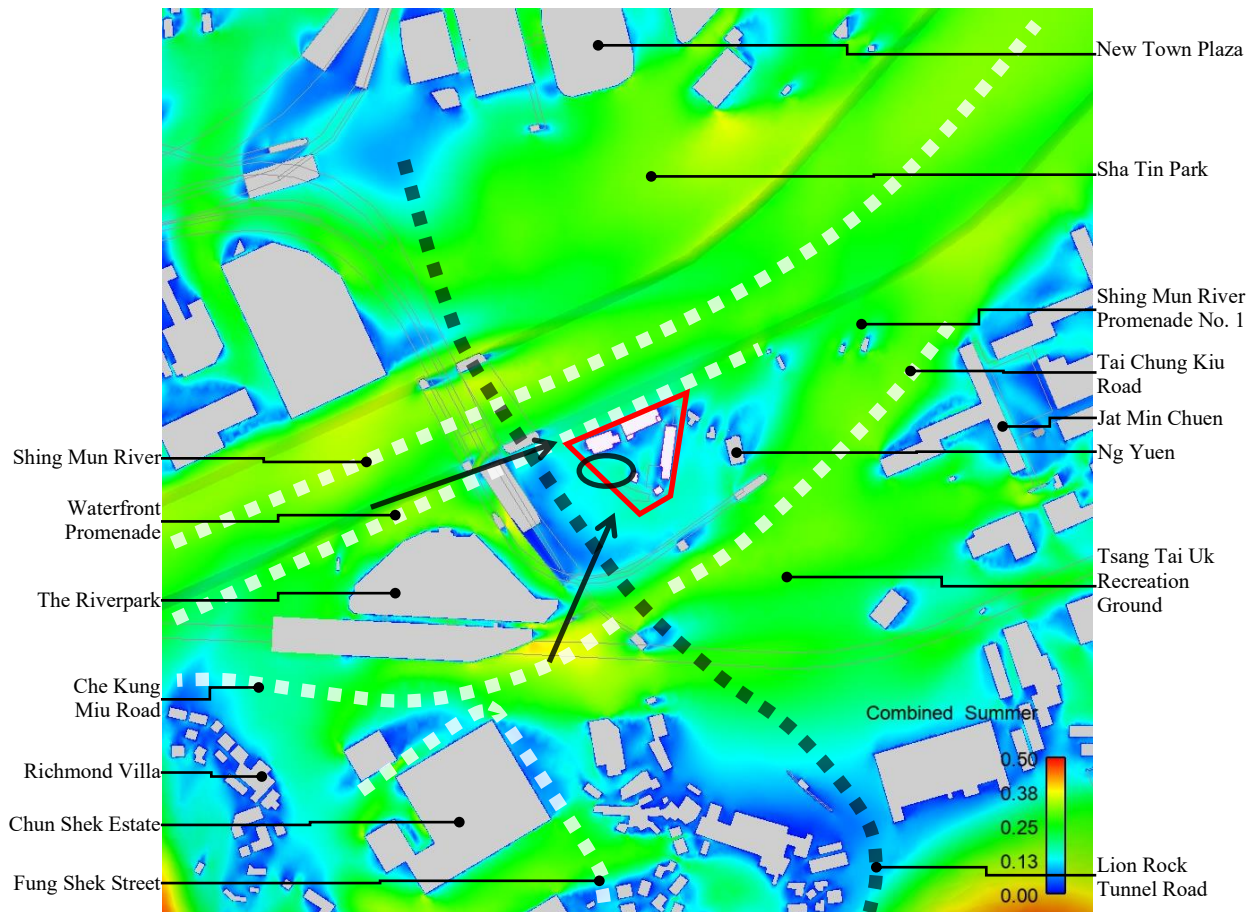


Figure 33 Contour Plot of Baseline Scheme under Summer Prevailing Wind

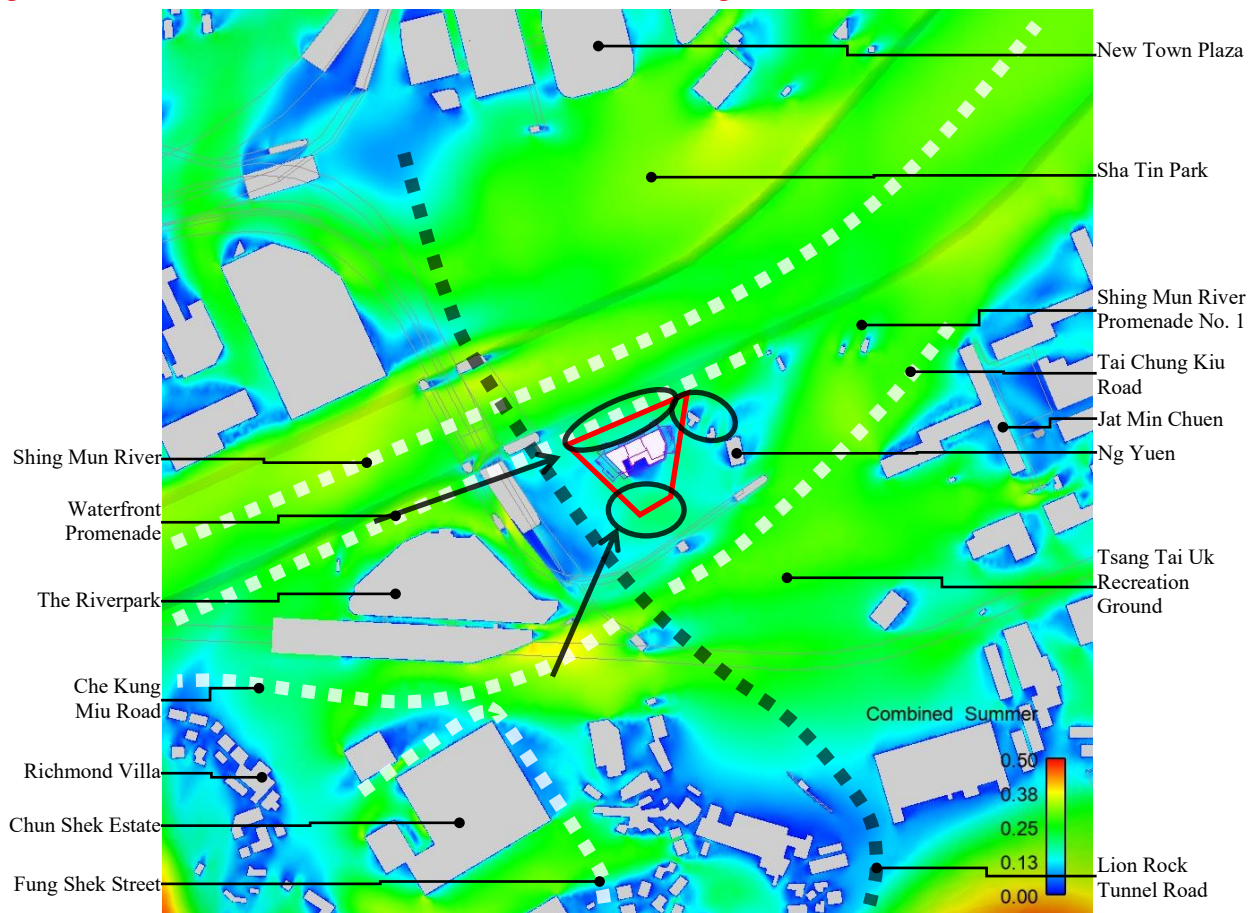


Figure 34 Contour Plot of Proposed Scheme under Summer Prevailing Wind

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7.3 Directional Analysis

7.3.1 NNE Wind

The overall wind performance of the Baseline and the Proposed Schemes under NNE wind is presented in Figure 35 and Figure 36 respectively.

The Application Site is located at the leeward side of Shing Mun River and Sha Tin Park with high-rise residential cluster such as New Town Plaza (max. ~98mPD) further away. Incoming wind would reach the Application Site relatively unobstructed. The incoming wind direction is illustrated with **Black Arrow** in Figure 35 and Figure 36.

Under the Baseline Scheme, mid- and high-level winds would skim over the Application Site to reach The Riverpark, where downwash effect is induced.

Northern stream of the downwashed wind would ventilate waterfront (**Blue Arrow** in Figure 35). Southern stream would reach Chun Shek Estate and divided by the estate toward Che Kung Miu Road and Fung Shek Street, where slightly higher VR would be observed (**Purple Arrows** in Figure 35).

Under the Proposed Scheme, the Application Site would reduce the downwash effect from The Riverpark, hence slightly lower VR in areas mentioned in above paragraph would be observed. On the other hand, downwash effect would be induced by the Application Site.

Northern stream of the downwashed wind from the Application Site would reach waterfront and northwestern open space within the Application Site, where slightly higher VR would be observed (**Blue Arrow** in Figure 36). Southern stream would ventilate Ng Yuen, then utilise the setback from southeastern boundary to ventilate the southeastern open space within Application and Lion Rock Tunnel Road, where slightly higher VR would be observed. This air stream would further travel towards Chun Shek Estate and diverted by the estate towards Fung Shek Street in SW and SE directions to alleviate the ventilation impact (**Pink Arrows** in Figure 36). The air stream travels in SW direction would reach villages behind such as Richmond Villa, where slightly higher VR would be observed (**Pink Circle** in Figure 36).

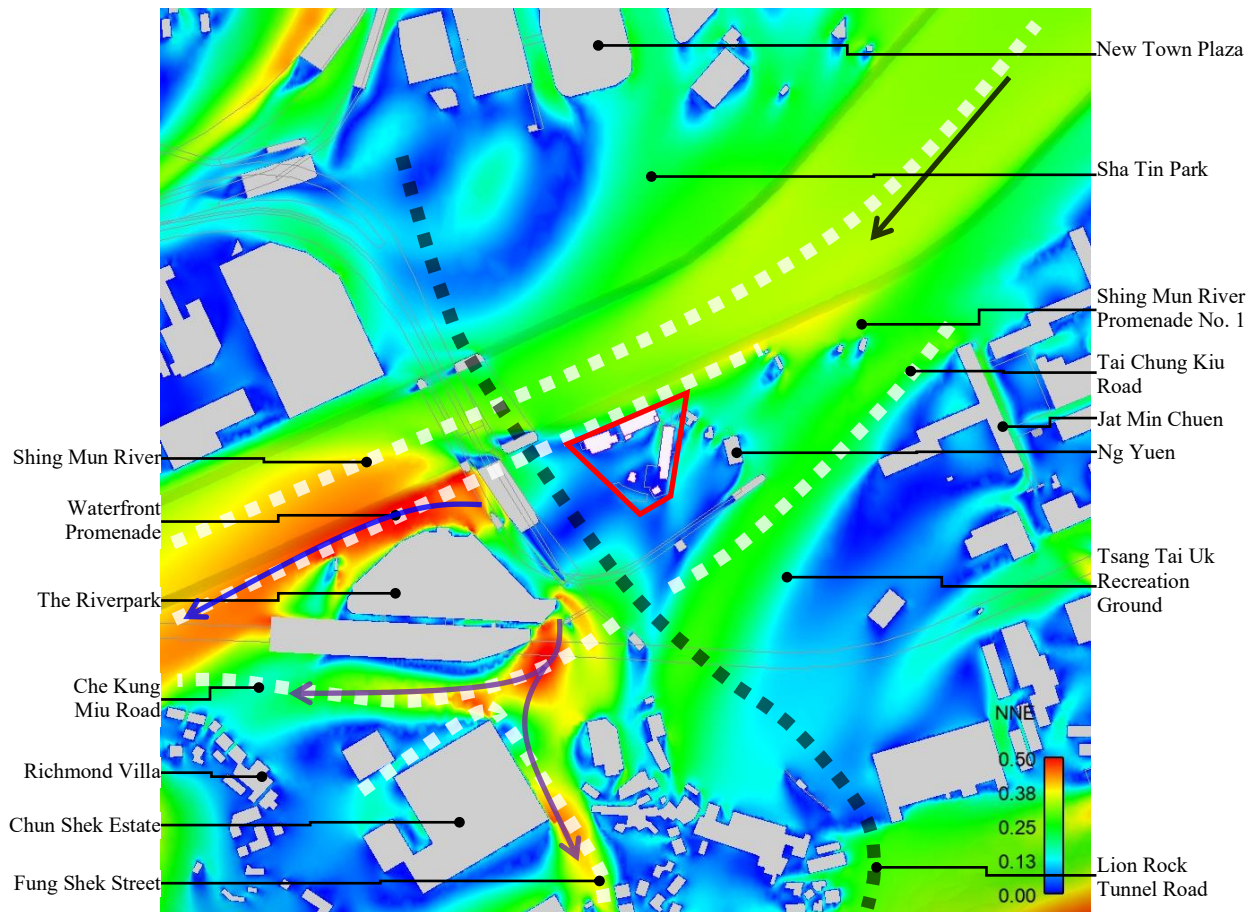


Figure 35 Contour Plot of Baseline Scheme under NNE Wind

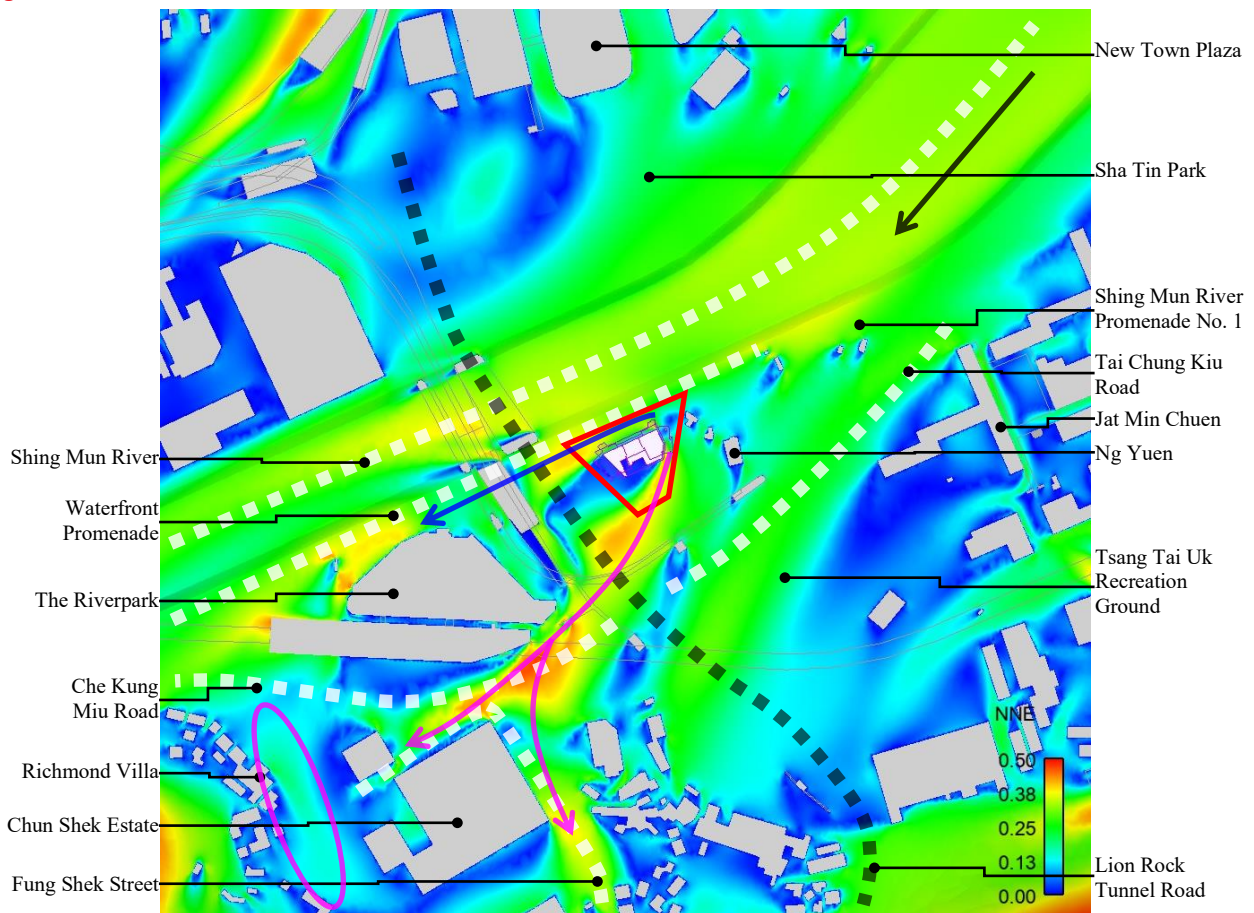


Figure 36 Contour Plot of Proposed Scheme under NNE Wind

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7.3.2 NE Wind

The overall wind performance of the Baseline and the Proposed Schemes under NE wind is presented in Figure 37 and Figure 38 respectively.

The Application Site is located at the leeward side of openness by Ng Yuen, Shing Mun River Promenade Garden No. 1 and Shing Mun River. Incoming wind would reach The Application Site relatively unobstructed. The incoming wind direction are illustrated with **Black Arrow** in Figure 37 and Figure 38.

Under the Baseline Scheme, mid- and high-level winds would skim over the Application Site to reach The Riverpark (max. ~155mPD) to induce downwash effect. Due to the unobstructed upwind environment and façade direction of The Riverpark aligned with incoming wind direction, more prominent downwash effect would be observed compared to other wind direction with similar downwash effect including NNE, ENE and E winds.

Northern stream of the downwashed wind would ventilate waterfront on both sides of the Shing Mun River and Sha Tin Government Secondary School, where slightly higher VR would be observed (**Blue Arrow** in Figure 37). Southern stream would reach Chun Shek Estate and divided into 3 air streams; one would travel along Che Kung Miu Road (**Red Arrow** in Figure 37); one would travel along Fung Shek Street (**Purple Arrow** in Figure 37); and one would skim over the podium of Chun Shek Estate to ventilate village behind such as Richmond Villa (**Pink Arrow** in Figure 37), where slightly higher VR would be observed along these three air streams.

Under the Proposed Scheme, the Application Site would reduce the downwash effect from The Riverpark, slightly lower VR would be observed in areas mentioned in the above paragraph. On the other hand, downwash effect on the Application Site would be induced to alleviate the ventilation impact.

Northern stream of the downwashed wind would ventilate waterfront and northwestern open space within the Application Site, where slightly higher VR would be observed (**Blue Arrow** in Figure 38). Southern stream would utilise the setback from southeastern boundary to ventilate southeastern open space within the Application Site and Lion Rock Tunnel Road, then travel towards Chun Shek Estate and be diverted towards Che Kung Miu Road and Fung Shek Street, alleviating the ventilation impact (**Purple Arrows** in Figure 38), and also some would skim over the podium of Cheun Shek Estate to ventilate villages behind, alleviating the ventilation impact (**Pink Arrow** in Figure 38).

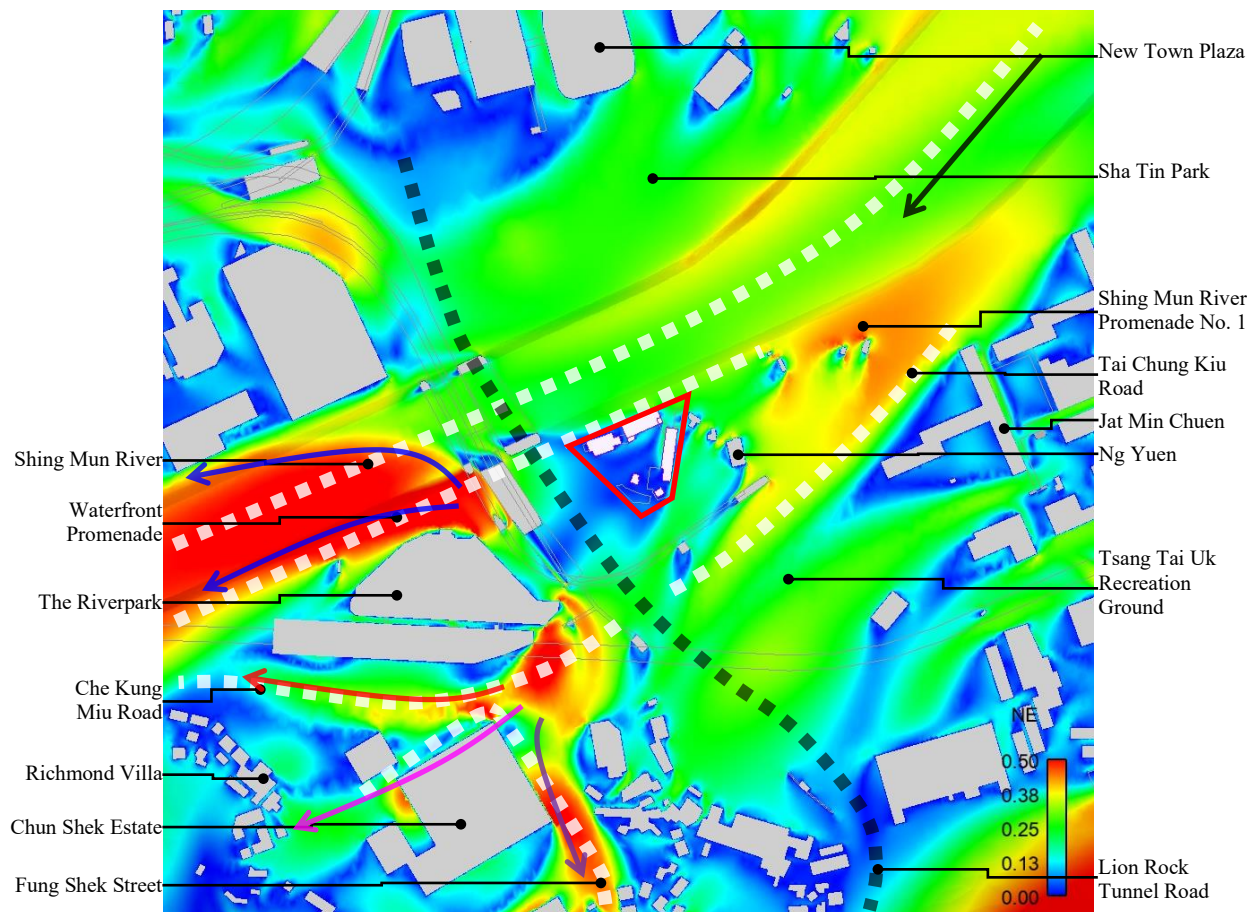


Figure 37 Contour Plot of Baseline Scheme under NE Wind

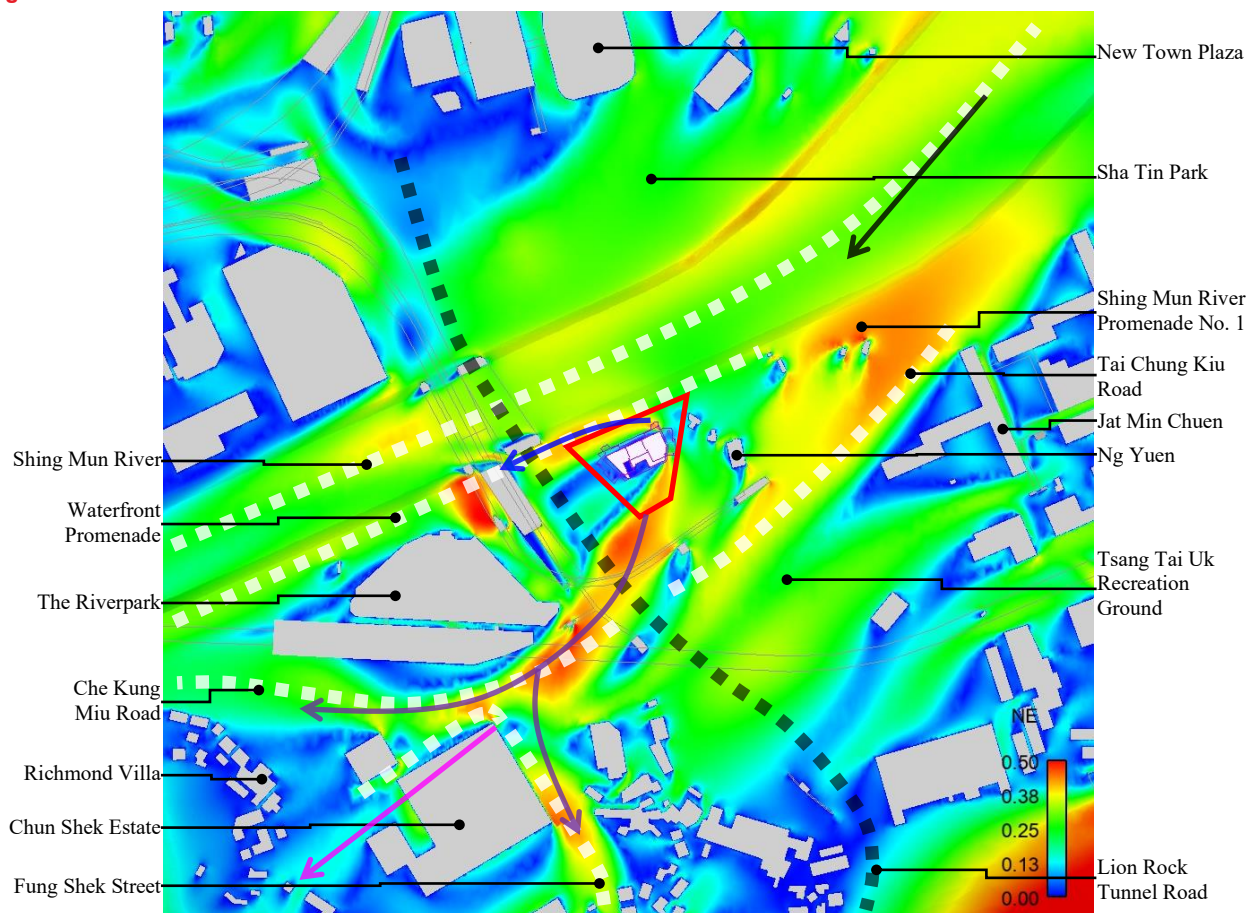


Figure 38 Contour Plot of Proposed Scheme under NE Wind

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7.3.3 ENE/E Winds

The overall wind performance of the Baseline and the Proposed Schemes under ENE/E winds are presented in Figure 39/Figure 41 and Figure 40/Figure 42 respectively.

The Application Site although is partially shielded by mid to high-rise residential cluster such as Jat Min Chuen (max. ~95mPD), openness on Ng Yuen and Shing Mun River Promenade Garden No. 1 provide relatively unobstructed upwind environment. Incoming wind diverted by the residential cluster would reach The Application Site from the NE direction via Shing Mun River relatively unobstructed. The incoming wind direction is illustrated with **Black Arrow** in Figure 39/Figure 41 and Figure 40/Figure 42.

For ENE wind, under the Baseline Scheme, mid and high-level incoming winds would skim over the Application Site, ventilating open space within the Application Site, where slightly higher VR would be observed (**Red Arrow** in Figure 39).

Under the Baseline Scheme, the incoming winds skimming over the Application Site would induce downwash effect on The Riverpark; while under the Proposed Scheme, downwashed effect from The Riverpark is weakened and downwash effect from the Application Site supplement additional wind availability.

Under both Scheme, northern stream of the downwashed wind (**Blue Arrow** in Figure 39/Figure 41 and Figure 40/Figure 42) would travel along waterfront. Under the Baseline scheme, waterfront near The Riverpark would be observed with slightly higher VR. Under the Proposed Scheme, the air stream would ventilate waterfront and northwestern open space within the Application Site where slightly higher VR would be observed.

For southern stream of the downwashed wind (**Pink Arrow** in Figure 39/Figure 41 and Figure 40/Figure 42), under the Proposed Scheme, the air stream would ventilate Ng Yuen, then utilise the setback from southeastern boundary to ventilate southeastern open space within the Application Site and Lion Rock Tunnel Road, where slightly higher VR would be observed. After that, under both Scheme, the air stream would travel towards Chun Shek Estate and diverted by the Estate. Together with the downwashed wind from Chun Shek Estate, the air streams would travel towards Che Kung Miu Road and Fung Shek Street.

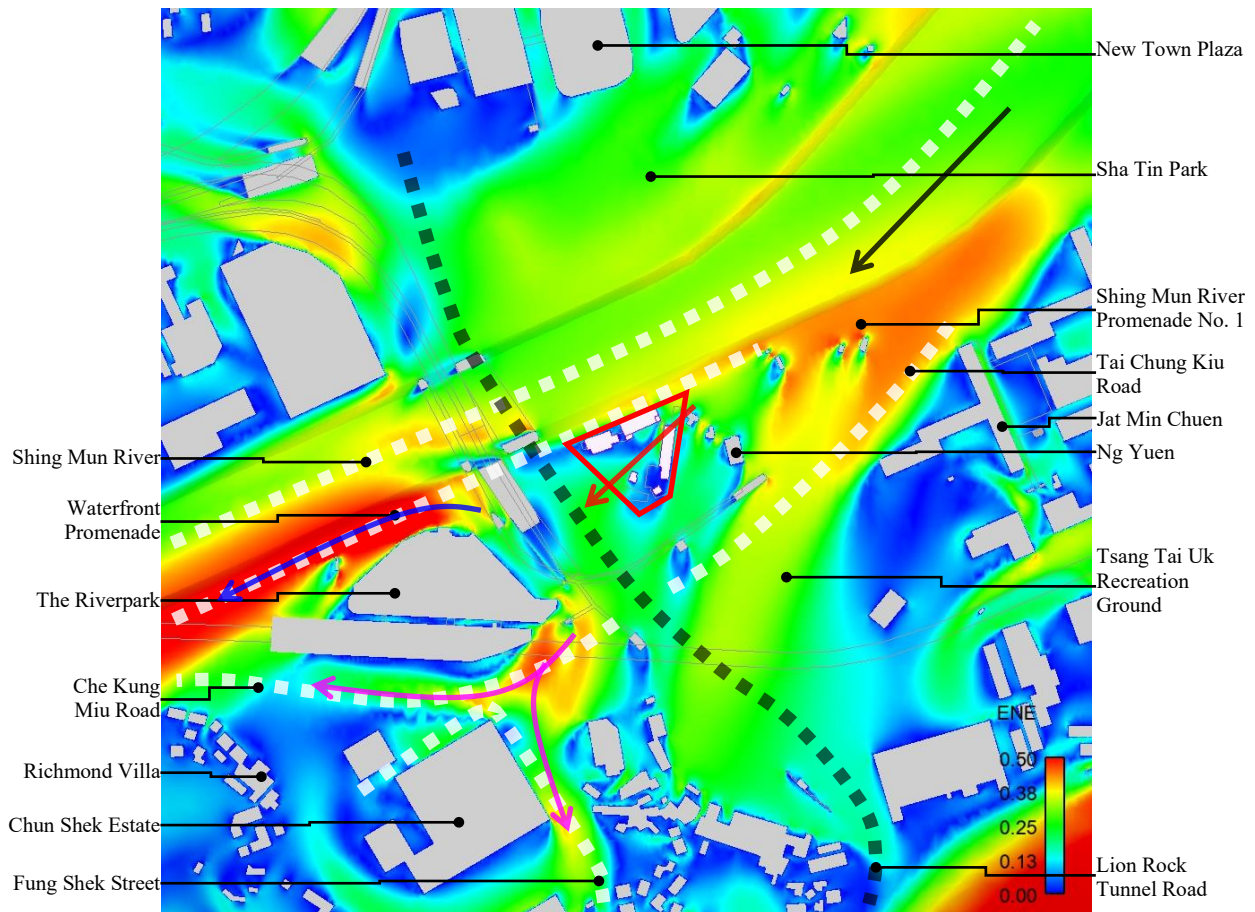


Figure 39 Contour Plot of Baseline Scheme under ENE Wind

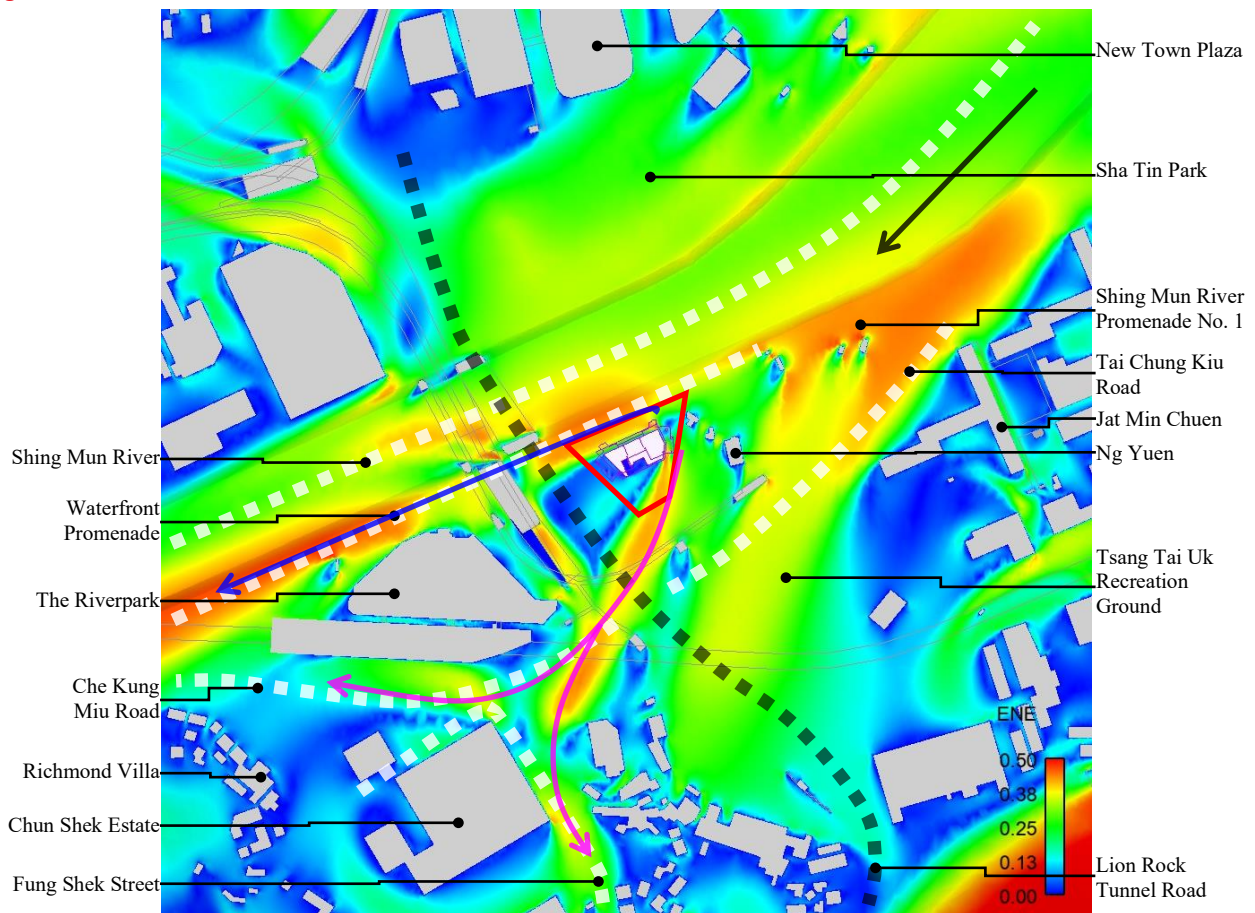


Figure 40 Contour Plot of Proposed Scheme under ENE Wind

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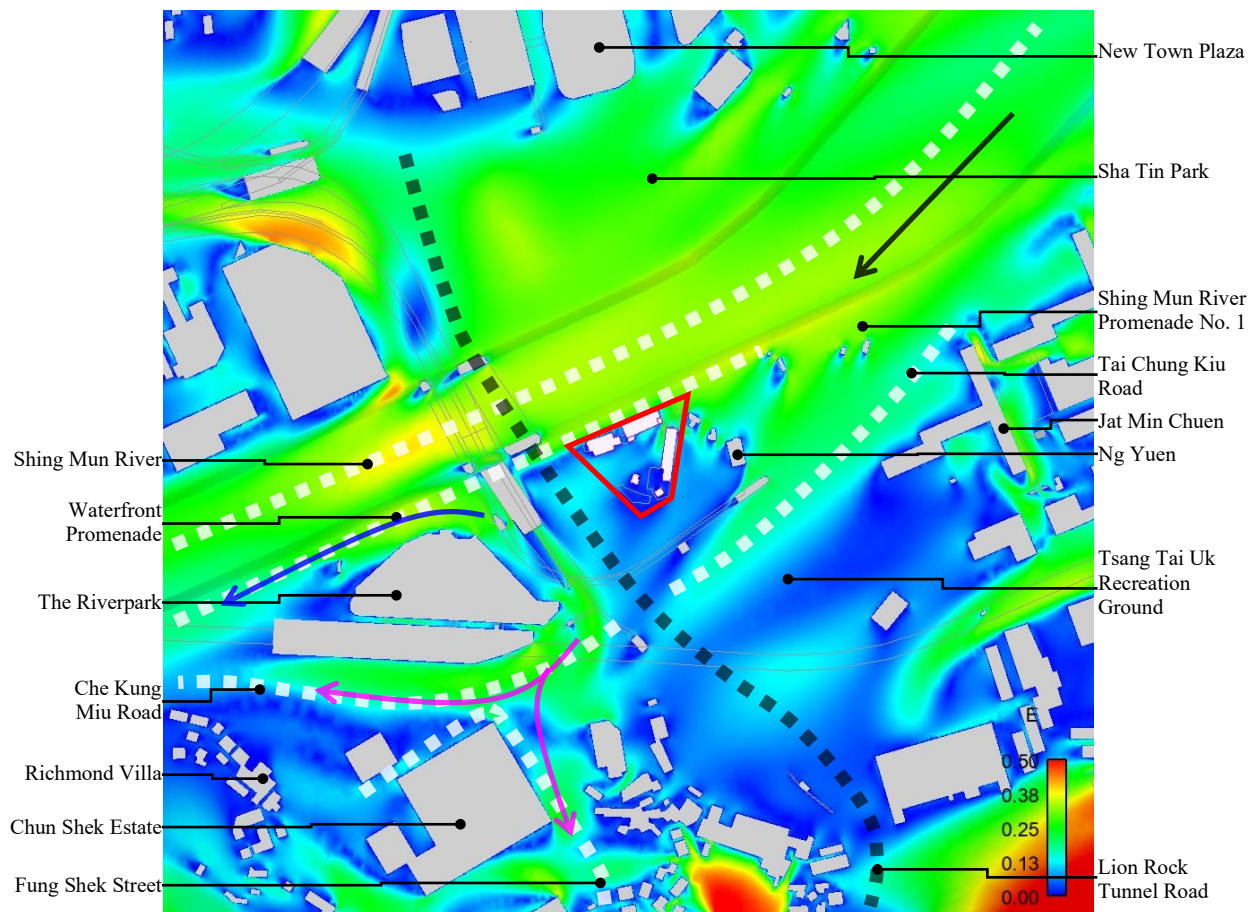


Figure 41 Contour Plot of Baseline Scheme under E Wind

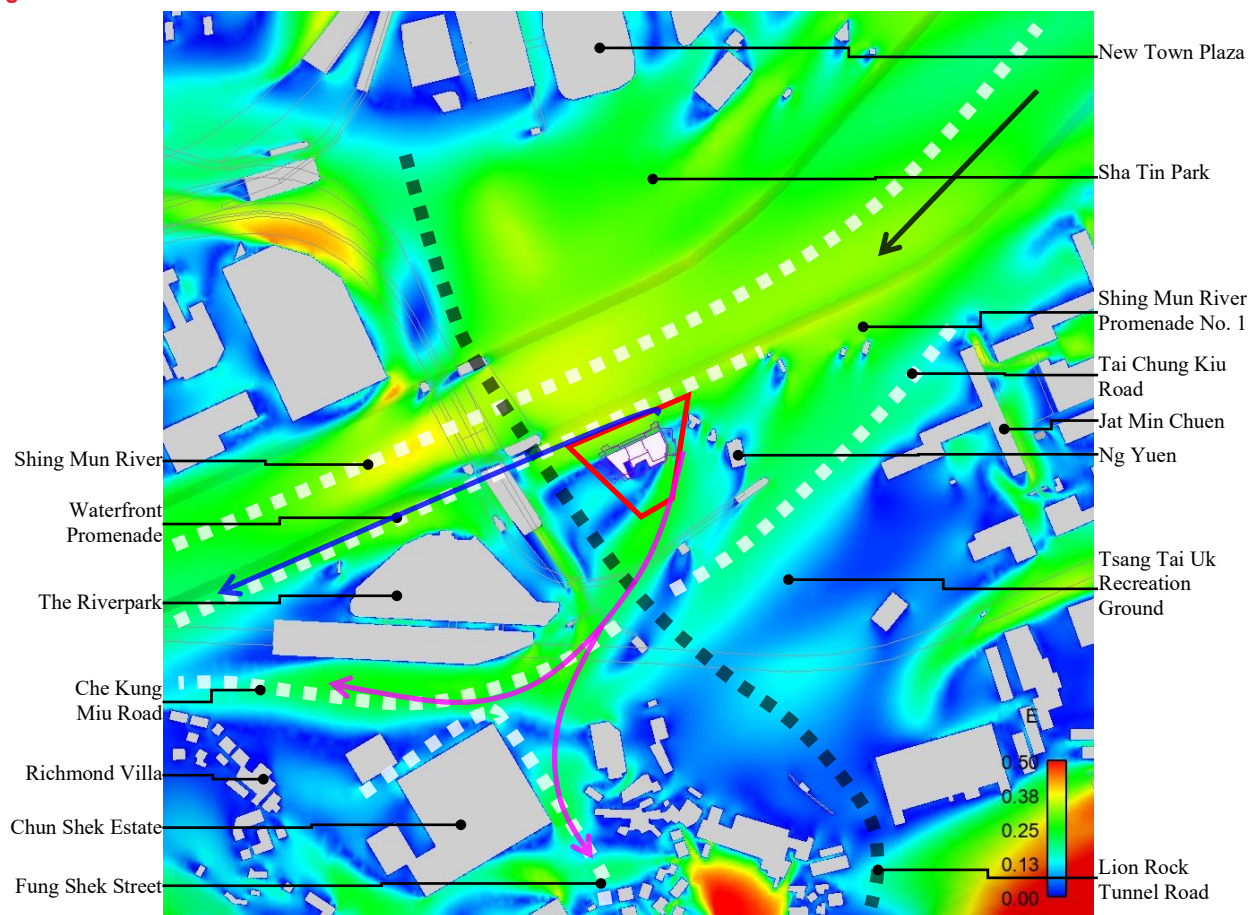


Figure 42 Contour Plot of Proposed Scheme under E Wind

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7.3.4 ESE Wind

The overall wind performance of the Baseline and the Proposed Schemes under ESE wind is presented in Figure 43 and Figure 44 respectively.

The Application Site is shielded by mid to high-rise residential cluster such as Jat Min Chuen (max. ~95mPD). Wind environment near the Application Site is dominated by upwind buildings with minor difference in both Schemes. Incoming wind would penetrate the building separation to reach the Application Site from the east. The incoming wind direction is illustrated with **Black Arrow** in Figure 43 and Figure 44.

Under Baseline Scheme, mid and high-level winds would skim over the Application Site and ventilate the waterfront across the Shing Mun River, where slightly higher VR would be observed (**Red Circle** in Figure 43).

Under Proposed Scheme, due to taller building height, the Application Site would shield the leeward side including areas mentioned in the waterfront across the Shing Mun River mentioned in above paragraph, where slightly lower VR would be observed. However, with the elongated tower alignment, the Application Site would divert more incoming wind, towards waterfront on the closer side of the Shing Mun River (**Red Arrows** in Figure 44).

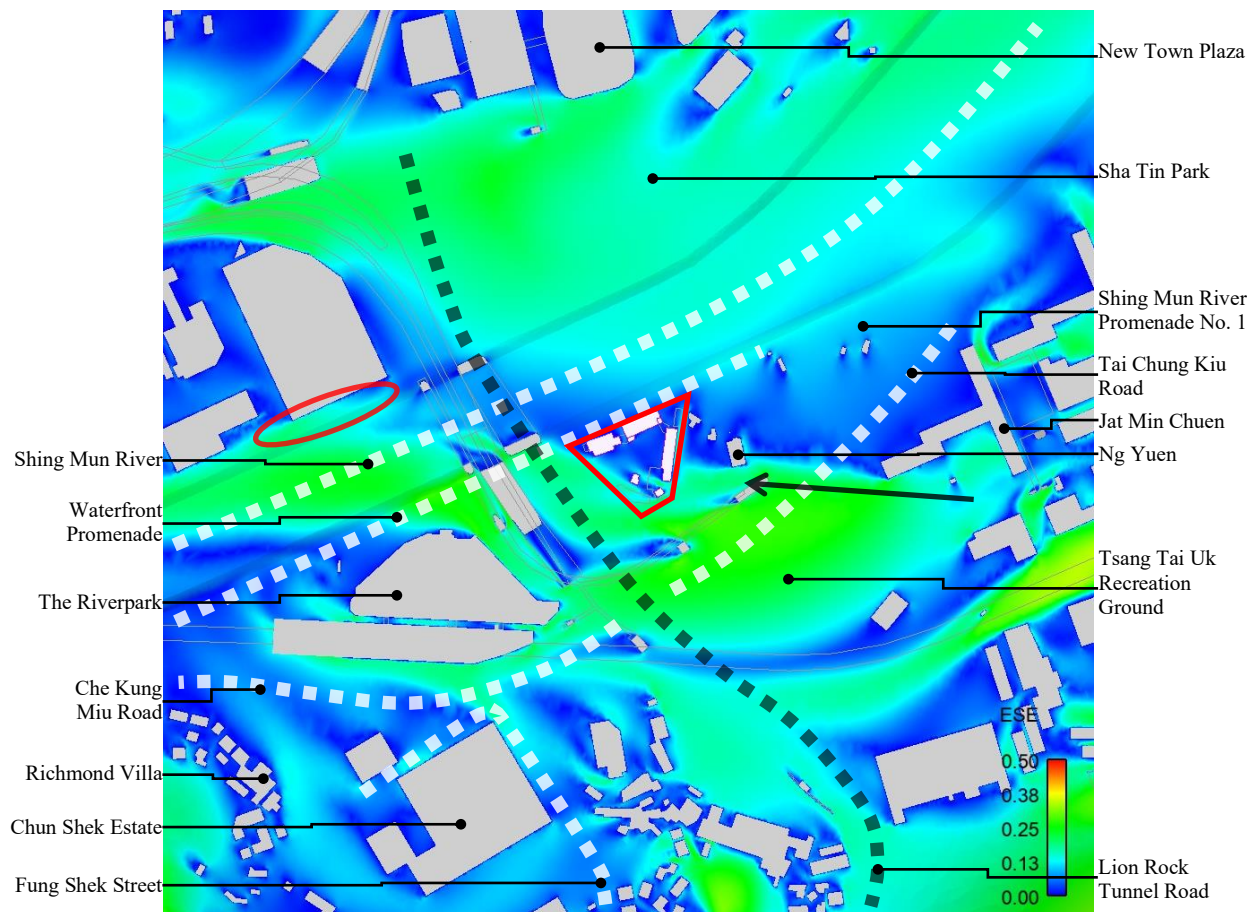


Figure 43 Contour Plot of Baseline Scheme under ESE Wind

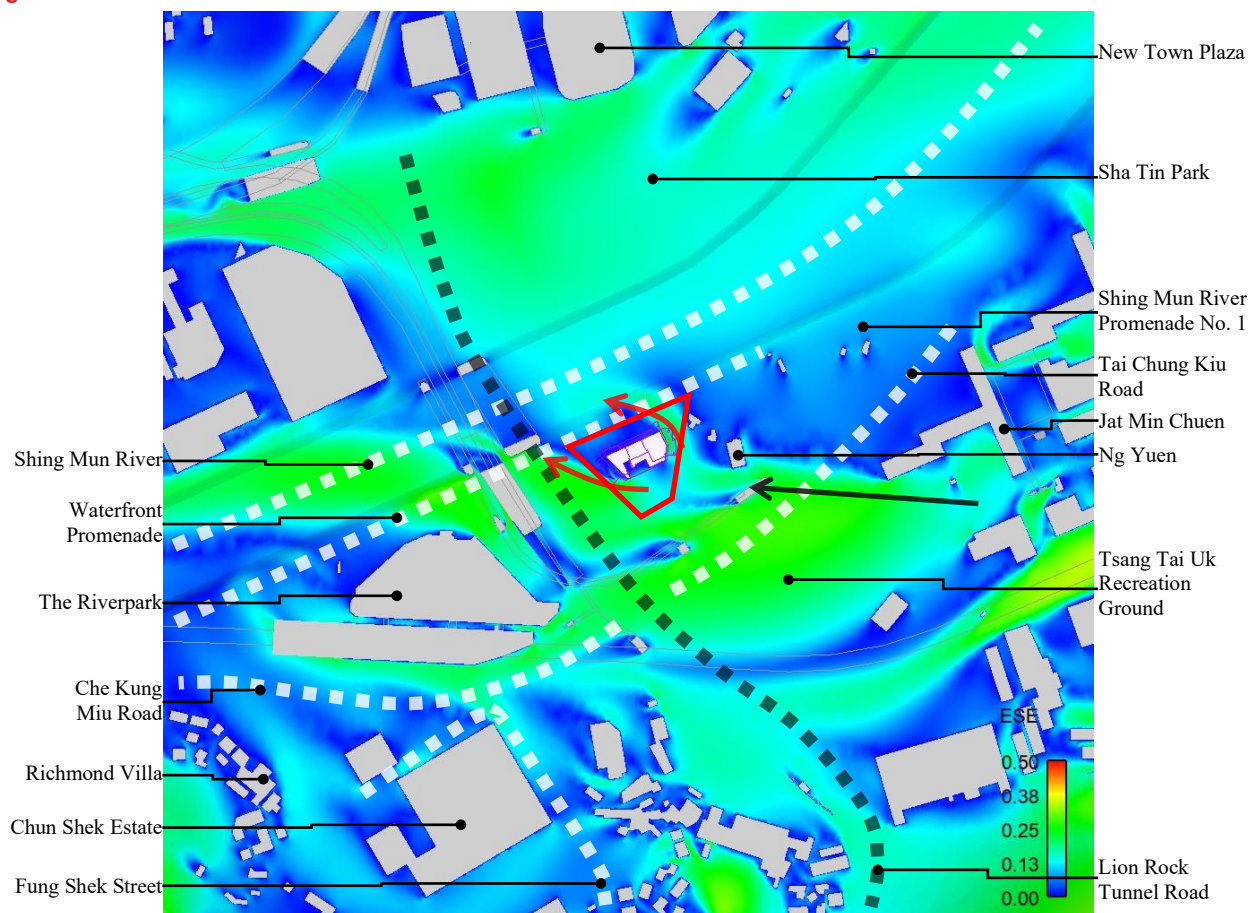


Figure 44 Contour Plot of Proposed Scheme under ESE Wind

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7.3.5 SSE Wind

The overall wind performance of the Baseline and the Proposed Schemes under SSE wind is presented in Figure 45 and Figure 46 respectively.

The Application site is located at the leeward side of relatively unobstructed areas of Tsang Tai Uk Recreation Ground. However, the wind availability is limited by the hilly terrain on the far side such as Lion Rock. Low and mid-level incoming winds availability near the Application Site as well as southern section of Lion Rock Tunnel Road are supplemented by the downwash effect from The Riverpark (max. ~155mPD), while high level incoming wind is from the prevailing wind direction along Lion Rock Tunnel Road. The incoming wind direction is illustrated with Black Arrow in Figure 45 and Figure 46.

Under the Baseline Scheme, the larger open area on the southwestern side allows more downwashed wind from The Riverpark to penetrate, reaching waterfront, where slightly higher VR would be observed (**Red Arrow** in Figure 45).

Under the Proposed Scheme, taller building height of the Application Site would capture the high level wind along Lion Rock Tunnel Road, inducing downwash effect to ventilate southeastern open space within the Application Site and waterfront (**Pink Arrows** in Figure 46). However, it would shield the leeward side such as Sha Tin Park where slightly lower VR would be observed (**Black Circle** in Figure 46), while 15m air path allows mid and high-level wind to skim over, alleviating the ventilation impact.

In addition, downwashed wind from the Application Site would flow against the downwashed wind from The Riverpark. Hence, downwashed wind from The Riverpark would be travelled toward the southeast, along Lion Rock Tunnel Road, where slightly higher VR would be observed (**Red Arrow** in Figure 46).

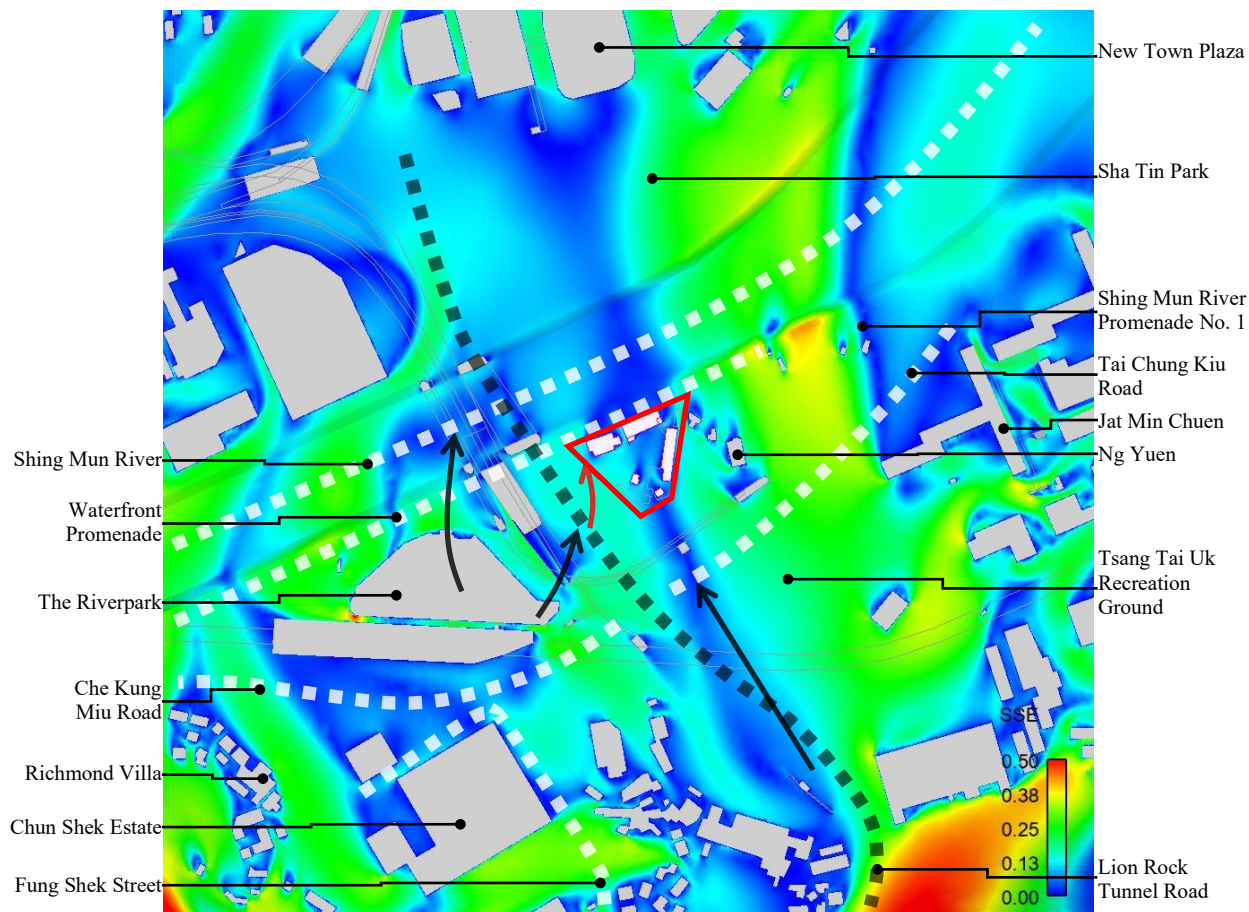


Figure 45 Contour Plot of Baseline Scheme under SSE Wind

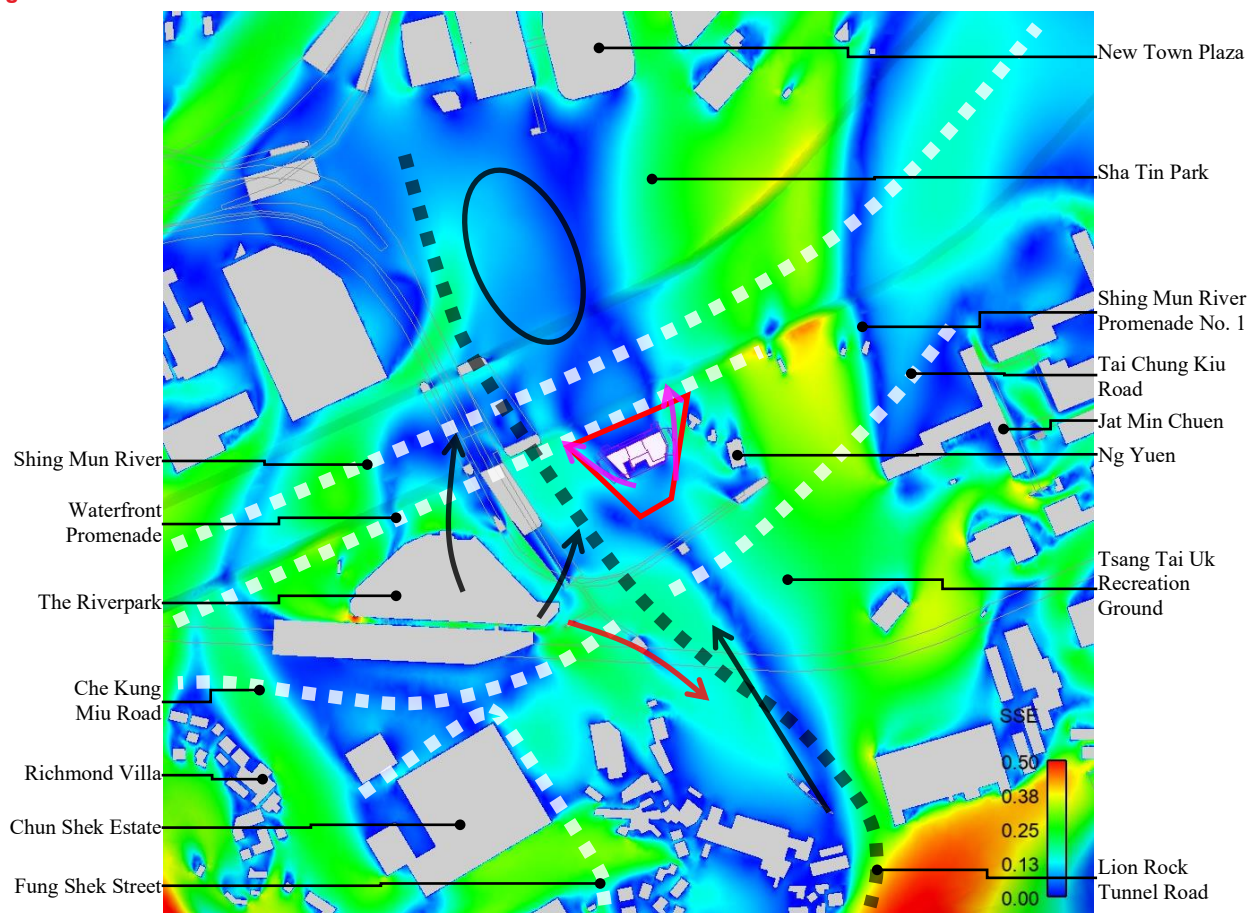


Figure 46 Contour Plot of Proposed Scheme under SSE Wind

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7.3.6 S/SSW Winds

The overall wind performance of the Baseline and the Proposed Schemes under S/SSW winds are presented in Figure 47/Figure 49 and Figure 48/Figure 50 respectively.

For S wind, the Application Site is at the leeward side of Lion Rock, the incoming wind diverted by the mountain to reach the surrounding of the Application Site in SSE direction. Near the Application Site the upwind environment are dominated by The Riverpark (max. ~155mPD), Chun Shek Estate (max. ~83mPD) and villages (max. ~25mPD) separated by Lion Rock Tunnel Road. Incoming wind would mainly supplement by the downwash effect from The Riverpark, reach the Application Site Lion Rock Tunnel Road. The incoming wind direction is illustrated with **Black Arrow** in Figure 47/Figure 49 and Figure 48/Figure 50.

Under the Baseline Scheme, incoming wind would enter open space within the Application Site and penetrate via building separations towards waterfront (**Red Arrow** in Figure 47/Figure 49).

Also, mid and high-level incoming wind would skim over the Application site to reach ventilate the leeward side, where slightly higher VR would be observed (**Pink Arrow** in Figure 47/Figure 49). Under S wind, Sha Tin Park would benefit from the air stream, while under SSW wind, it would arrive on the waterbody of Shing Mun River where impact to pedestrian is minimal.

Under the Proposed Scheme, due to taller building height, the Application Site would shield areas mentioned in the above paragraph. However, incoming wind would flow around the Application Site, together with the setback from southeastern boundary, to ventilate to alleviate the ventilation impact on waterfront (**Red Arrows** in Figure 48/Figure 50).

Under SSW wind, due to strong incoming wind (compared to S wind), portion of mid and high-level incoming wind would be diverted by the Application Site towards east and ventilate Tai Chung Kiu Road and open space of Jat Min Chuen, where slightly higher VR would be observed (**Blue Circle** in Figure 50).

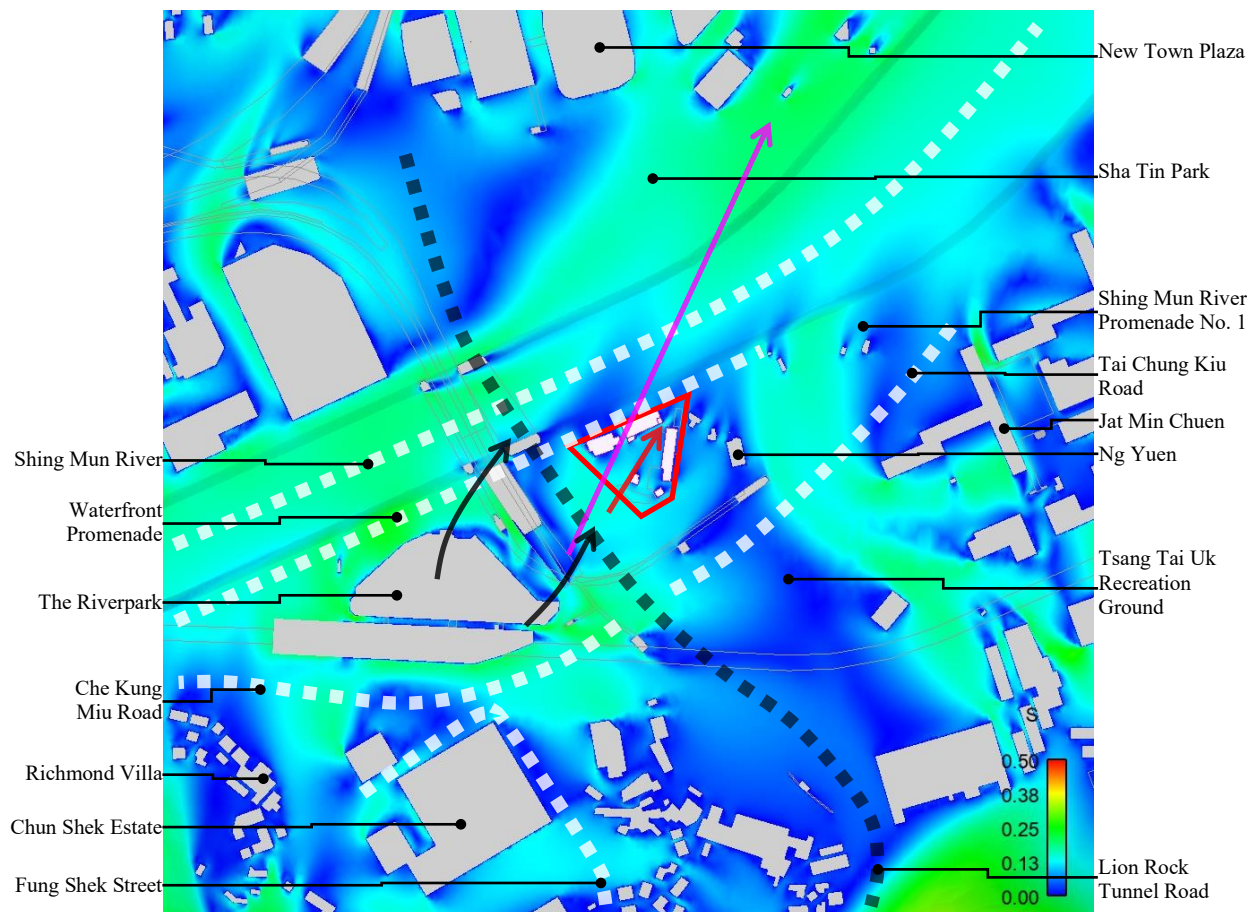


Figure 47 Contour Plot of Baseline Scheme under S Wind

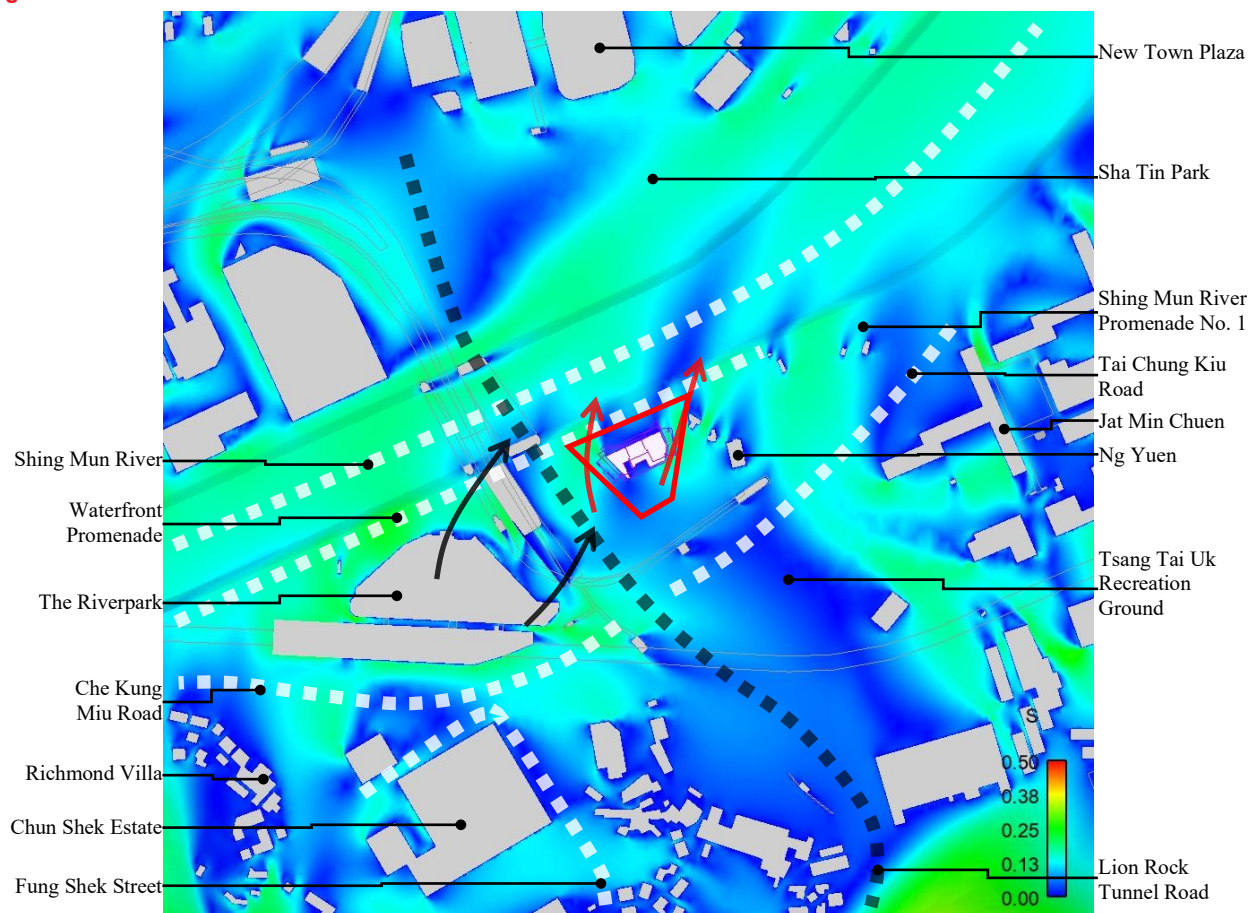


Figure 48 Contour Plot of Proposed Scheme under S Wind

Application for Amendment of Plan under S12A of the Town Planning Ordinance (Cap. 131), to Rezone the Application Site from "Open Space" to "Residential (Group A) 11" at Sha Tin Town Lot 310 in D.D. 184, Sha Tin

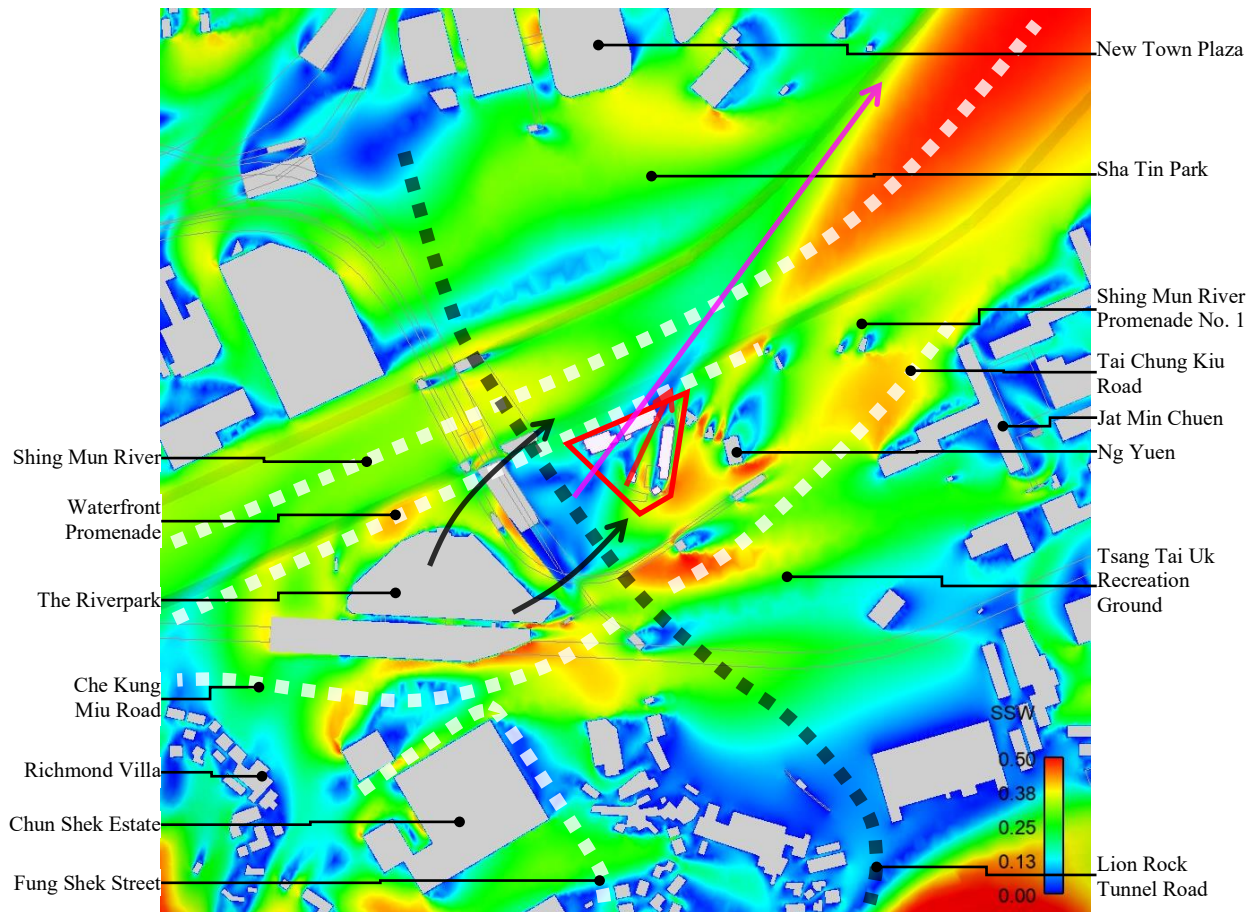


Figure 49 Contour Plot of Baseline Scheme under SSW Wind

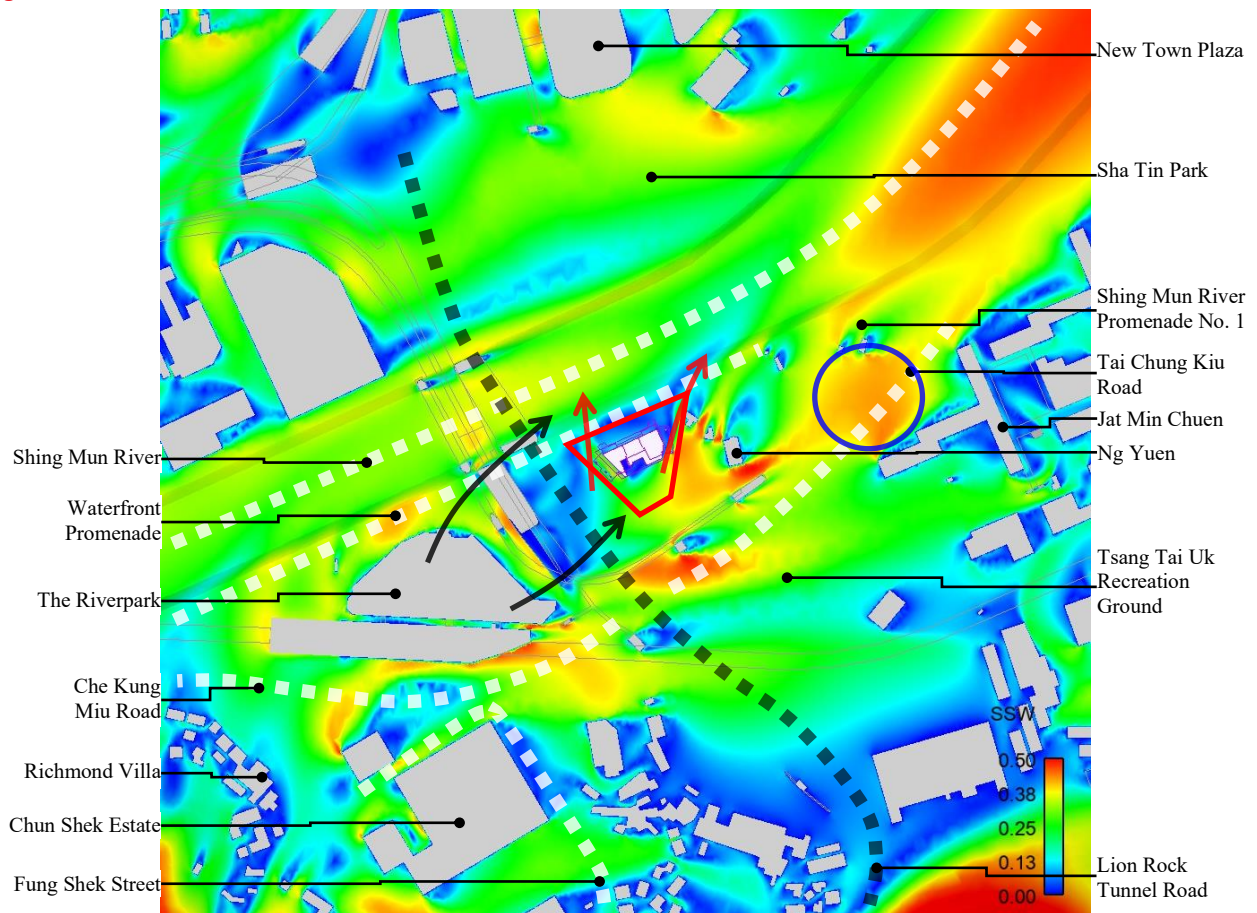


Figure 50 Contour Plot of Proposed Scheme under SSW Wind

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7.3.7 SW Wind

The overall wind performance of the Baseline and the Proposed Schemes under SW wind is presented in Figure 51 and Figure 52 respectively.

The Application Site is located at the leeward side of The Riverpark (max. ~155mPD). Wind environment near the Application Site is dominated by upwind buildings with minor difference in both Schemes. Some incoming wind would reach the Application Site via Shing Mun River. The incoming wind direction is illustrated with **Black Arrow** in Figure 51 and Figure 52.

Under both Schemes, the incoming wind along Shing Mun River would be diverted by the Application Site and travels along southwestern site boundary. Under the Baseline Scheme, the smaller podium footprint and shorter podium edge allow the air stream to reach the open space at the centre of the Application Site. Under the Proposed Scheme, the longer podium edge guide the air stream further towards Tai Chung Kiu Road. As a result, the difference wind pattern would be observed (**Red Arrow** in Figure 51 and Figure 52).

In addition, under the Proposed Scheme, the air stream traveling towards Tai Chung Kiu Road limits the incoming wind along Tai Chung Kiu Road from entering Ng Yuen, where a slightly lower VR is observed (**Red Circle** in Figure 52).

Along northwestern site boundary, under the Proposed Scheme, incoming wind utilise reduced podium footprint to ventilate along waterfront and northwestern open space within the Application Site, where slightly higher VR would be observed (**Blue Arrow** in Figure 52).

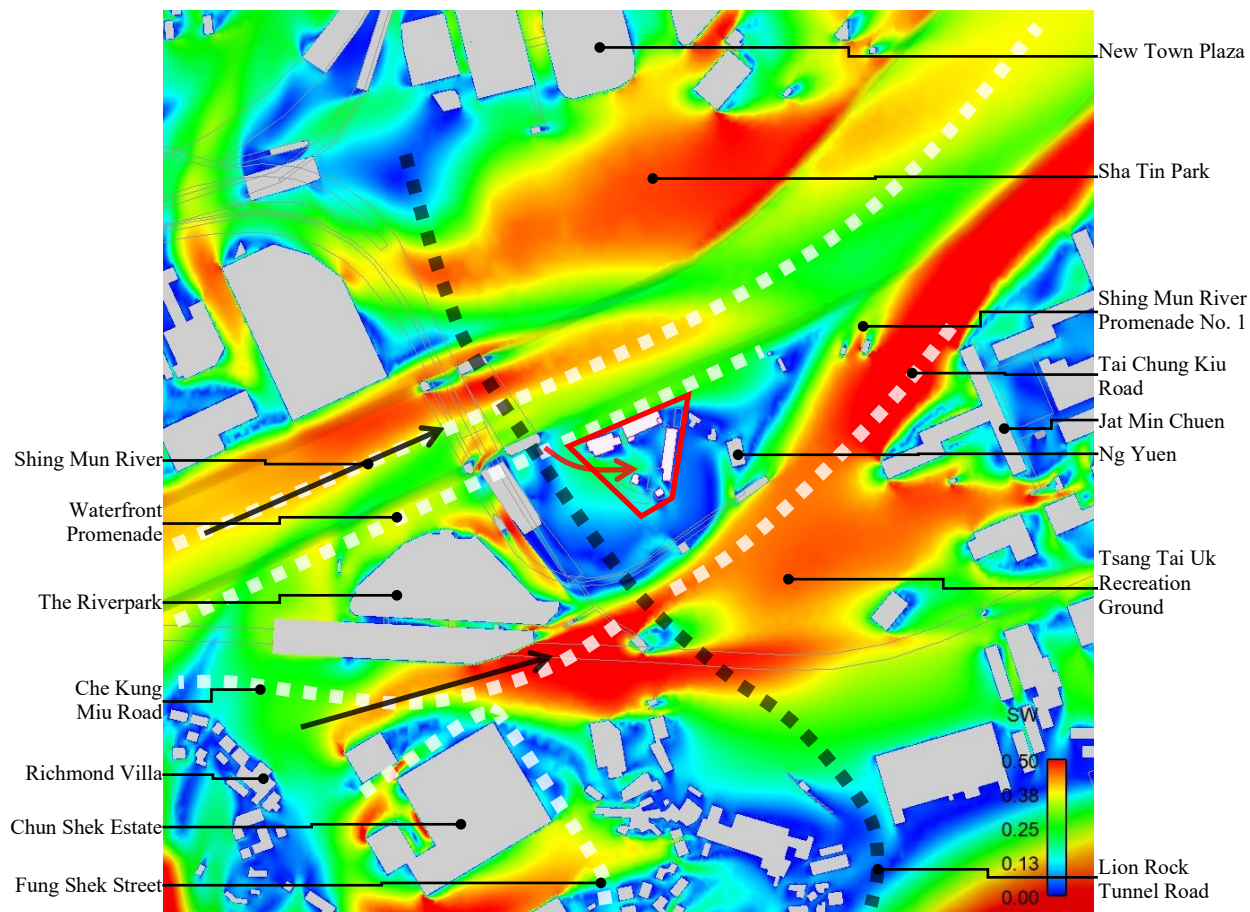


Figure 51 Contour Plot of Baseline Scheme under SW Wind

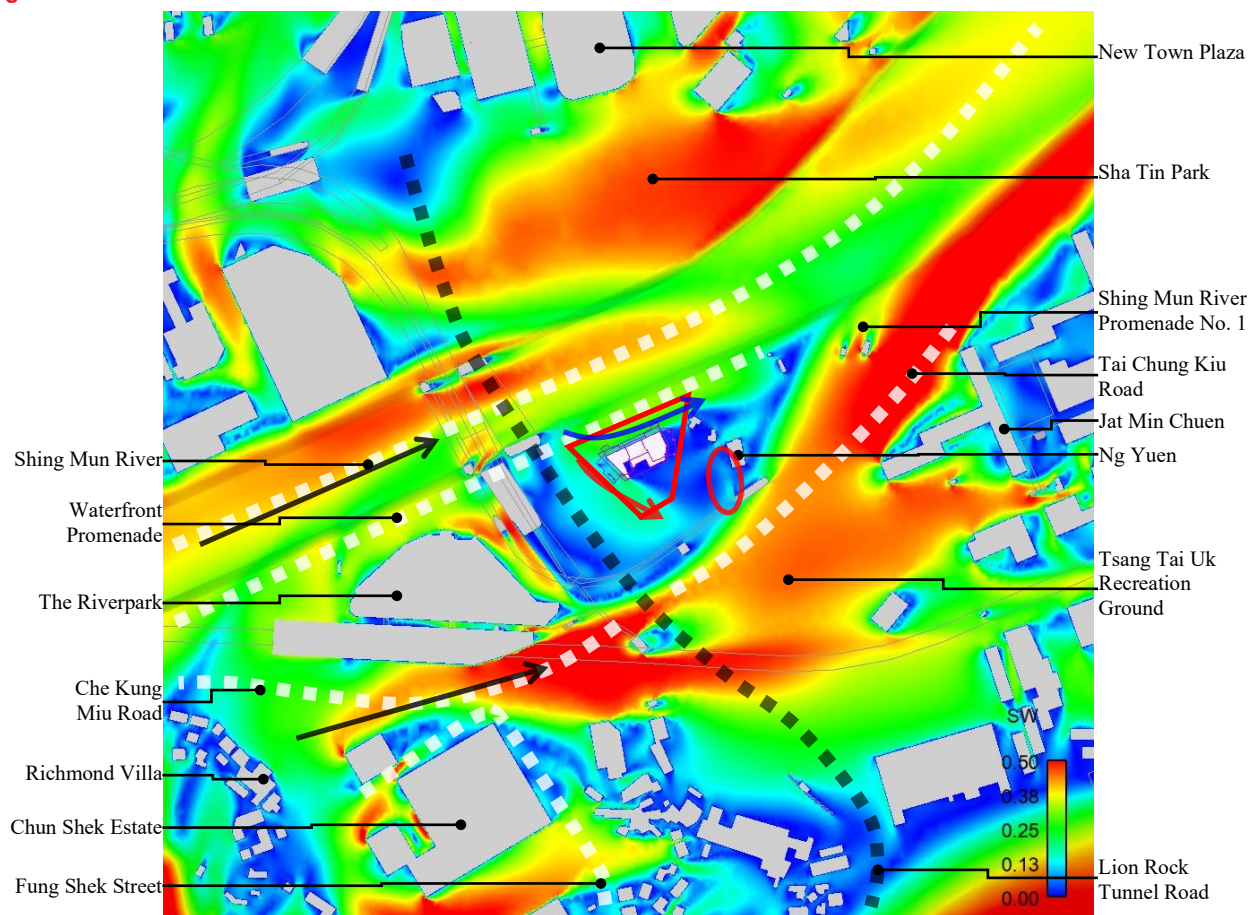


Figure 52 Contour Plot of Proposed Scheme under SW Wind

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7.3.8 WSW Wind

The overall wind performance of the Baseline and the Proposed Schemes under WSW wind is presented in Figure 53 and Figure 54 respectively.

The Application Site is located at the leeward side of The Riverpark (max. ~155mPD). Wind environment near the Application Site is dominated by upwind buildings with minor difference in both Schemes. Some incoming wind would reach the Application Site via Shing Mun River. The incoming wind direction is illustrated with **Black Arrow** in Figure 53 and Figure 54.

Under both Schemes, incoming wind travel along Shing Mun River would be diverted by the Application Site. Under the Baseline Scheme, the smaller podium footprint and shorter podium edge allow the air stream to reach the open space at the centre of the Application Site. Under the Proposed Scheme, the setback from southeastern boundary improves wind permeability, together with the longer podium edge, the air stream is guided further towards Tai Chung Kiu Road. As a result, the difference wind pattern would be observed (**Red Arrow** in Figure 53 and Figure 54).

Under Proposed Scheme, incoming wind along Shing Mun River would utilise the reduced podium footprint to ventilate waterfront, where slightly higher VR would be observed (**Pink Arrow** in Figure 54).

Under Proposed Scheme, due to taller building height, the Application Site would shield the mid and high level wind from reaching leeward side including Ng Yuen, Tai Chung Kiu Road and Jat Min Chuen, where slightly lower VR would be observed (**Red Circles** in Figure 53). However, without mid and high-level wind reaching the leeward side, air stream traveling along waterfront would recirculate towards Ng Yuen and traveling along Tai Chung Kiu Road would recirculate towards Shing Mun River Promenade Garden No.1, alleviating the ventilation impact (**Black Circles** in Figure 54).

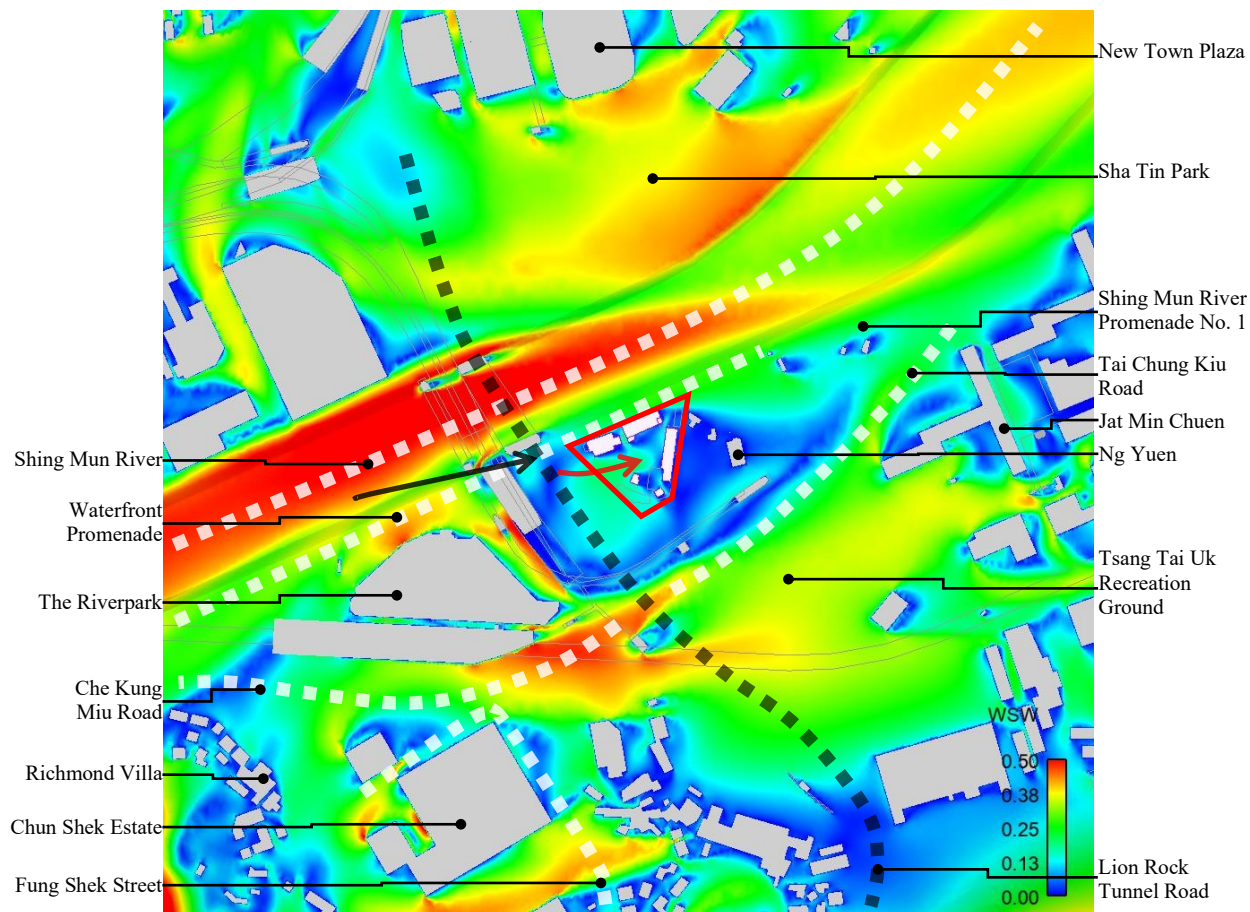


Figure 53 Contour Plot of Baseline Scheme under WSW Wind

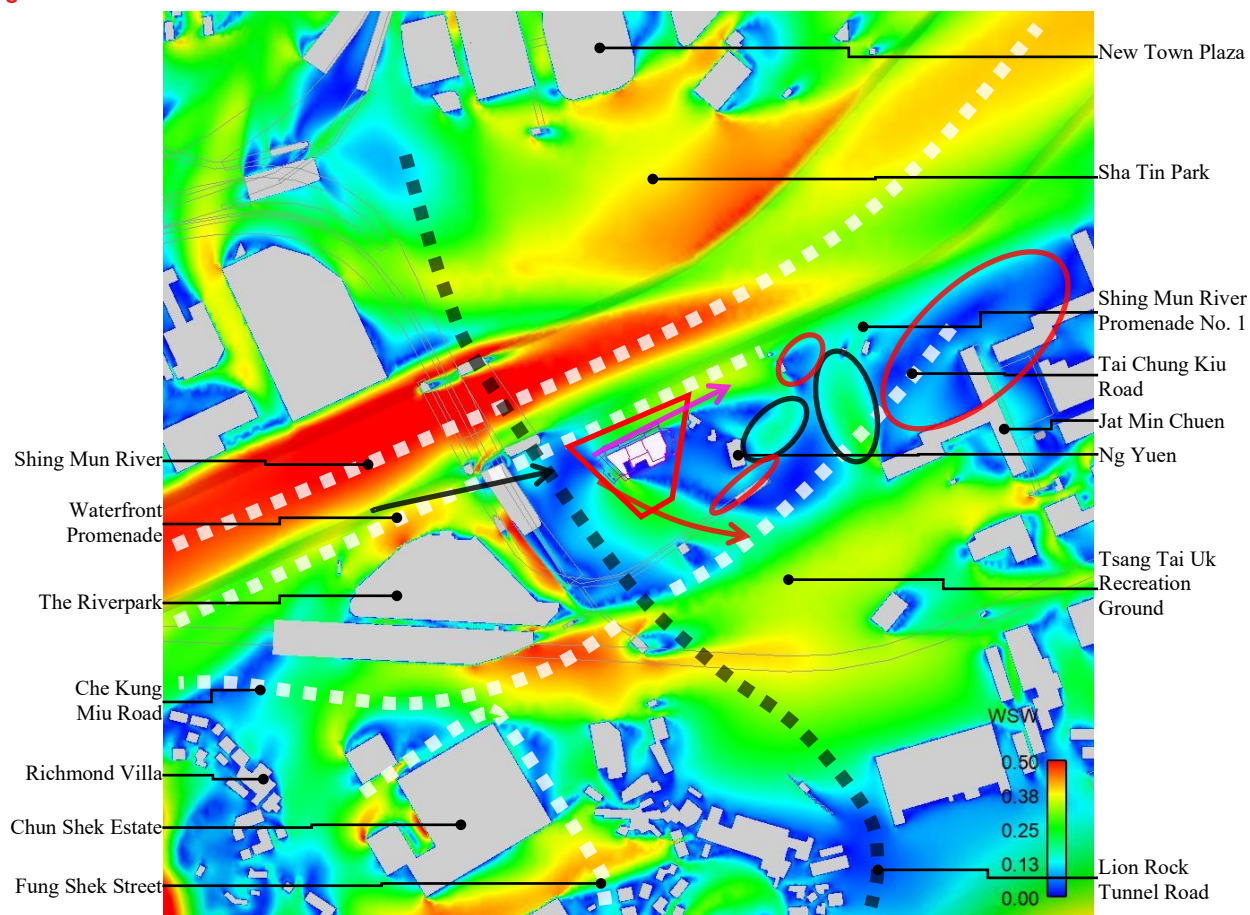


Figure 54 Contour Plot of Proposed Scheme under WSW Wind

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7.4 Focus Areas

The average VR of all test points are determined and extracted. The results of all test points are presented in Appendix E. A total of 26/29 focus areas for the Baseline/Proposed Schemes respectively. The associated test points and averaged VR for focus areas are tabulated in Table 8 and Table 9 respectively. The location of each focus area is shown in Figure 55 and Figure 56. Higher VR has been highlighted in bold for reference.

Table 8 Focus Areas and Corresponding Test Points

Focus Area		Test Points
1	Sha Tin Centre Street	O199 – O204
2	Lion Rock Tunnel Road (Northern Section)	O190 – O199
3	Sha Tin Park	O212 – O261
4	Shing Mun River Promenade 1	O4 – O9
5	Sha Tin Government Secondary School	O1 – O3
6	Shing Mun River Promenade 2	O170 – O176
7	Ng Yuen	O161 – O169
8	Shing Mun River Promenade 3	O10 – O16
9	The Riverpark	O17 – O27
10	Che Kung Miu Road	O28 – O36
11	Fung Shek Street	O37 – O44
12	Sha Tin Tau	O49 – O57
13	Carpark near Sha Tin Tau	O45 – O48
14	Sha Tin Tau Village Sitting-out Area	O58 – O61
15	Lion Rock Tunnel Road (Southern Section)	O177 – O189
16	Sha Ha Wai	O62 – O67
17	Tsang Tai Uk Recreation Ground	O68 – O95
18	Sha Kok Street	O96 – O101
19	Sha Tin Wai Dr. CFW Memorial School	O102 – O105
20	Jat Min Chuen Street	O98 – O108
21	Jat Min Cheun	O109 – O123
22	Tai Chung Kiu Road	O124 – O137
23	Shing Mun River Promenade Garden No.1	O138 – O158
24	Pak Hok Ting Street	O203, O205 – O208
25	Yi Ching Lane	O209 – O211
26	Open Space within the Application Site	S1 – S14
27	Air Path (Proposed Scheme Only)	P11, P26, P27, S1 – S4

Focus Area		Test Points
28	Podium Setback from Northwestern Site Boundary	P1-P2, P10-P31, S4-S6, S13-S14
29	Podium Setback from Southeastern Site Boundary	P6-P15, S1, S8-S11

Table 9 Focus Areas and Corresponding VR

Focus Area		Annual		Summer	
		Baseline	Proposed	Baseline	Proposed
1	Sha Tin Centre Street	0.11	0.11	0.15	0.15
2	Lion Rock Tunnel Road (Northern Section)	0.20	0.20	0.21	0.21
3	Sha Tin Park	0.26	0.26	0.27	0.27
4	Shing Mun River Promenade 1	0.26	0.22	0.30	0.29
5	Sha Tin Government Secondary School	0.10	0.07	0.13	0.13
6	Shing Mun River Promenade 2	0.27	0.29	0.20	0.21
7	Ng Yuen	0.22	0.22	0.18	0.19
8	Shing Mun River Promenade 3	0.37	0.30	0.27	0.27
9	The Riverpark	0.26	0.22	0.25	0.25
10	Che Kung Miu Road	0.29	0.27	0.28	0.28
11	Fung Shek Street	0.20	0.19	0.16	0.16
12	Sha Tin Tau	0.14	0.13	0.11	0.11
13	Carpark near Sha Tin Tau	0.15	0.16	0.24	0.24
14	Sha Tin Tau Village Sitting-out Area	0.08	0.07	0.07	0.08
15	Lion Rock Tunnel Road (Southern Section)	0.16	0.19	0.17	0.17
16	Sha Ha Wai	0.11	0.11	0.15	0.15
17	Tsang Tai Uk Recreation Ground	0.18	0.19	0.24	0.24
18	Sha Kok Street	0.15	0.15	0.23	0.23
19	Sha Tin Wai Dr. CFW Memorial School	0.13	0.13	0.20	0.20
20	Jat Min Chuen Street	0.18	0.18	0.27	0.27
21	Jat Min Cheun	0.16	0.16	0.19	0.19
22	Tai Chung Kiu Road	0.29	0.29	0.29	0.27
23	Shing Mun River Promenade Garden No.1	0.31	0.31	0.27	0.27
24	Pak Hok Ting Street	0.19	0.19	0.24	0.24

Focus Area		Annual		Summer	
		Baseline	Proposed	Baseline	Proposed
25	Yi Ching Lane	0.23	0.23	0.30	0.30
26	Open Space within the Application Site	0.11	0.21	0.12	0.15
27	Air Path (Proposed Scheme Only)	-	0.24	-	0.16
28	Podium Setback from Northwestern Site Boundary	-	0.27	-	0.19
29	Podium Setback from Southeastern Site Boundary	-	0.24	-	0.17

Annual Condition

Under annual condition, the incoming winds are mostly from NE, ENE and E directions.

Under the Baseline Scheme, prominent downwash effect from The Riverpark (especially under NE wind) would ventilate **#4 Shing Mun River Promenade 1** and **#5 Sha Tin Government Secondary School, #8 Shing Mun River Promenade 3, #9 The River Park** and **#10 Che Kung Miu Road**, as discussed in Sections 7.3.1 to 7.3.3.

Under the Proposed Scheme, downwashed wind from the Application Site would *ventilate #6 Shing Mun River Promenade 2, #15 Lion Rock Tunnel Road (Southern Section), #26 Open Space within the Application Site*, as discussed in Sections 7.3.1 to 7.3.3.

Summer Condition

Under annual condition, the incoming winds are mostly from SW and SSW direction, with some from E direction.

Under Baseline Scheme, mid and high-level incoming wind would skim over the Application Site to ventilate the leeward side including **#22 Tai Chung Kiu Road**, as discussed in Section 7.3.8.

Under Proposed Scheme, reduced podium footprint of the Application Site improved wind permeability, allows incoming wind to ventilate **#26 Open Space within the Application Site**, as discussed in Section 7.3.7.

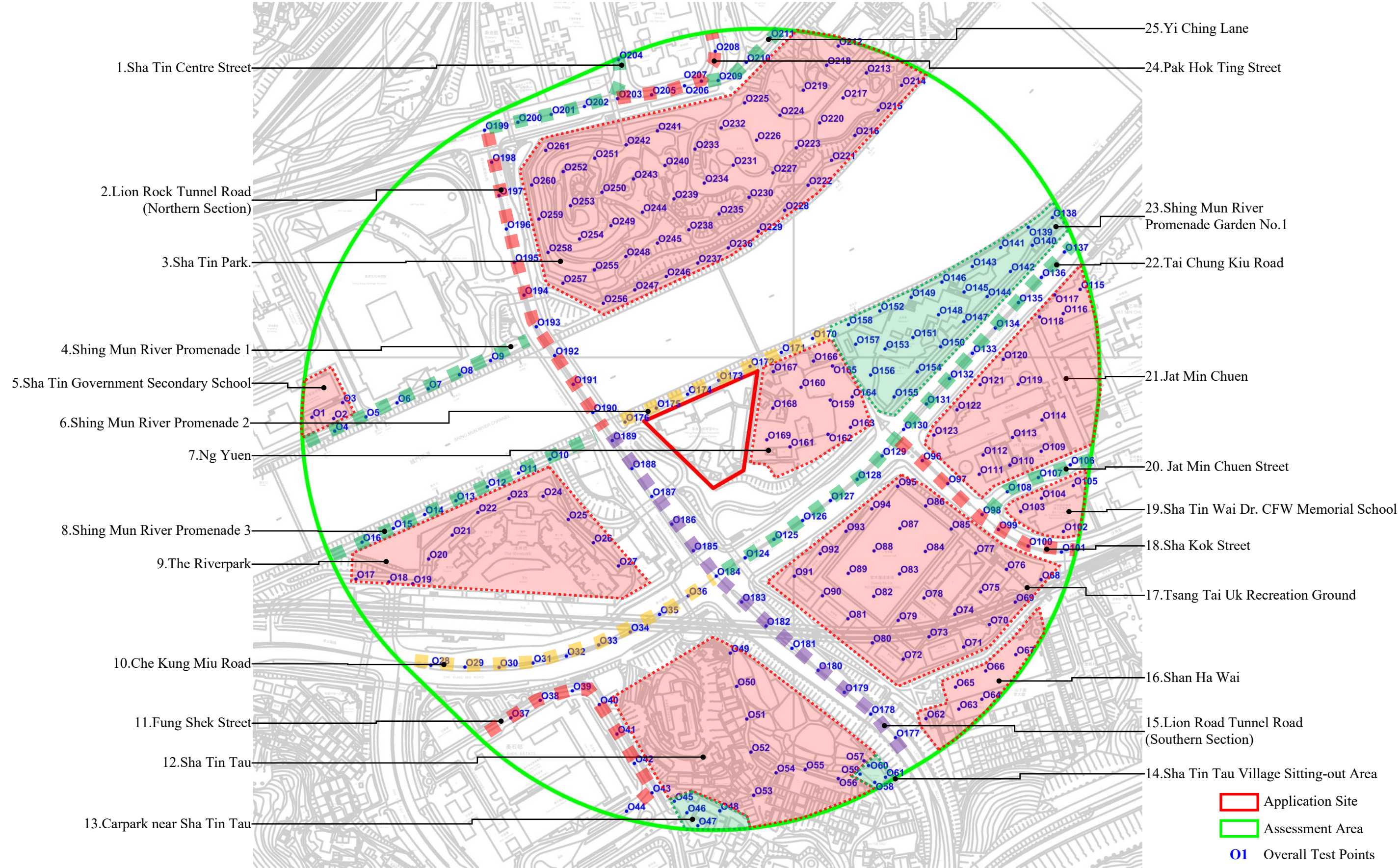


Figure 55 Location of Focus Areas (1 of 2)

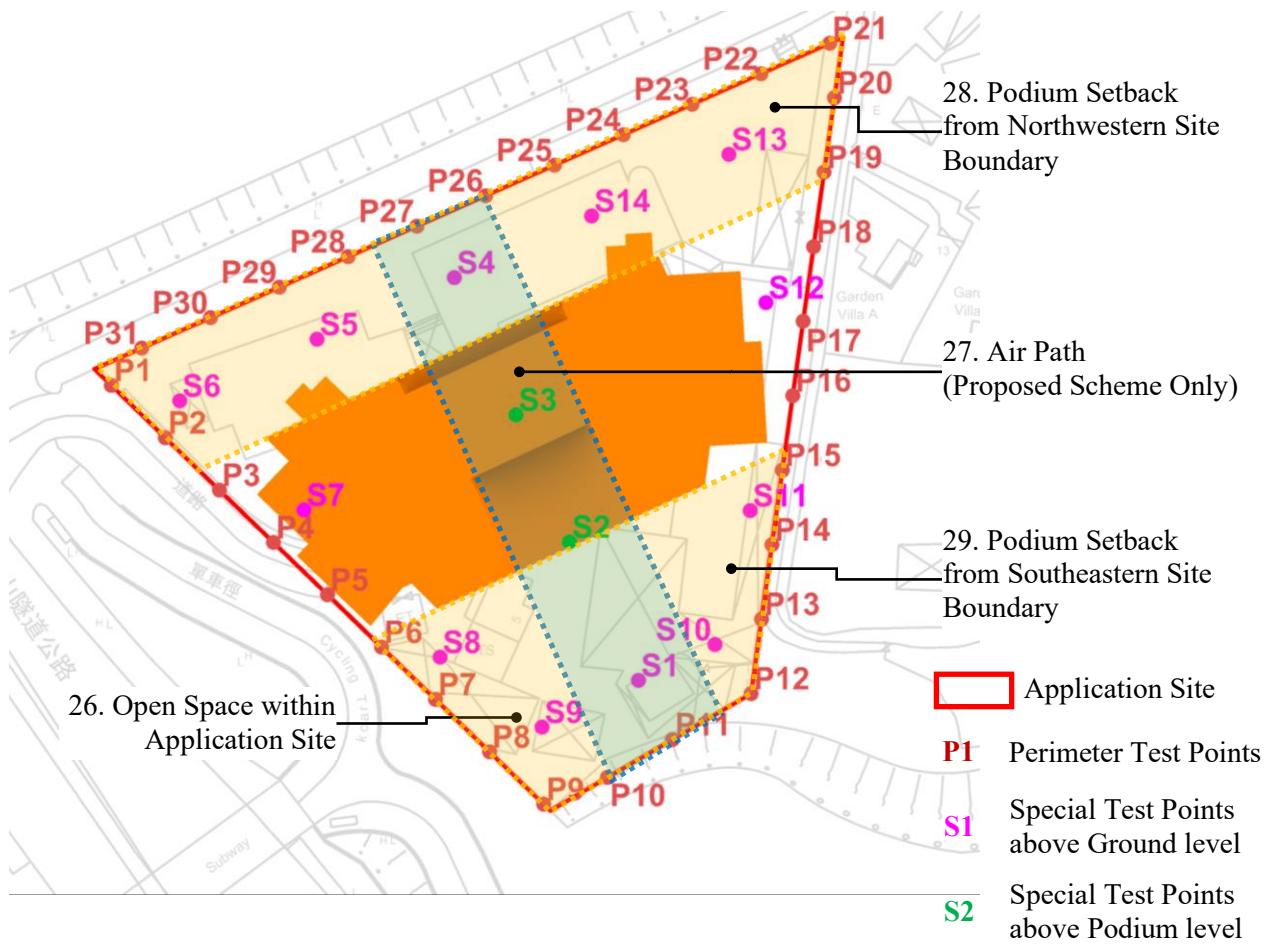


Figure 56 Location of Focus Areas (2 of 2)

8. Conclusion

8.1 Overview

An Air Ventilation Assessment – Initial Study was conducted to assess the ventilation performance of the Baseline Scheme and the Proposed Scheme in accordance with the AVA Technical Circular ^[1].

The Baseline and the Proposed Schemes were assessed using Computational Fluid Dynamics (CFD) techniques. A series CFD simulation using Realizable k-ε turbulence model were performed under annual and summer wind conditions with reference to the AVA Technical Circular ^[1]. For annual wind condition, NNE, NE, ENE, E, ESE, SSW and SW were selected which gives total wind frequency of 75.8% over a year. For summer wind condition, E, ESE, SSE, S, SSW, SW and WSW were selected which gives total wind frequency of 75.9%.

The Velocity Ratio (VR) as reference to the AVA Technical Circular ^[1] was employed to assess the ventilation performance of the Baseline and Proposed Scheme. Total 31 perimeter test points, 261 overall test points and 14 special test points were allocated to assess the overall ventilation performance along the site boundary, within the Application Site and within the Assessment Area.

8.2 Result

The results shows that:

- Under annual and summer conditions, the Proposed Scheme achieved higher SVR (0.24/0.18 vs 0.16/0.15) compared to the Baseline Scheme, mainly due to the downwash effect from the Application Site.
- Also, under annual and summer condition, both Schemes achieved similar LVR (0.22 and 0.22), meaning the ventilation within the Assessment Area are similar in both Schemes.
- In particular, Shing Mun River Promenade Garden No.1 and Tsang Tai Uk Recreation Ground and Sha Tin Park, which are larger nearby open space, achieved similar VR under annual and summer conditions. Indicating the ventilation performance are similar in both Schemes at these open spaces.
- Also, area near the Application Site including waterfront along northwestern boundary and Lion Rock Tunnel Road (southern section) achieved slightly higher VR under annual condition, and Open Space within Application Site achieved slightly higher VR under annual and summer conditions. Indicating the ventilation performance are slightly enhanced under Proposed Scheme at these focus areas.
- On the other hand, area near The Riverpark including waterfront, The Riverpark, and Che Kun Miu Road achieved slightly lower VR under annual condition, and Tai Chung Kiu Road achieved slightly lower VR under summer condition. Indicating the ventilation performance are slightly reduced under Proposed Scheme at these focus areas.
- The wind enhancement features, including the podium setbacks from the northwestern and southeastern site boundaries, improve wind permeability around the Application Site. These setbacks allow more incoming wind to flow around the Application Site and utilised by downwashed wind from the Application Site, enhancing overall air movement in the surrounding area. However, alternative wind enhancement features may achieve similar ventilation performance. If alternative wind enhancement features is to be proposed in detailed design stage, AVA is recommended to demonstrate the effectiveness of these features.

9. Reference

- [1] Annex A of Technical Circular No. 1/06 issued by the Housing, Planning and Lands Bureau pertaining specifically to Air Ventilation Assessments, 19th July, 2006
(https://www.devb.gov.hk/filemanager/en/content_679/hplb-etwb-tc-01-06.pdf)
- [2] Planning Department RAMS Data
(http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/)

Appendix A

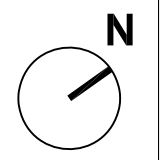
Layout of Baseline and Proposed Schemes

A.1 Layout Plan of Baseline Scheme

A.2 Layout Plan of Proposed Scheme



NOTES:
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KEY PLAN SCALE 1:2000

01	SECOND SUBMISSION	FH	07/26
-	FIRST SUBMISSION	FH	09/25
Rev	Description	By	Date

Consultant
ARUP

Contract No. and Title
SHATIN TOWN LOT 310

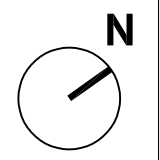
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MASTER LAYOUT PLAN

Drawing no. 299123/22/S12A_1000 (COLOUR)		Rev. 01	
Drawn RH	Date 07/26	Checked FY	Approved FH
Scale 1:200		Status	

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KEY PLAN SCALE 1:2000

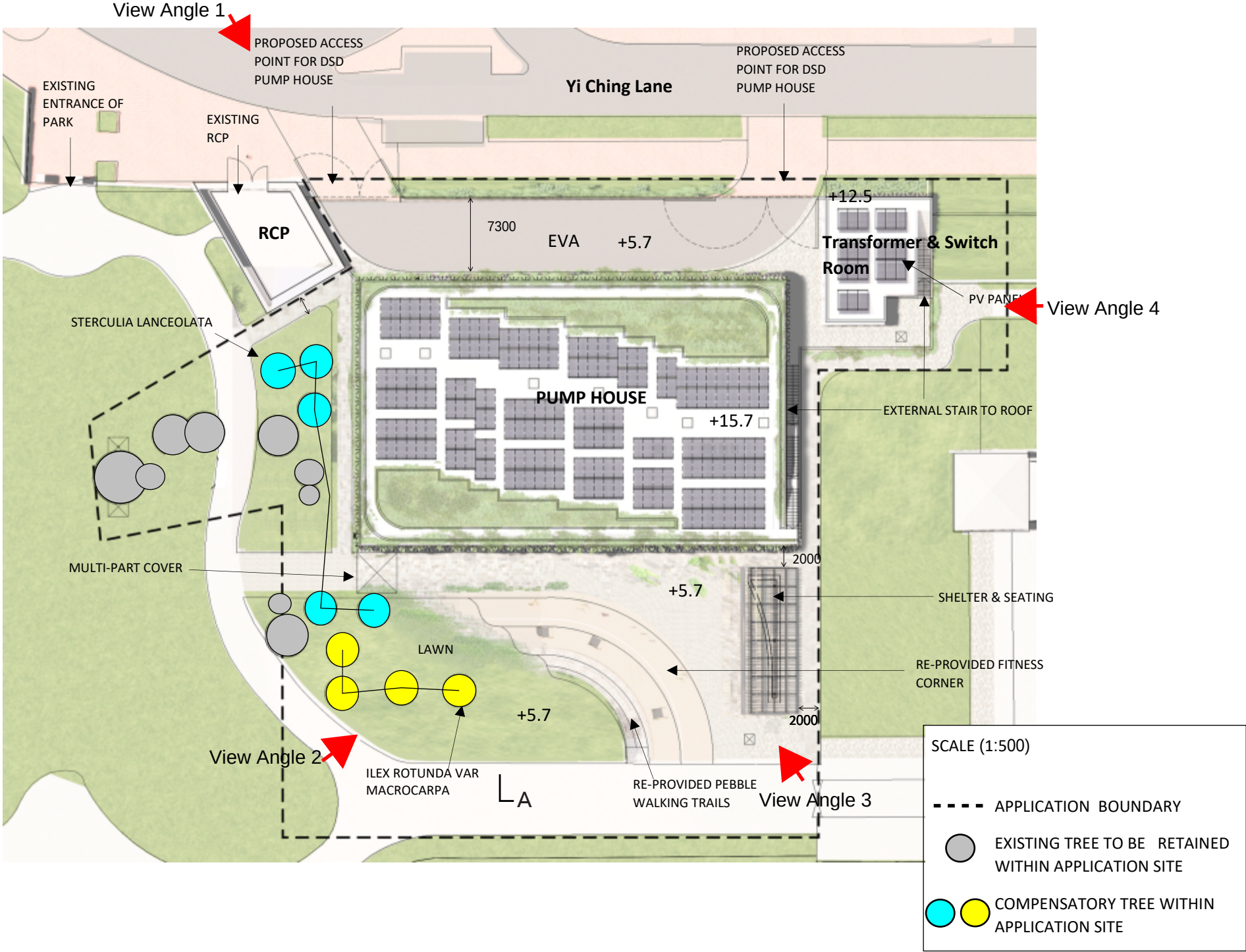
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-	FIRST SUBMISSION	FH	09/25
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title			
SHATIN TOWN LOT 310			
Drawing Title			
GROUND FLOOR PLAN			
Drawing no.			Rev.
299123/22/S12A_1001 (2)			01
Drawn	Date	Checked	Approved
RH	07/26	FY	FH
Scale		Status	
1: 400			
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Appendix B

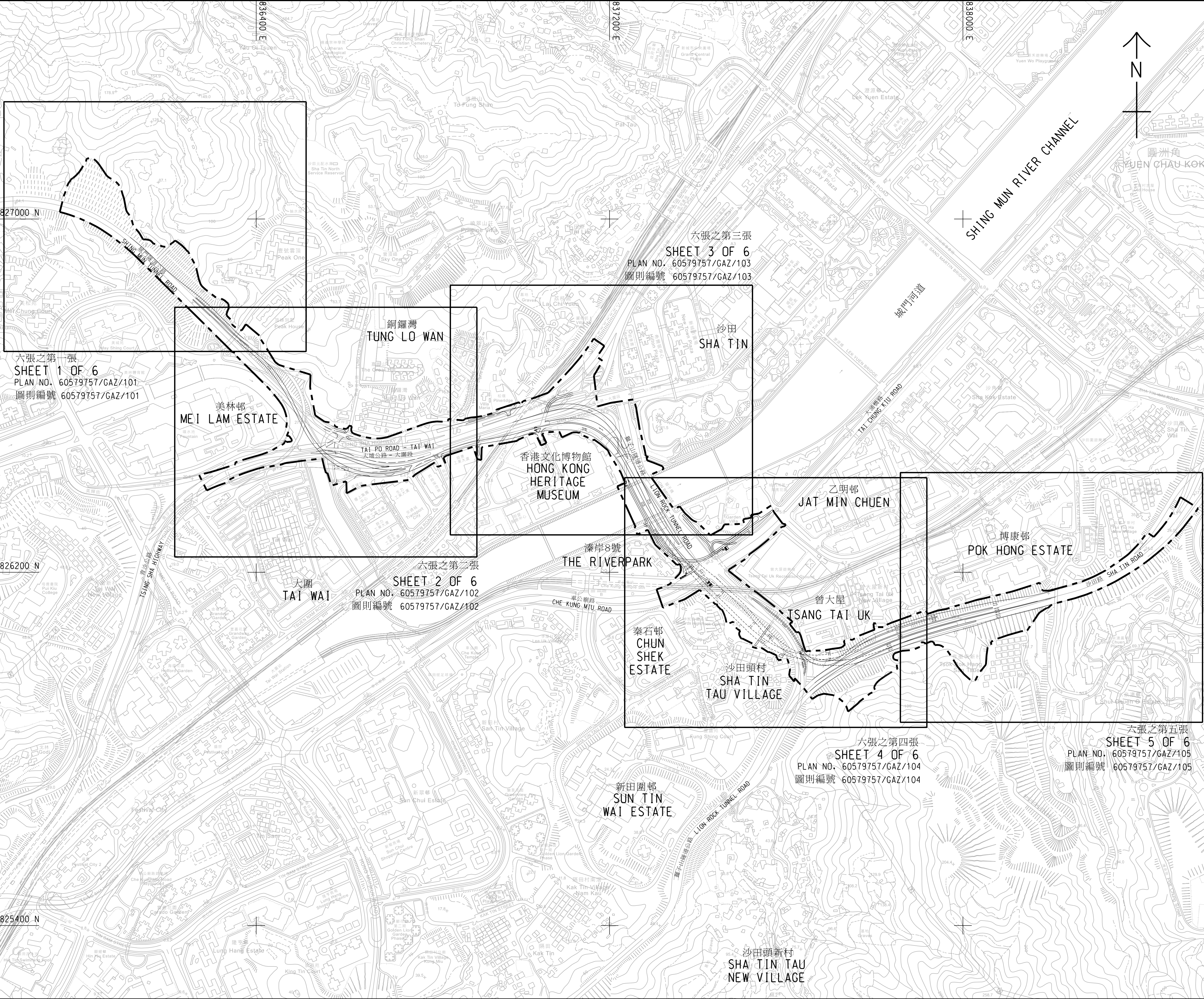
Layout of Planned/WIP/Committed Developments

B.1 Layout Plan of Sha Tin Stormwater Storage Facility under Planned Application No. A/ST/1025

View Angle for Photomontage



B.2 Trunk Road T4 in Sha Tin and Associated Works



註釋：
NOTES:

- 除在其他方面指定外，所有量度以米為單位。
ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
- 所有水平均為約數，以米為單位，並基於香港主水平基準上。
ALL LEVELS ARE APPROXIMATE VALUES AND IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
- 如有需要，施工區界限內部分現有行車道、行人路、單車徑及隧道或會分階段暫時封閉及實施臨時交通安排，以便進行建造工程。
SECTIONS OF THE EXISTING CARRIAGEWAYS, FOOTPATHS, CYCLE TRACKS AND SUBWAYS WITHIN THE LIMIT OF WORKS AREA MAY BE TEMPORARILY CLOSED IN PHASES AND TEMPORARY TRAFFIC ARRANGEMENT MAY BE IMPLEMENTED TO FACILITATE CONSTRUCTION WORKS AS AND WHEN REQUIRED.
- 隔音屏障興建/重建/拆卸工程的位置載於圖則第 60579757/GAZ/106 號（六張之第六張）
FOR LOCATION OF CONSTRUCTION/RECONSTRUCTION/DEMOLITION OF NOISE BARRIERS, PLEASE REFER TO PLAN NO. 60579757/GAZ/106 (SHEET 6 OF 6).

圖例：
LEGEND:

—— 施工區界限
LIMIT OF WORKS AREA

工程名稱 Project title	
工務計劃項目第 7705TH 號 沙田新市鎮第二期 - T4 號主幹路	
PWP ITEM NO. 7705TH SHA TIN NEW TOWN, STAGE 2 - TRUNK ROAD T4	
圖則名稱 Plan title	
根據《道路(工程、使用及補償)條例》 (第 370 章)而在憲報公布之圖則 PLANS FOR GAZETTING UNDER ROADS (WORKS, USE AND COMPENSATION) ORDINANCE (CHAPTER 370)	
圖則編號 Plan no.	索引圖 KEY PLAN
60579757/GAZ/100	比例 Scale A1 1 : 4000
辦事處 Office	
北拓展處 NORTH DEVELOPMENT OFFICE	
 土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	

Appendix C

Contour Plot of Velocity Ratio (VR)

C.1 Baseline Scheme

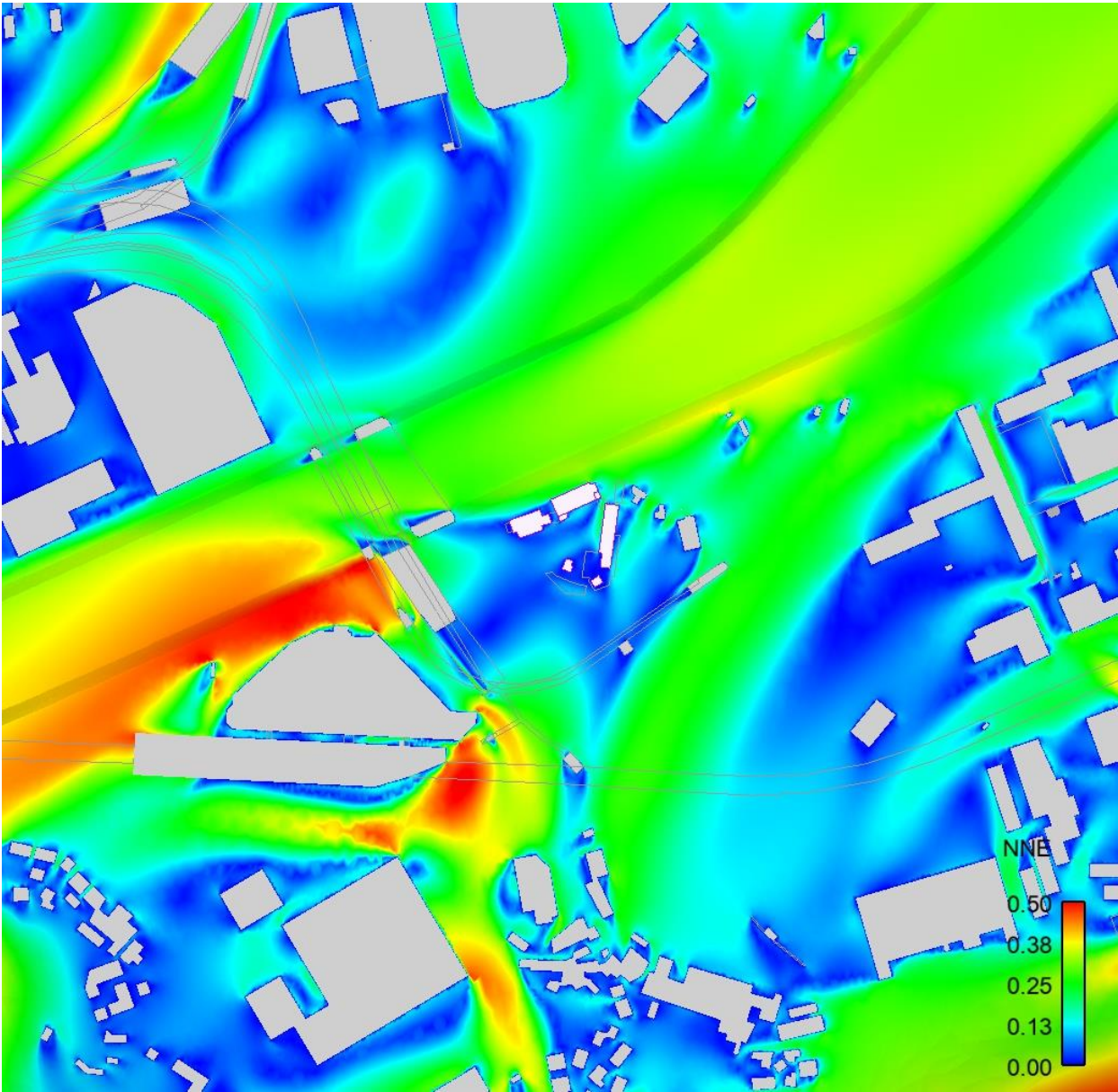


Figure 1 Baseline Scheme Velocity Contour Plot under NNE wind

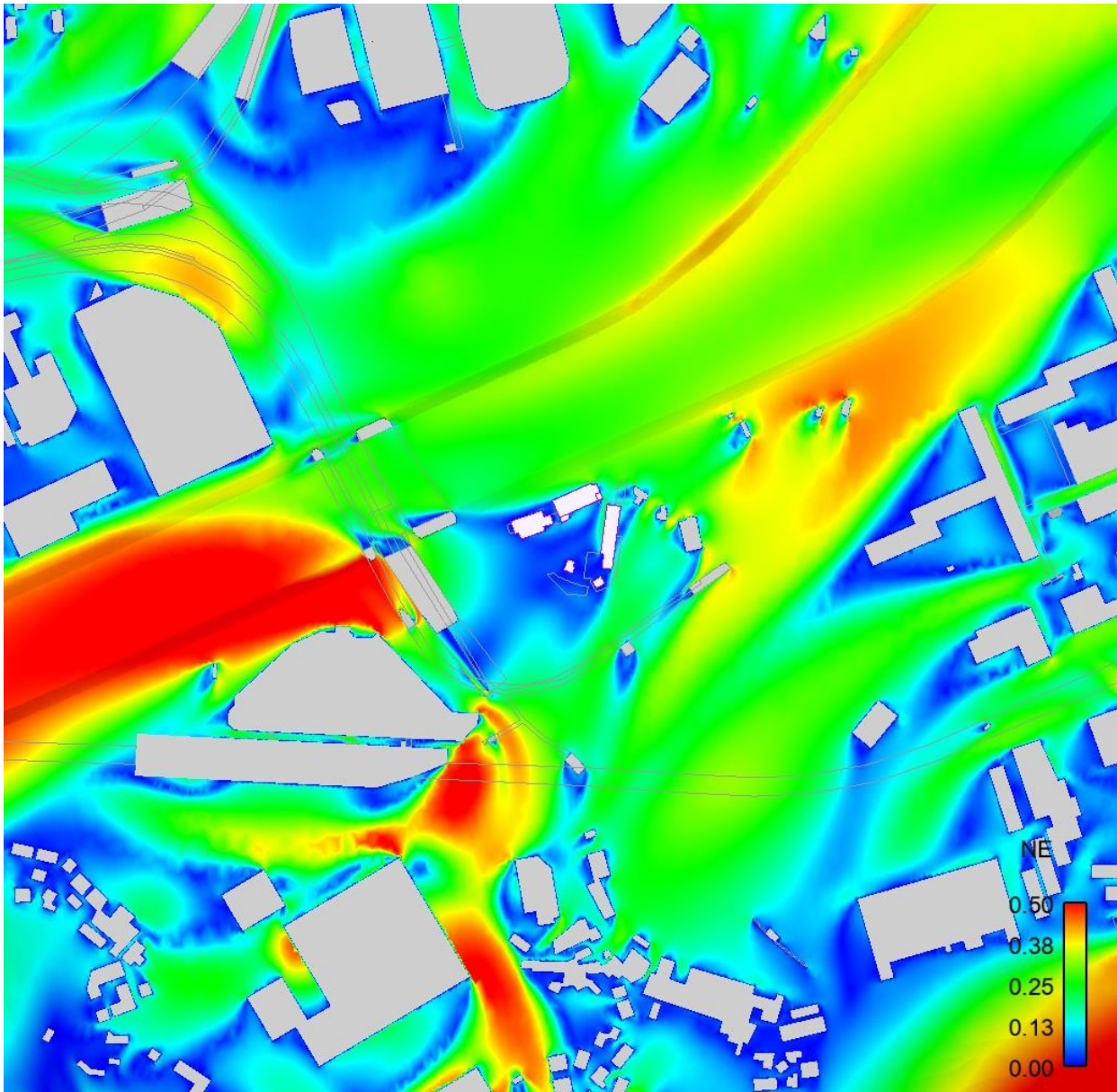


Figure 2 Baseline Scheme Velocity Contour Plot under NE wind

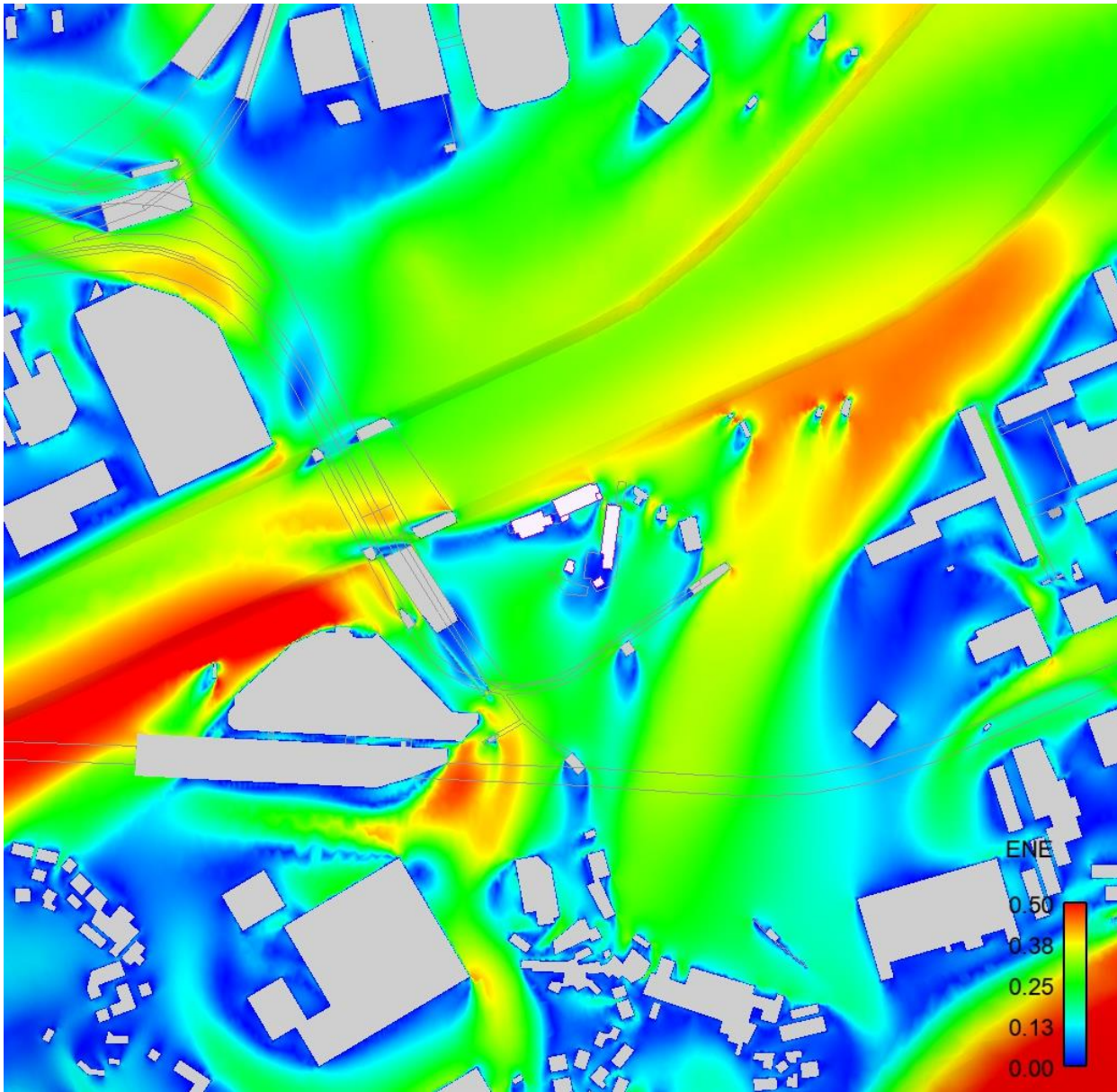


Figure 3 Baseline Scheme Velocity Contour Plot under ENE wind

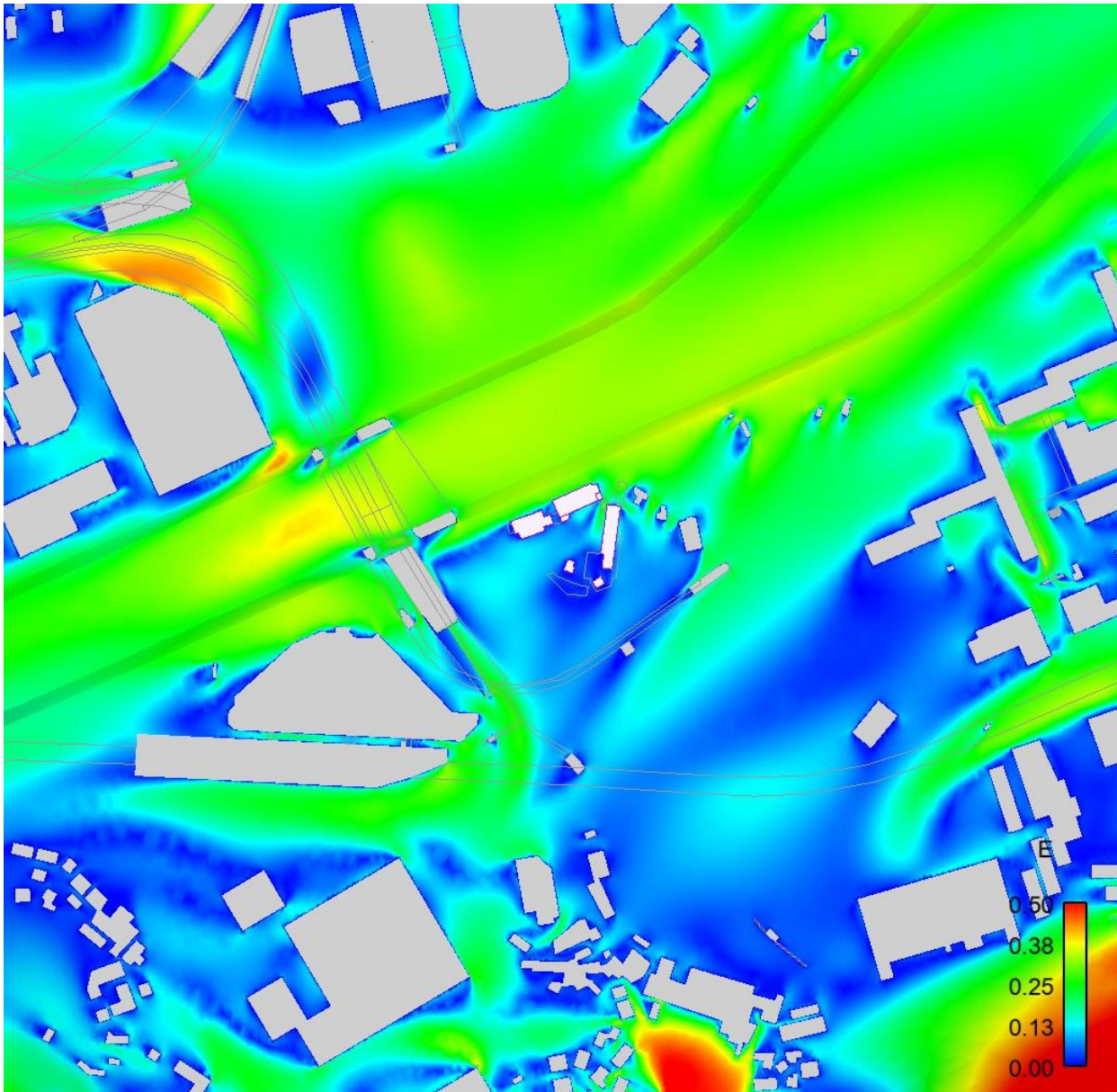


Figure 4 Baseline Scheme Velocity Contour Plot under E wind

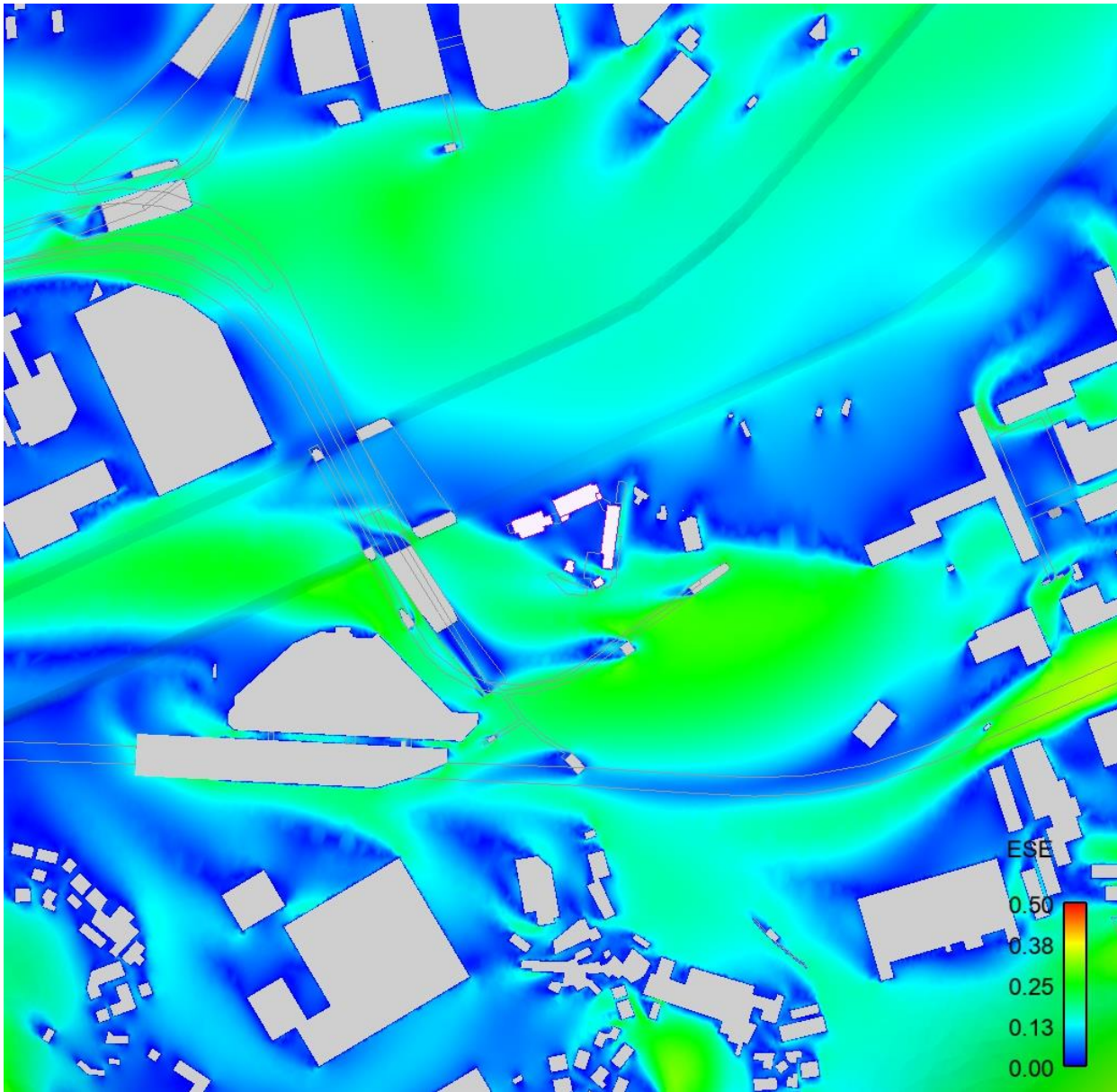


Figure 5 Baseline Scheme Velocity Contour Plot under ESE wind

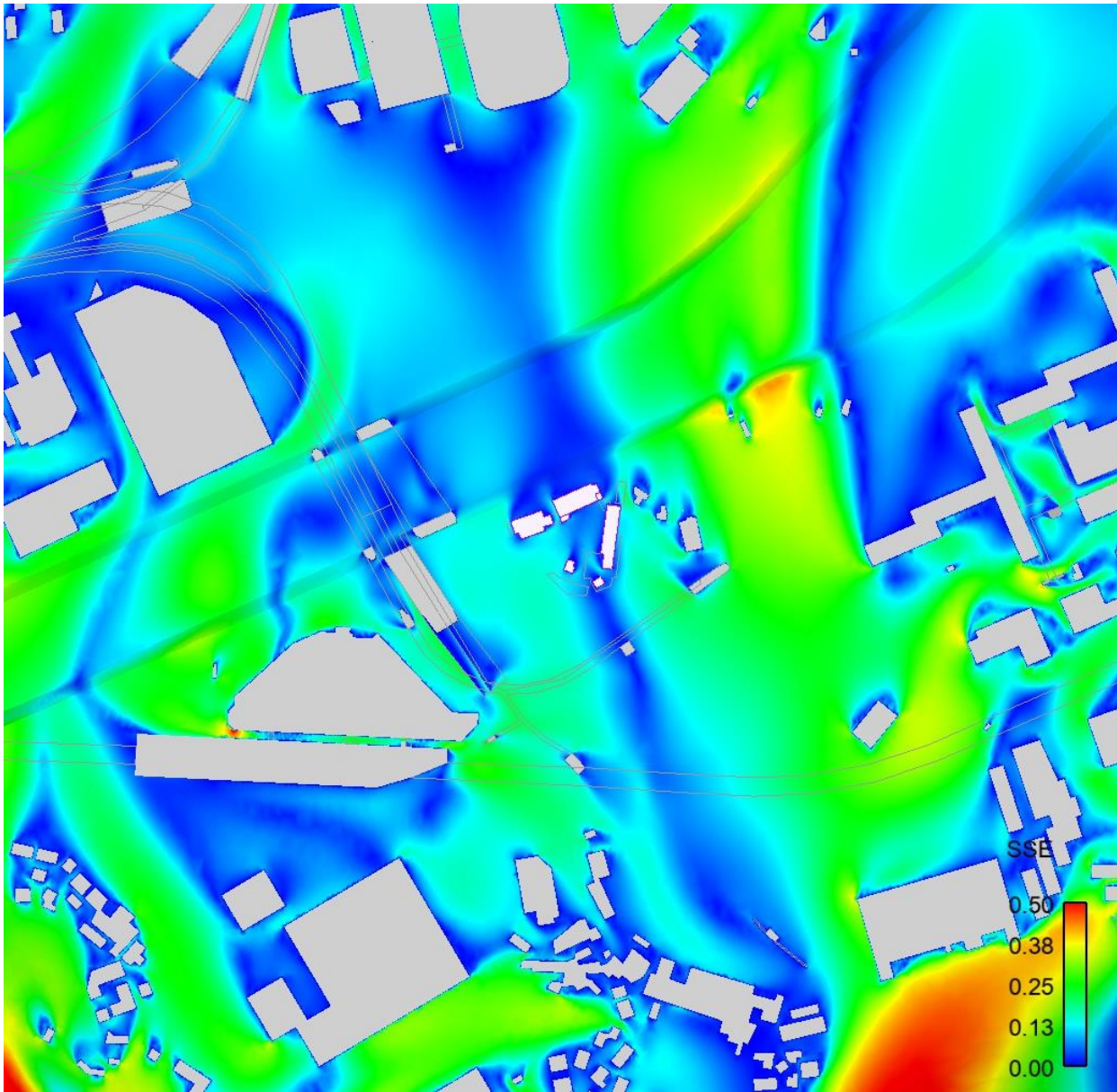


Figure 6 Baseline Scheme Velocity Contour Plot under SSE wind

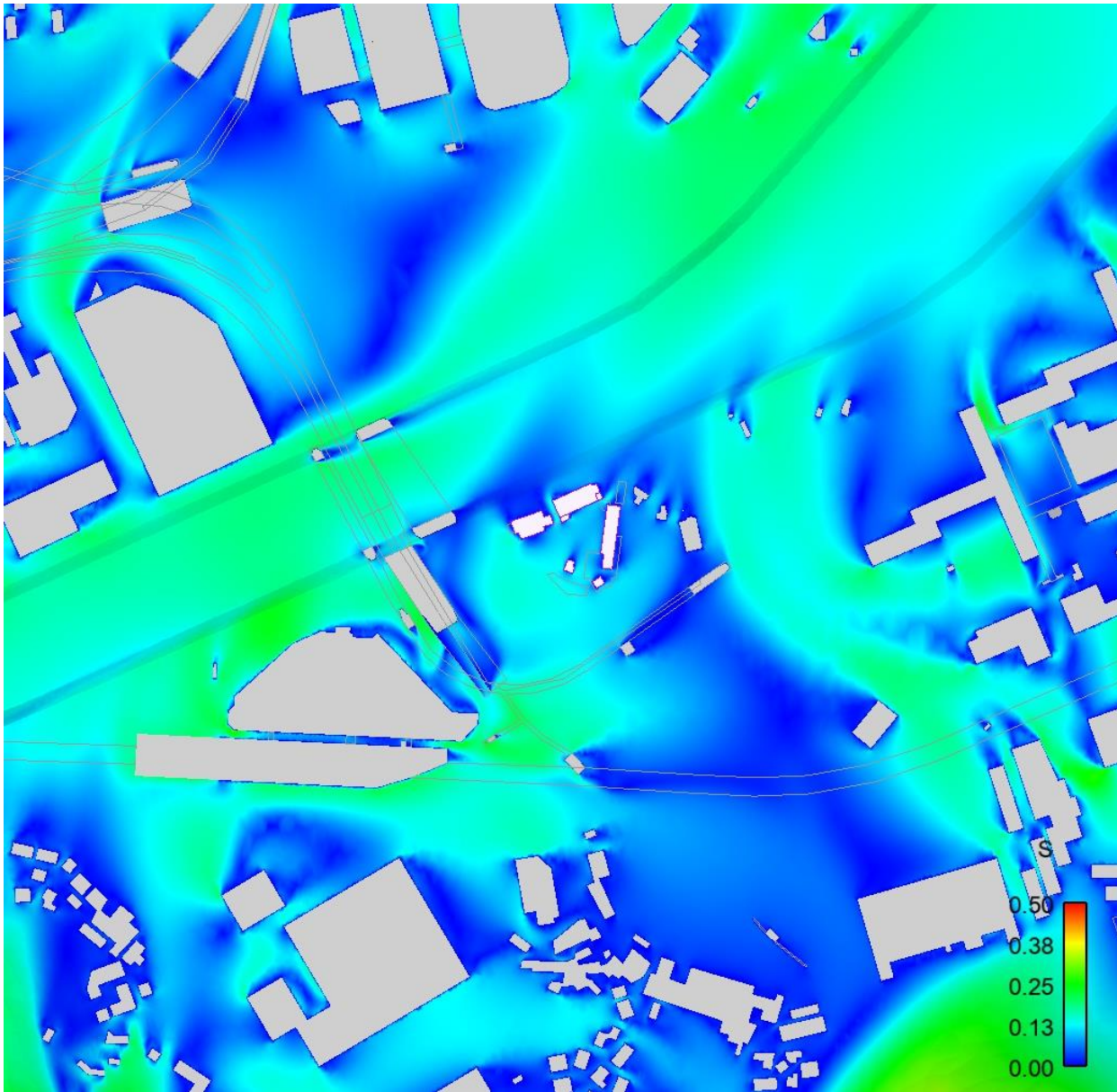


Figure 7 Baseline Scheme Velocity Contour Plot under S wind

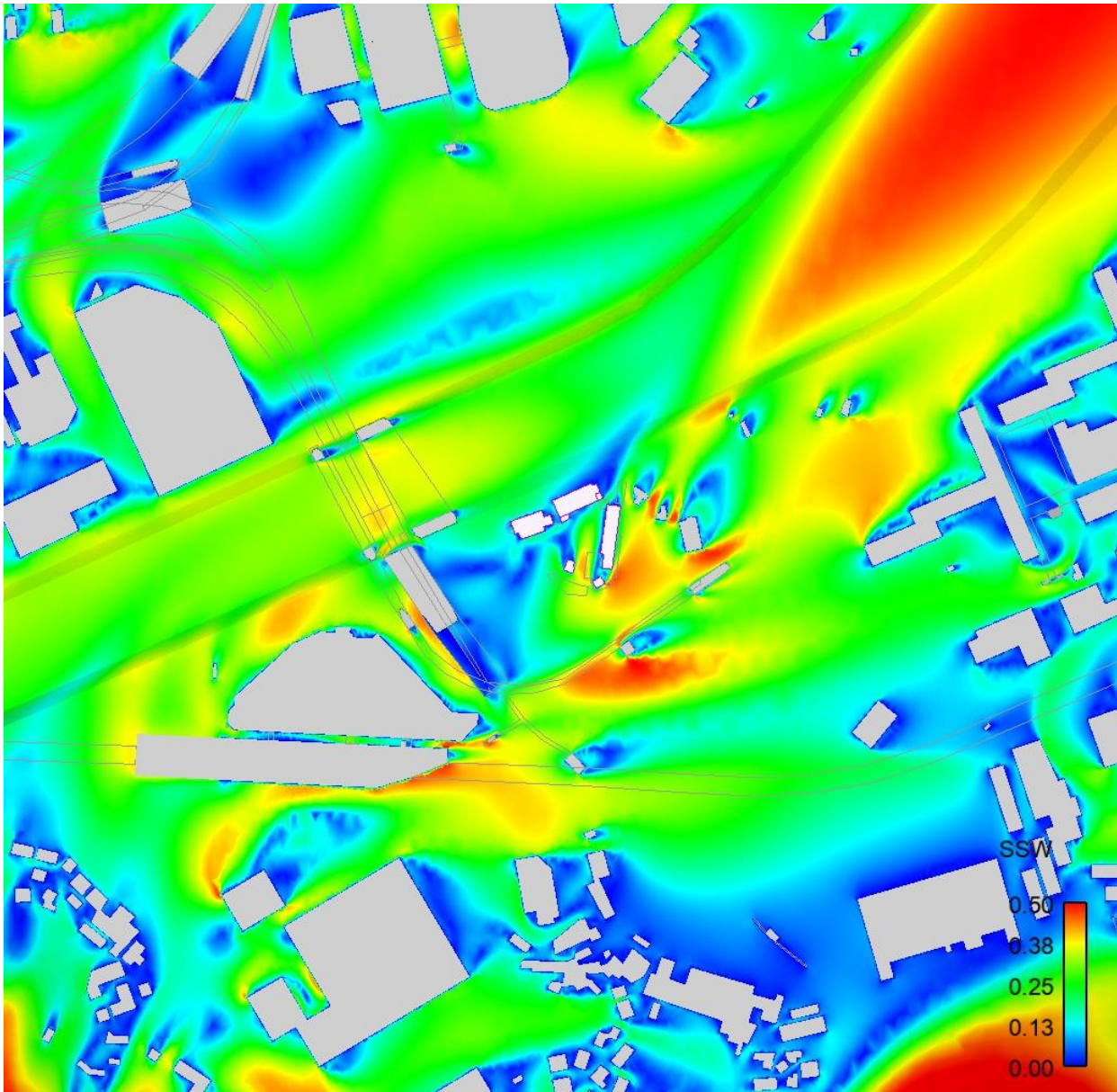


Figure 8 Baseline Scheme Velocity Contour Plot under SSW wind

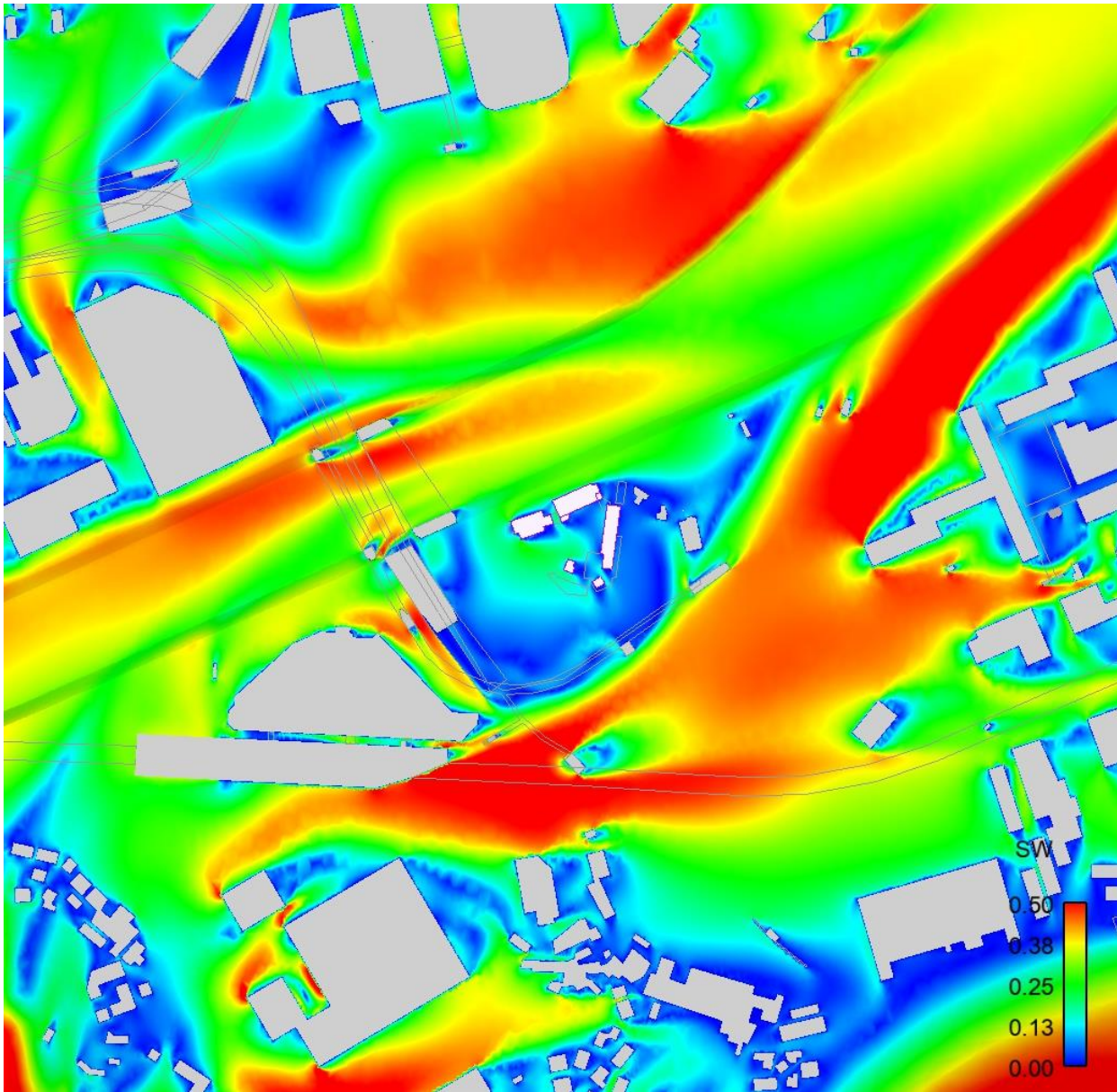


Figure 9 Baseline Scheme Velocity Contour Plot under SW wind

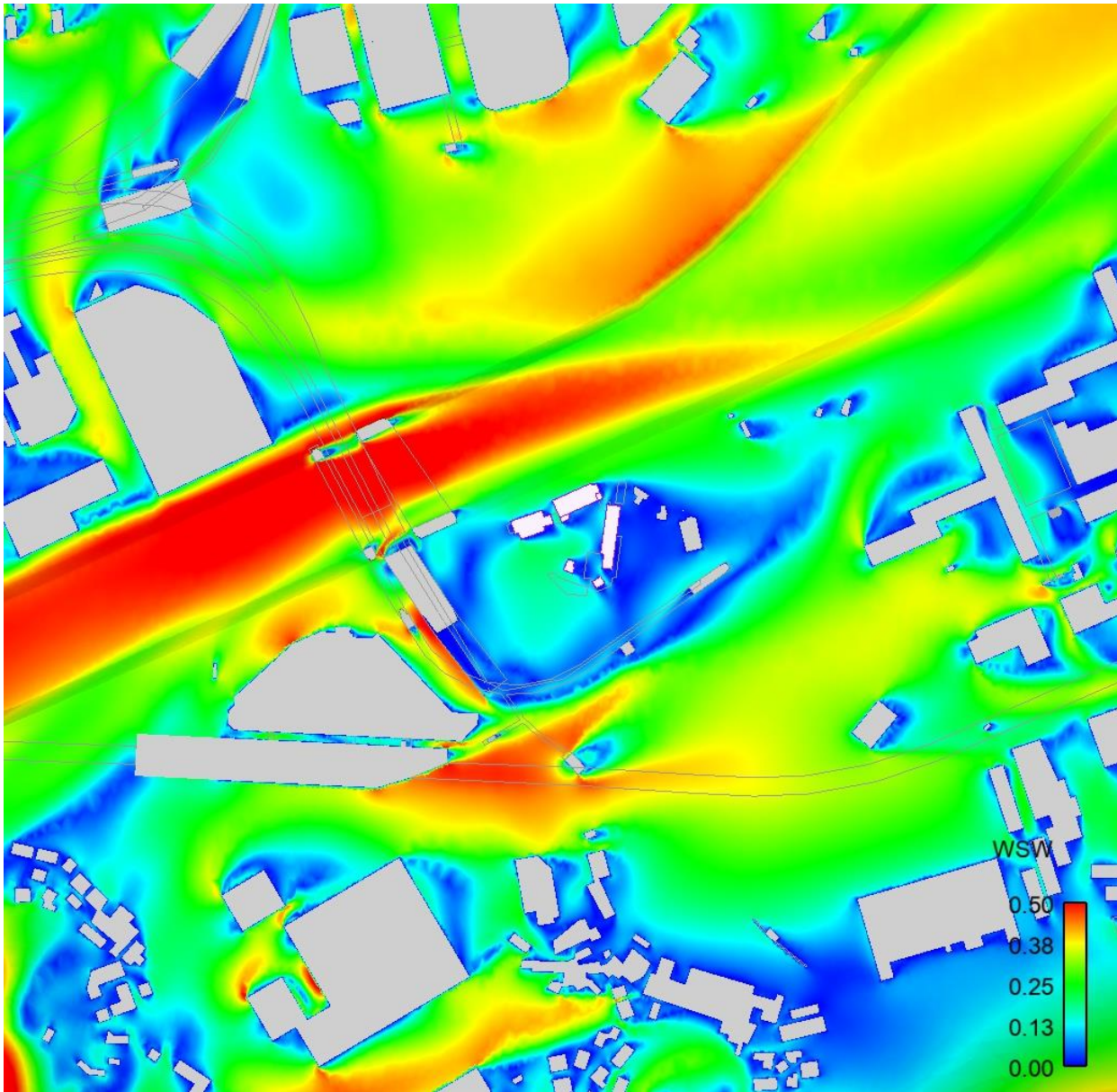


Figure 10 Baseline Scheme Velocity Contour Plot under WSW wind

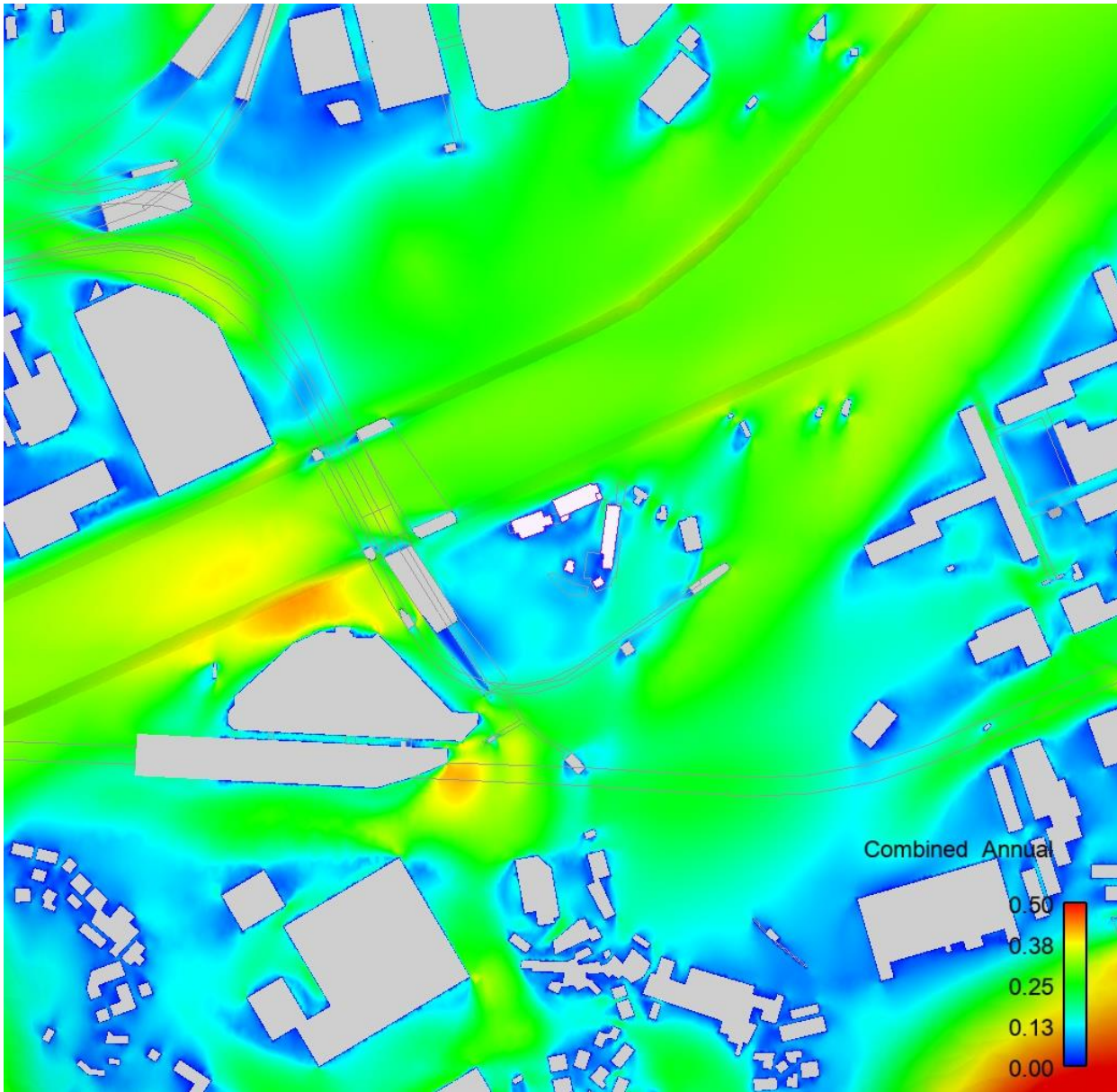


Figure 11 Baseline Scheme Velocity Contour Plot under Annual Condition

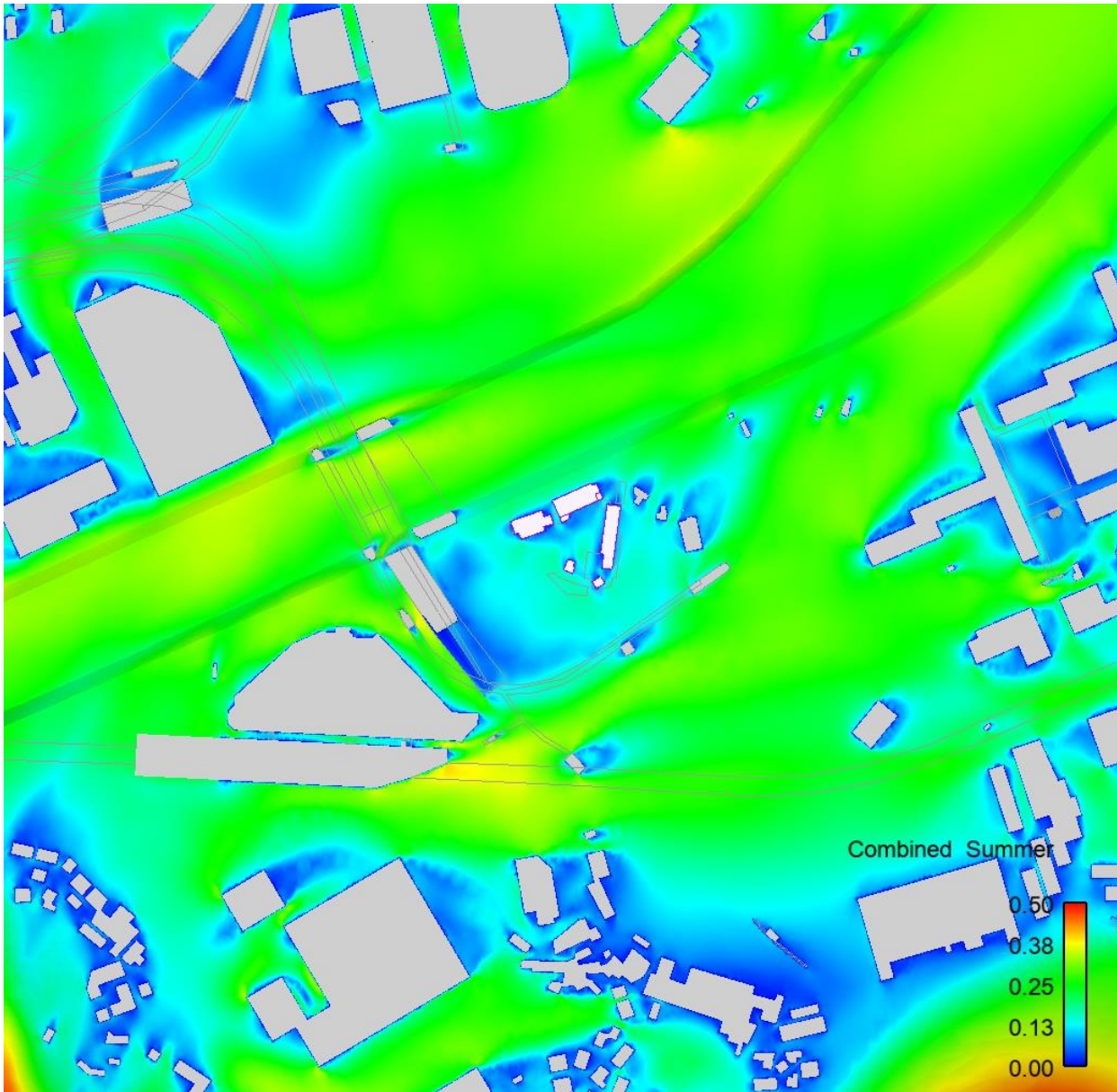


Figure 12 Baseline Scheme Velocity Contour Plot under Summer Condition

C.2 Baseline Scheme (Domain)

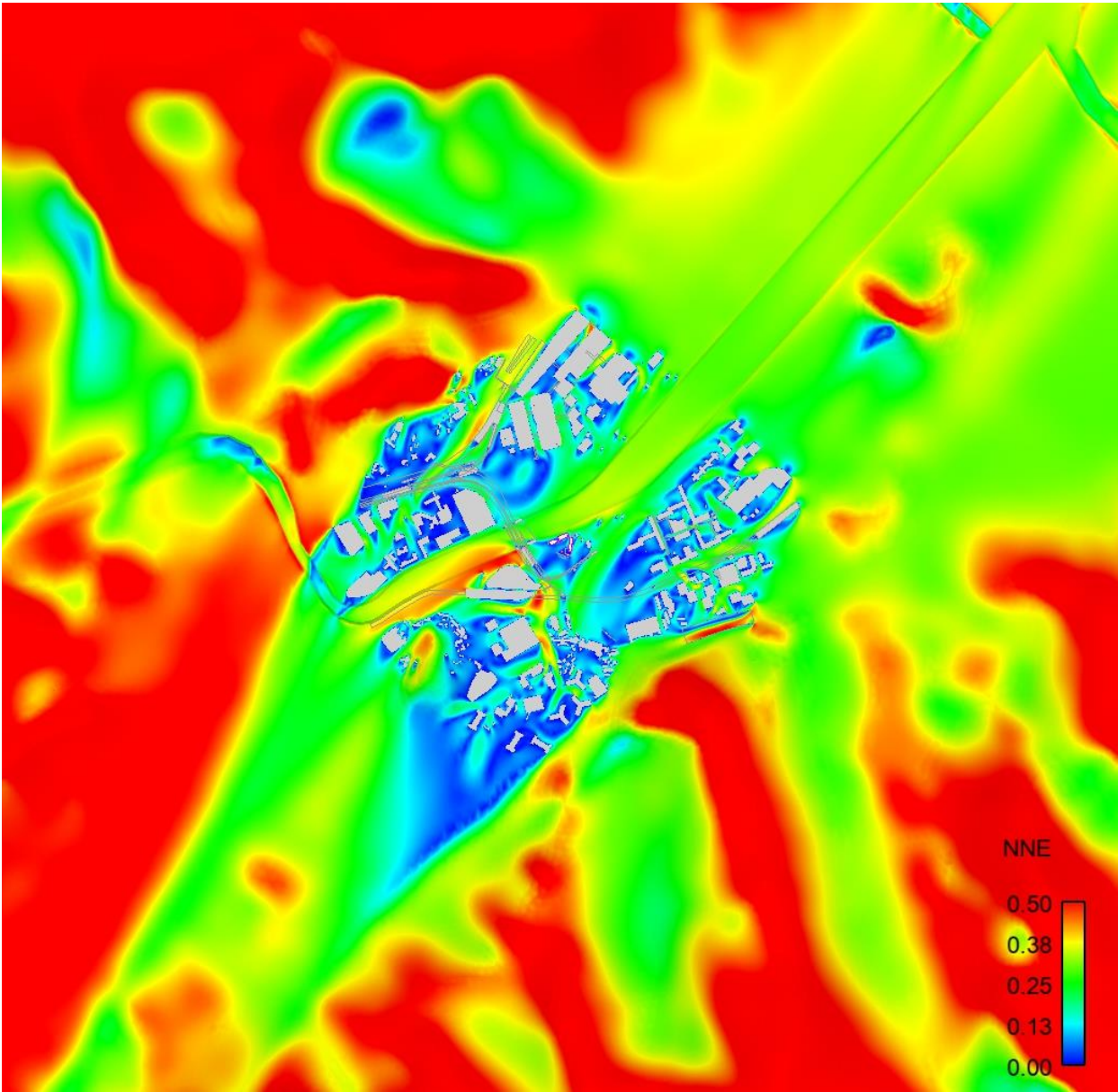


Figure 13 Baseline Scheme Velocity Contour Plot (Domain) under NNE wind

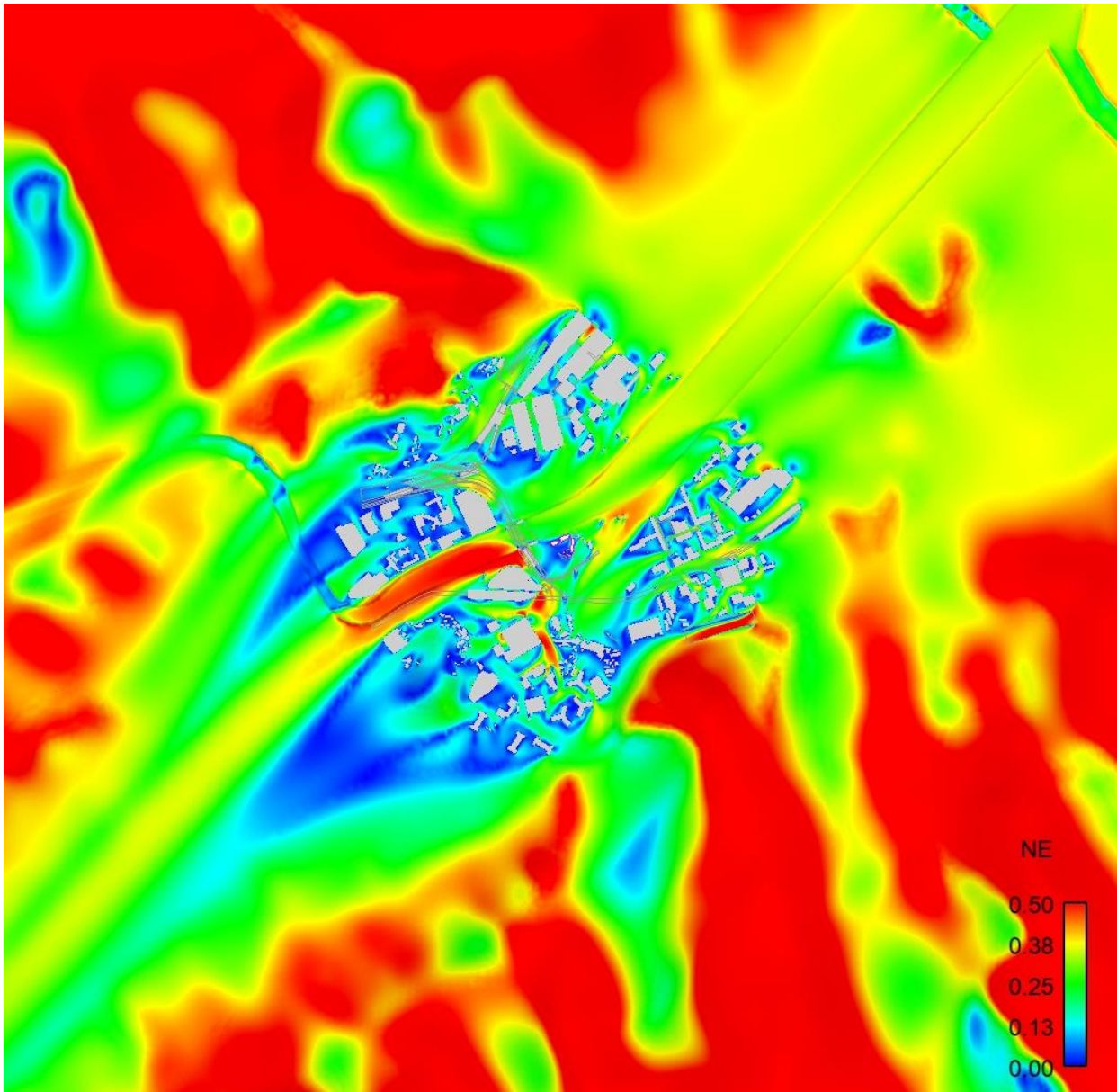


Figure 14 Baseline Scheme Velocity Contour Plot (Domain) under NE wind

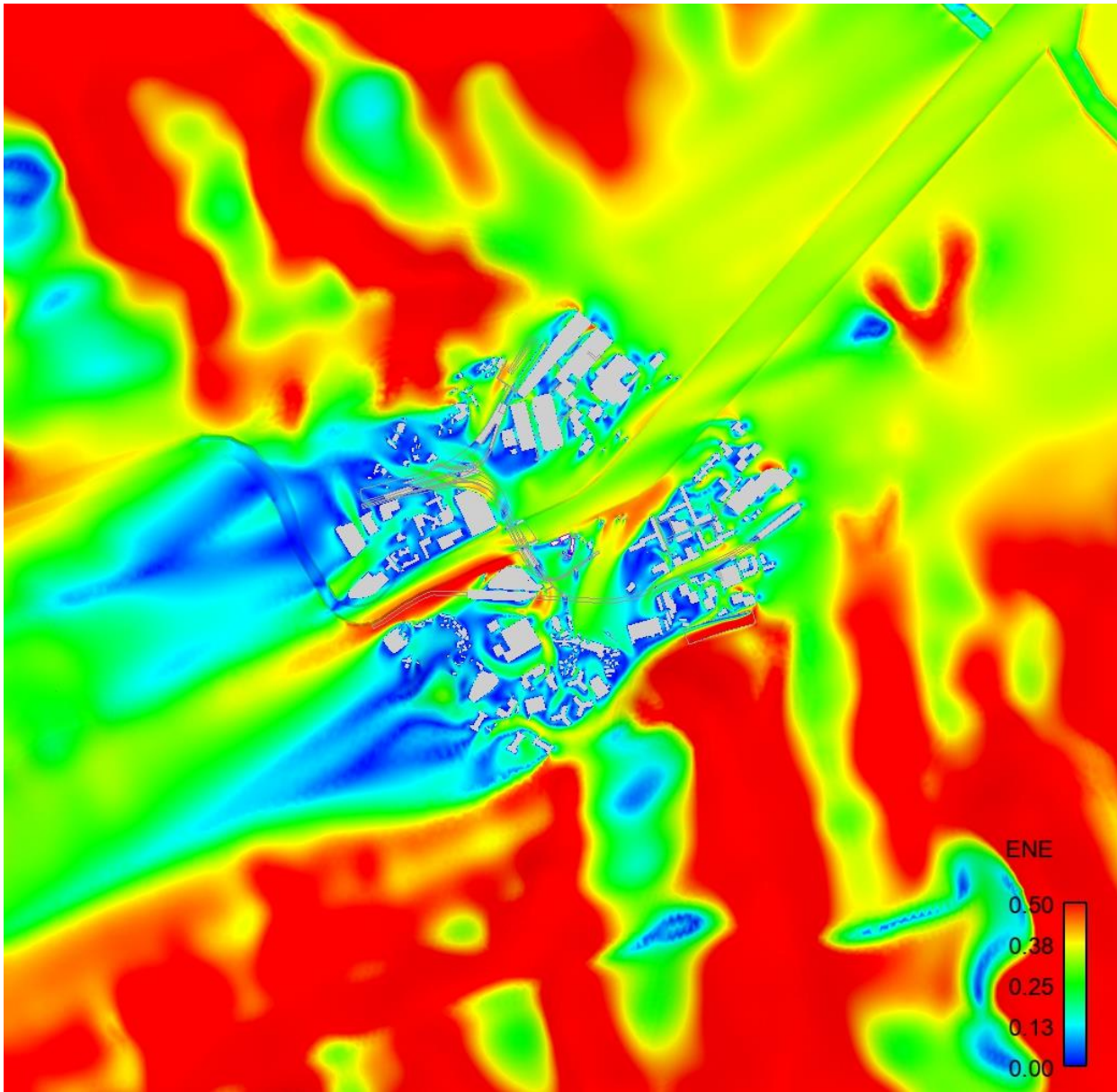


Figure 15 Baseline Scheme Velocity Contour Plot (Domain) under ENE wind

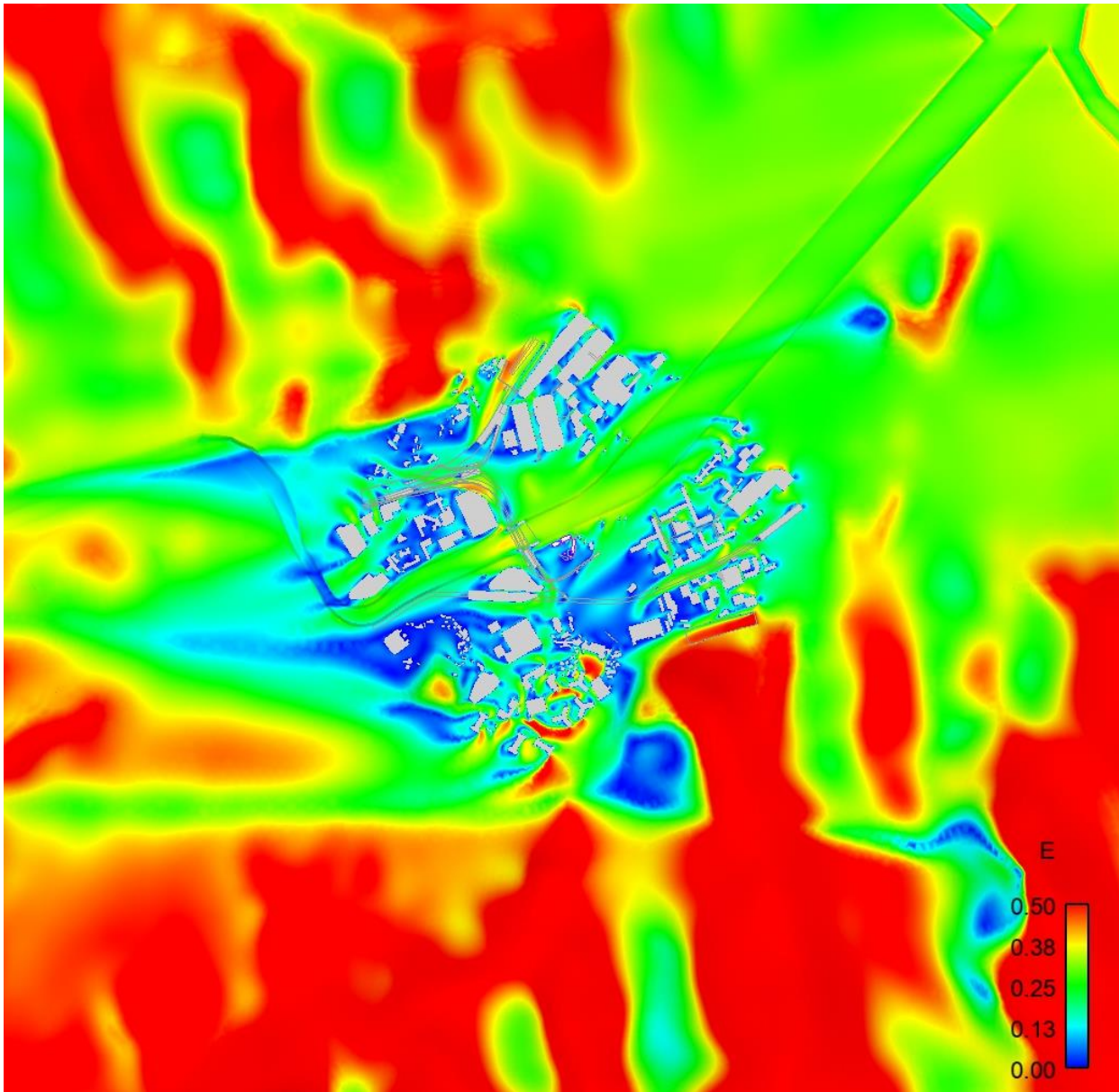


Figure 16 Baseline Scheme Velocity Contour Plot (Domain) under E wind

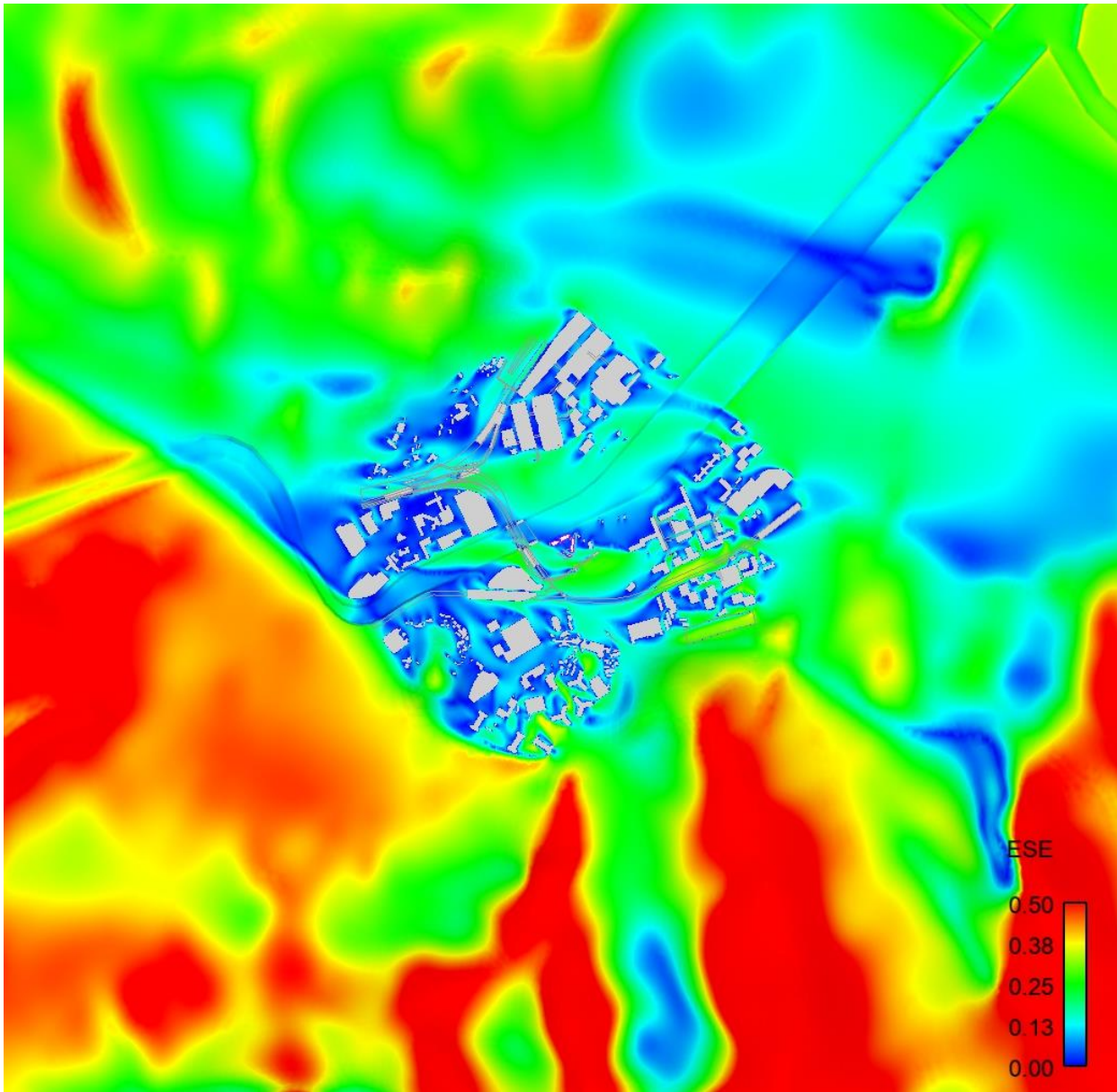


Figure 17 Baseline Scheme Velocity Contour Plot (Domain) under ESE wind

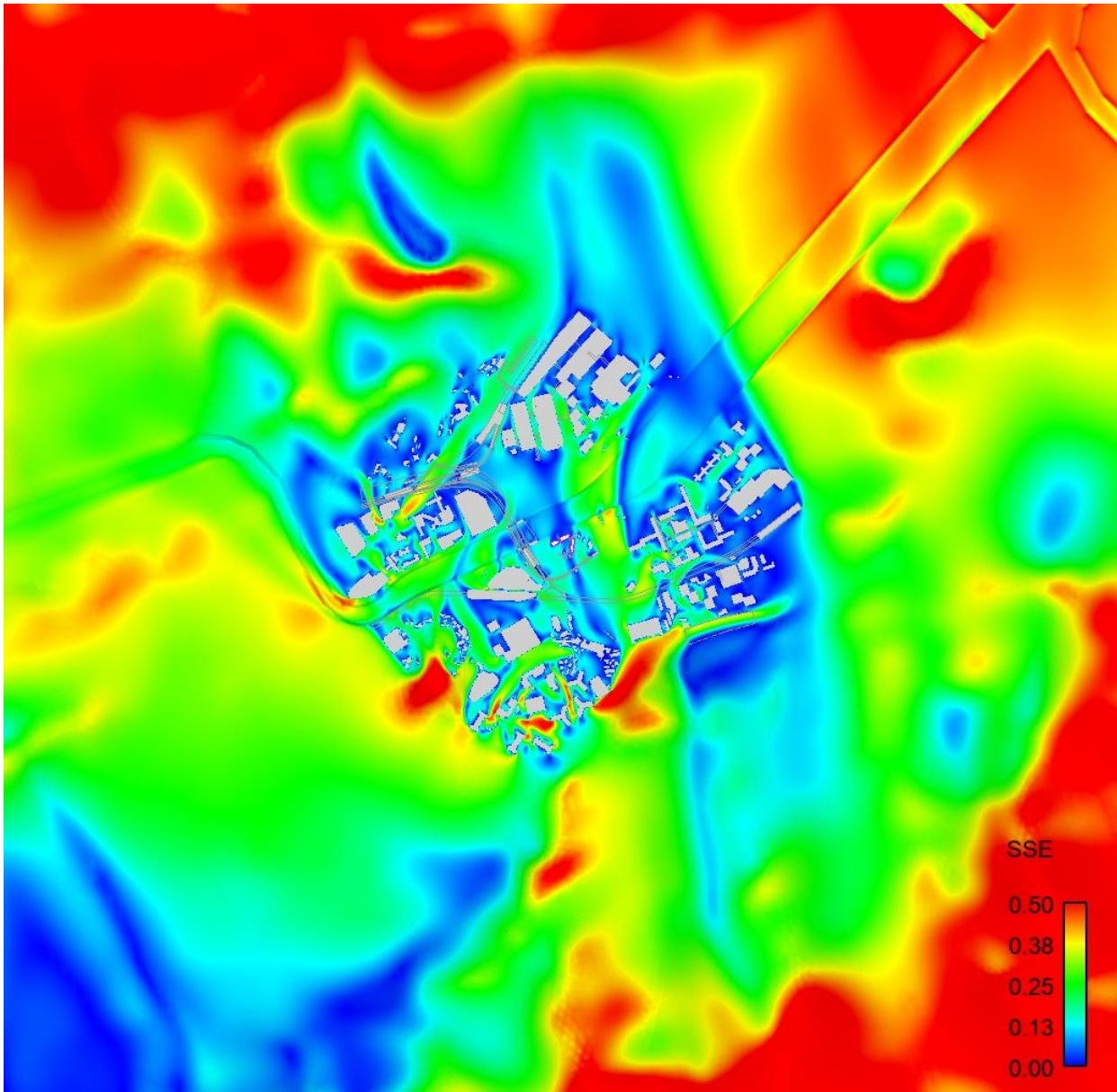


Figure 18 Baseline Scheme Velocity Contour Plot (Domain) under SSE wind

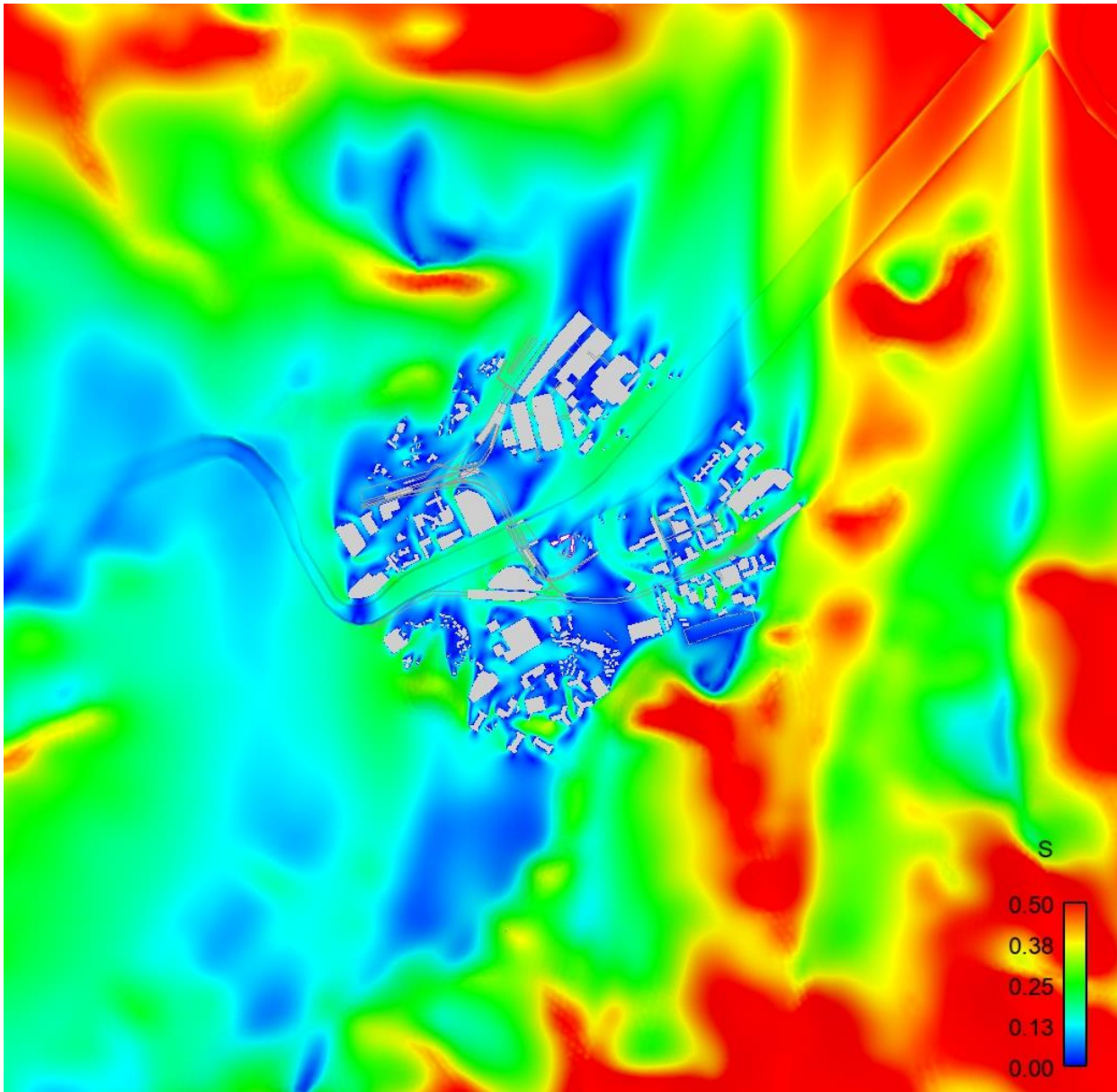


Figure 19 Baseline Scheme Velocity Contour Plot (Domain) under S wind

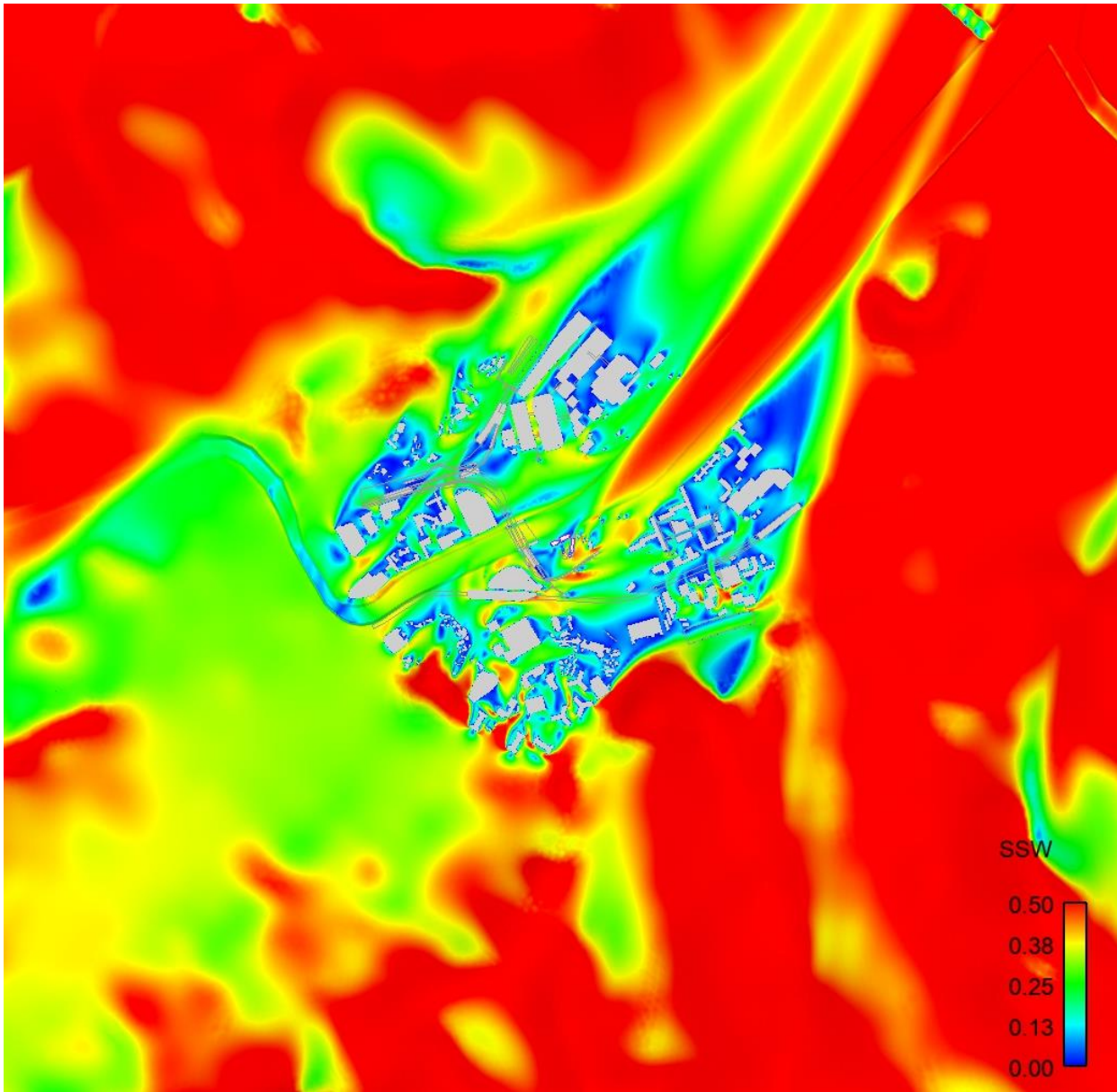


Figure 20 Baseline Scheme Velocity Contour Plot (Domain) under SSW wind

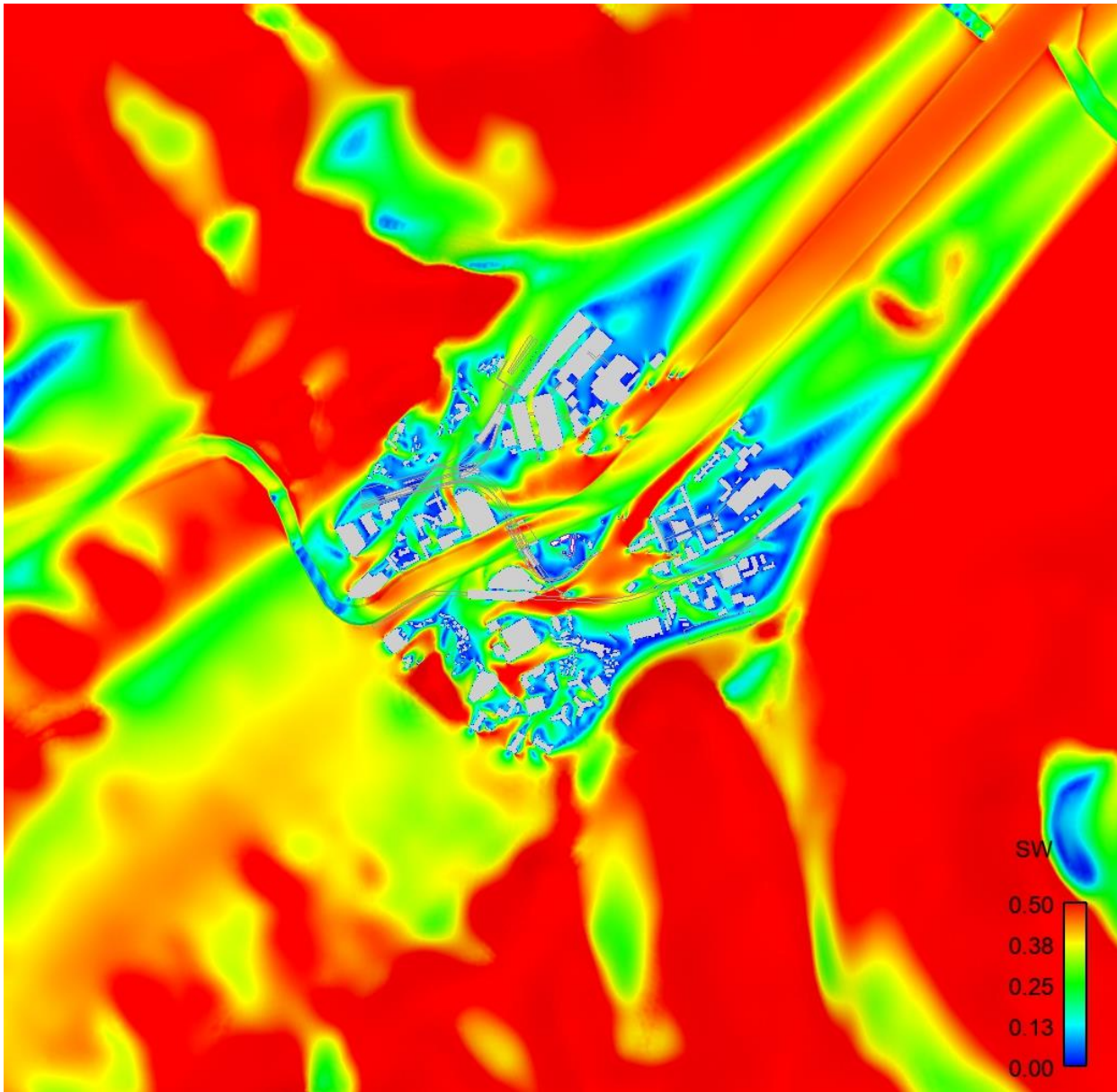


Figure 21 Baseline Scheme Velocity Contour Plot (Domain) under SW wind

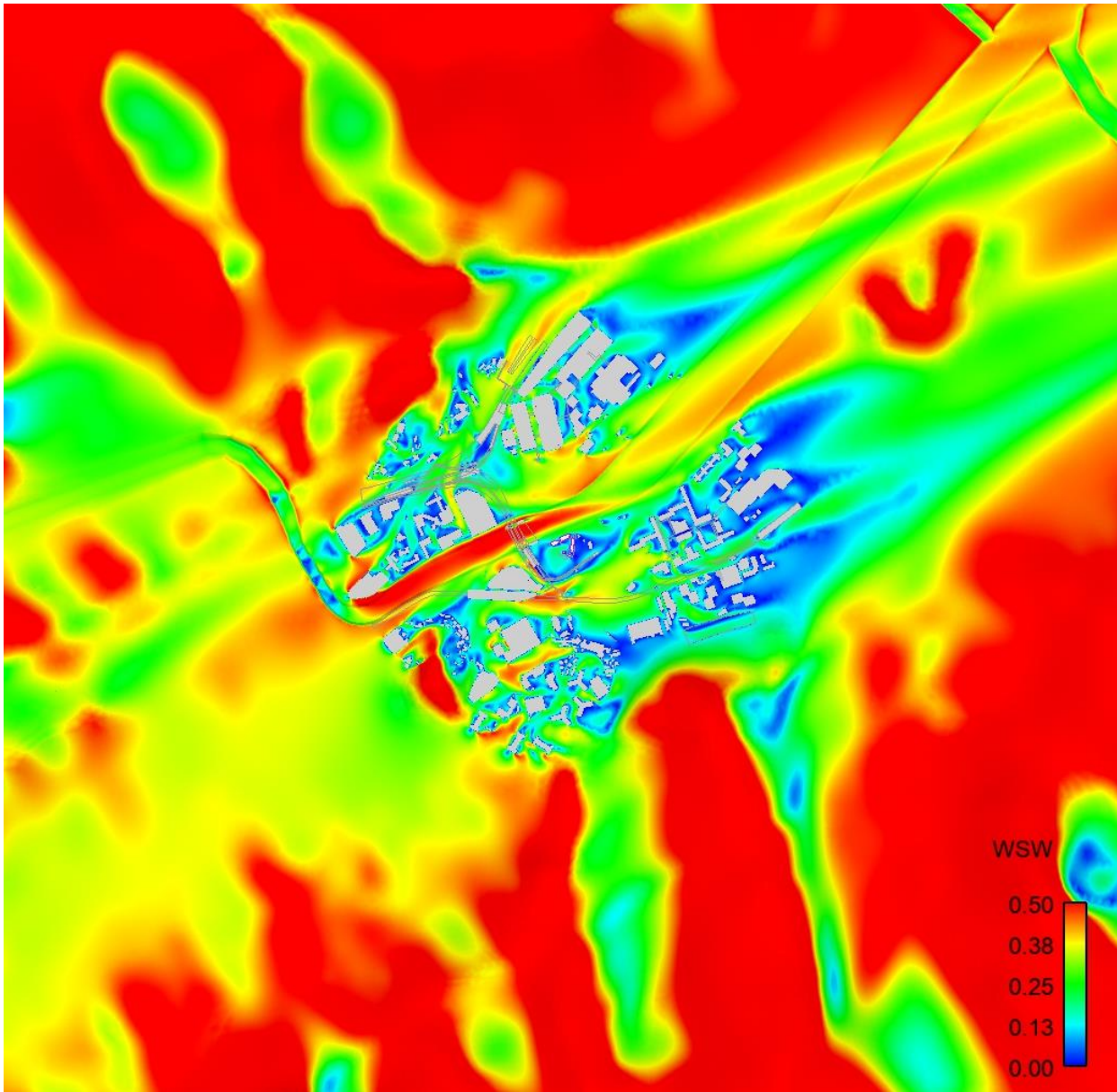


Figure 22 Baseline Scheme Velocity Contour Plot (Domain) under WSW wind

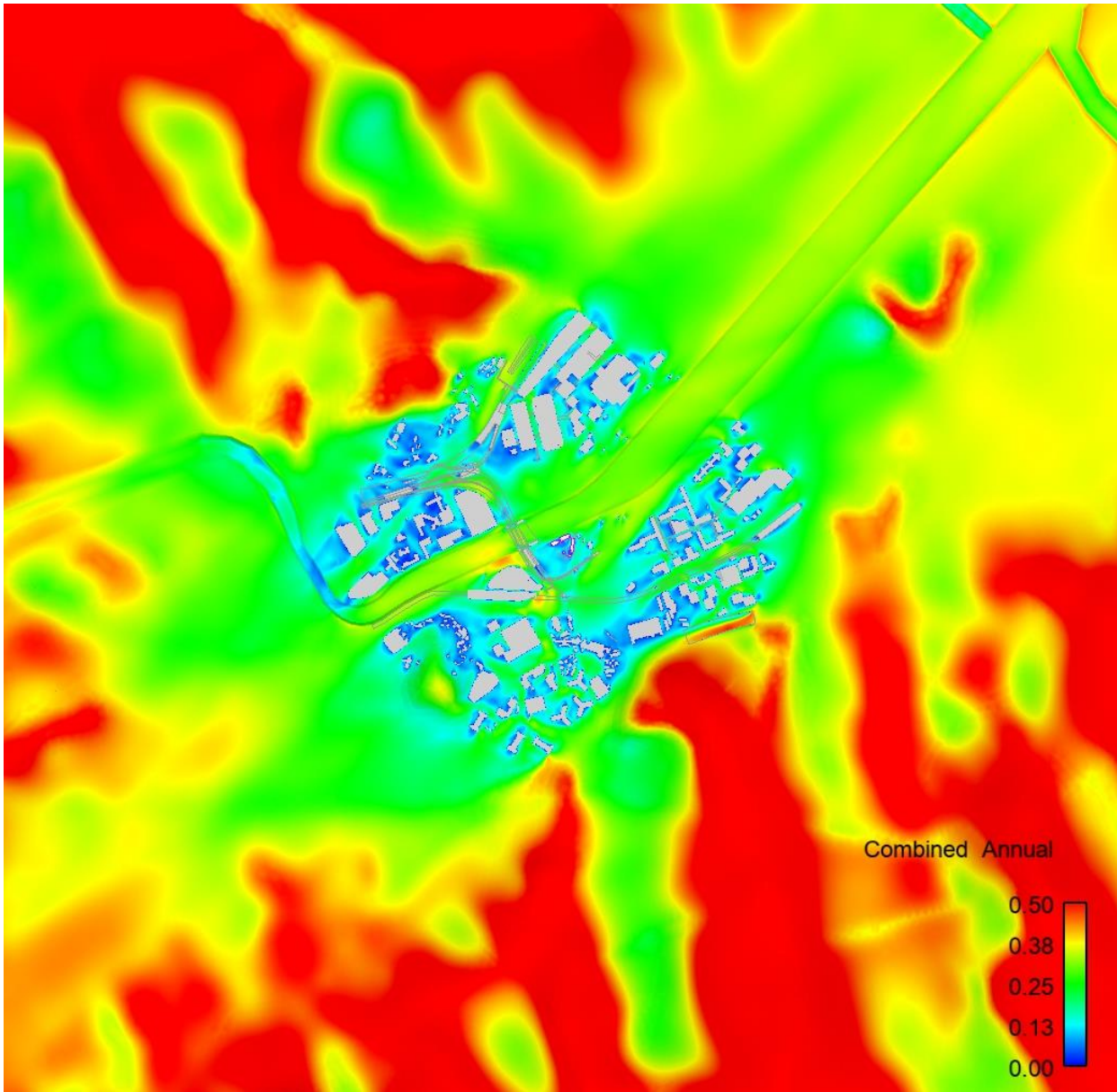


Figure 23 Baseline Scheme Velocity Contour Plot (Domain) under Annual Condition

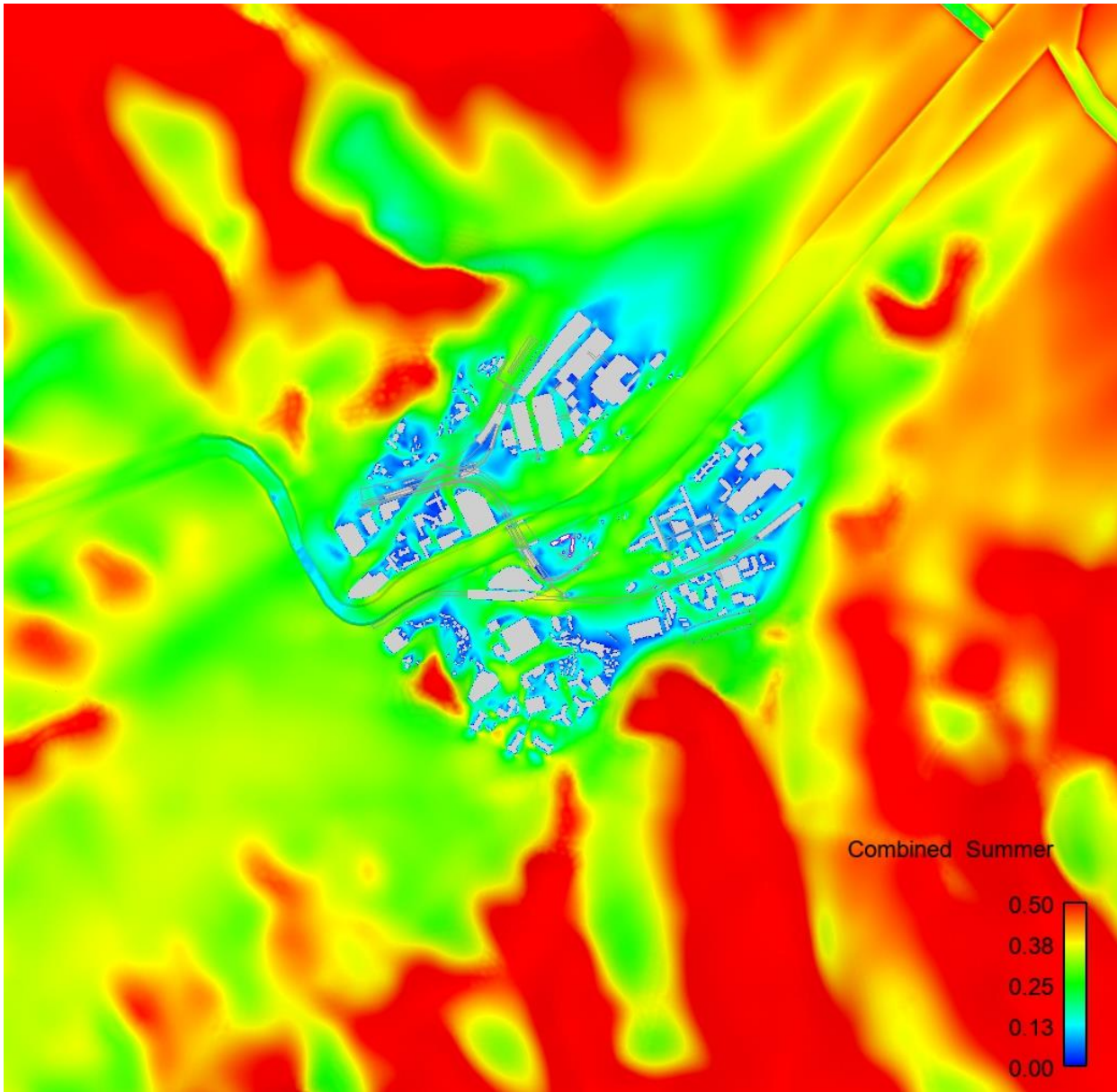


Figure 24 Baseline Scheme Velocity Contour Plot (Domain) under Summer Condition

C.3 Proposed Scheme

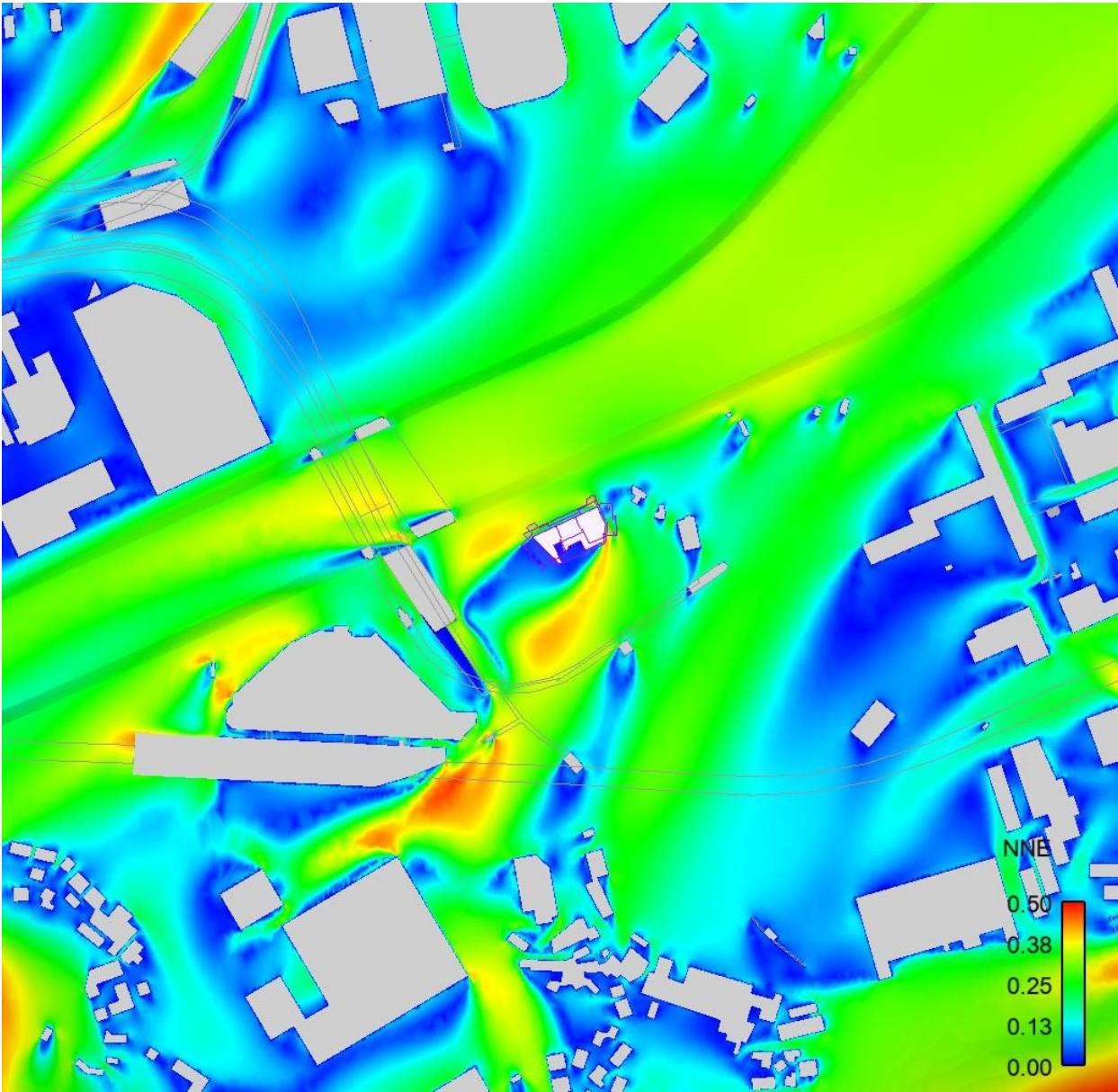


Figure 25 Proposed Scheme Velocity Contour Plot under NNE wind

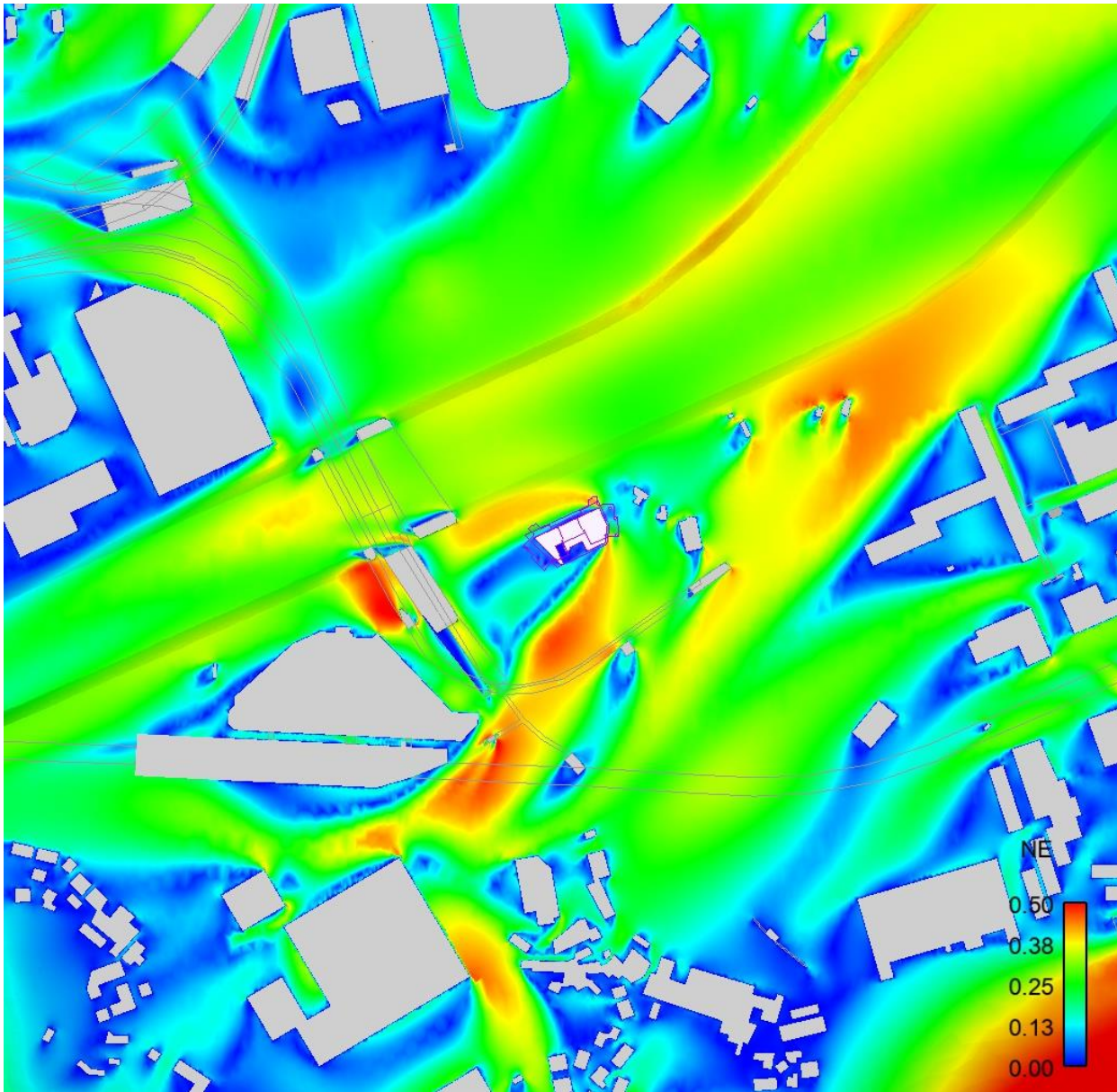


Figure 26 Proposed Scheme Velocity Contour Plot under NE wind

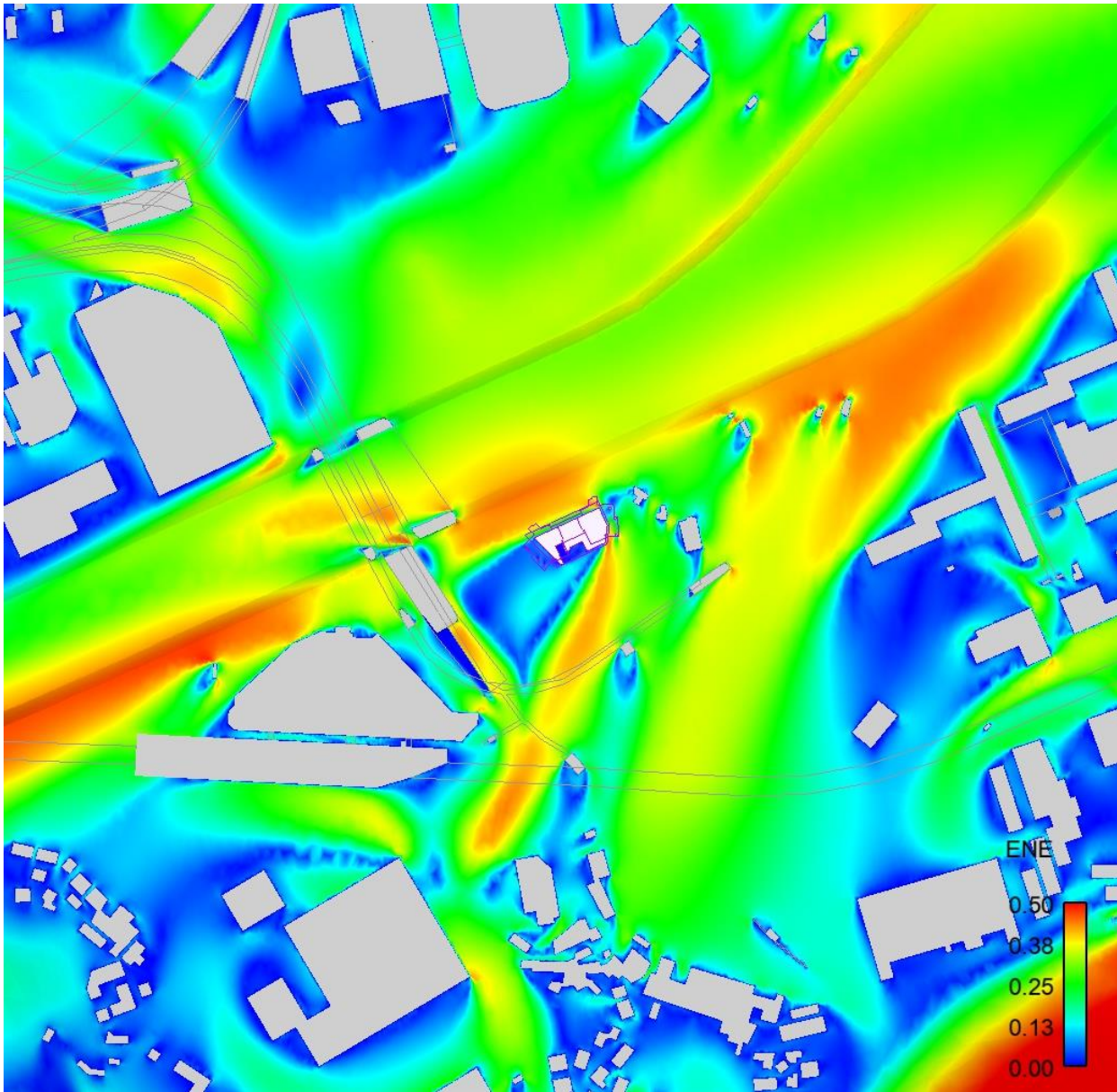


Figure 27 Proposed Scheme Velocity Contour Plot under ENE wind

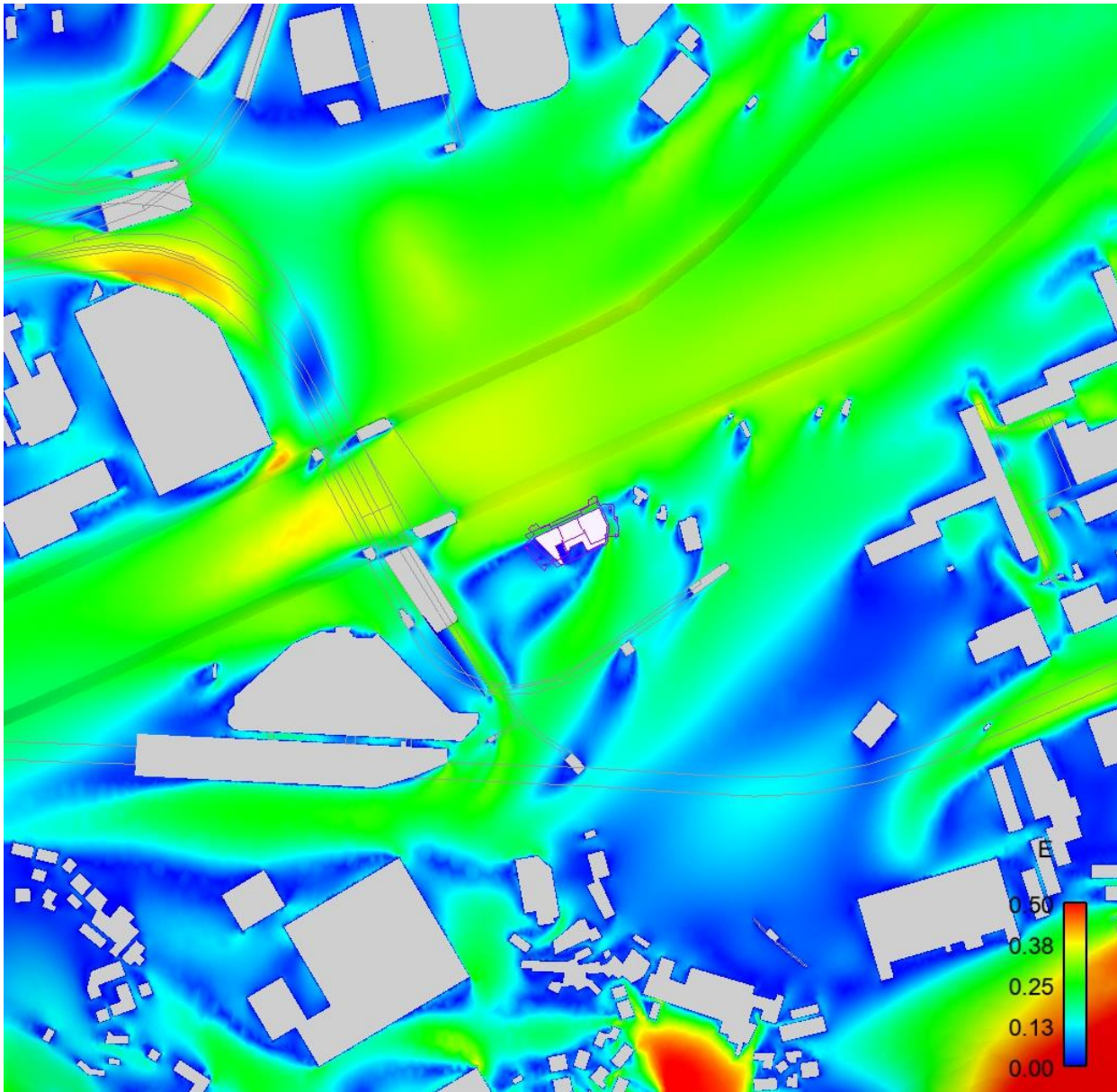


Figure 28 Proposed Scheme Velocity Contour Plot under E wind

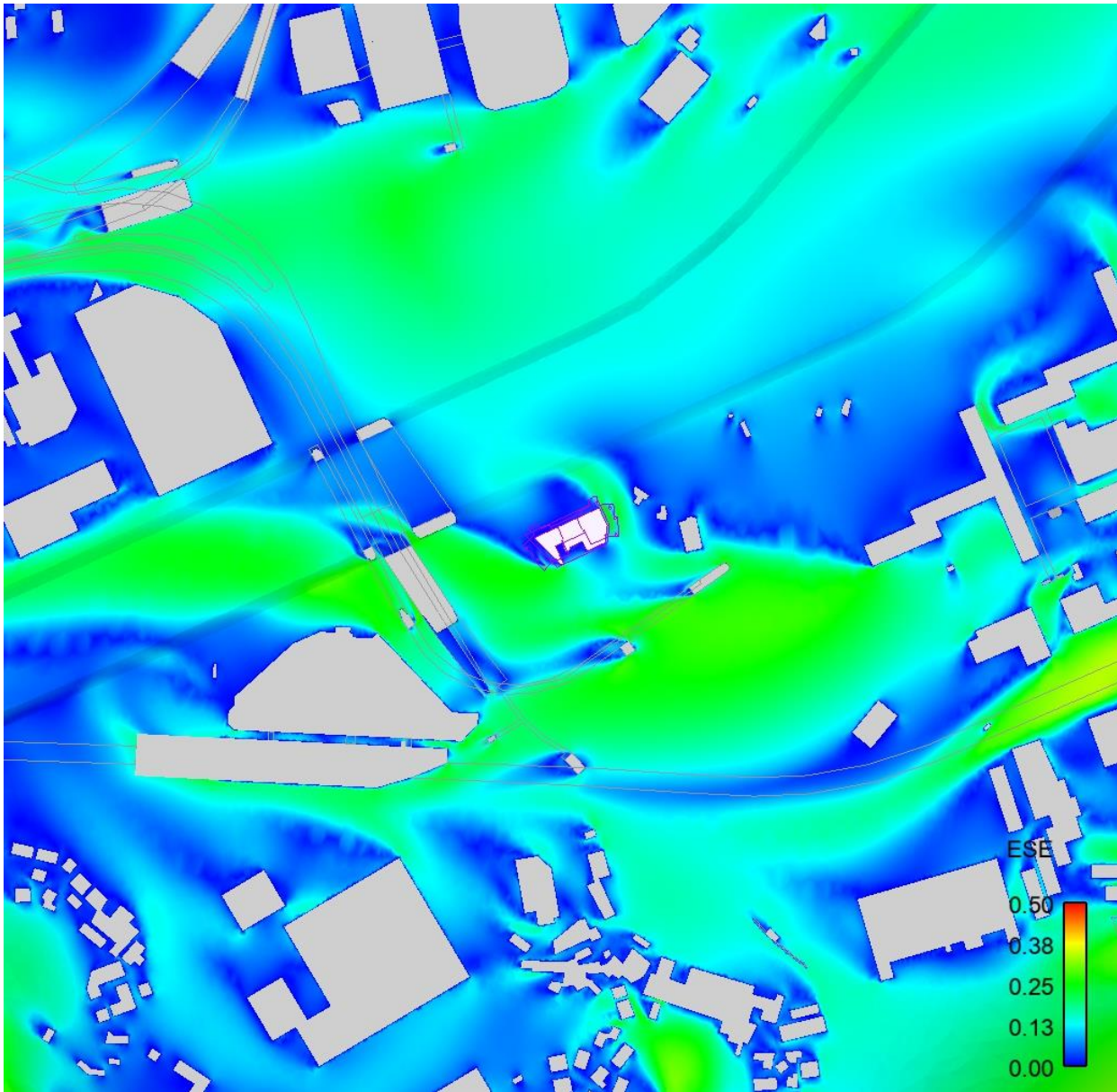


Figure 29 Proposed Scheme Velocity Contour Plot under ESE wind

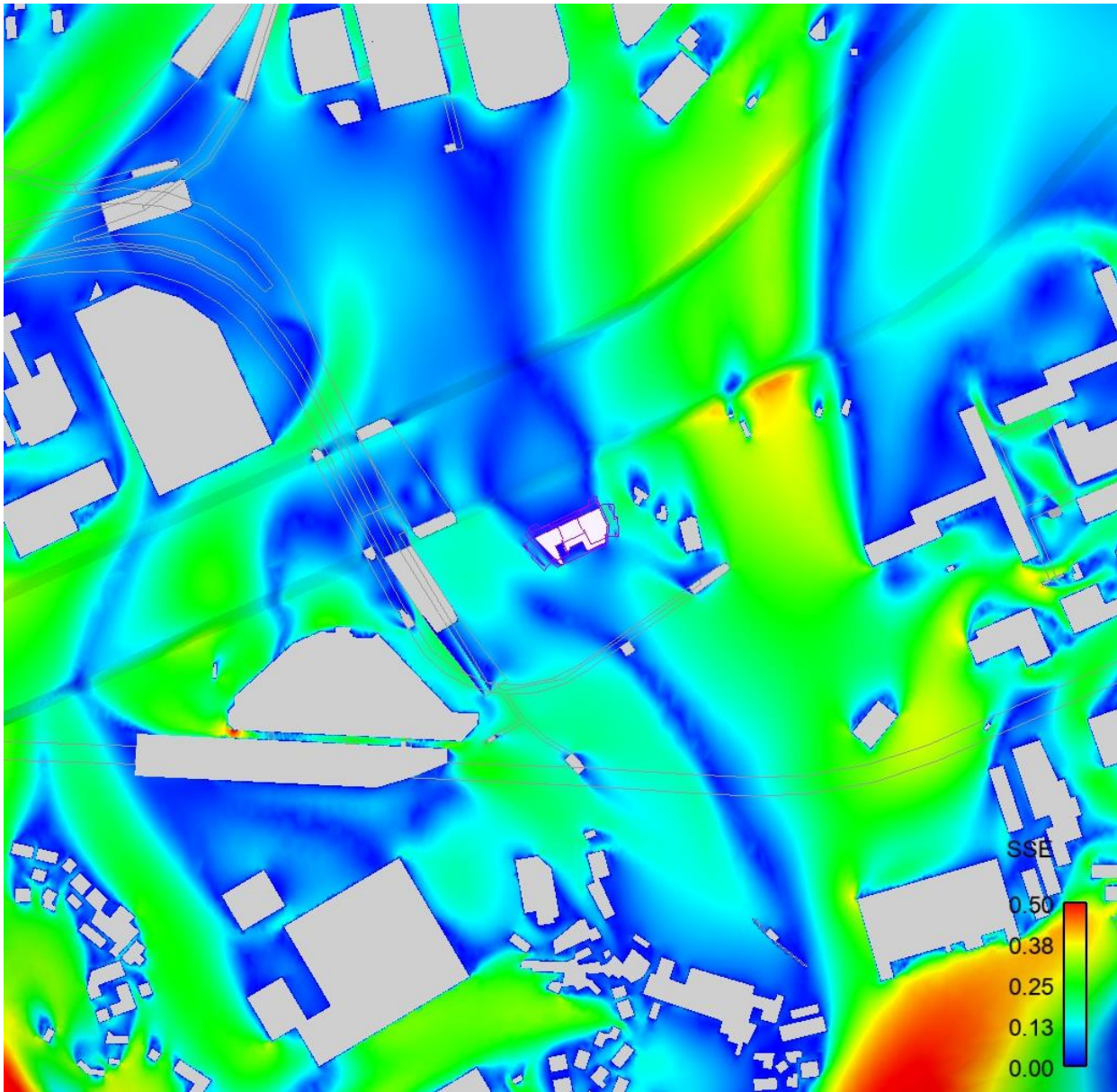


Figure 30 Proposed Scheme Velocity Contour Plot under SSE wind

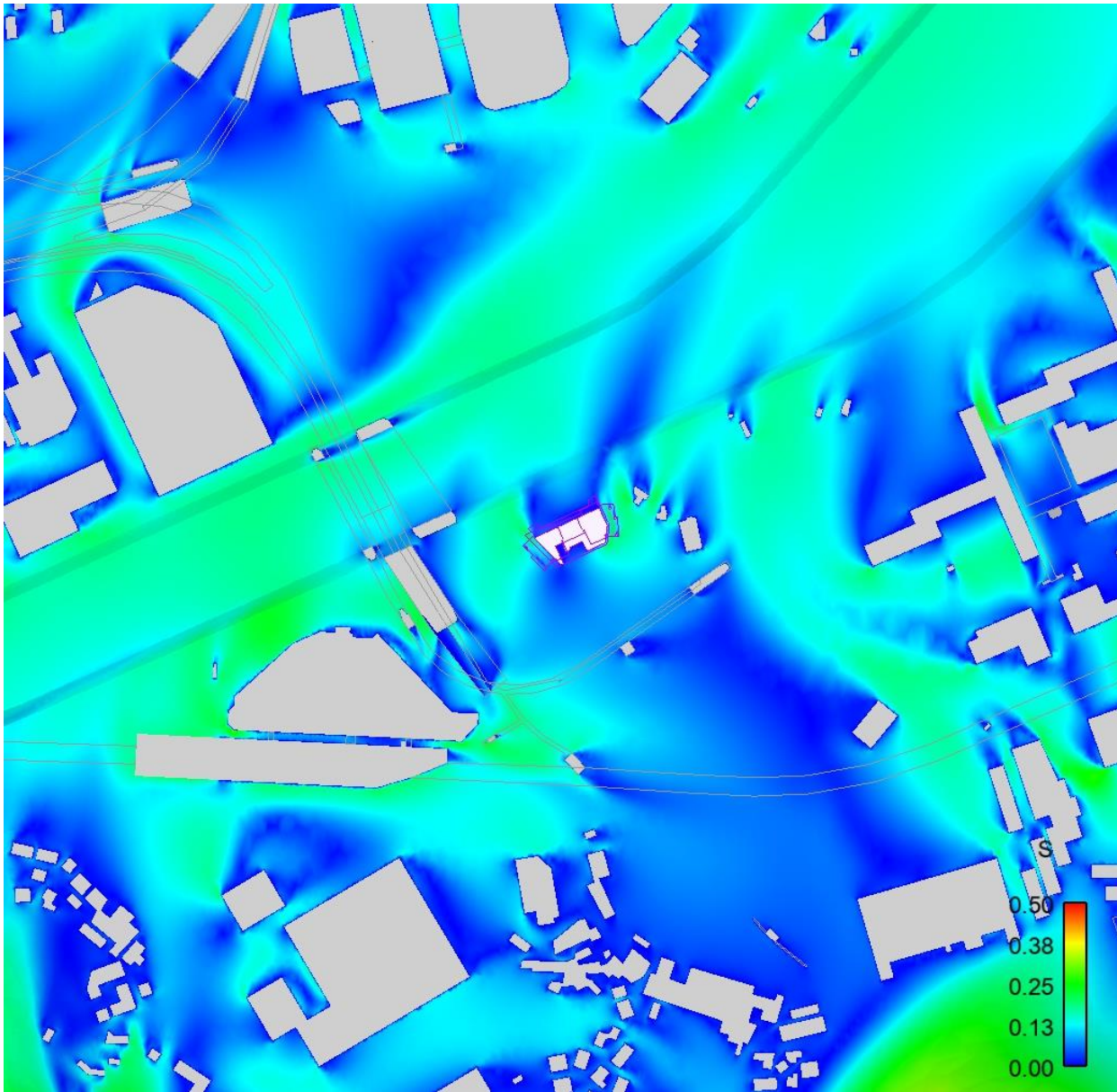


Figure 31 Proposed Scheme Velocity Contour Plot under S wind

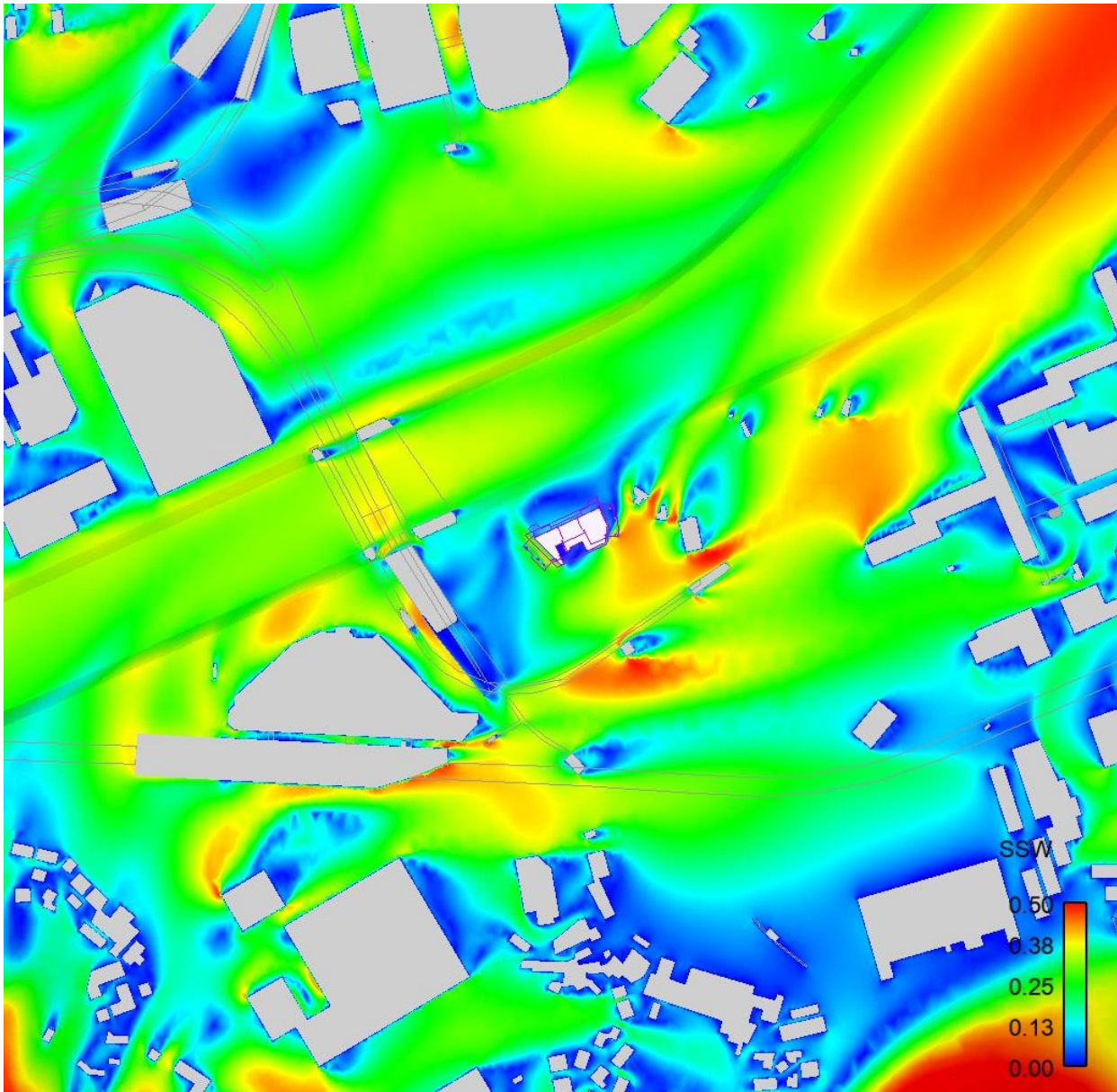


Figure 32 Proposed Scheme Velocity Contour Plot under SSW wind

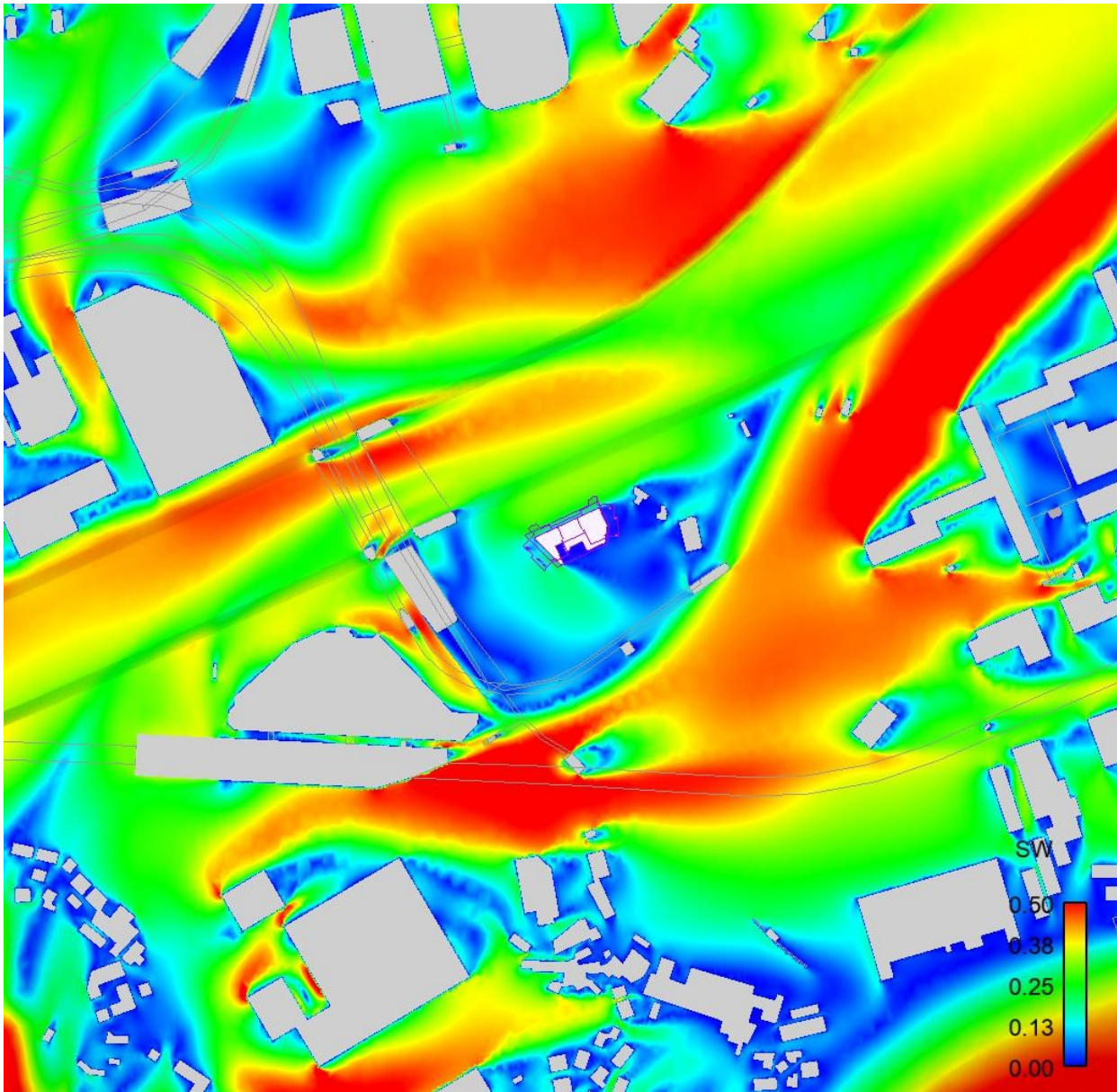


Figure 33 Proposed Scheme Velocity Contour Plot under SW wind

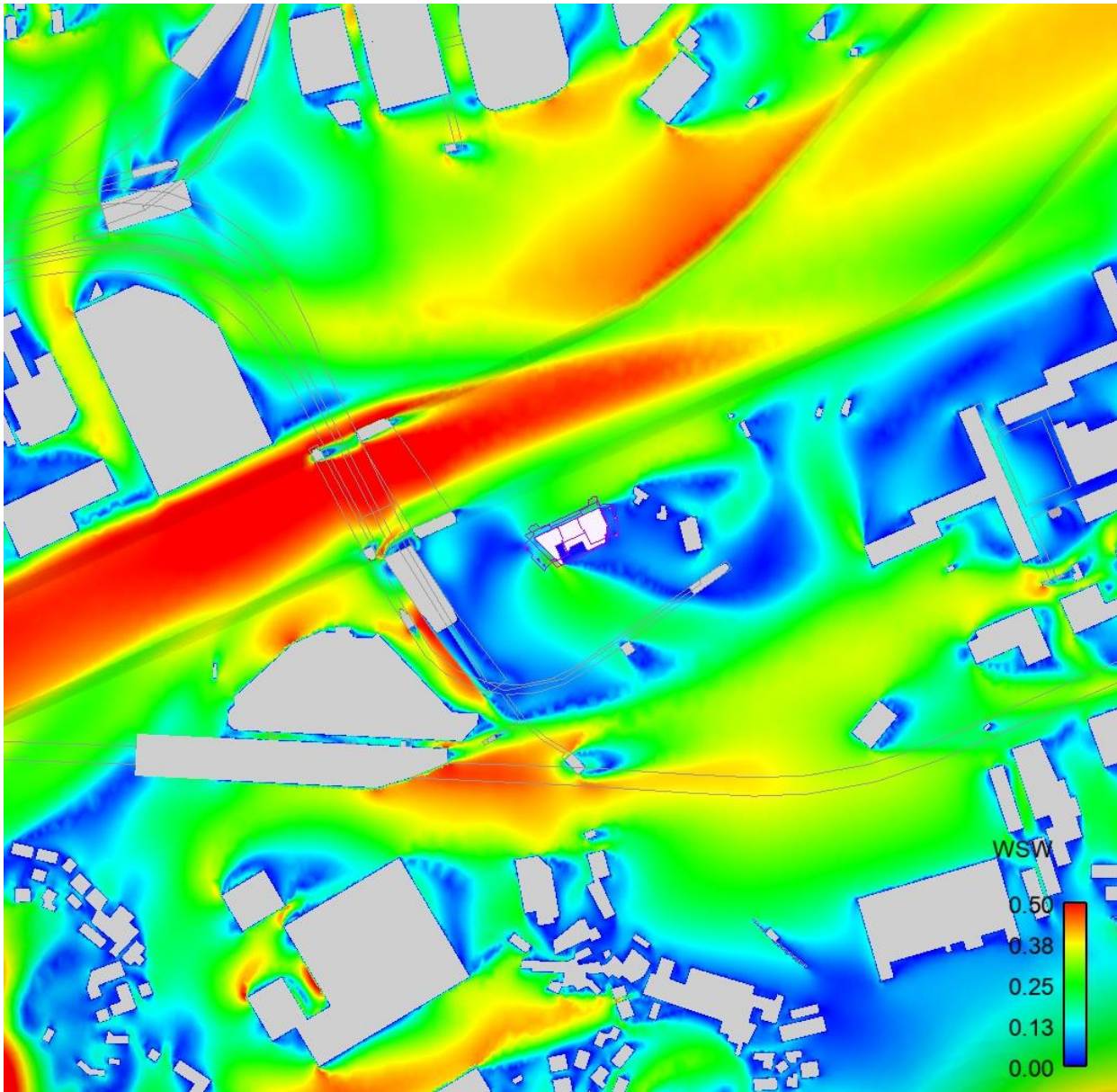


Figure 34 Proposed Scheme Velocity Contour Plot under WSW wind

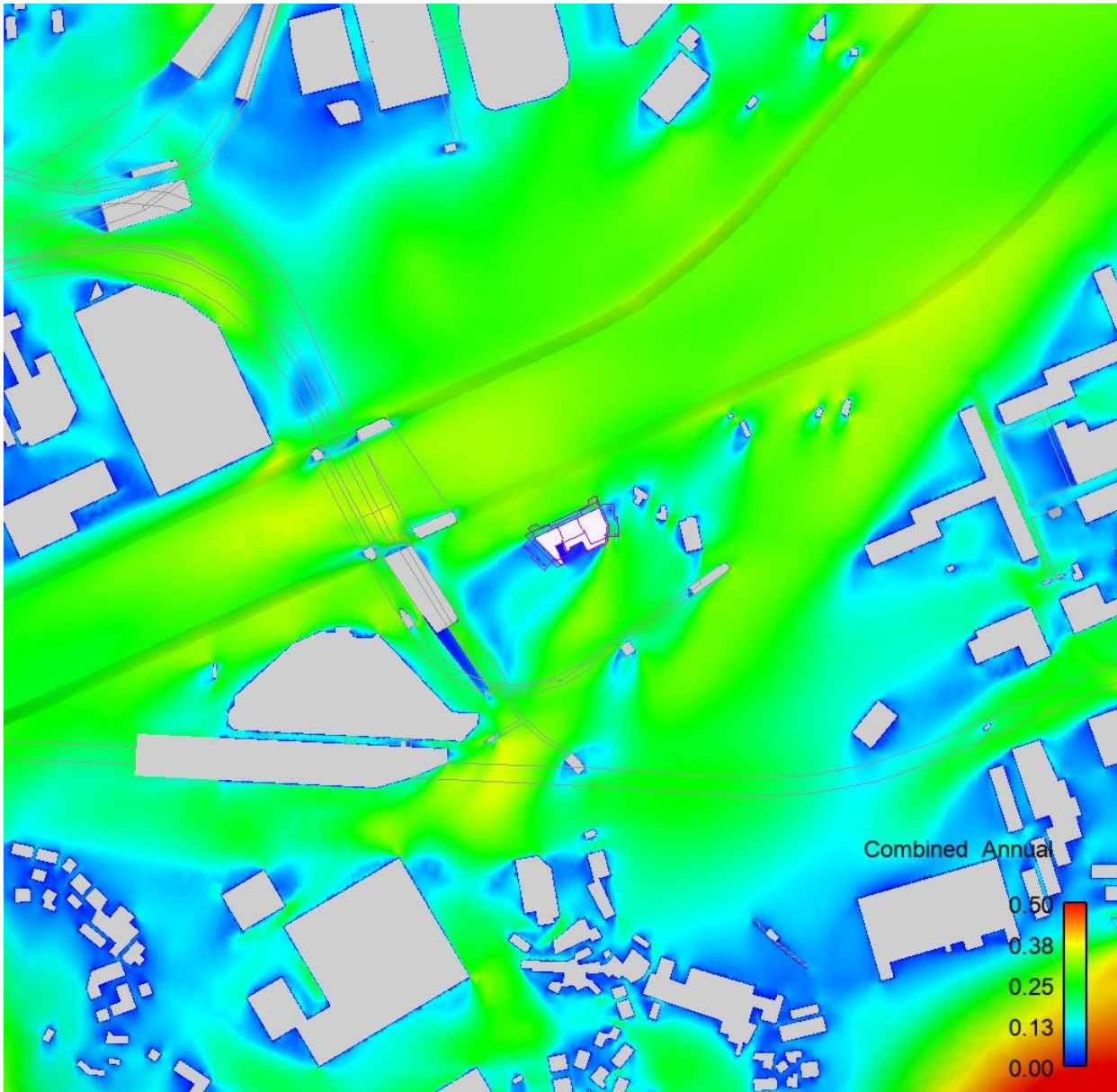


Figure 35 Proposed Scheme Velocity Contour Plot under Annual Condition

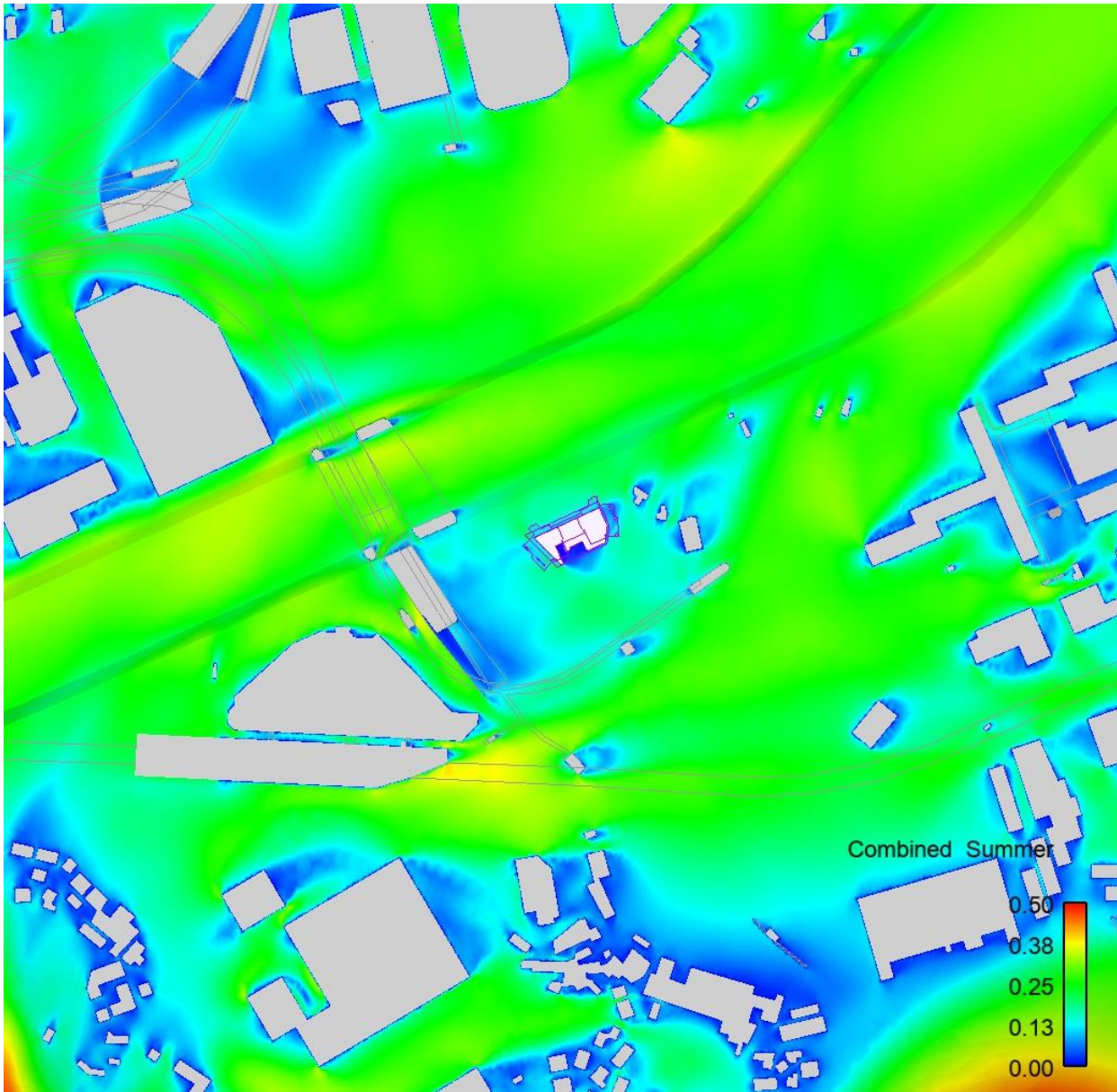


Figure 36 Proposed Scheme Velocity Contour Plot under Summer Condition

C.4 Proposed Scheme (Domain)

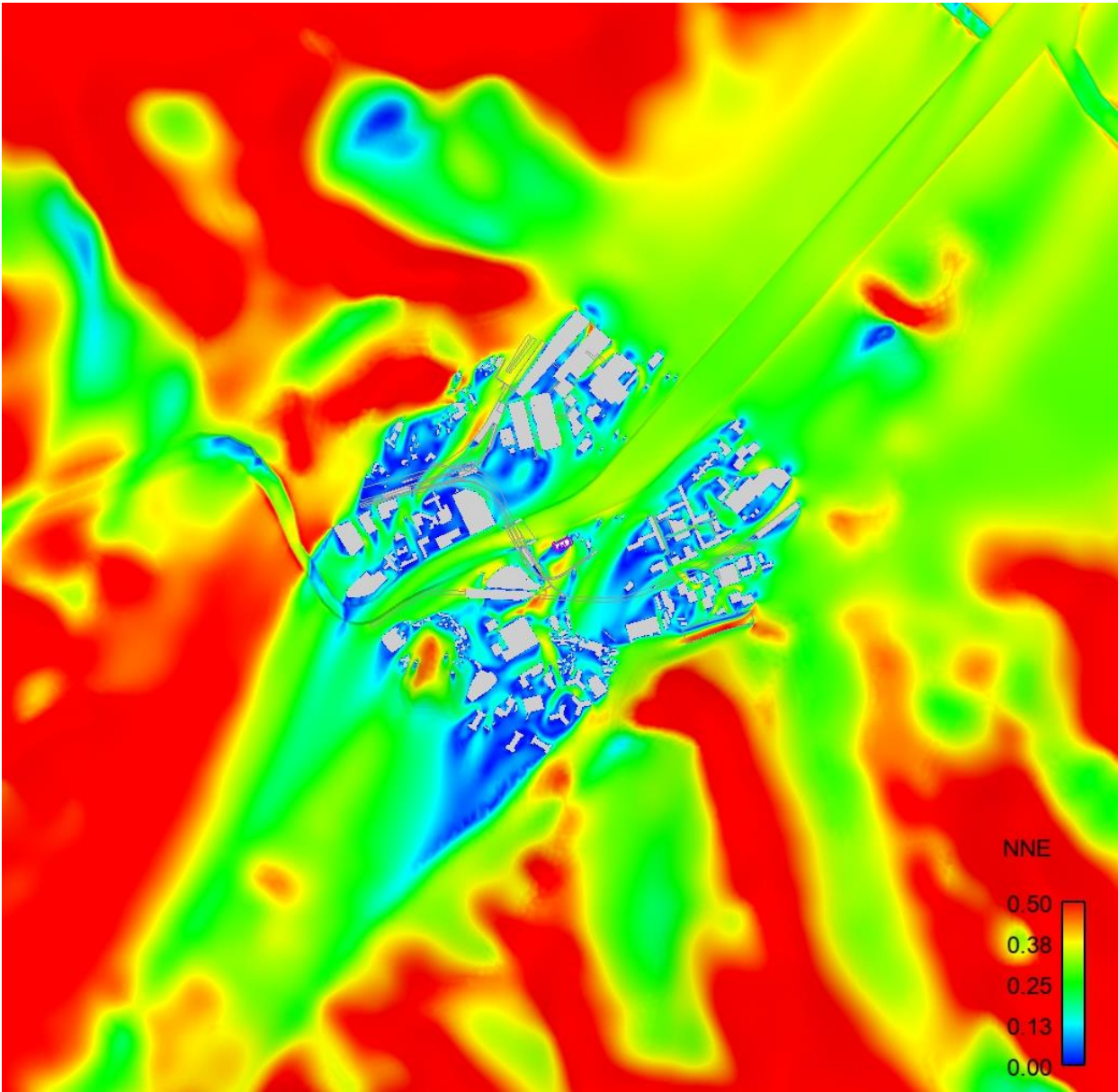


Figure 37 Proposed Scheme Velocity Contour Plot (Domain) under NNE wind

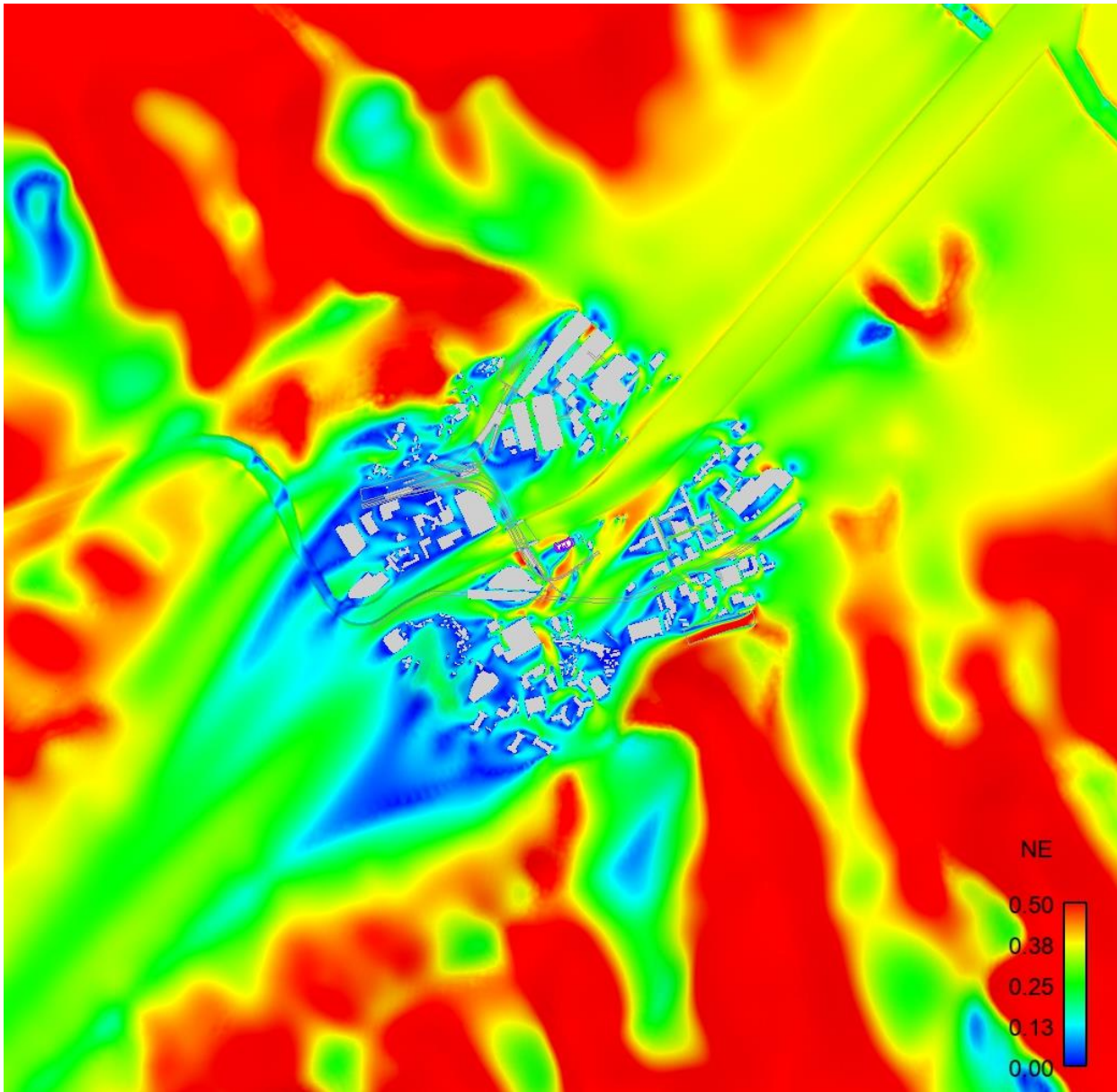


Figure 38 Proposed Scheme Velocity Contour Plot (Domain) under NE wind

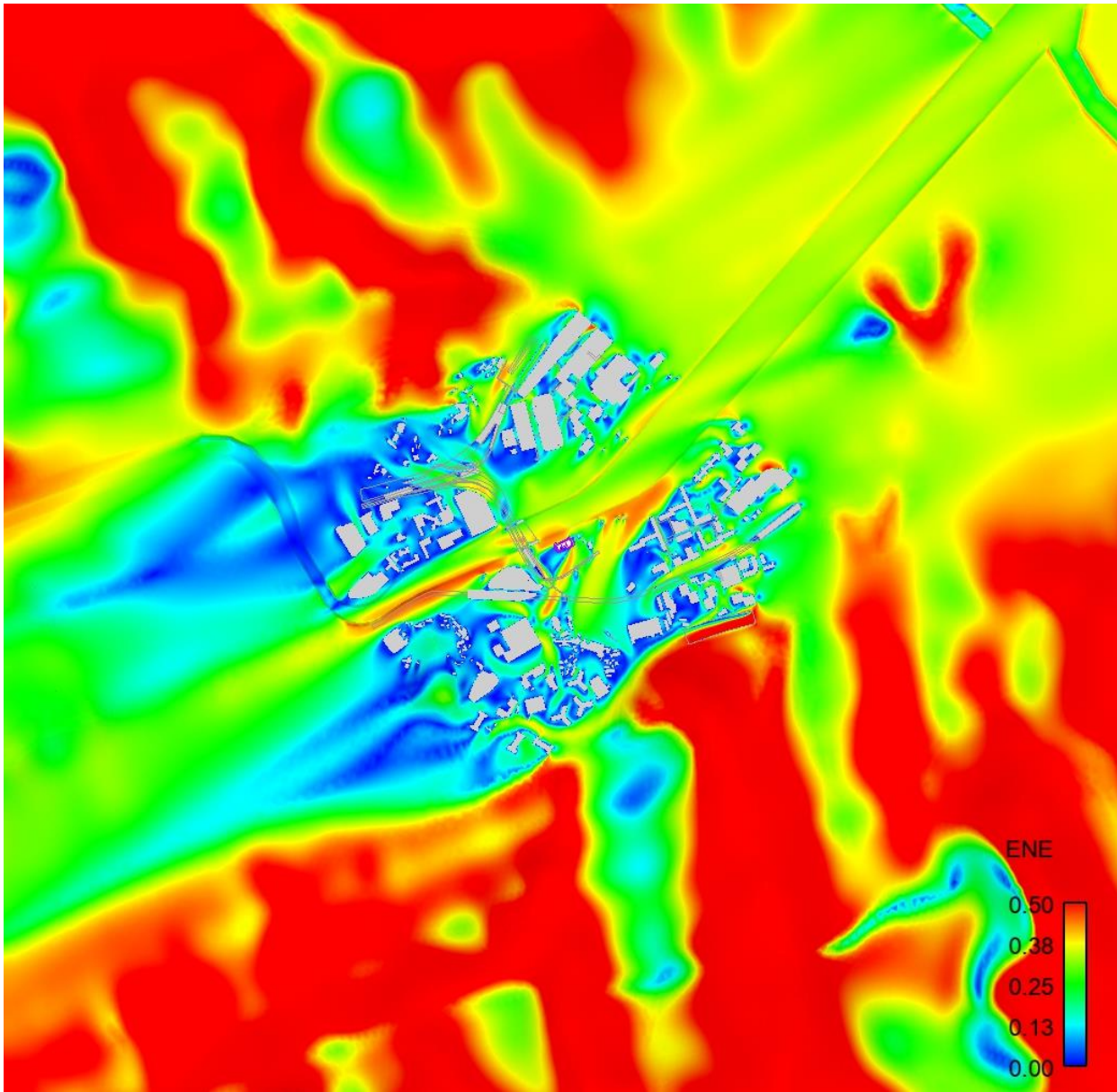


Figure 39 Proposed Scheme Velocity Contour Plot (Domain) under ENE wind

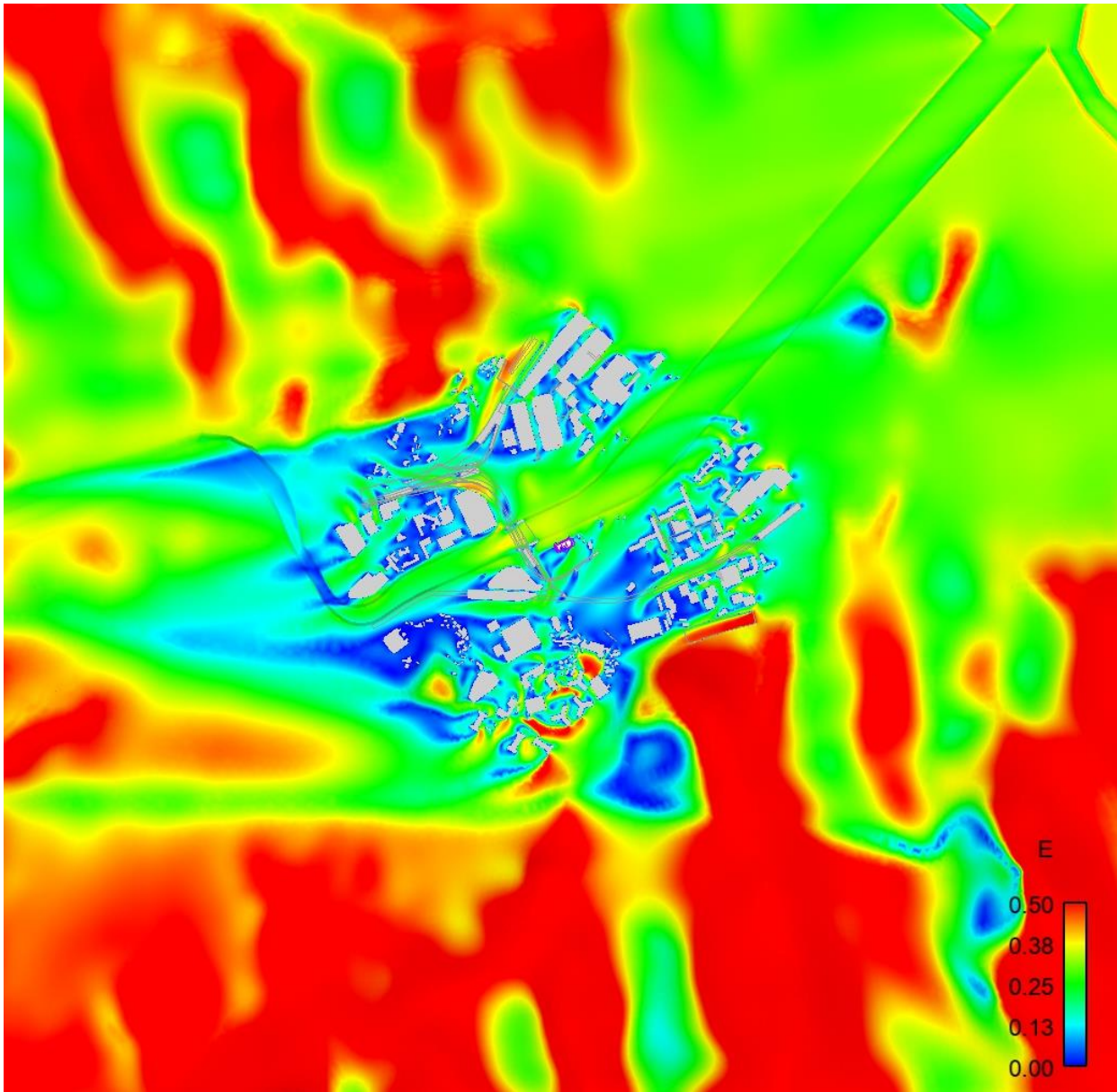


Figure 40 Proposed Scheme Velocity Contour Plot (Domain) under E wind

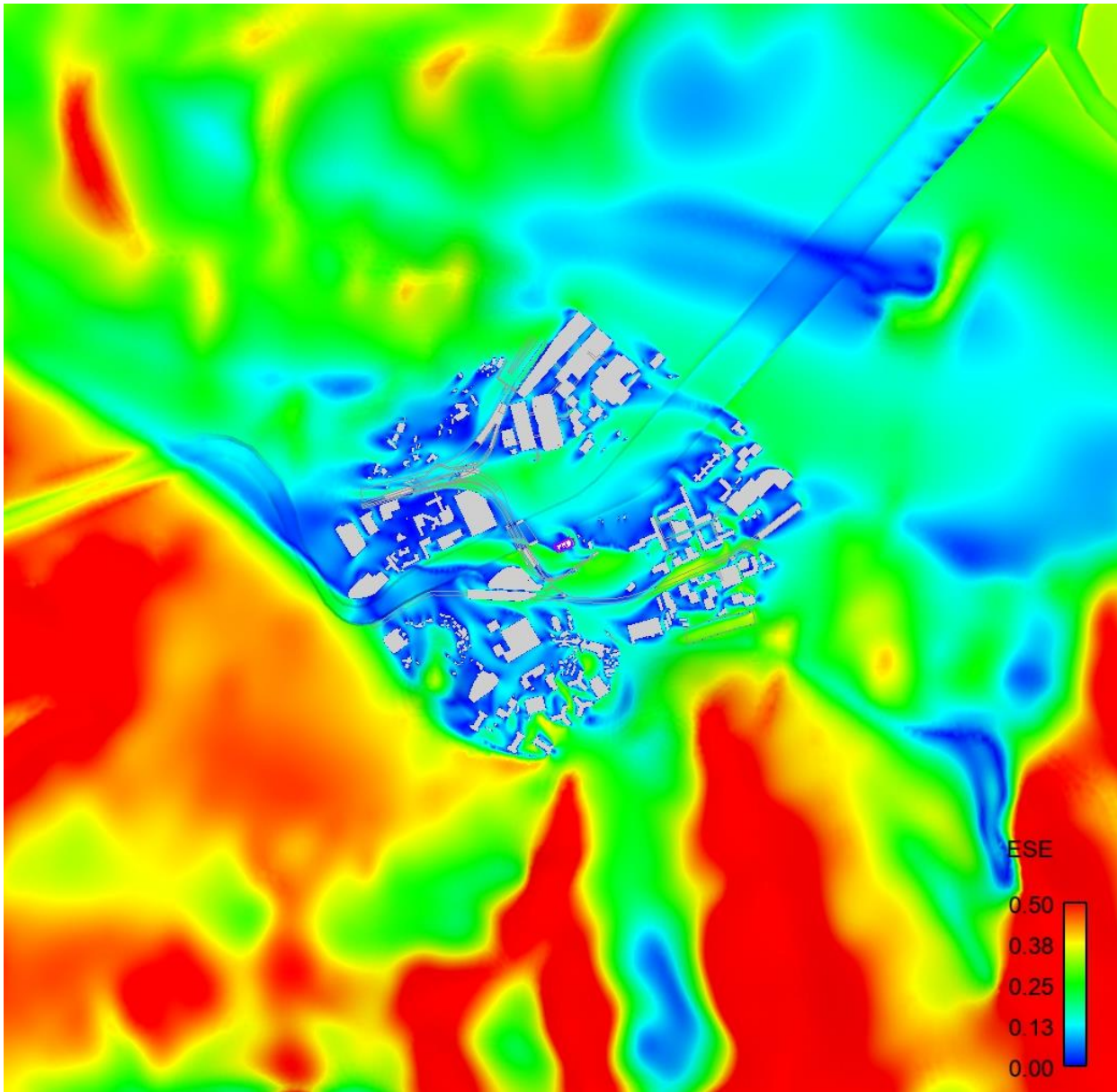


Figure 41 Proposed Scheme Velocity Contour Plot (Domain) under ESE wind

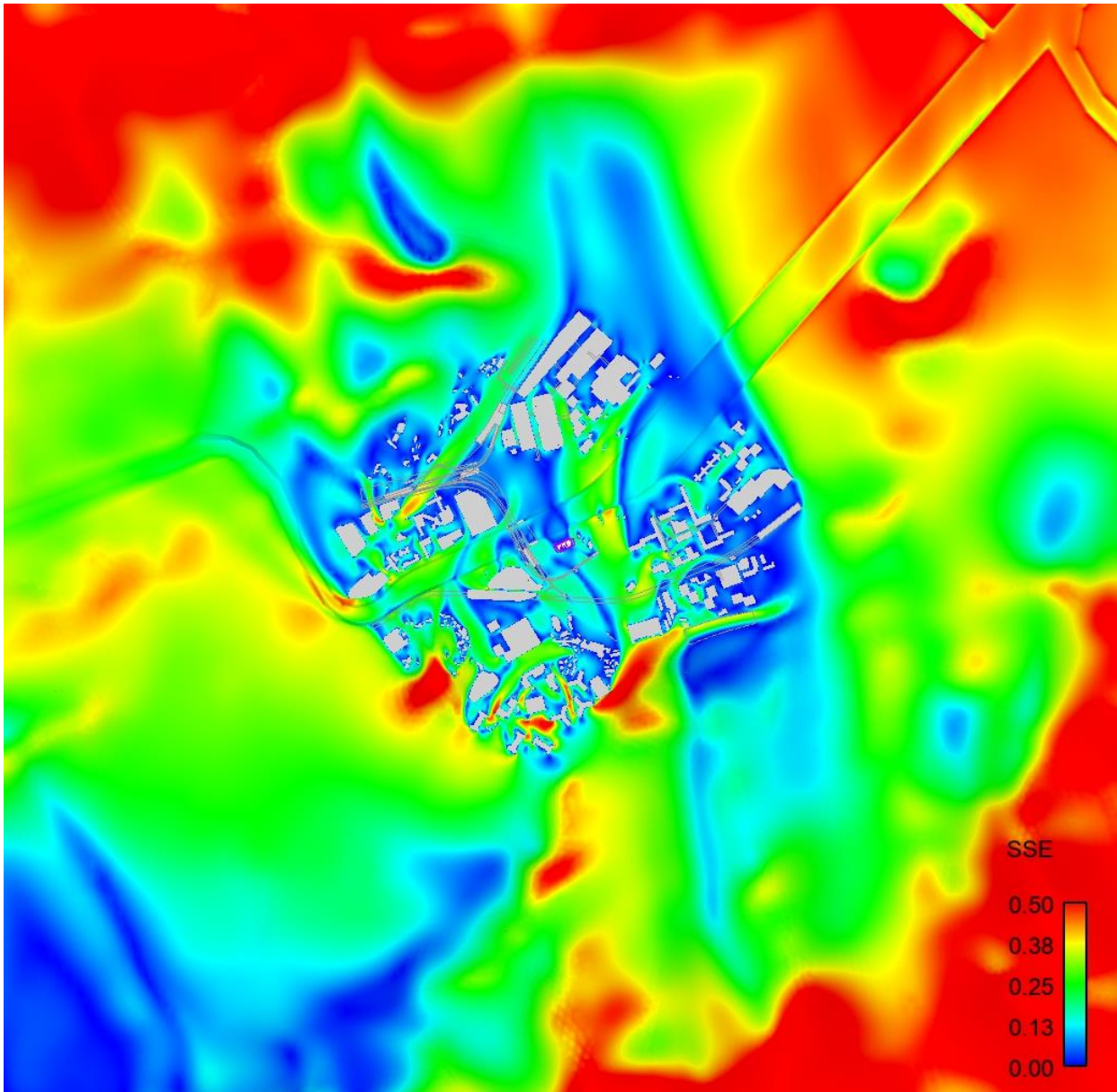


Figure 42 Proposed Scheme Velocity Contour Plot (Domain) under SSE wind

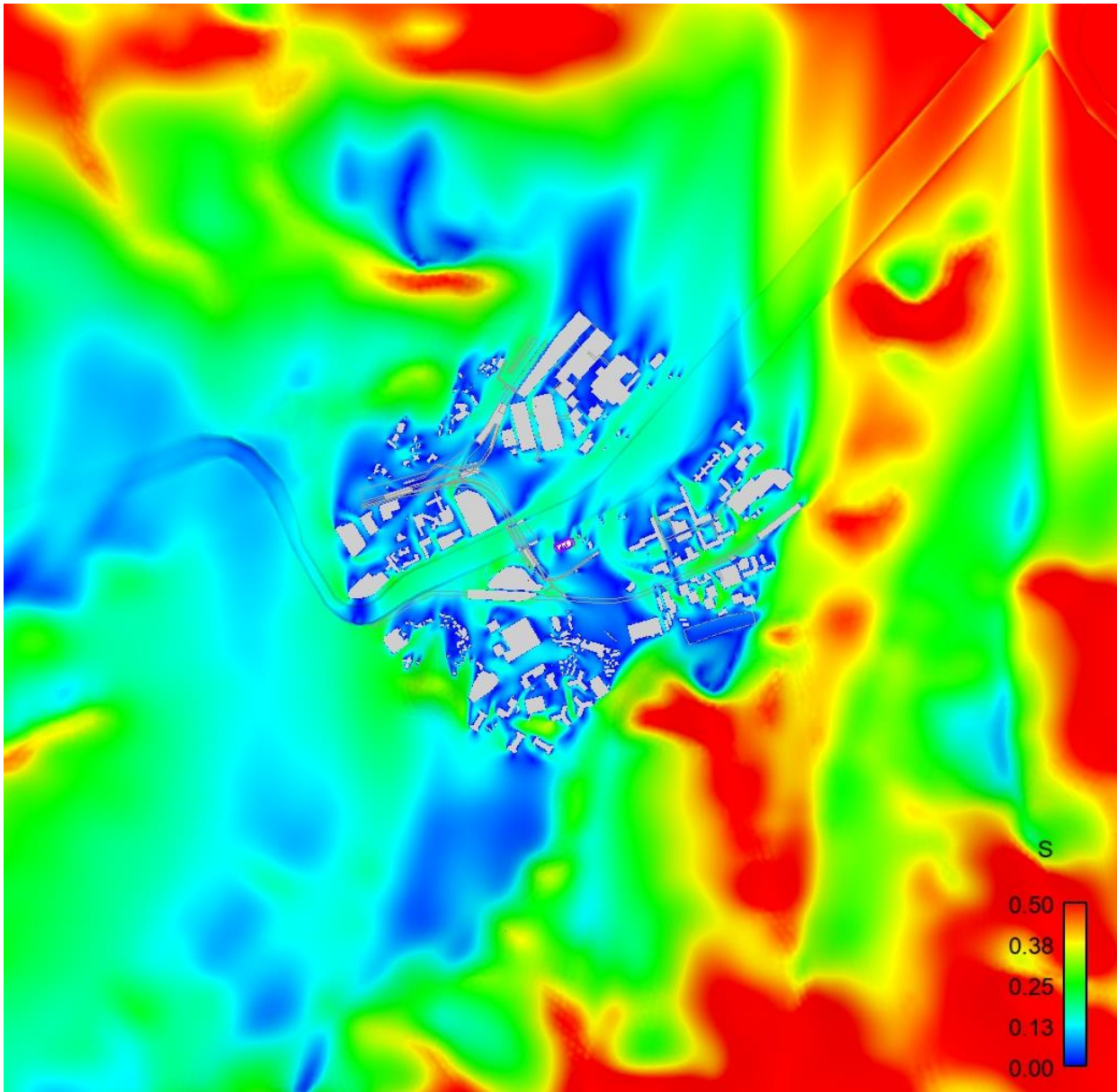


Figure 43 Proposed Scheme Velocity Contour Plot (Domain) under S wind

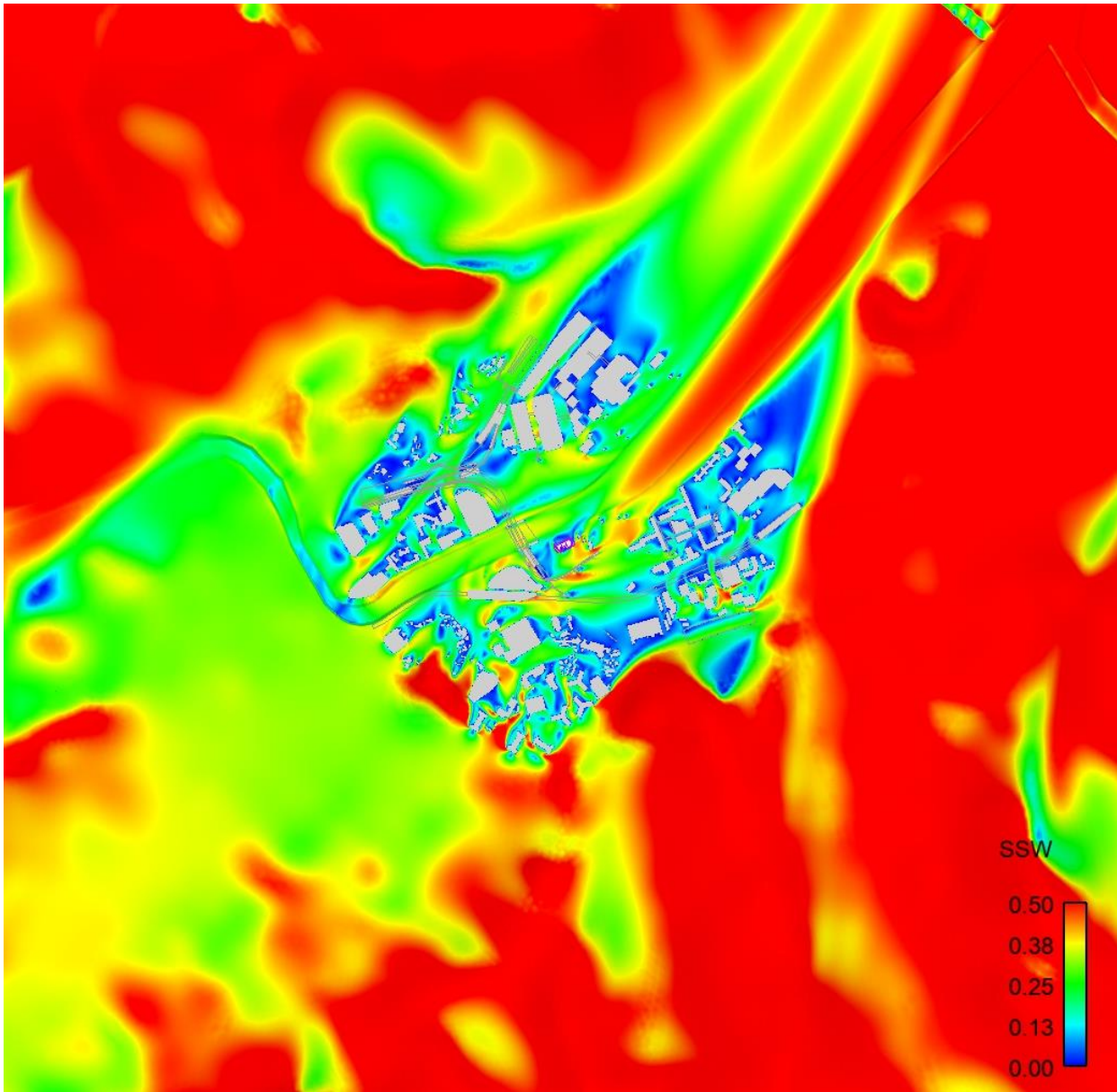


Figure 44 Proposed Scheme Velocity Contour Plot (Domain) under SSW wind

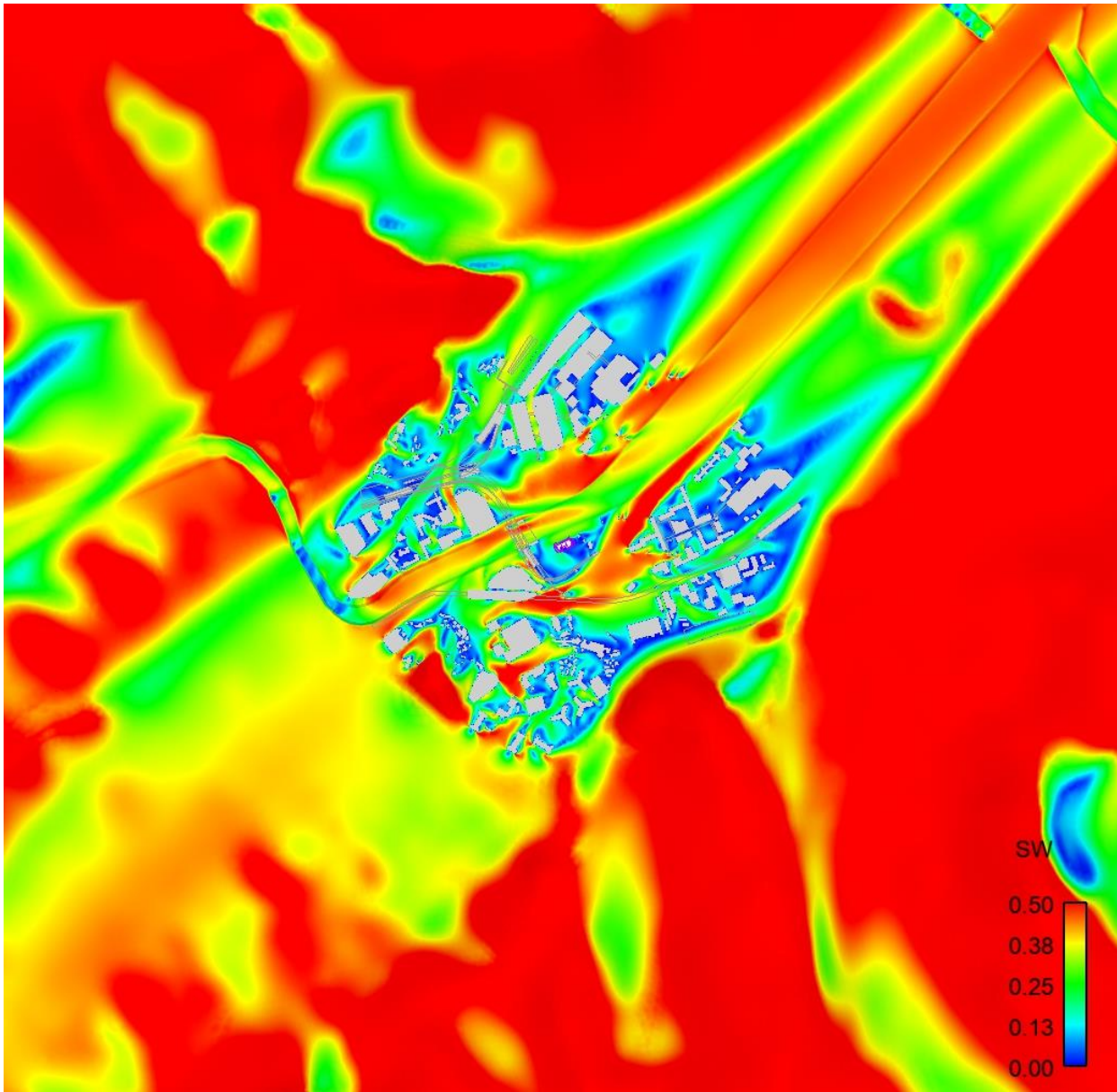


Figure 45 Proposed Scheme Velocity Contour Plot (Domain) under SW wind

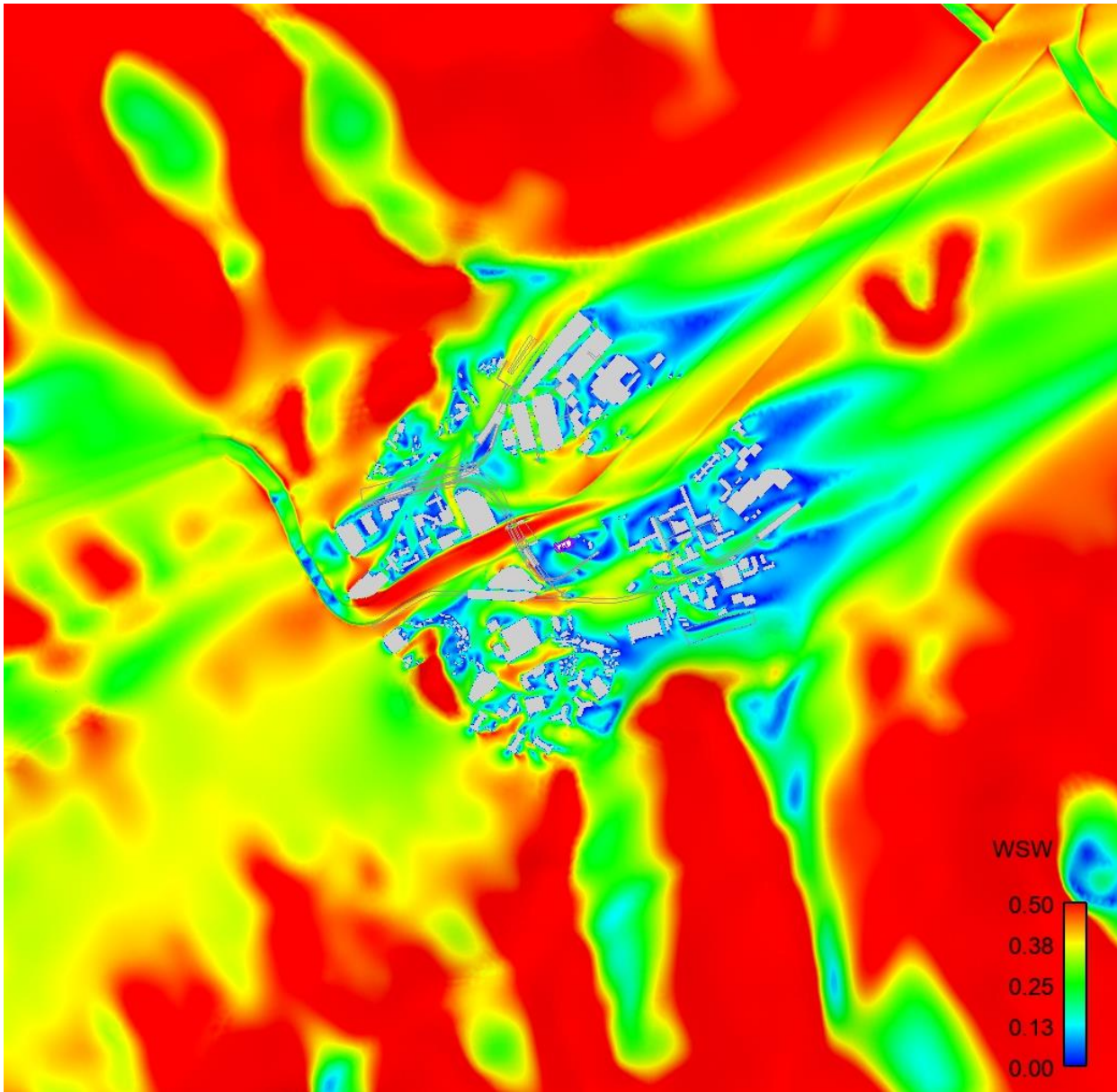


Figure 46 Proposed Scheme Velocity Contour Plot (Domain) under WSW wind

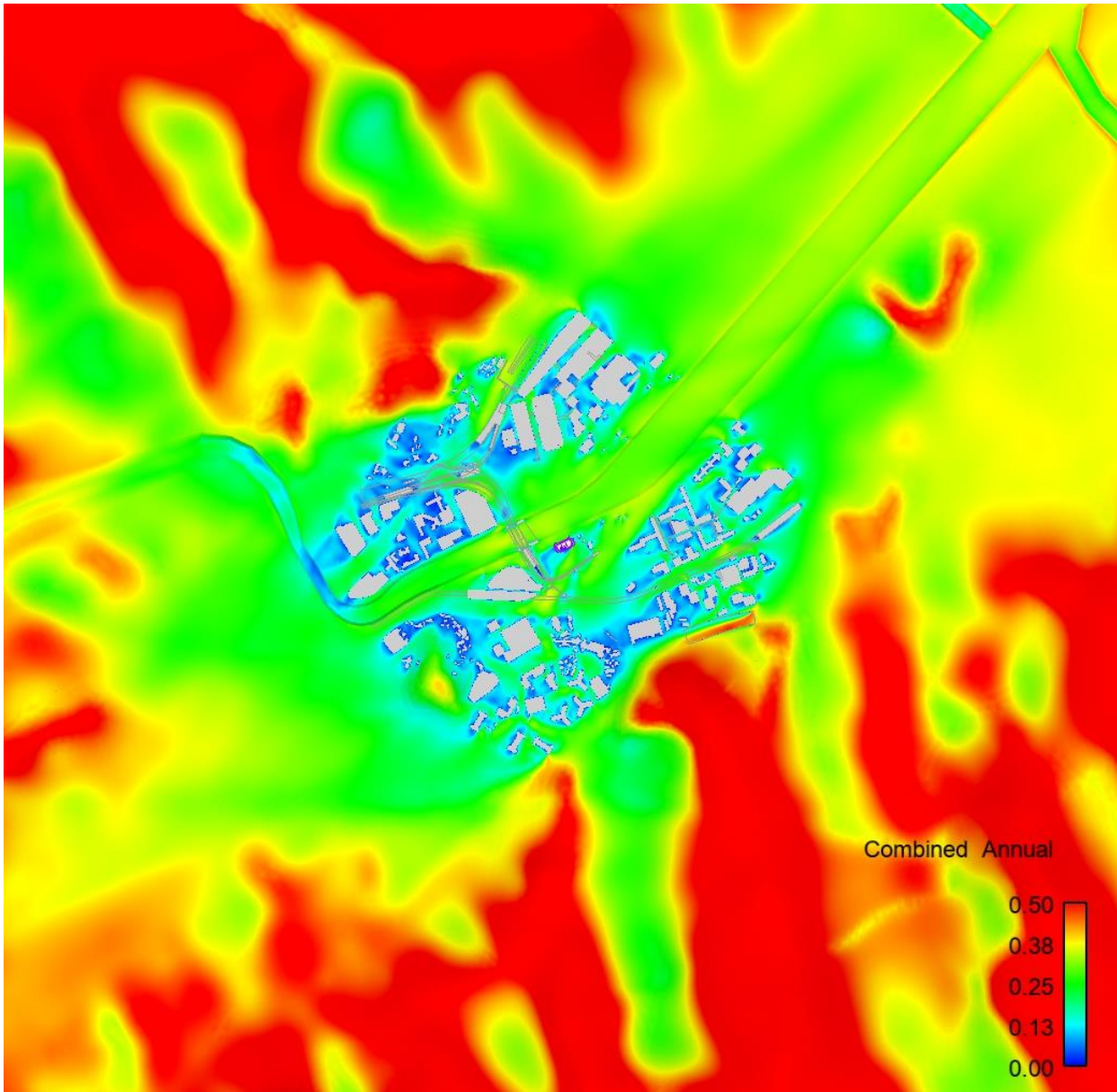


Figure 47 Proposed Scheme Velocity Contour Plot (Domain) under Annual wind

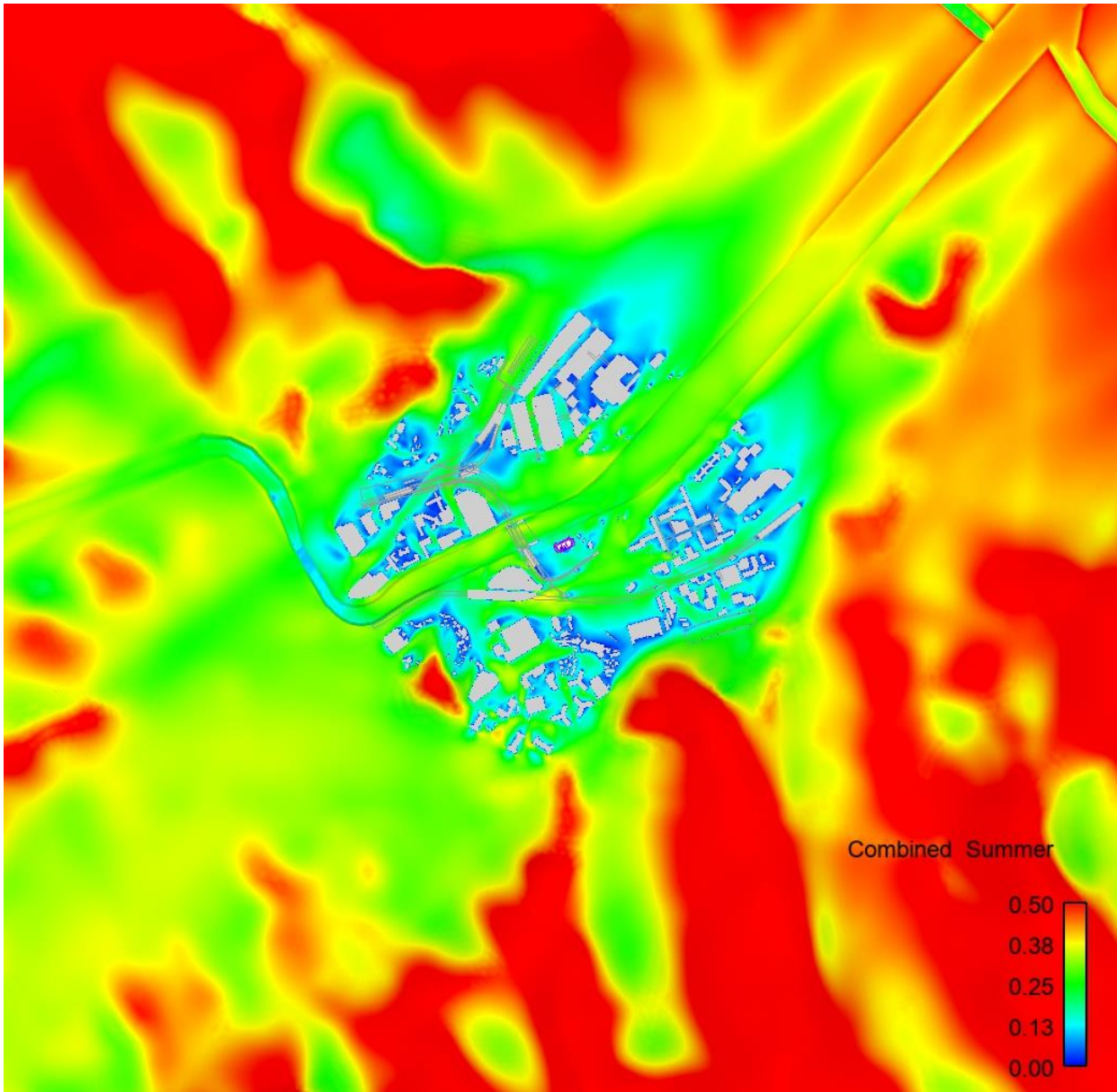


Figure 48 Proposed Scheme Velocity Contour Plot (Domain) under Summer wind

Appendix D

Vector Plot of Velocity Ratio (VR)

D.1 Baseline Scheme

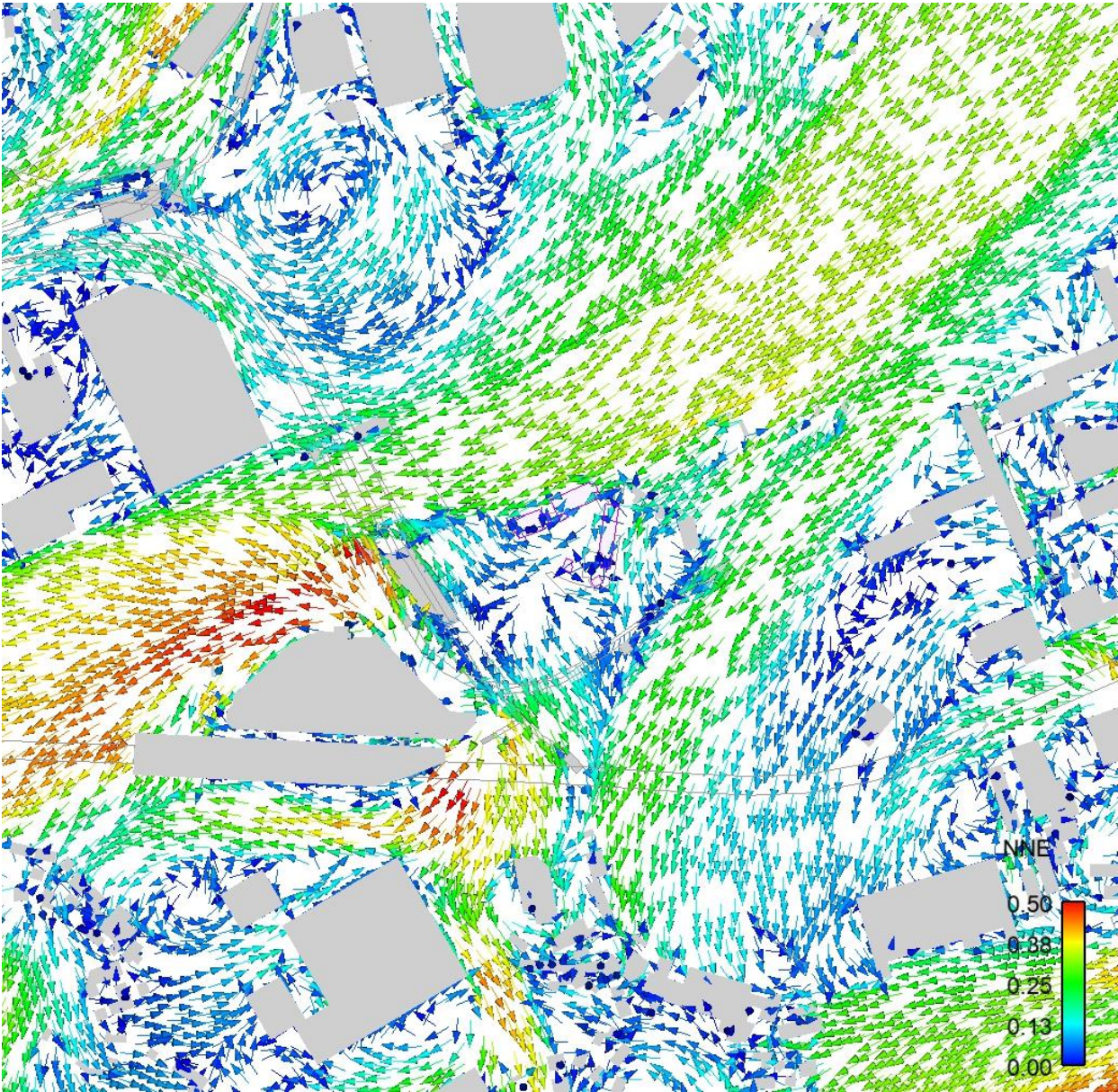


Figure 1 Baseline Scheme Vector Plot under NNE wind

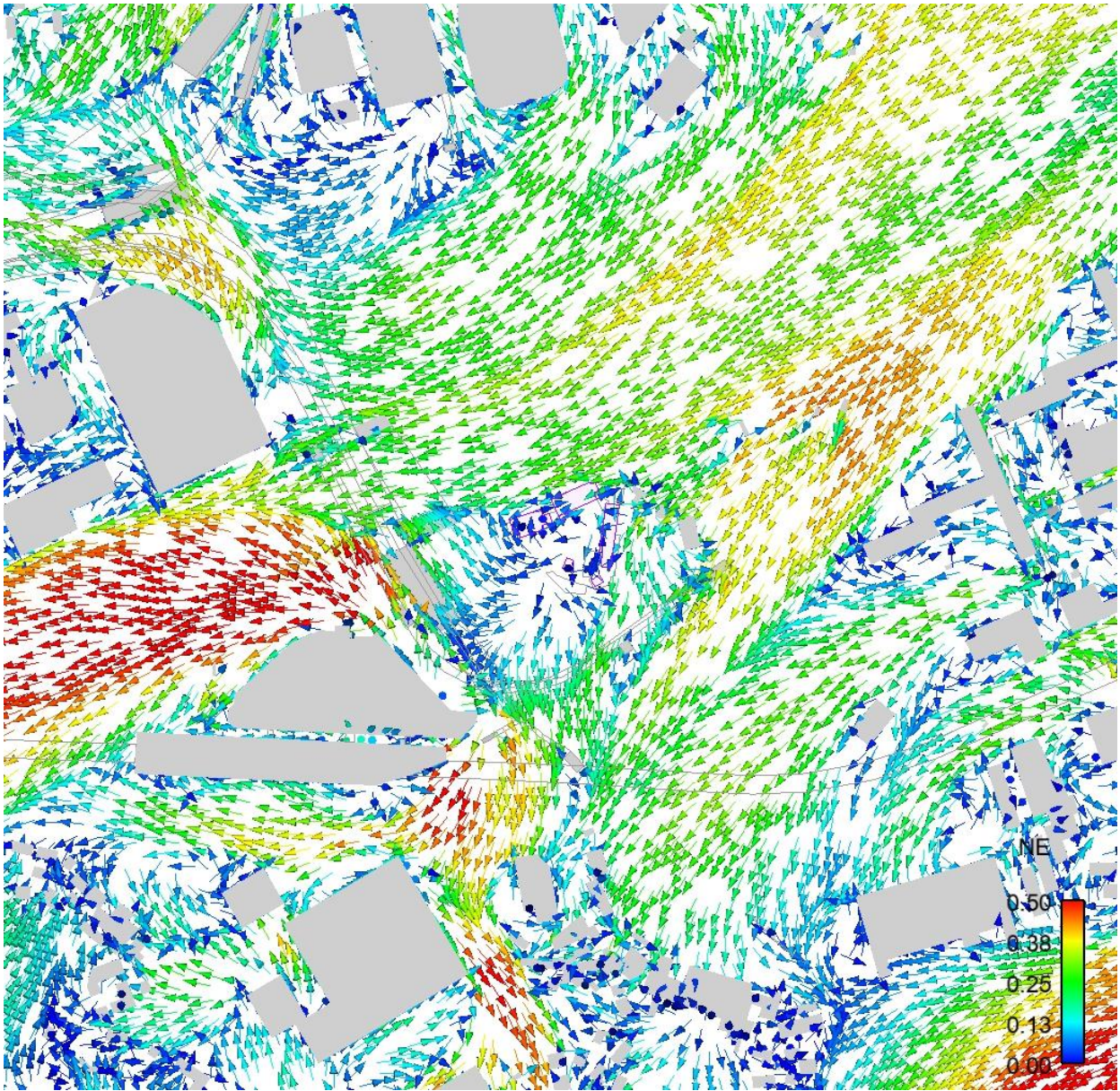


Figure 2 Baseline Scheme Vector Plot under NE wind

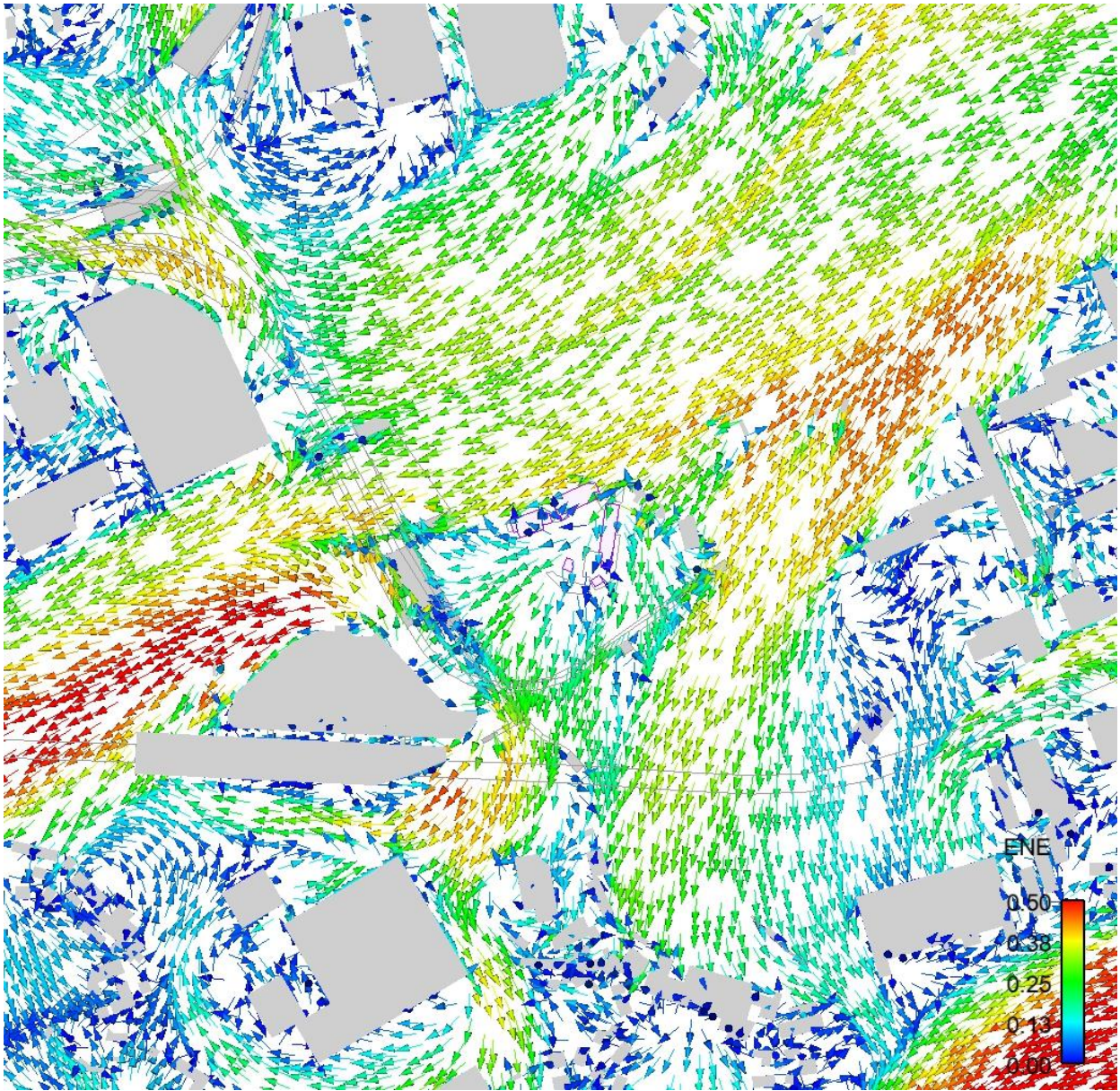


Figure 3 Baseline Scheme Vector Plot under ENE wind

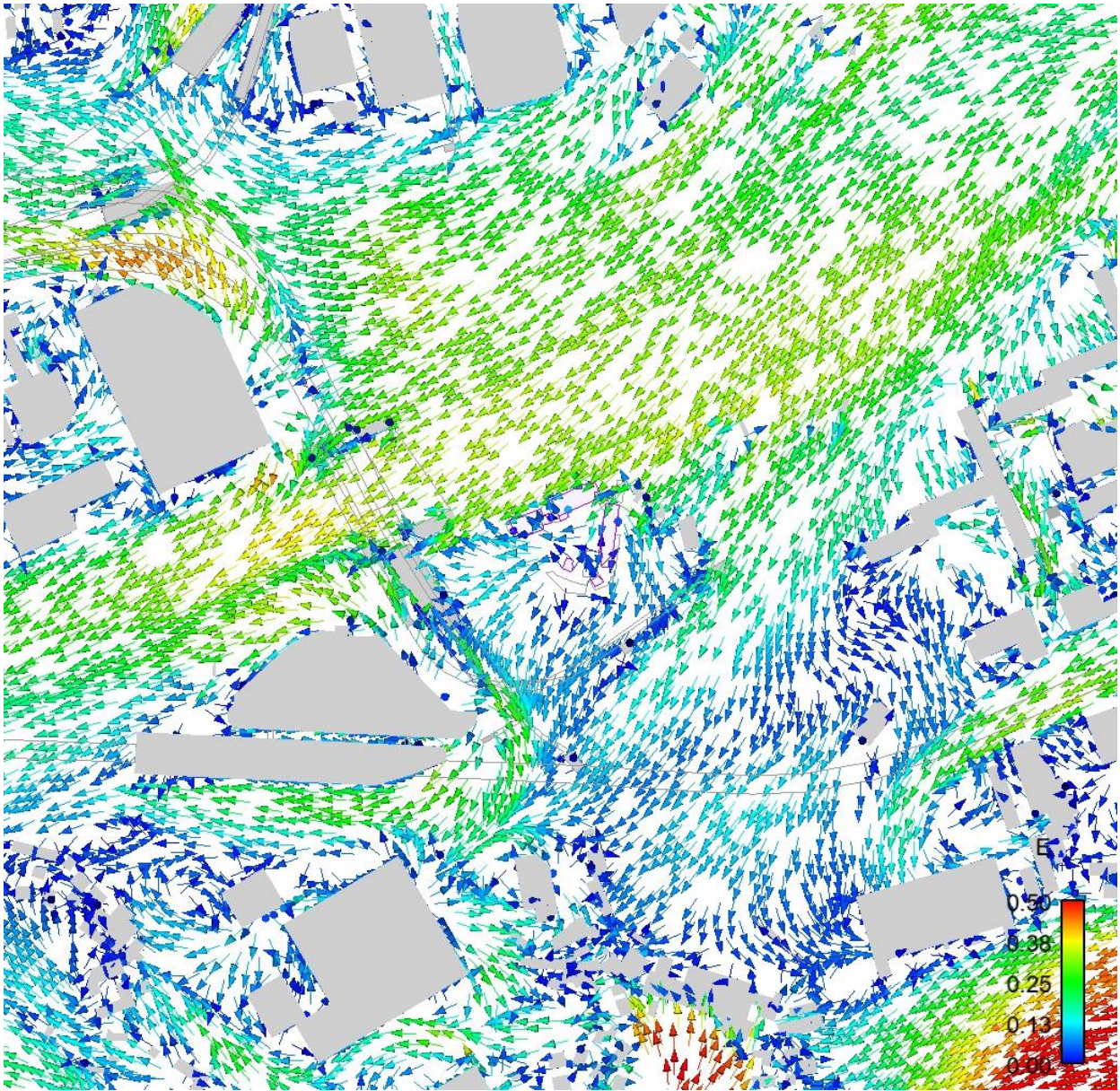


Figure 4 Baseline Scheme Vector Plot under E wind

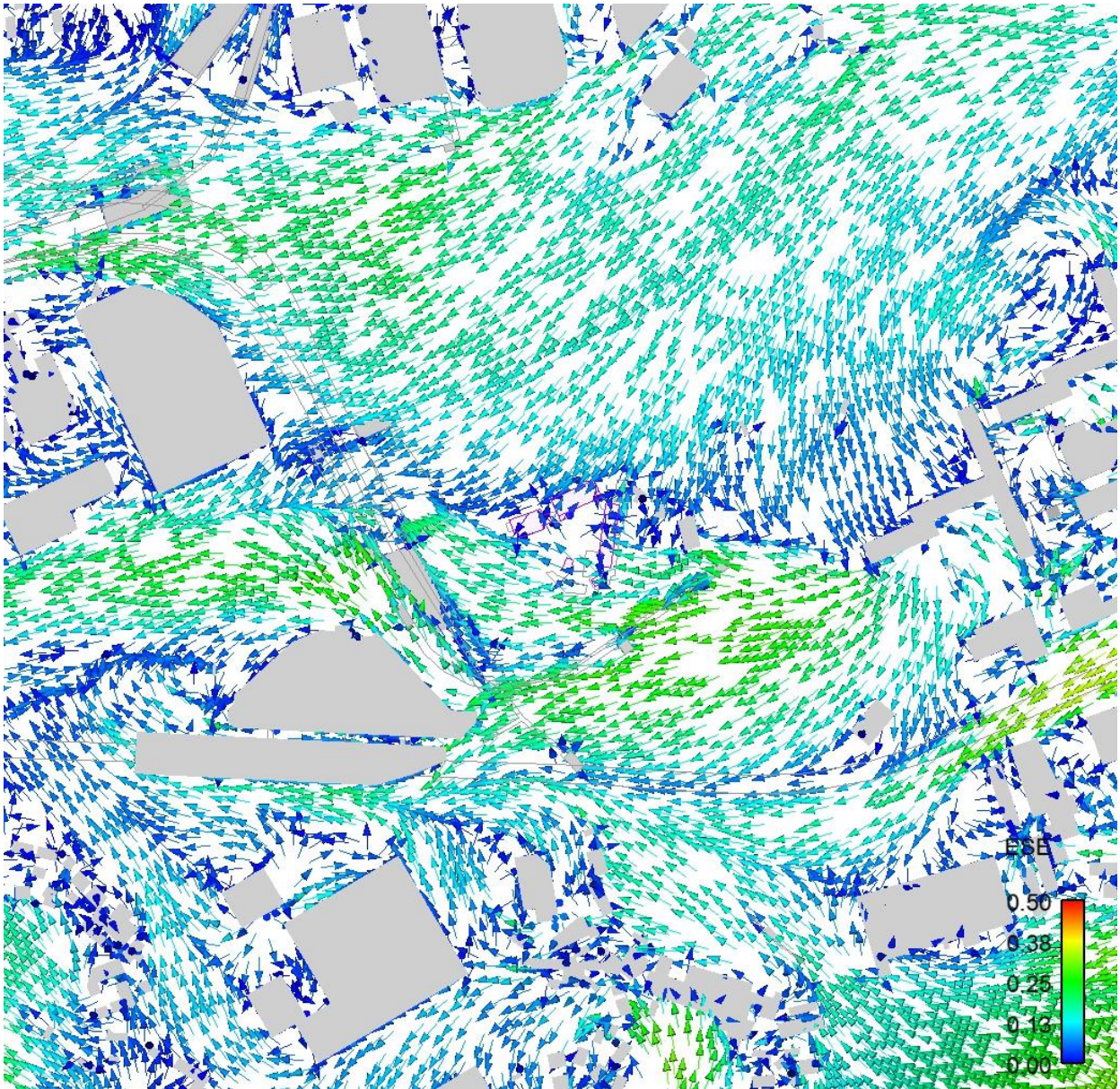


Figure 5 Baseline Scheme Vector Plot under ESE wind

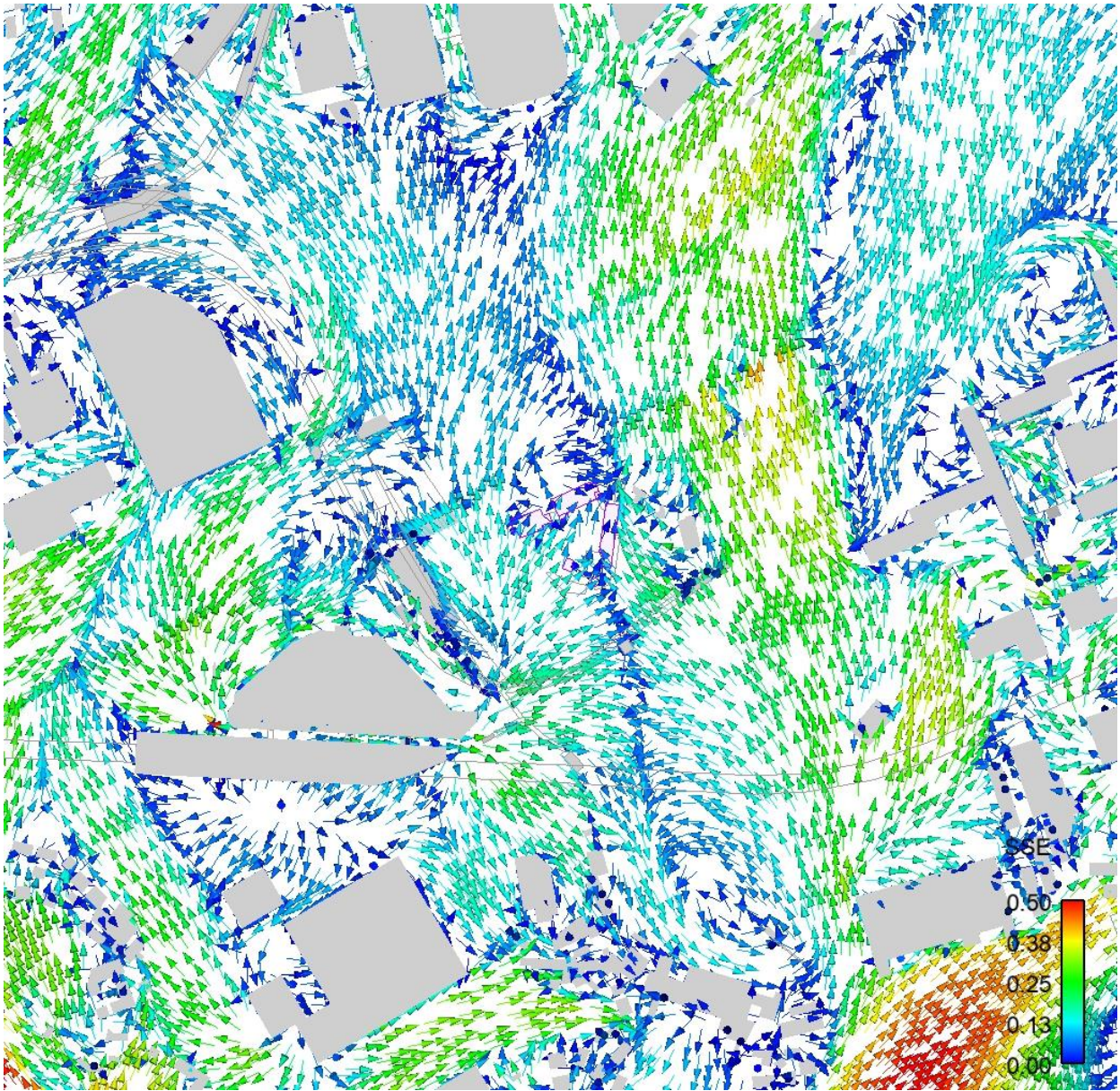


Figure 6 Baseline Scheme Vector Plot under SSE wind

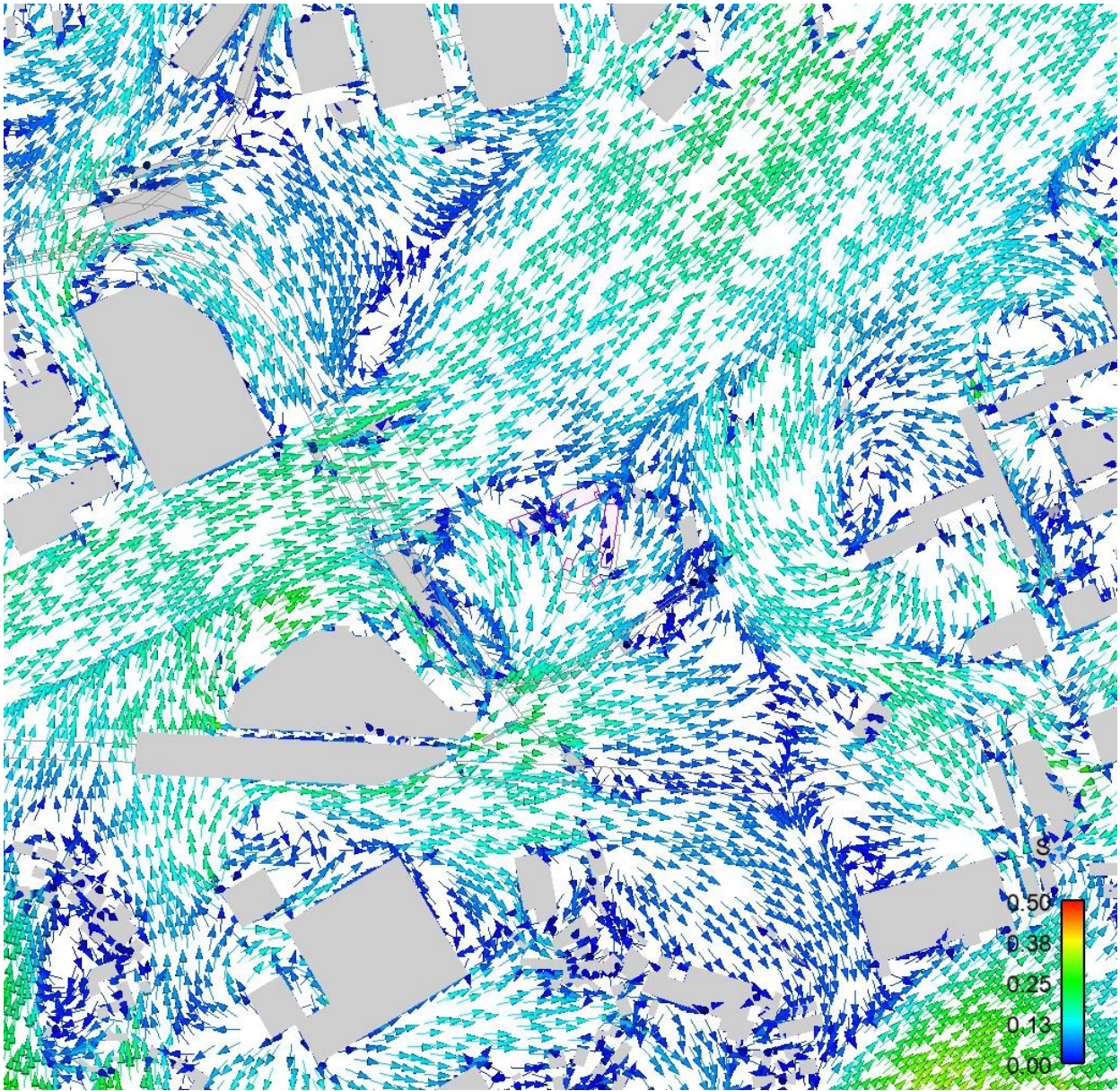


Figure 7 Baseline Scheme Vector Plot under S wind

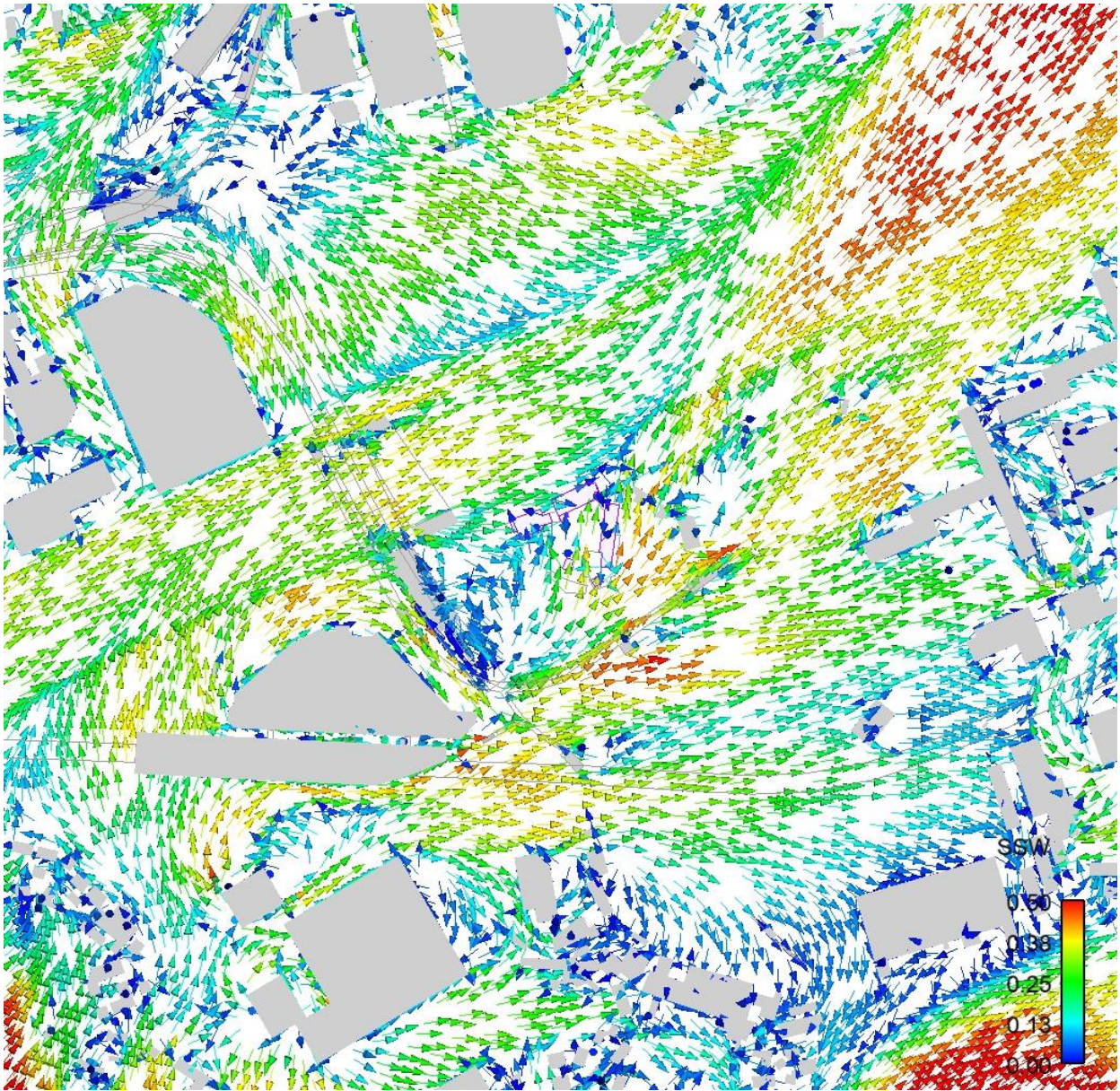


Figure 8 Baseline Scheme Vector Plot under SSW wind

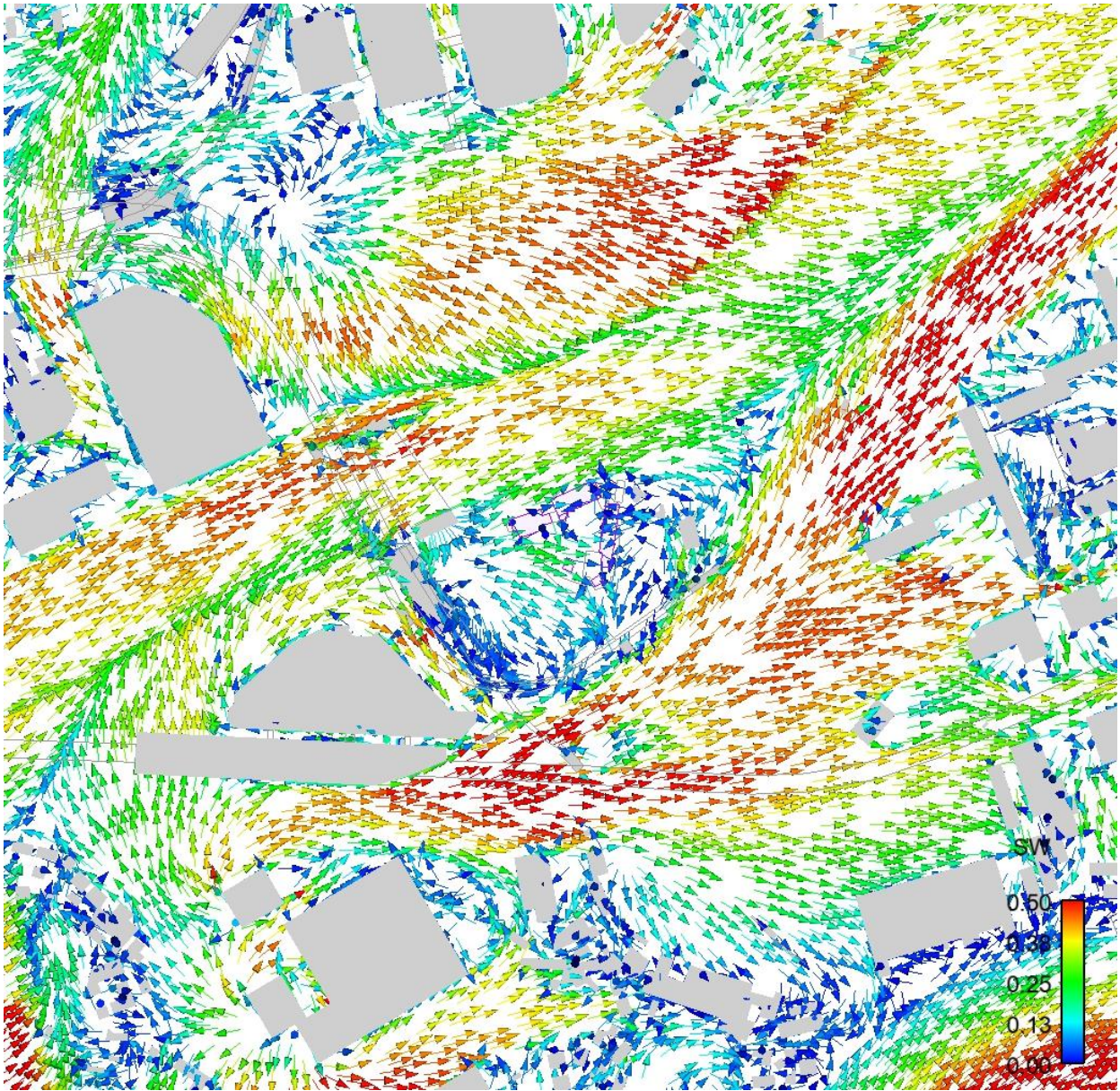


Figure 9 Baseline Scheme Vector Plot under SW wind

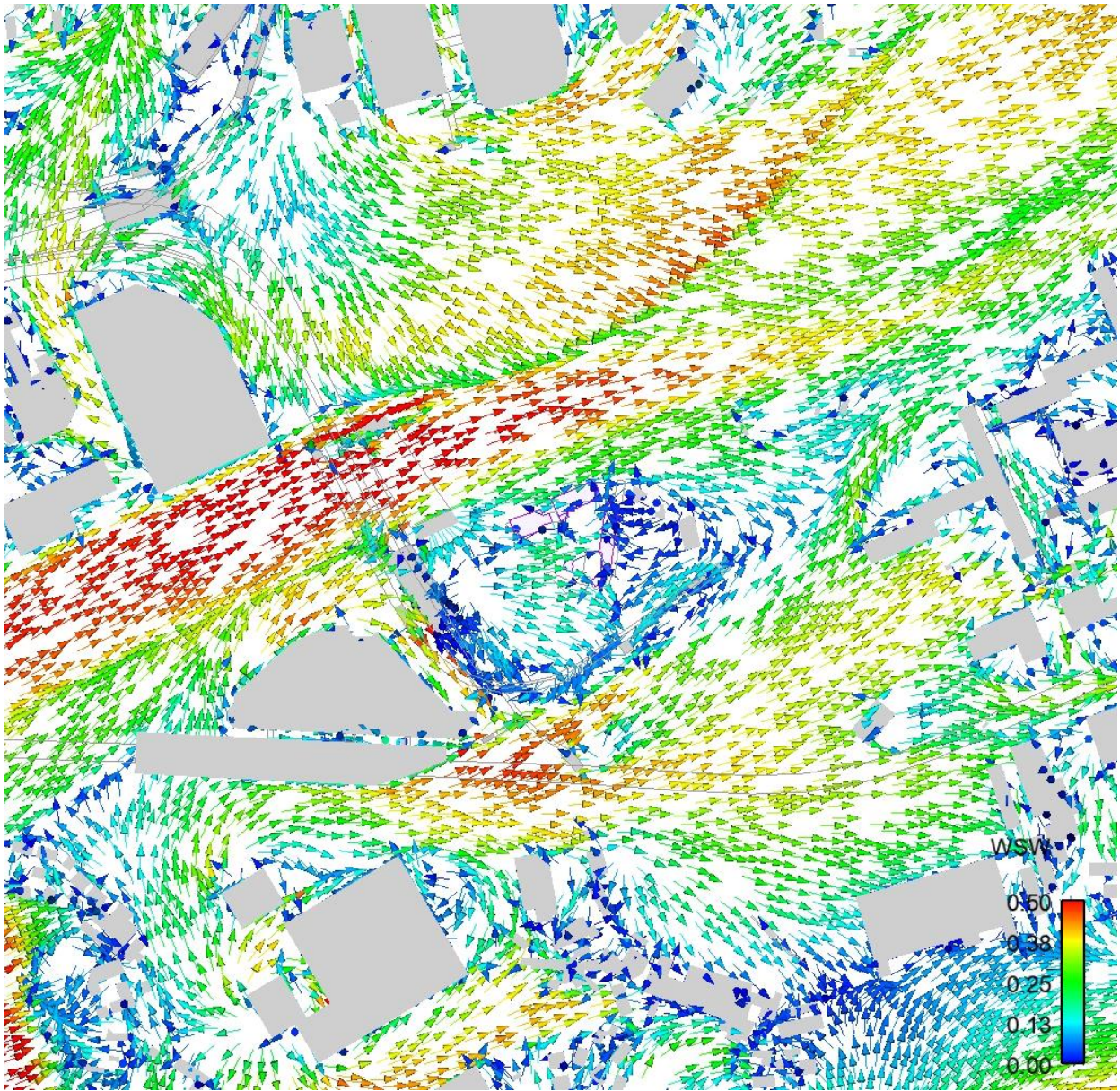


Figure 10 Baseline Scheme Vector Plot under WSW wind

D.2 Proposed Scheme

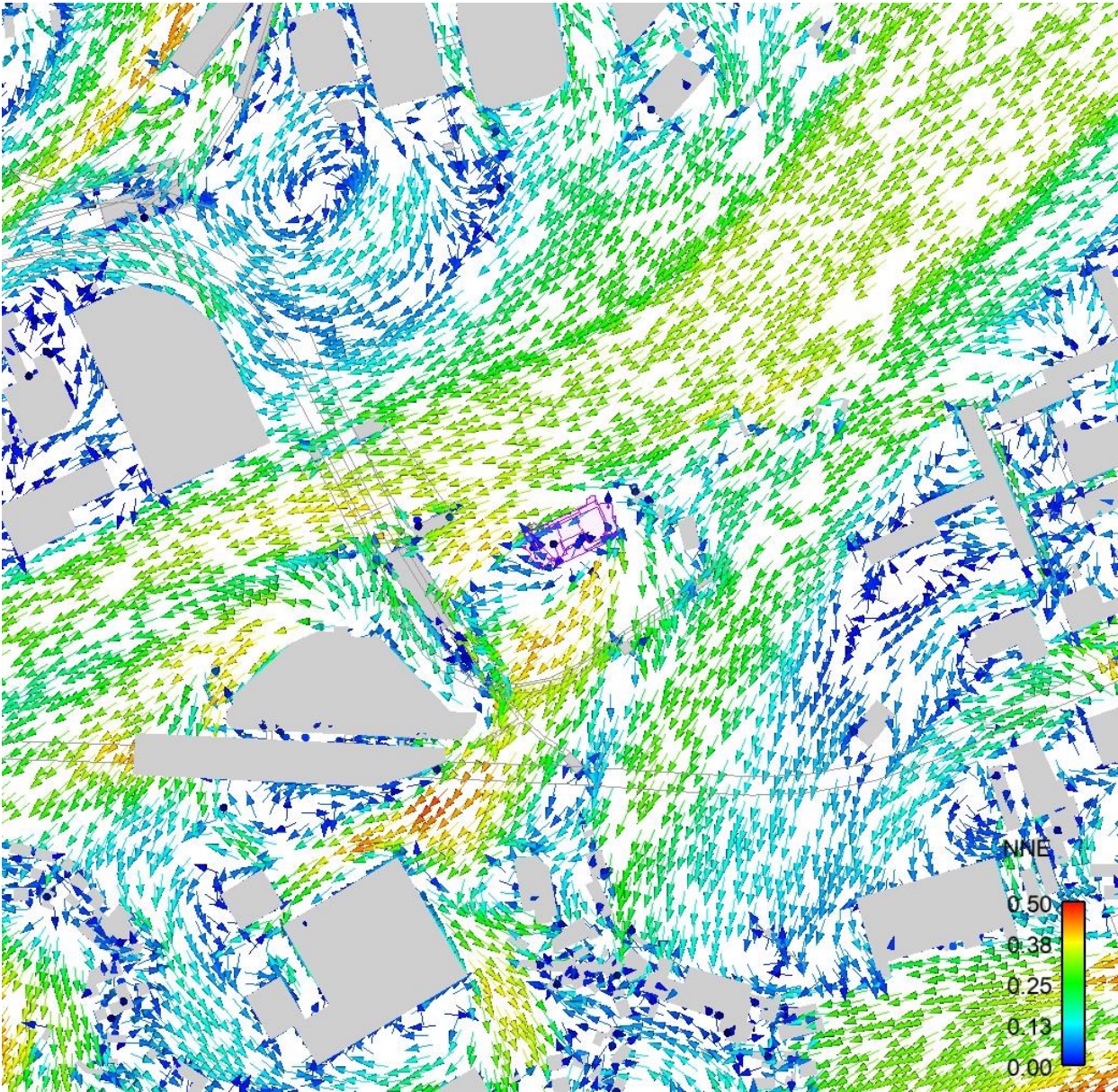


Figure 11 Proposed Scheme Vector Plot under NNE wind

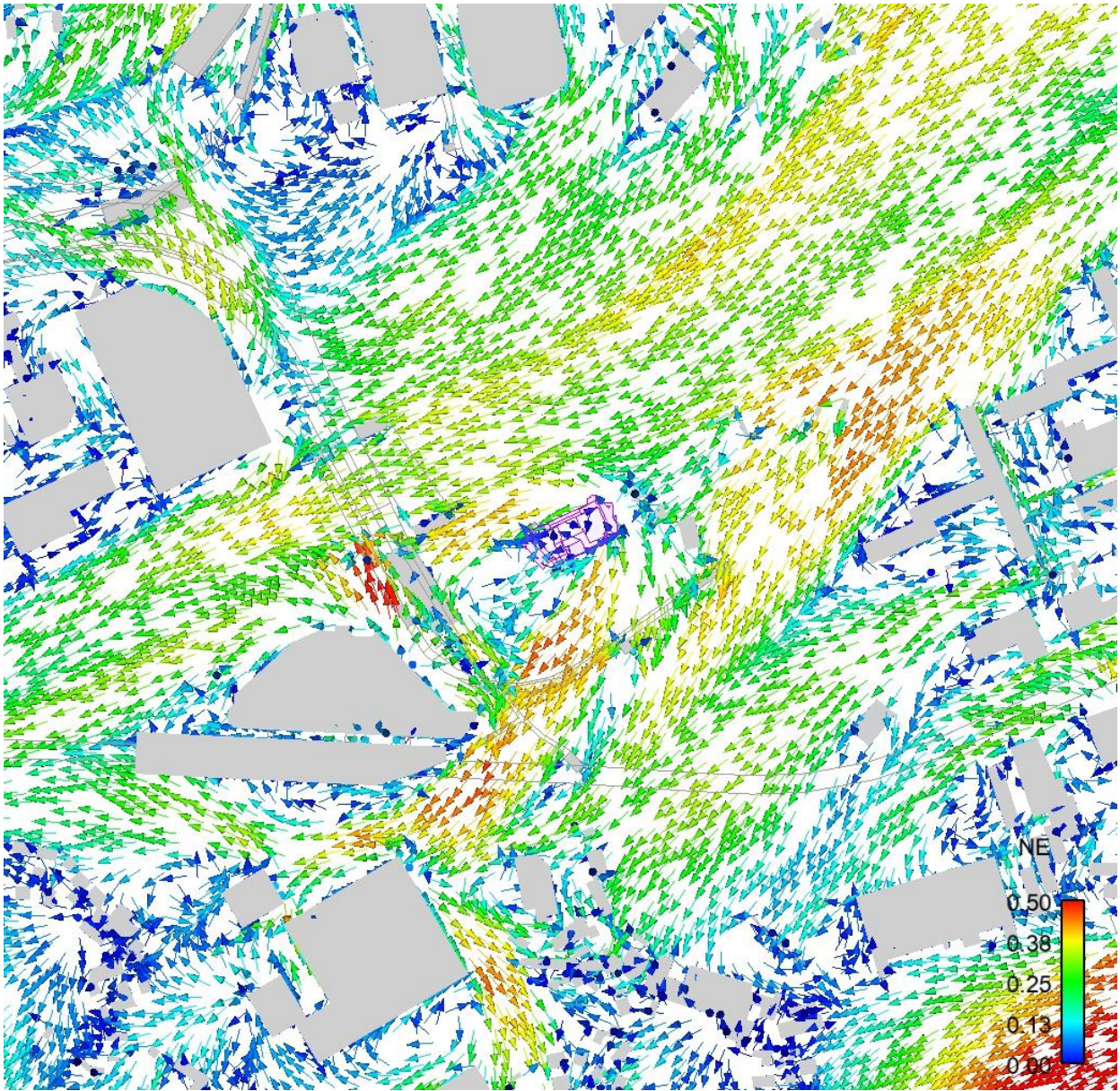


Figure 12 Proposed Scheme Vector Plot under NE wind

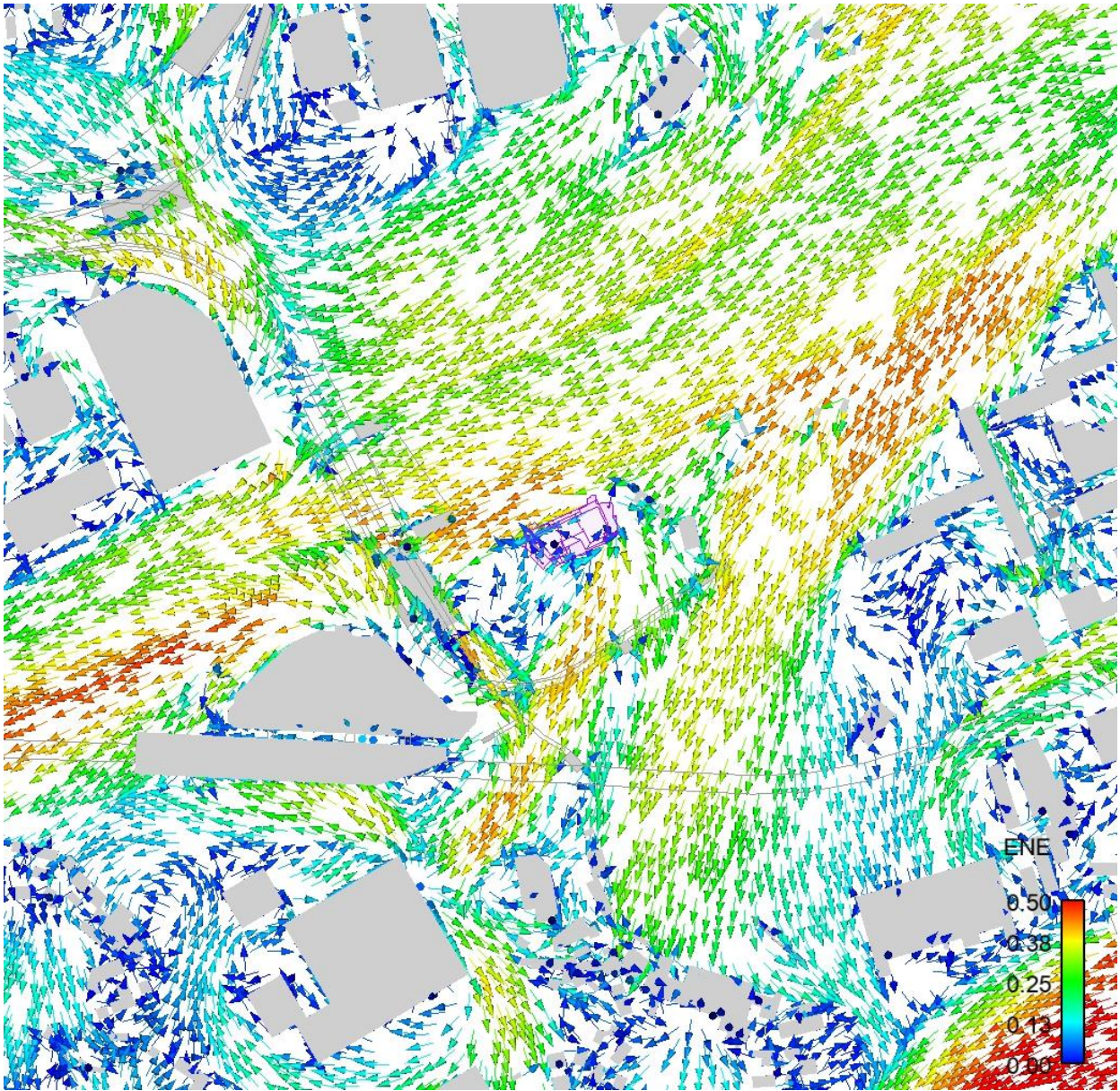


Figure 13 Proposed Scheme Vector Plot under ENE wind

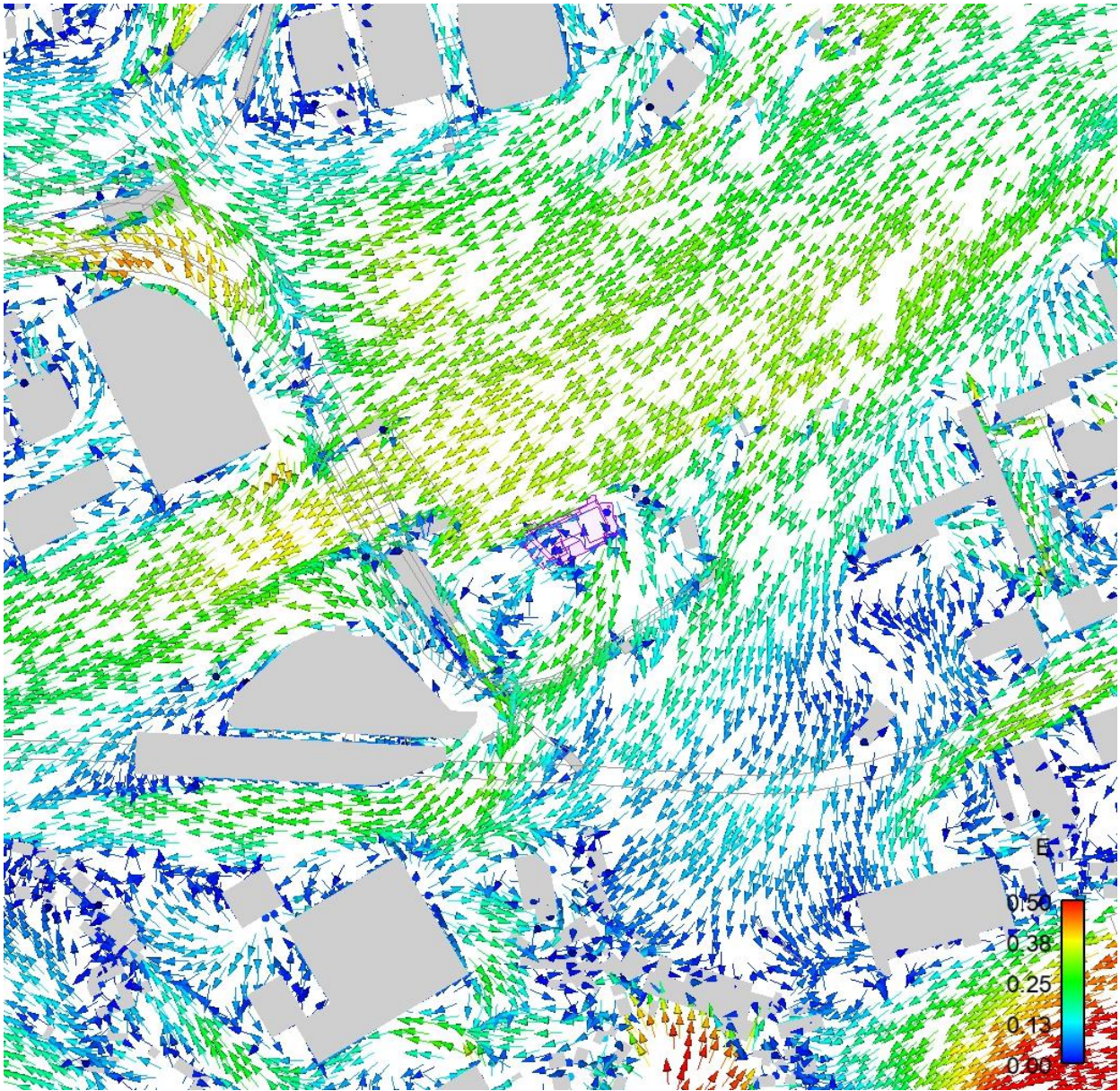


Figure 14 Proposed Scheme Vector Plot under E wind

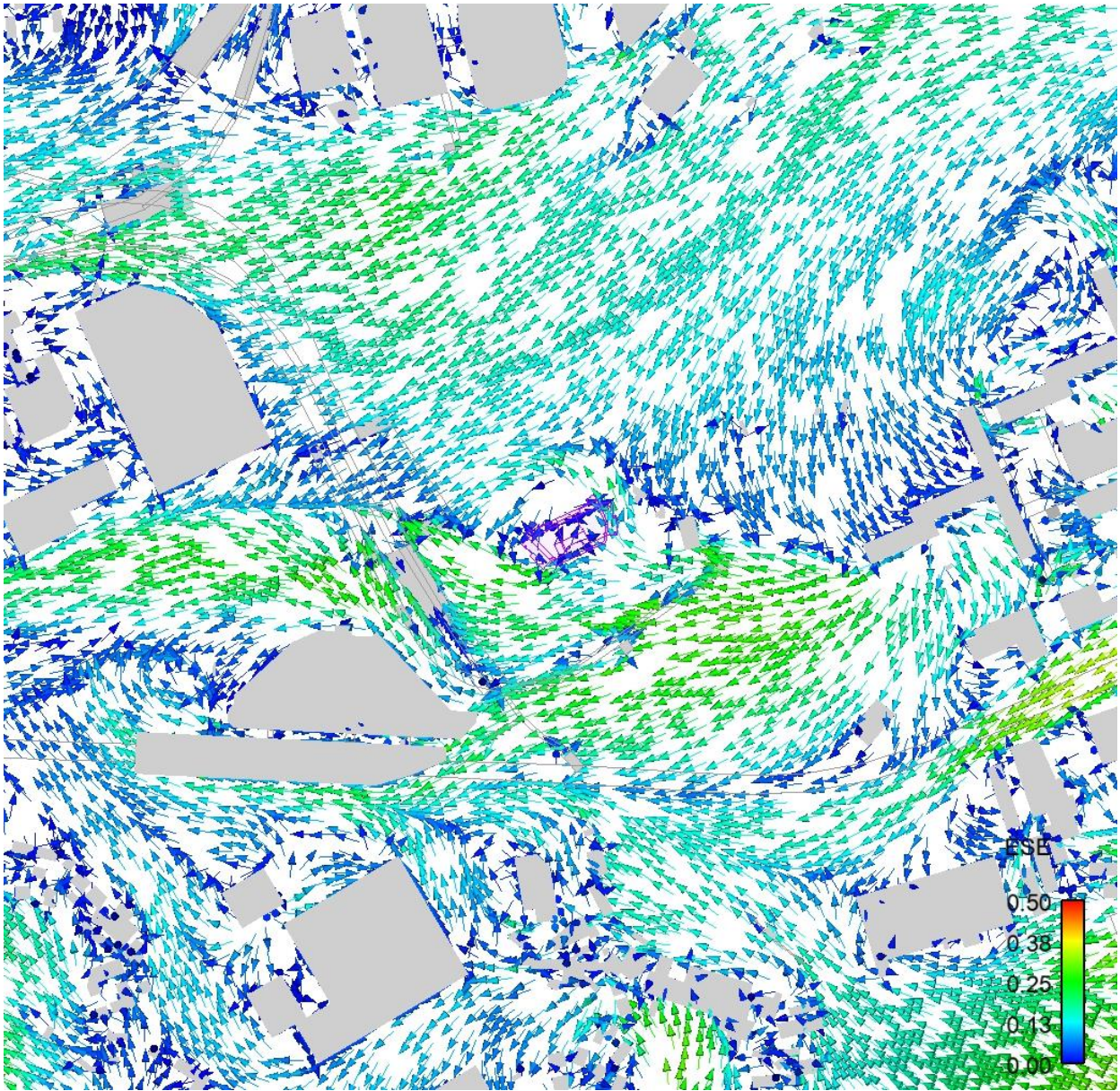


Figure 15 Proposed Scheme Vector Plot under ESE wind

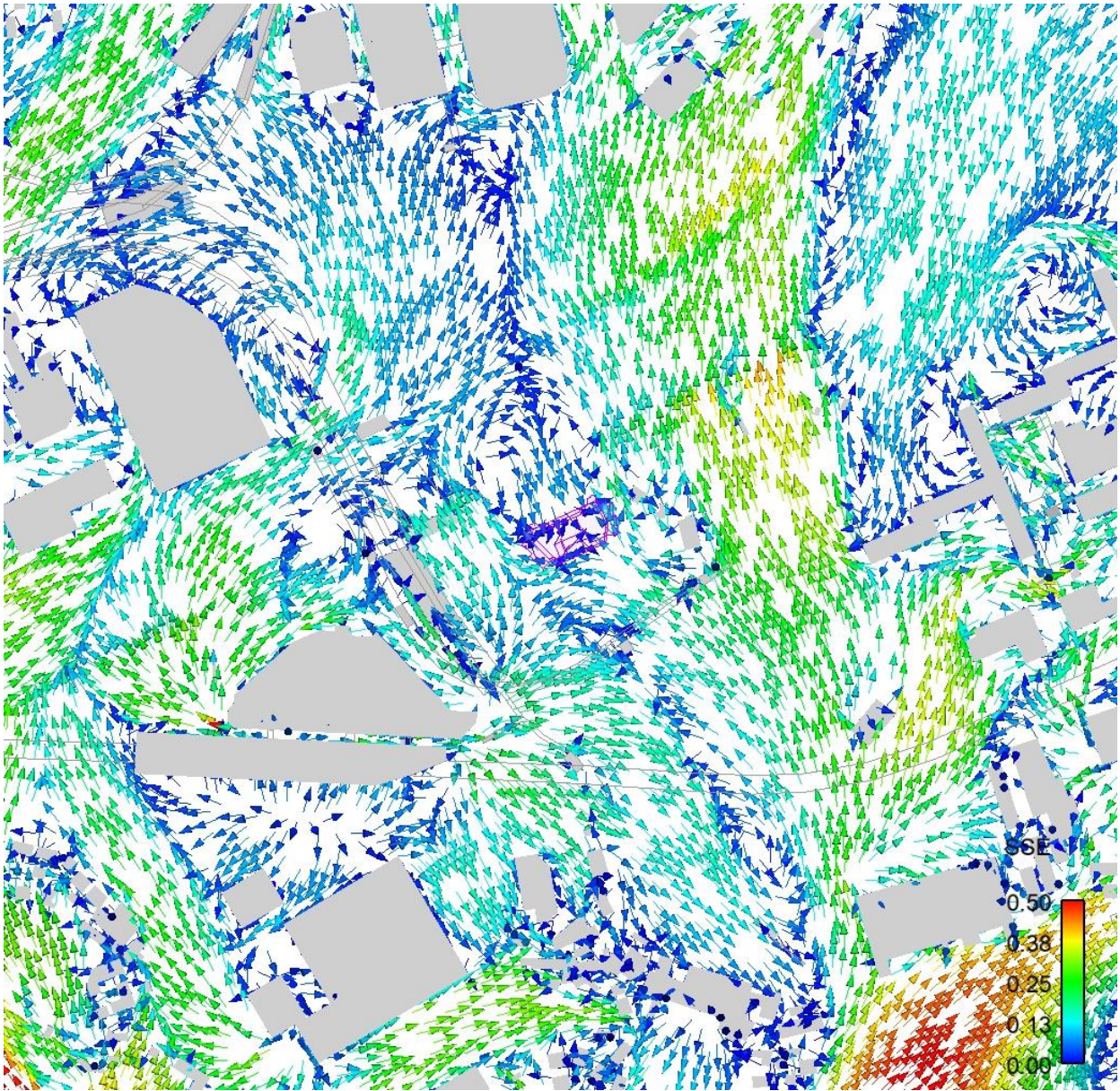


Figure 16 Proposed Scheme Vector Plot under SSE wind

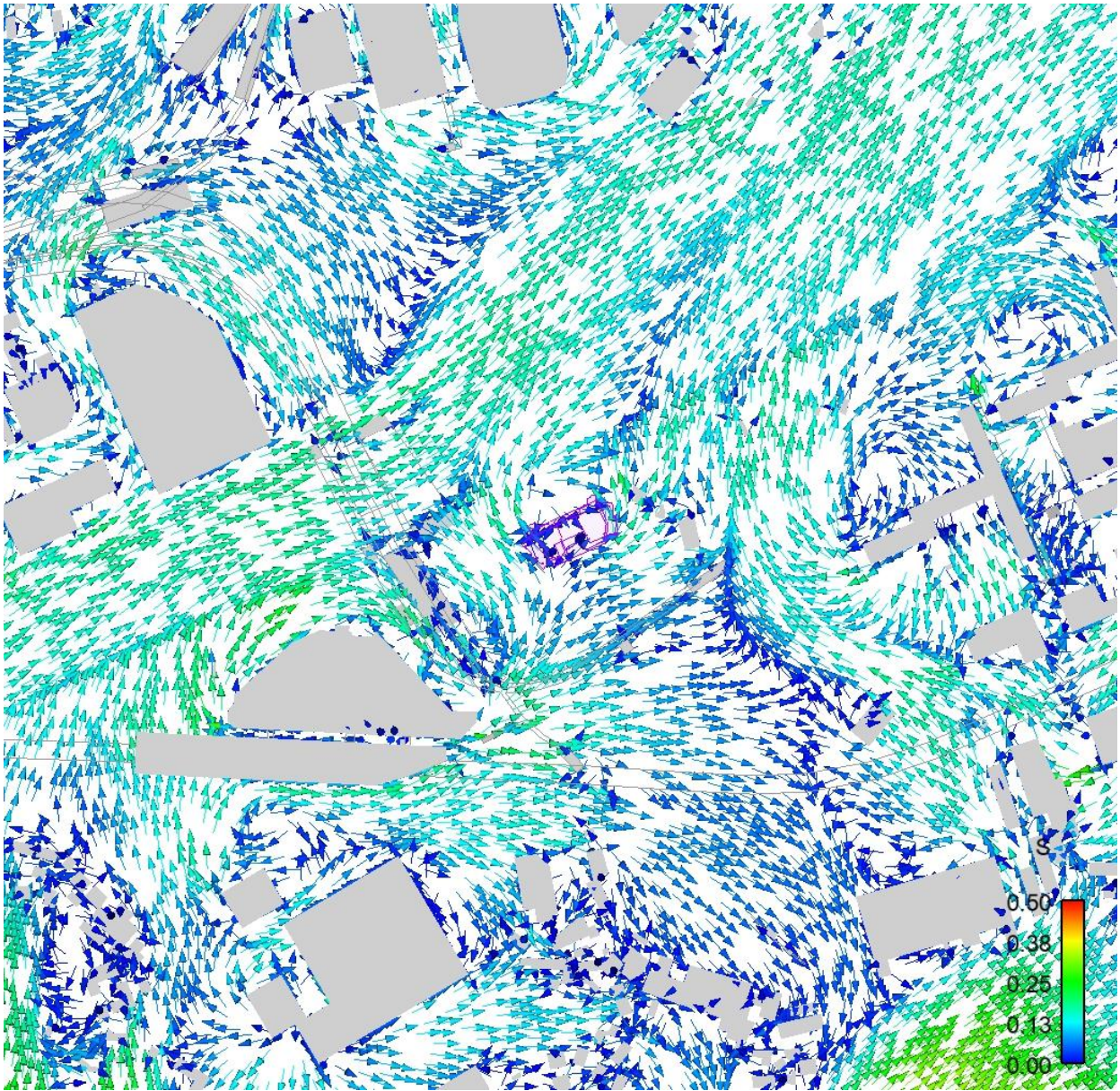


Figure 17 Proposed Scheme Vector Plot under S wind

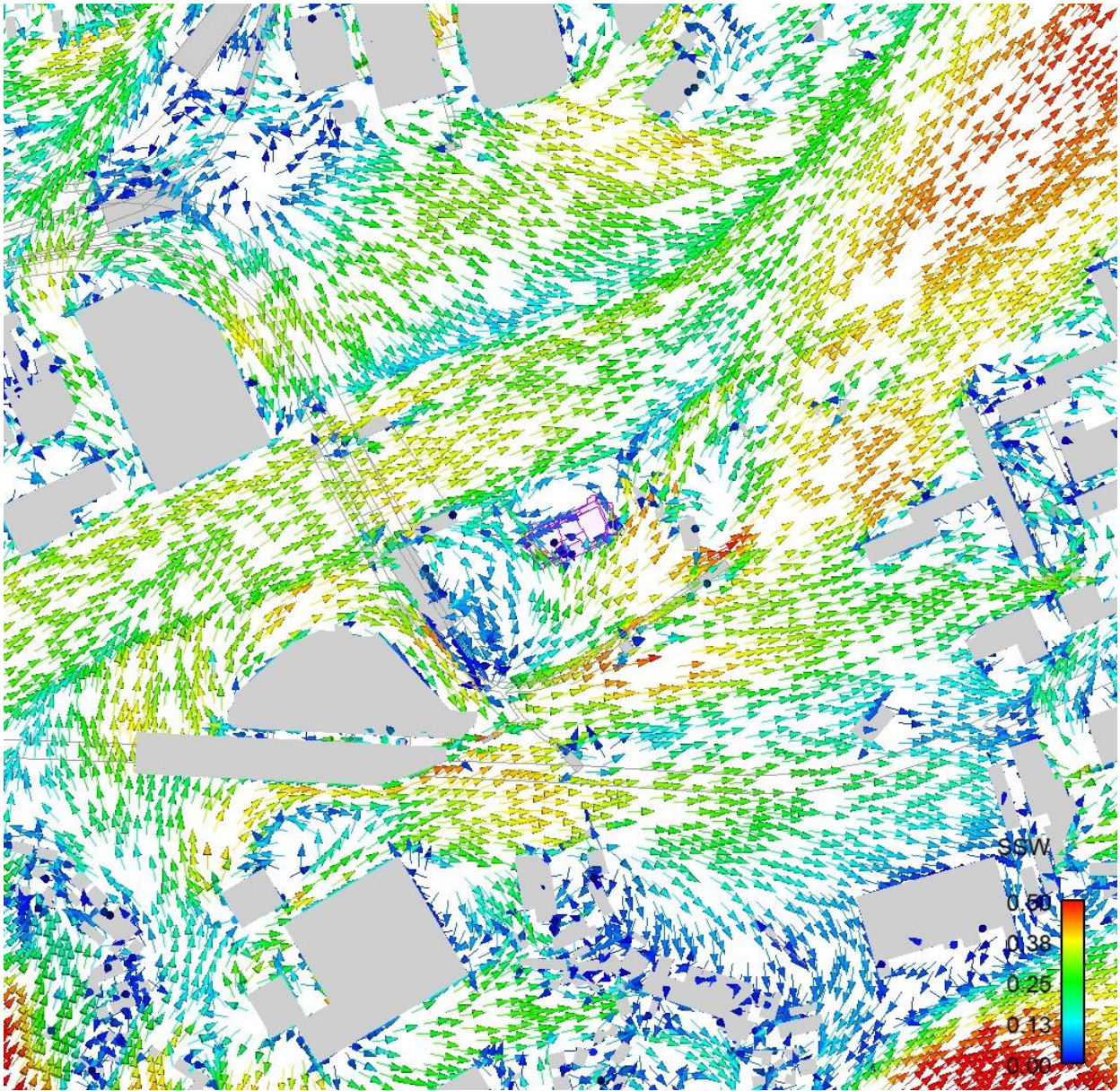


Figure 18 Proposed Scheme Vector Plot under SSW wind

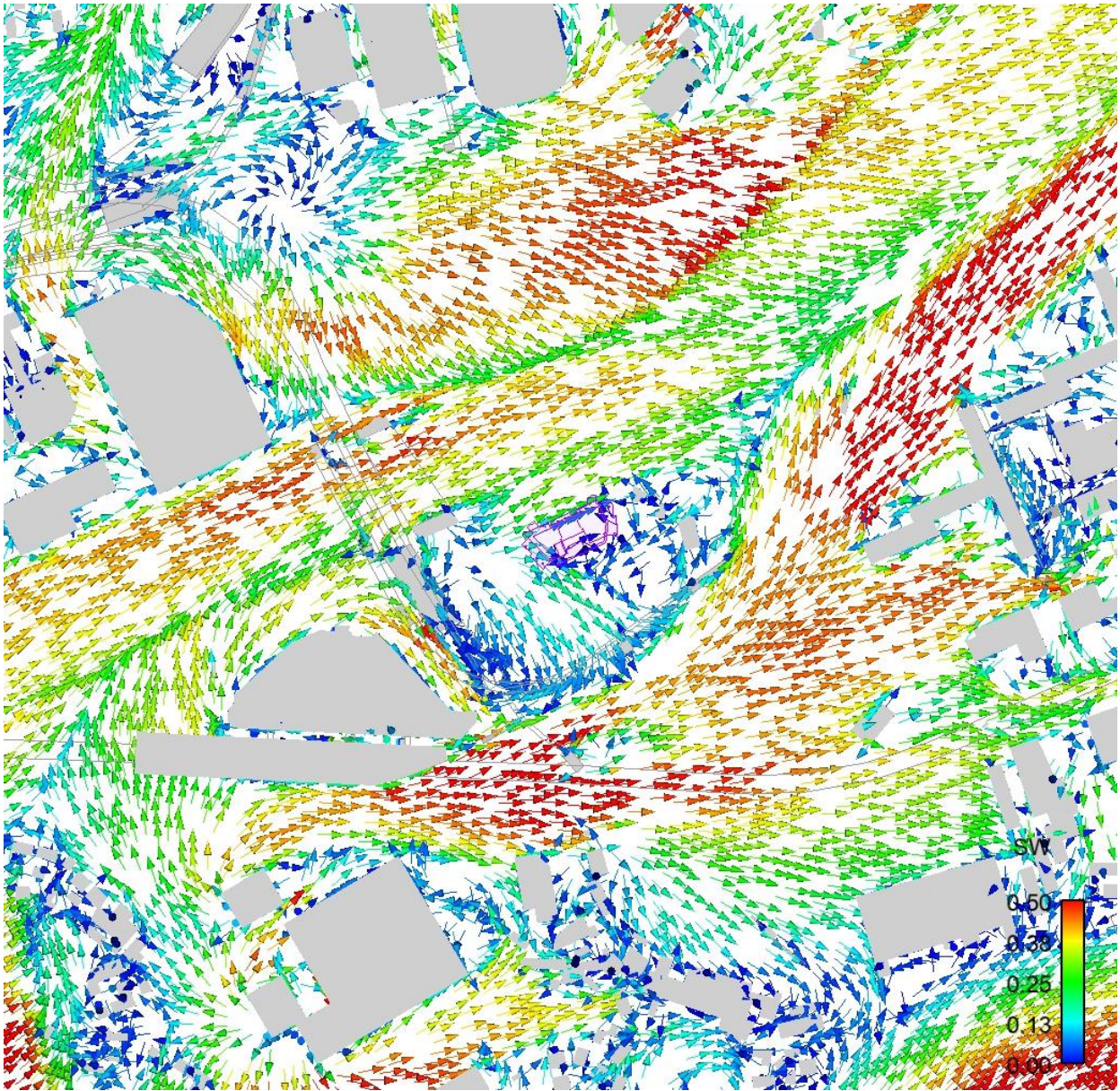


Figure 19 Proposed Scheme Vector Plot under SW wind

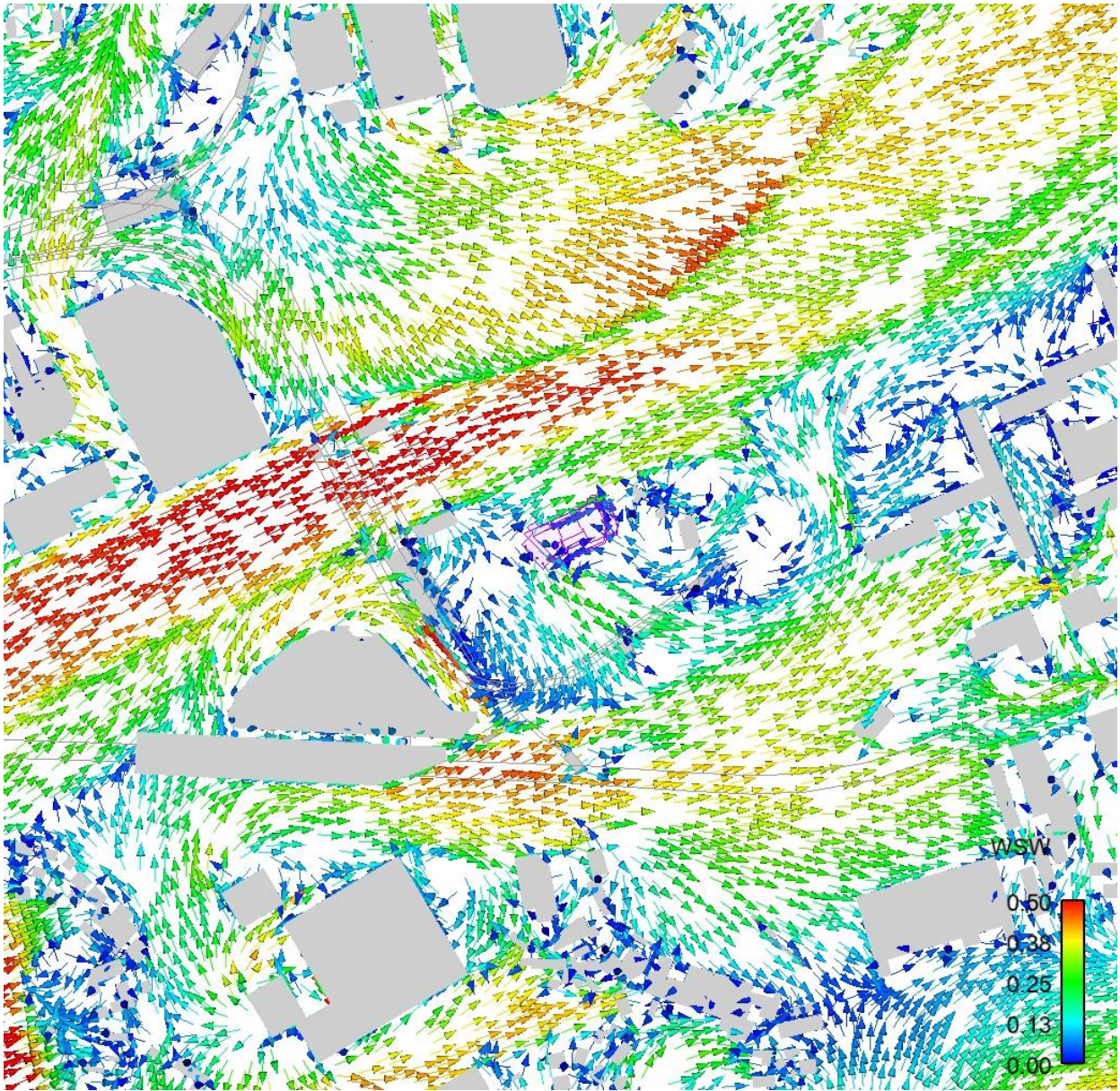


Figure 20 Proposed Scheme Vector Plot under WSW wind

Appendix E

VR of Test Points

E.1 Baseline Scheme

Table 1 Perimeter Test Points of Baseline Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
P1	0.05	0.04	0.14	0.20	0.03	0.14	0.12	0.19	0.20	0.10
P2	0.06	0.06	0.07	0.06	0.06	0.12	0.14	0.13	0.14	0.07
P3	0.07	0.06	0.13	0.11	0.14	0.10	0.13	0.13	0.22	0.15
P4	0.07	0.05	0.16	0.12	0.14	0.13	0.12	0.07	0.23	0.20
P5	0.07	0.04	0.19	0.11	0.15	0.14	0.13	0.10	0.20	0.20
P6	0.06	0.04	0.23	0.08	0.15	0.14	0.13	0.17	0.18	0.18
P7	0.07	0.04	0.21	0.02	0.13	0.13	0.14	0.23	0.16	0.17
P8	0.08	0.06	0.09	0.02	0.15	0.12	0.13	0.31	0.14	0.15
P9	0.07	0.06	0.08	0.02	0.19	0.11	0.13	0.35	0.12	0.14
P10	0.09	0.06	0.07	0.02	0.19	0.06	0.12	0.36	0.14	0.14
P11	0.04	0.03	0.03	0.02	0.20	0.05	0.11	0.32	0.03	0.04
P12	0.12	0.20	0.18	0.08	0.16	0.09	0.11	0.44	0.07	0.02
P13	0.14	0.20	0.16	0.08	0.11	0.08	0.07	0.44	0.07	0.02
P14	0.12	0.17	0.11	0.08	0.09	0.09	0.02	0.34	0.06	0.02
P15	0.07	0.11	0.13	0.10	0.13	0.11	0.04	0.30	0.05	0.03
P16	0.05	0.05	0.14	0.10	0.14	0.12	0.06	0.29	0.04	0.03
P17	0.08	0.11	0.15	0.11	0.13	0.13	0.06	0.30	0.04	0.03
P18	0.11	0.13	0.16	0.12	0.12	0.20	0.08	0.38	0.04	0.05
P19	0.16	0.18	0.26	0.25	0.11	0.13	0.07	0.32	0.04	0.05
P20	0.26	0.27	0.35	0.30	0.06	0.12	0.07	0.26	0.18	0.20
P21	0.29	0.28	0.37	0.31	0.06	0.14	0.06	0.20	0.26	0.26
P22	0.29	0.28	0.36	0.30	0.07	0.12	0.05	0.08	0.27	0.26
P23	0.25	0.26	0.32	0.26	0.07	0.03	0.06	0.03	0.26	0.25
P24	0.28	0.30	0.37	0.25	0.05	0.04	0.08	0.04	0.28	0.26
P25	0.26	0.22	0.35	0.28	0.05	0.03	0.08	0.05	0.25	0.23
P26	0.25	0.19	0.33	0.28	0.04	0.02	0.06	0.08	0.25	0.21
P27	0.24	0.17	0.33	0.28	0.02	0.03	0.07	0.11	0.24	0.20
P28	0.22	0.14	0.31	0.28	0.03	0.05	0.02	0.16	0.22	0.19
P29	0.18	0.10	0.27	0.26	0.02	0.03	0.03	0.18	0.22	0.18
P30	0.15	0.08	0.27	0.26	0.03	0.04	0.03	0.19	0.26	0.17
P31	0.11	0.05	0.24	0.26	0.02	0.15	0.07	0.19	0.23	0.13

Table 2 Overall Test Points of Baseline Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O1	0.04	0.10	0.03	0.06	0.04	0.06	0.05	0.10	0.10	0.12
O2	0.12	0.20	0.07	0.10	0.14	0.22	0.16	0.25	0.25	0.26
O3	0.08	0.06	0.04	0.08	0.06	0.17	0.10	0.09	0.08	0.14
O4	0.28	0.40	0.20	0.18	0.18	0.24	0.19	0.35	0.40	0.47
O5	0.24	0.33	0.21	0.14	0.19	0.10	0.15	0.30	0.35	0.42
O6	0.25	0.34	0.26	0.08	0.16	0.15	0.18	0.34	0.39	0.48
O7	0.26	0.35	0.32	0.15	0.13	0.19	0.18	0.34	0.42	0.50
O8	0.23	0.32	0.35	0.30	0.10	0.18	0.18	0.32	0.40	0.45
O9	0.17	0.26	0.27	0.27	0.04	0.19	0.18	0.33	0.42	0.47
O10	0.46	0.50	0.39	0.17	0.24	0.05	0.13	0.19	0.18	0.19
O11	0.46	0.54	0.42	0.30	0.26	0.16	0.17	0.35	0.34	0.37
O12	0.50	0.56	0.53	0.34	0.21	0.16	0.21	0.40	0.36	0.39
O13	0.49	0.54	0.55	0.32	0.11	0.20	0.23	0.37	0.35	0.37
O14	0.47	0.51	0.54	0.29	0.06	0.25	0.17	0.28	0.27	0.31
O15	0.47	0.49	0.54	0.26	0.05	0.29	0.18	0.33	0.37	0.34
O16	0.45	0.47	0.52	0.22	0.06	0.23	0.16	0.35	0.31	0.32
O17	0.41	0.25	0.43	0.13	0.04	0.18	0.16	0.35	0.30	0.28
O18	0.21	0.14	0.25	0.04	0.11	0.27	0.17	0.30	0.34	0.17
O19	0.30	0.12	0.29	0.04	0.14	0.27	0.20	0.36	0.34	0.23
O20	0.38	0.28	0.40	0.04	0.04	0.24	0.17	0.30	0.30	0.29
O21	0.38	0.35	0.43	0.17	0.04	0.25	0.19	0.29	0.27	0.35
O22	0.47	0.46	0.55	0.30	0.08	0.09	0.22	0.39	0.35	0.45
O23	0.47	0.52	0.52	0.31	0.17	0.25	0.16	0.34	0.33	0.38
O24	0.45	0.51	0.37	0.29	0.26	0.15	0.15	0.34	0.41	0.36
O25	0.24	0.31	0.18	0.16	0.22	0.14	0.08	0.24	0.36	0.32
O26	0.15	0.20	0.16	0.12	0.18	0.15	0.10	0.26	0.31	0.28
O27	0.21	0.22	0.20	0.13	0.15	0.14	0.03	0.24	0.30	0.31
O28	0.29	0.32	0.18	0.17	0.10	0.06	0.14	0.38	0.33	0.29
O29	0.34	0.32	0.25	0.19	0.07	0.05	0.03	0.19	0.42	0.26
O30	0.37	0.32	0.30	0.20	0.06	0.04	0.05	0.14	0.38	0.23
O31	0.35	0.26	0.30	0.25	0.16	0.07	0.10	0.10	0.38	0.29
O32	0.32	0.23	0.26	0.25	0.14	0.09	0.14	0.25	0.45	0.36
O33	0.44	0.46	0.43	0.27	0.13	0.04	0.15	0.35	0.50	0.41
O34	0.48	0.51	0.43	0.24	0.11	0.23	0.14	0.40	0.57	0.47
O35	0.38	0.41	0.41	0.24	0.11	0.22	0.19	0.37	0.55	0.46
O36	0.27	0.28	0.26	0.10	0.18	0.16	0.18	0.34	0.52	0.44
O37	0.11	0.09	0.24	0.07	0.09	0.10	0.09	0.32	0.18	0.14
O38	0.13	0.16	0.20	0.07	0.06	0.04	0.06	0.25	0.11	0.15
O39	0.28	0.34	0.25	0.19	0.16	0.15	0.11	0.29	0.24	0.24
O40	0.18	0.20	0.15	0.08	0.12	0.15	0.06	0.09	0.09	0.08
O41	0.30	0.37	0.26	0.15	0.10	0.14	0.03	0.08	0.11	0.08
O42	0.38	0.47	0.31	0.21	0.05	0.06	0.03	0.08	0.07	0.17
O43	0.41	0.48	0.34	0.18	0.10	0.27	0.10	0.22	0.35	0.34
O44	0.13	0.18	0.18	0.13	0.10	0.30	0.12	0.27	0.37	0.36
O45	0.19	0.30	0.14	0.06	0.06	0.28	0.10	0.22	0.32	0.33
O46	0.10	0.20	0.08	0.07	0.08	0.31	0.11	0.25	0.35	0.37
O47	0.06	0.11	0.05	0.17	0.09	0.31	0.12	0.26	0.36	0.39
O48	0.12	0.12	0.13	0.04	0.11	0.24	0.11	0.23	0.34	0.37
O49	0.23	0.24	0.19	0.07	0.17	0.14	0.10	0.34	0.48	0.38
O50	0.22	0.11	0.17	0.05	0.17	0.12	0.09	0.17	0.24	0.22
O51	0.26	0.22	0.27	0.06	0.13	0.07	0.03	0.03	0.08	0.09

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O52	0.23	0.27	0.28	0.09	0.08	0.03	0.03	0.06	0.09	0.09
O53	0.12	0.12	0.12	0.17	0.10	0.03	0.02	0.04	0.04	0.05
O54	0.17	0.23	0.26	0.09	0.09	0.03	0.03	0.06	0.08	0.05
O55	0.13	0.16	0.21	0.06	0.15	0.13	0.04	0.05	0.09	0.08
O56	0.11	0.13	0.18	0.02	0.12	0.11	0.03	0.05	0.05	0.07
O57	0.03	0.07	0.14	0.05	0.15	0.05	0.04	0.05	0.14	0.14
O58	0.03	0.09	0.17	0.03	0.10	0.07	0.03	0.04	0.06	0.08
O59	0.07	0.11	0.19	0.04	0.12	0.08	0.04	0.05	0.08	0.09
O60	0.02	0.07	0.14	0.04	0.14	0.05	0.04	0.04	0.13	0.13
O61	0.03	0.05	0.15	0.03	0.14	0.04	0.03	0.02	0.11	0.09
O62	0.08	0.12	0.14	0.04	0.05	0.28	0.05	0.08	0.21	0.18
O63	0.06	0.11	0.06	0.06	0.04	0.18	0.01	0.04	0.21	0.18
O64	0.06	0.13	0.05	0.10	0.04	0.19	0.02	0.05	0.22	0.19
O65	0.11	0.15	0.10	0.11	0.10	0.18	0.02	0.10	0.27	0.24
O66	0.11	0.21	0.13	0.15	0.09	0.19	0.07	0.11	0.28	0.26
O67	0.05	0.13	0.19	0.05	0.05	0.18	0.15	0.12	0.28	0.25
O68	0.18	0.24	0.28	0.24	0.22	0.24	0.08	0.09	0.26	0.21
O69	0.13	0.15	0.22	0.22	0.17	0.31	0.17	0.11	0.30	0.20
O70	0.14	0.16	0.13	0.19	0.18	0.31	0.15	0.19	0.34	0.31
O71	0.12	0.14	0.10	0.13	0.18	0.26	0.08	0.16	0.32	0.30
O72	0.11	0.17	0.15	0.09	0.17	0.20	0.04	0.18	0.33	0.31
O73	0.09	0.11	0.13	0.07	0.09	0.27	0.04	0.20	0.35	0.33
O74	0.05	0.08	0.07	0.04	0.04	0.29	0.10	0.20	0.40	0.32
O75	0.07	0.10	0.10	0.08	0.06	0.34	0.15	0.08	0.22	0.14
O76	0.05	0.06	0.09	0.06	0.06	0.34	0.17	0.10	0.22	0.19
O77	0.08	0.17	0.06	0.06	0.12	0.22	0.19	0.12	0.32	0.25
O78	0.09	0.21	0.11	0.10	0.08	0.27	0.06	0.16	0.36	0.30
O79	0.10	0.25	0.16	0.11	0.05	0.23	0.03	0.24	0.42	0.34
O80	0.11	0.28	0.21	0.13	0.09	0.17	0.03	0.25	0.41	0.36
O81	0.11	0.31	0.27	0.10	0.12	0.15	0.02	0.26	0.46	0.38
O82	0.08	0.29	0.21	0.07	0.15	0.19	0.02	0.18	0.41	0.35
O83	0.06	0.28	0.15	0.05	0.17	0.23	0.03	0.15	0.41	0.34
O84	0.05	0.28	0.08	0.03	0.18	0.22	0.09	0.16	0.43	0.34
O85	0.04	0.28	0.04	0.03	0.18	0.21	0.17	0.21	0.44	0.35
O86	0.02	0.20	0.07	0.03	0.23	0.24	0.14	0.28	0.45	0.35
O87	0.06	0.23	0.18	0.05	0.23	0.24	0.12	0.28	0.46	0.35
O88	0.10	0.25	0.26	0.04	0.22	0.21	0.02	0.25	0.45	0.35
O89	0.15	0.26	0.30	0.05	0.20	0.17	0.04	0.18	0.44	0.35
O90	0.19	0.27	0.32	0.06	0.18	0.13	0.06	0.17	0.41	0.36
O91	0.26	0.26	0.33	0.10	0.21	0.12	0.09	0.21	0.39	0.31
O92	0.24	0.25	0.33	0.10	0.24	0.16	0.07	0.33	0.44	0.32
O93	0.22	0.23	0.34	0.11	0.26	0.20	0.04	0.37	0.45	0.32
O94	0.19	0.20	0.33	0.11	0.27	0.24	0.12	0.33	0.45	0.30
O95	0.16	0.17	0.30	0.11	0.26	0.27	0.14	0.28	0.44	0.29
O96	0.13	0.11	0.25	0.11	0.21	0.30	0.16	0.23	0.40	0.28
O97	0.03	0.13	0.05	0.01	0.22	0.19	0.15	0.25	0.44	0.34
O98	0.06	0.26	0.03	0.04	0.15	0.24	0.11	0.21	0.43	0.34
O99	0.09	0.18	0.07	0.07	0.13	0.31	0.12	0.16	0.38	0.29
O100	0.05	0.07	0.09	0.06	0.05	0.25	0.17	0.12	0.30	0.24
O101	0.16	0.21	0.24	0.13	0.08	0.14	0.13	0.13	0.26	0.25
O102	0.06	0.11	0.06	0.07	0.05	0.12	0.05	0.05	0.16	0.14

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O103	0.11	0.20	0.11	0.09	0.17	0.36	0.08	0.17	0.35	0.29
O104	0.07	0.16	0.10	0.02	0.14	0.13	0.09	0.22	0.41	0.33
O105	0.12	0.18	0.13	0.09	0.05	0.19	0.08	0.24	0.39	0.33
O106	0.06	0.27	0.26	0.24	0.11	0.32	0.17	0.27	0.40	0.32
O107	0.10	0.30	0.04	0.06	0.13	0.25	0.16	0.25	0.44	0.34
O108	0.07	0.29	0.03	0.04	0.14	0.29	0.12	0.25	0.44	0.36
O109	0.05	0.10	0.12	0.06	0.15	0.17	0.18	0.16	0.28	0.13
O110	0.01	0.05	0.03	0.07	0.13	0.16	0.14	0.24	0.44	0.32
O111	0.01	0.12	0.02	0.04	0.17	0.10	0.15	0.25	0.46	0.36
O112	0.02	0.04	0.03	0.06	0.14	0.10	0.12	0.20	0.39	0.33
O113	0.05	0.09	0.07	0.16	0.12	0.21	0.11	0.20	0.30	0.32
O114	0.09	0.09	0.12	0.14	0.15	0.06	0.10	0.06	0.15	0.05
O115	0.15	0.23	0.21	0.17	0.09	0.08	0.09	0.07	0.13	0.11
O116	0.15	0.18	0.15	0.09	0.04	0.02	0.04	0.05	0.17	0.03
O117	0.18	0.33	0.36	0.17	0.14	0.07	0.05	0.17	0.16	0.14
O118	0.21	0.28	0.29	0.20	0.17	0.10	0.19	0.07	0.14	0.16
O119	0.13	0.10	0.08	0.09	0.02	0.04	0.02	0.15	0.20	0.11
O120	0.11	0.10	0.20	0.16	0.04	0.02	0.07	0.31	0.43	0.15
O121	0.09	0.15	0.28	0.17	0.04	0.05	0.06	0.37	0.46	0.09
O122	0.12	0.19	0.32	0.16	0.03	0.05	0.05	0.40	0.48	0.11
O123	0.18	0.23	0.35	0.15	0.05	0.26	0.08	0.32	0.45	0.31
O124	0.09	0.11	0.12	0.09	0.25	0.08	0.12	0.42	0.43	0.39
O125	0.21	0.26	0.22	0.14	0.25	0.11	0.09	0.45	0.42	0.27
O126	0.25	0.34	0.32	0.17	0.27	0.18	0.05	0.33	0.43	0.19
O127	0.27	0.35	0.35	0.17	0.27	0.21	0.05	0.29	0.44	0.16
O128	0.26	0.35	0.35	0.16	0.26	0.26	0.14	0.29	0.44	0.18
O129	0.25	0.36	0.37	0.17	0.20	0.30	0.13	0.31	0.44	0.18
O130	0.24	0.38	0.39	0.19	0.07	0.33	0.14	0.34	0.46	0.15
O131	0.24	0.39	0.41	0.20	0.06	0.24	0.08	0.39	0.52	0.23
O132	0.24	0.40	0.42	0.18	0.06	0.05	0.03	0.41	0.55	0.28
O133	0.26	0.40	0.42	0.16	0.07	0.08	0.06	0.39	0.54	0.24
O134	0.29	0.41	0.43	0.15	0.07	0.05	0.08	0.36	0.52	0.21
O135	0.23	0.38	0.41	0.16	0.06	0.06	0.07	0.38	0.56	0.20
O136	0.18	0.38	0.42	0.20	0.06	0.08	0.11	0.37	0.53	0.20
O137	0.18	0.37	0.42	0.18	0.07	0.09	0.09	0.36	0.49	0.24
O138	0.22	0.38	0.44	0.26	0.13	0.14	0.12	0.37	0.53	0.34
O139	0.24	0.39	0.43	0.29	0.14	0.16	0.13	0.37	0.50	0.35
O140	0.23	0.40	0.44	0.25	0.12	0.14	0.12	0.36	0.54	0.30
O141	0.26	0.40	0.42	0.30	0.13	0.15	0.12	0.36	0.48	0.36
O142	0.23	0.41	0.44	0.24	0.10	0.11	0.11	0.34	0.54	0.25
O143	0.28	0.42	0.43	0.31	0.12	0.13	0.09	0.35	0.43	0.32
O144	0.25	0.42	0.44	0.24	0.09	0.11	0.09	0.32	0.53	0.20
O145	0.26	0.43	0.44	0.28	0.10	0.10	0.07	0.30	0.45	0.22
O146	0.31	0.42	0.43	0.32	0.11	0.08	0.09	0.36	0.32	0.30
O147	0.26	0.43	0.44	0.23	0.08	0.09	0.05	0.32	0.52	0.18
O148	0.25	0.41	0.41	0.27	0.09	0.05	0.04	0.17	0.27	0.11
O149	0.34	0.41	0.43	0.33	0.12	0.18	0.13	0.36	0.21	0.28
O150	0.27	0.43	0.44	0.22	0.07	0.03	0.07	0.40	0.51	0.17
O151	0.25	0.42	0.43	0.28	0.07	0.22	0.12	0.36	0.44	0.14
O152	0.36	0.40	0.43	0.34	0.12	0.40	0.16	0.29	0.13	0.27
O153	0.23	0.36	0.40	0.27	0.09	0.36	0.15	0.34	0.29	0.13

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O154	0.25	0.38	0.38	0.20	0.07	0.26	0.11	0.39	0.49	0.11
O155	0.25	0.37	0.37	0.21	0.07	0.34	0.15	0.38	0.46	0.08
O156	0.22	0.38	0.40	0.26	0.09	0.35	0.15	0.32	0.29	0.19
O157	0.23	0.28	0.31	0.24	0.09	0.35	0.14	0.12	0.03	0.06
O158	0.35	0.37	0.40	0.32	0.12	0.32	0.10	0.22	0.16	0.26
O159	0.21	0.36	0.32	0.20	0.05	0.29	0.14	0.12	0.09	0.11
O160	0.18	0.24	0.30	0.21	0.06	0.17	0.07	0.29	0.12	0.16
O161	0.07	0.17	0.15	0.08	0.12	0.17	0.08	0.31	0.14	0.04
O162	0.16	0.32	0.34	0.20	0.08	0.20	0.12	0.29	0.21	0.07
O163	0.21	0.36	0.37	0.21	0.04	0.31	0.15	0.37	0.33	0.08
O164	0.21	0.38	0.40	0.25	0.06	0.33	0.15	0.26	0.21	0.12
O165	0.12	0.18	0.21	0.15	0.07	0.33	0.14	0.18	0.13	0.22
O166	0.23	0.26	0.31	0.25	0.10	0.29	0.11	0.32	0.20	0.24
O167	0.26	0.27	0.35	0.30	0.08	0.18	0.06	0.19	0.23	0.24
O168	0.25	0.33	0.38	0.27	0.05	0.11	0.10	0.44	0.02	0.01
O169	0.14	0.19	0.23	0.10	0.08	0.15	0.09	0.40	0.05	0.03
O170	0.35	0.34	0.41	0.34	0.13	0.35	0.11	0.39	0.23	0.27
O171	0.34	0.31	0.39	0.34	0.12	0.25	0.08	0.27	0.26	0.27
O172	0.32	0.29	0.38	0.32	0.09	0.16	0.06	0.09	0.28	0.27
O173	0.31	0.29	0.38	0.30	0.08	0.04	0.08	0.09	0.30	0.27
O174	0.26	0.24	0.37	0.32	0.05	0.06	0.07	0.16	0.28	0.23
O175	0.22	0.16	0.34	0.31	0.04	0.12	0.02	0.22	0.27	0.19
O176	0.10	0.08	0.27	0.30	0.11	0.14	0.06	0.20	0.12	0.12
O177	0.09	0.10	0.16	0.04	0.11	0.14	0.05	0.07	0.19	0.17
O178	0.12	0.16	0.18	0.06	0.12	0.10	0.06	0.12	0.25	0.23
O179	0.12	0.23	0.22	0.10	0.14	0.08	0.07	0.18	0.29	0.28
O180	0.13	0.29	0.27	0.11	0.14	0.08	0.07	0.25	0.36	0.30
O181	0.21	0.29	0.32	0.09	0.11	0.07	0.07	0.31	0.46	0.35
O182	0.27	0.20	0.31	0.07	0.10	0.10	0.02	0.29	0.47	0.40
O183	0.20	0.21	0.18	0.11	0.17	0.13	0.09	0.09	0.15	0.14
O184	0.16	0.24	0.24	0.06	0.22	0.16	0.15	0.32	0.45	0.41
O185	0.19	0.19	0.22	0.08	0.22	0.17	0.15	0.35	0.08	0.09
O186	0.11	0.14	0.24	0.10	0.12	0.13	0.11	0.14	0.04	0.13
O187	0.03	0.07	0.23	0.11	0.19	0.14	0.14	0.09	0.09	0.12
O188	0.11	0.13	0.17	0.12	0.17	0.14	0.12	0.09	0.09	0.07
O189	0.14	0.18	0.06	0.16	0.19	0.13	0.05	0.14	0.07	0.11
O190	0.24	0.18	0.38	0.27	0.04	0.05	0.11	0.27	0.31	0.32
O191	0.28	0.25	0.33	0.33	0.07	0.06	0.16	0.36	0.37	0.52
O192	0.21	0.24	0.26	0.32	0.08	0.10	0.15	0.33	0.40	0.47
O193	0.17	0.25	0.26	0.24	0.12	0.08	0.14	0.29	0.27	0.26
O194	0.10	0.19	0.21	0.18	0.14	0.16	0.05	0.16	0.27	0.26
O195	0.07	0.21	0.19	0.18	0.16	0.17	0.08	0.27	0.45	0.36
O196	0.11	0.16	0.20	0.19	0.18	0.14	0.08	0.28	0.32	0.25
O197	0.08	0.09	0.14	0.20	0.20	0.12	0.08	0.21	0.13	0.16
O198	0.04	0.08	0.07	0.18	0.20	0.11	0.07	0.13	0.05	0.12
O199	0.10	0.05	0.05	0.12	0.16	0.11	0.06	0.05	0.07	0.15
O200	0.06	0.04	0.06	0.10	0.17	0.09	0.08	0.11	0.05	0.24
O201	0.06	0.03	0.04	0.11	0.17	0.06	0.10	0.19	0.13	0.27
O202	0.07	0.04	0.04	0.12	0.18	0.05	0.12	0.25	0.21	0.36
O203	0.10	0.11	0.13	0.08	0.18	0.07	0.09	0.25	0.18	0.34
O204	0.23	0.20	0.15	0.14	0.01	0.19	0.12	0.26	0.25	0.32

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O205	0.06	0.11	0.13	0.14	0.20	0.07	0.09	0.33	0.30	0.39
O206	0.15	0.19	0.21	0.20	0.19	0.03	0.11	0.36	0.38	0.42
O207	0.18	0.26	0.24	0.22	0.19	0.10	0.14	0.36	0.41	0.42
O208	0.22	0.26	0.17	0.11	0.09	0.20	0.15	0.19	0.33	0.25
O209	0.19	0.26	0.25	0.21	0.16	0.16	0.15	0.35	0.39	0.41
O210	0.17	0.20	0.22	0.19	0.16	0.22	0.16	0.30	0.39	0.40
O211	0.15	0.14	0.21	0.18	0.17	0.18	0.17	0.33	0.47	0.40
O212	0.20	0.27	0.23	0.21	0.15	0.27	0.16	0.08	0.18	0.13
O213	0.21	0.25	0.28	0.23	0.13	0.27	0.17	0.12	0.18	0.14
O214	0.21	0.27	0.28	0.22	0.17	0.26	0.20	0.26	0.40	0.36
O215	0.22	0.28	0.29	0.23	0.16	0.33	0.20	0.29	0.47	0.41
O216	0.24	0.29	0.31	0.24	0.16	0.33	0.19	0.26	0.49	0.41
O217	0.19	0.22	0.25	0.21	0.12	0.30	0.20	0.26	0.38	0.33
O218	0.20	0.28	0.28	0.26	0.17	0.30	0.18	0.11	0.22	0.15
O219	0.13	0.13	0.18	0.24	0.15	0.27	0.16	0.11	0.16	0.13
O220	0.23	0.27	0.31	0.26	0.15	0.30	0.20	0.34	0.49	0.41
O221	0.26	0.32	0.33	0.26	0.15	0.33	0.19	0.21	0.49	0.43
O222	0.28	0.34	0.34	0.28	0.15	0.33	0.19	0.21	0.48	0.44
O223	0.25	0.28	0.34	0.29	0.16	0.30	0.19	0.30	0.49	0.41
O224	0.15	0.19	0.22	0.25	0.14	0.24	0.17	0.38	0.47	0.38
O225	0.19	0.22	0.23	0.17	0.10	0.21	0.16	0.37	0.40	0.37
O226	0.20	0.22	0.25	0.26	0.14	0.26	0.17	0.33	0.47	0.38
O227	0.26	0.28	0.34	0.29	0.16	0.29	0.17	0.24	0.48	0.41
O228	0.27	0.33	0.34	0.29	0.15	0.31	0.17	0.22	0.48	0.45
O229	0.27	0.33	0.33	0.30	0.15	0.27	0.16	0.24	0.44	0.43
O230	0.26	0.28	0.33	0.28	0.16	0.25	0.16	0.19	0.47	0.41
O231	0.22	0.25	0.28	0.27	0.15	0.22	0.16	0.28	0.47	0.38
O232	0.20	0.25	0.25	0.21	0.13	0.17	0.16	0.35	0.44	0.36
O233	0.17	0.26	0.27	0.25	0.16	0.11	0.14	0.32	0.44	0.36
O234	0.20	0.26	0.29	0.27	0.16	0.14	0.16	0.25	0.46	0.38
O235	0.24	0.27	0.33	0.29	0.16	0.18	0.15	0.17	0.45	0.41
O236	0.28	0.31	0.33	0.30	0.16	0.20	0.14	0.23	0.39	0.41
O237	0.26	0.29	0.33	0.30	0.16	0.11	0.14	0.24	0.34	0.38
O238	0.22	0.27	0.33	0.29	0.16	0.10	0.16	0.14	0.43	0.40
O239	0.16	0.27	0.29	0.28	0.16	0.07	0.15	0.24	0.46	0.37
O240	0.09	0.26	0.27	0.26	0.17	0.05	0.11	0.29	0.44	0.35
O241	0.07	0.20	0.24	0.22	0.20	0.02	0.07	0.30	0.37	0.33
O242	0.04	0.10	0.22	0.23	0.20	0.01	0.05	0.31	0.36	0.34
O243	0.04	0.24	0.27	0.26	0.18	0.04	0.07	0.29	0.42	0.32
O244	0.08	0.26	0.29	0.28	0.17	0.06	0.13	0.21	0.44	0.36
O245	0.18	0.27	0.32	0.30	0.17	0.07	0.16	0.10	0.41	0.39
O246	0.23	0.27	0.33	0.30	0.16	0.07	0.14	0.23	0.30	0.33
O247	0.20	0.26	0.32	0.30	0.16	0.10	0.15	0.25	0.26	0.27
O248	0.12	0.27	0.33	0.31	0.18	0.09	0.15	0.10	0.39	0.37
O249	0.05	0.29	0.32	0.32	0.19	0.09	0.12	0.18	0.42	0.37
O250	0.07	0.24	0.29	0.29	0.20	0.08	0.04	0.29	0.43	0.32
O251	0.12	0.06	0.21	0.26	0.22	0.06	0.05	0.31	0.36	0.32
O252	0.16	0.09	0.22	0.29	0.23	0.11	0.04	0.30	0.35	0.28
O253	0.11	0.24	0.30	0.31	0.21	0.12	0.02	0.29	0.41	0.30
O254	0.05	0.29	0.31	0.32	0.19	0.12	0.05	0.23	0.43	0.36
O255	0.08	0.27	0.32	0.31	0.18	0.10	0.11	0.11	0.38	0.36

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O256	0.18	0.25	0.31	0.30	0.15	0.10	0.16	0.29	0.23	0.22
O257	0.08	0.24	0.28	0.27	0.17	0.11	0.05	0.12	0.35	0.32
O258	0.07	0.24	0.26	0.26	0.18	0.12	0.04	0.24	0.42	0.34
O259	0.12	0.18	0.24	0.26	0.19	0.13	0.06	0.29	0.33	0.25
O260	0.12	0.10	0.16	0.24	0.21	0.12	0.06	0.25	0.21	0.20
O261	0.11	0.09	0.07	0.20	0.21	0.10	0.07	0.23	0.21	0.25

Table 3 Special Test Points of Baseline Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
S1	0.06	0.04	0.09	0.09	0.03	0.06	0.06	0.11	0.10	0.11
S2	0.17	0.19	0.24	0.20	0.05	0.03	0.05	0.04	0.10	0.12
S3	0.26	0.28	0.36	0.30	0.05	0.14	0.07	0.21	0.18	0.20
S4	0.10	0.08	0.18	0.21	0.07	0.15	0.05	0.21	0.04	0.05
S5	0.09	0.07	0.17	0.17	0.03	0.07	0.09	0.18	0.08	0.09
S6	0.08	0.10	0.15	0.11	0.05	0.06	0.10	0.17	0.03	0.04
S7	0.06	0.06	0.07	0.09	0.05	0.12	0.10	0.10	0.08	0.09
S8	0.05	0.03	0.13	0.11	0.08	0.12	0.08	0.10	0.21	0.18
S9	0.07	0.04	0.22	0.08	0.12	0.14	0.13	0.22	0.19	0.18
S10	0.06	0.03	0.17	0.06	0.10	0.05	0.05	0.05	0.20	0.17
S11	0.10	0.07	0.15	0.10	0.03	0.08	0.10	0.30	0.09	0.11
S12	0.02	0.02	0.02	0.03	0.14	0.07	0.11	0.33	0.08	0.04
S13	0.10	0.06	0.07	0.03	0.17	0.09	0.12	0.36	0.14	0.14
S14	0.02	0.04	0.01	0.02	0.14	0.07	0.05	0.18	0.05	0.04

E.2 Proposed Scheme

Table 4 Perimeter Test Points of Proposed Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
P1	0.38	0.40	0.42	0.32	0.05	0.13	0.17	0.09	0.23	0.06
P2	0.39	0.35	0.40	0.30	0.04	0.12	0.17	0.09	0.22	0.05
P3	0.34	0.15	0.20	0.17	0.04	0.13	0.17	0.17	0.16	0.02
P4	0.03	0.06	0.06	0.05	0.02	0.12	0.14	0.22	0.14	0.09
P5	0.05	0.08	0.07	0.08	0.14	0.13	0.11	0.26	0.17	0.19
P6	0.07	0.13	0.10	0.12	0.25	0.12	0.06	0.23	0.19	0.20
P7	0.09	0.12	0.13	0.10	0.22	0.10	0.04	0.24	0.18	0.24
P8	0.25	0.20	0.09	0.07	0.19	0.08	0.05	0.28	0.18	0.25
P9	0.38	0.40	0.28	0.19	0.17	0.07	0.06	0.32	0.18	0.24
P10	0.38	0.42	0.38	0.24	0.15	0.08	0.07	0.33	0.17	0.25
P11	0.37	0.40	0.41	0.26	0.13	0.09	0.08	0.35	0.13	0.24
P12	0.33	0.37	0.38	0.24	0.12	0.10	0.10	0.37	0.05	0.14
P13	0.34	0.36	0.37	0.24	0.12	0.10	0.12	0.38	0.05	0.06
P14	0.33	0.34	0.35	0.23	0.11	0.09	0.14	0.39	0.06	0.06
P15	0.32	0.32	0.36	0.24	0.14	0.10	0.17	0.42	0.04	0.06
P16	0.23	0.21	0.29	0.19	0.18	0.15	0.17	0.39	0.02	0.05
P17	0.17	0.14	0.23	0.15	0.18	0.18	0.18	0.33	0.01	0.04
P18	0.13	0.14	0.17	0.08	0.14	0.22	0.21	0.38	0.10	0.10
P19	0.15	0.12	0.24	0.22	0.05	0.09	0.14	0.30	0.22	0.25
P20	0.20	0.20	0.32	0.28	0.03	0.09	0.09	0.18	0.30	0.33
P21	0.24	0.23	0.34	0.30	0.02	0.13	0.08	0.10	0.32	0.34
P22	0.24	0.24	0.35	0.30	0.07	0.16	0.13	0.06	0.32	0.33
P23	0.24	0.24	0.36	0.30	0.14	0.15	0.08	0.09	0.32	0.32
P24	0.26	0.27	0.38	0.31	0.18	0.08	0.06	0.09	0.32	0.31
P25	0.28	0.33	0.40	0.32	0.12	0.06	0.08	0.07	0.32	0.30
P26	0.30	0.37	0.42	0.33	0.02	0.07	0.09	0.05	0.32	0.28
P27	0.31	0.39	0.42	0.33	0.02	0.07	0.07	0.04	0.31	0.26
P28	0.33	0.39	0.42	0.33	0.06	0.06	0.04	0.03	0.31	0.23
P29	0.34	0.40	0.42	0.33	0.08	0.05	0.08	0.09	0.30	0.19
P30	0.36	0.40	0.43	0.33	0.09	0.04	0.18	0.16	0.28	0.15
P31	0.37	0.40	0.43	0.33	0.08	0.09	0.17	0.11	0.25	0.10

Table 5 Overall Test Points of Proposed Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O1	0.02	0.03	0.02	0.06	0.04	0.07	0.05	0.10	0.10	0.12
O2	0.09	0.03	0.04	0.10	0.11	0.22	0.16	0.25	0.25	0.26
O3	0.06	0.05	0.02	0.07	0.06	0.17	0.10	0.10	0.08	0.14
O4	0.22	0.07	0.13	0.17	0.18	0.24	0.19	0.35	0.40	0.47
O5	0.23	0.08	0.15	0.13	0.17	0.10	0.15	0.30	0.35	0.42
O6	0.25	0.13	0.21	0.05	0.12	0.13	0.17	0.34	0.39	0.48
O7	0.27	0.24	0.30	0.07	0.09	0.18	0.18	0.34	0.42	0.50
O8	0.25	0.31	0.34	0.25	0.08	0.17	0.18	0.32	0.40	0.46
O9	0.21	0.25	0.28	0.28	0.05	0.19	0.18	0.33	0.42	0.47
O10	0.19	0.45	0.35	0.18	0.24	0.06	0.12	0.19	0.18	0.18
O11	0.21	0.35	0.36	0.26	0.28	0.16	0.15	0.34	0.34	0.36
O12	0.30	0.28	0.41	0.31	0.21	0.15	0.20	0.40	0.36	0.39
O13	0.35	0.31	0.44	0.30	0.09	0.18	0.23	0.37	0.35	0.37
O14	0.35	0.33	0.45	0.28	0.05	0.25	0.16	0.28	0.27	0.31
O15	0.33	0.33	0.46	0.26	0.06	0.29	0.18	0.33	0.37	0.34
O16	0.29	0.32	0.46	0.23	0.07	0.24	0.16	0.35	0.31	0.31
O17	0.33	0.21	0.34	0.11	0.07	0.20	0.16	0.35	0.30	0.28
O18	0.21	0.08	0.23	0.04	0.11	0.28	0.17	0.30	0.34	0.17
O19	0.24	0.10	0.21	0.04	0.12	0.27	0.20	0.36	0.34	0.23
O20	0.41	0.06	0.30	0.05	0.01	0.24	0.17	0.30	0.29	0.28
O21	0.35	0.15	0.33	0.16	0.03	0.24	0.18	0.29	0.27	0.34
O22	0.38	0.26	0.42	0.27	0.08	0.09	0.22	0.39	0.35	0.45
O23	0.25	0.21	0.34	0.29	0.17	0.26	0.15	0.34	0.33	0.38
O24	0.17	0.42	0.33	0.25	0.25	0.17	0.16	0.34	0.41	0.35
O25	0.17	0.26	0.14	0.15	0.20	0.12	0.06	0.25	0.36	0.32
O26	0.20	0.19	0.13	0.10	0.16	0.14	0.05	0.26	0.32	0.30
O27	0.11	0.31	0.25	0.10	0.08	0.14	0.09	0.24	0.31	0.33
O28	0.11	0.30	0.17	0.24	0.10	0.06	0.14	0.38	0.33	0.29
O29	0.05	0.21	0.21	0.24	0.07	0.05	0.03	0.19	0.43	0.26
O30	0.08	0.17	0.26	0.24	0.07	0.04	0.05	0.14	0.38	0.23
O31	0.22	0.23	0.33	0.26	0.16	0.06	0.09	0.10	0.39	0.29
O32	0.32	0.30	0.27	0.25	0.15	0.07	0.13	0.25	0.45	0.36
O33	0.45	0.41	0.11	0.26	0.16	0.05	0.14	0.35	0.49	0.41
O34	0.40	0.42	0.20	0.22	0.15	0.21	0.13	0.40	0.57	0.46
O35	0.36	0.42	0.38	0.26	0.17	0.21	0.19	0.37	0.55	0.44
O36	0.29	0.36	0.37	0.18	0.19	0.17	0.16	0.34	0.51	0.38
O37	0.15	0.12	0.20	0.06	0.09	0.09	0.08	0.32	0.18	0.14
O38	0.15	0.15	0.13	0.07	0.06	0.04	0.06	0.25	0.11	0.15
O39	0.26	0.29	0.31	0.17	0.17	0.14	0.11	0.29	0.24	0.24
O40	0.13	0.15	0.11	0.08	0.12	0.16	0.06	0.09	0.09	0.08
O41	0.25	0.34	0.24	0.16	0.11	0.14	0.03	0.08	0.11	0.08
O42	0.32	0.40	0.31	0.21	0.05	0.06	0.02	0.08	0.07	0.17
O43	0.37	0.41	0.34	0.18	0.10	0.27	0.10	0.22	0.34	0.34
O44	0.14	0.13	0.17	0.12	0.11	0.29	0.12	0.27	0.37	0.36
O45	0.26	0.26	0.20	0.06	0.06	0.28	0.10	0.22	0.32	0.33
O46	0.17	0.16	0.12	0.07	0.09	0.30	0.11	0.25	0.35	0.37
O47	0.10	0.08	0.06	0.17	0.09	0.28	0.12	0.26	0.36	0.39
O48	0.11	0.12	0.12	0.04	0.11	0.23	0.10	0.23	0.34	0.37
O49	0.18	0.28	0.18	0.10	0.15	0.16	0.10	0.34	0.48	0.37
O50	0.18	0.14	0.16	0.05	0.16	0.12	0.08	0.18	0.24	0.23
O51	0.25	0.22	0.27	0.05	0.13	0.04	0.04	0.03	0.08	0.10

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O52	0.23	0.25	0.28	0.09	0.08	0.02	0.03	0.06	0.10	0.10
O53	0.12	0.11	0.11	0.17	0.10	0.04	0.02	0.04	0.04	0.05
O54	0.17	0.20	0.26	0.09	0.09	0.04	0.03	0.05	0.08	0.06
O55	0.12	0.11	0.20	0.06	0.14	0.08	0.04	0.05	0.09	0.11
O56	0.10	0.07	0.17	0.02	0.12	0.07	0.03	0.05	0.06	0.09
O57	0.03	0.04	0.12	0.04	0.14	0.10	0.05	0.06	0.15	0.16
O58	0.04	0.04	0.16	0.03	0.10	0.06	0.04	0.04	0.07	0.10
O59	0.03	0.06	0.17	0.04	0.12	0.08	0.04	0.06	0.09	0.12
O60	0.03	0.04	0.12	0.04	0.14	0.09	0.04	0.05	0.13	0.15
O61	0.03	0.03	0.13	0.03	0.14	0.05	0.03	0.03	0.11	0.12
O62	0.09	0.16	0.14	0.03	0.05	0.28	0.06	0.09	0.21	0.21
O63	0.06	0.11	0.05	0.04	0.04	0.19	0.02	0.05	0.21	0.20
O64	0.06	0.11	0.06	0.10	0.04	0.20	0.02	0.06	0.23	0.21
O65	0.12	0.18	0.10	0.09	0.10	0.19	0.02	0.11	0.27	0.26
O66	0.11	0.20	0.14	0.16	0.09	0.20	0.06	0.12	0.29	0.28
O67	0.05	0.10	0.20	0.05	0.05	0.19	0.14	0.13	0.28	0.27
O68	0.18	0.25	0.29	0.24	0.20	0.25	0.08	0.09	0.26	0.22
O69	0.13	0.16	0.22	0.20	0.16	0.32	0.17	0.10	0.31	0.22
O70	0.14	0.18	0.13	0.17	0.17	0.32	0.14	0.19	0.34	0.32
O71	0.13	0.16	0.10	0.11	0.17	0.27	0.07	0.17	0.32	0.32
O72	0.11	0.13	0.16	0.10	0.16	0.19	0.05	0.19	0.33	0.33
O73	0.09	0.08	0.13	0.08	0.08	0.27	0.02	0.20	0.35	0.34
O74	0.06	0.08	0.07	0.04	0.04	0.29	0.09	0.19	0.40	0.33
O75	0.07	0.10	0.11	0.08	0.06	0.34	0.15	0.07	0.22	0.15
O76	0.05	0.06	0.09	0.06	0.06	0.34	0.16	0.11	0.22	0.19
O77	0.08	0.17	0.06	0.07	0.12	0.22	0.18	0.14	0.31	0.23
O78	0.10	0.20	0.13	0.10	0.08	0.27	0.04	0.15	0.36	0.31
O79	0.11	0.24	0.17	0.11	0.05	0.22	0.03	0.23	0.42	0.35
O80	0.12	0.27	0.23	0.13	0.07	0.13	0.06	0.25	0.41	0.37
O81	0.15	0.33	0.30	0.10	0.12	0.10	0.06	0.25	0.46	0.38
O82	0.11	0.31	0.24	0.07	0.15	0.17	0.03	0.17	0.41	0.35
O83	0.08	0.29	0.18	0.06	0.17	0.23	0.01	0.16	0.41	0.34
O84	0.05	0.29	0.11	0.04	0.18	0.22	0.07	0.19	0.42	0.34
O85	0.04	0.28	0.04	0.03	0.18	0.20	0.17	0.24	0.44	0.35
O86	0.02	0.21	0.09	0.04	0.24	0.23	0.14	0.29	0.44	0.33
O87	0.09	0.23	0.21	0.06	0.24	0.24	0.10	0.29	0.45	0.33
O88	0.14	0.26	0.29	0.07	0.22	0.20	0.02	0.27	0.45	0.34
O89	0.20	0.28	0.33	0.08	0.21	0.16	0.04	0.19	0.44	0.34
O90	0.24	0.29	0.35	0.09	0.18	0.08	0.07	0.17	0.41	0.34
O91	0.28	0.33	0.35	0.15	0.22	0.08	0.08	0.22	0.39	0.31
O92	0.27	0.30	0.35	0.14	0.24	0.15	0.04	0.34	0.44	0.28
O93	0.25	0.26	0.35	0.14	0.26	0.20	0.02	0.37	0.45	0.26
O94	0.22	0.23	0.34	0.13	0.28	0.24	0.09	0.32	0.45	0.23
O95	0.18	0.19	0.31	0.12	0.27	0.26	0.13	0.29	0.44	0.20
O96	0.15	0.14	0.27	0.12	0.22	0.30	0.15	0.25	0.39	0.18
O97	0.03	0.14	0.05	0.02	0.23	0.19	0.14	0.25	0.43	0.29
O98	0.06	0.26	0.03	0.04	0.16	0.24	0.10	0.23	0.43	0.33
O99	0.09	0.18	0.07	0.07	0.13	0.31	0.12	0.18	0.37	0.27
O100	0.05	0.07	0.09	0.07	0.05	0.25	0.17	0.14	0.30	0.22
O101	0.16	0.22	0.24	0.12	0.08	0.15	0.13	0.14	0.26	0.26
O102	0.06	0.11	0.06	0.06	0.04	0.13	0.05	0.06	0.16	0.13

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O103	0.11	0.19	0.11	0.09	0.16	0.37	0.07	0.19	0.35	0.29
O104	0.07	0.15	0.10	0.02	0.14	0.13	0.09	0.24	0.41	0.32
O105	0.12	0.19	0.13	0.09	0.05	0.19	0.08	0.26	0.39	0.32
O106	0.05	0.28	0.26	0.24	0.13	0.32	0.16	0.27	0.40	0.34
O107	0.10	0.31	0.04	0.06	0.14	0.25	0.15	0.26	0.44	0.35
O108	0.07	0.29	0.03	0.04	0.15	0.29	0.11	0.26	0.44	0.35
O109	0.05	0.10	0.12	0.06	0.17	0.17	0.17	0.16	0.28	0.17
O110	0.01	0.06	0.03	0.07	0.14	0.16	0.13	0.24	0.43	0.30
O111	0.01	0.13	0.02	0.04	0.18	0.10	0.14	0.24	0.46	0.31
O112	0.02	0.04	0.03	0.05	0.15	0.10	0.11	0.20	0.39	0.26
O113	0.05	0.09	0.06	0.15	0.12	0.21	0.11	0.19	0.31	0.26
O114	0.09	0.10	0.12	0.14	0.16	0.06	0.09	0.06	0.15	0.10
O115	0.15	0.24	0.20	0.16	0.10	0.08	0.09	0.08	0.13	0.07
O116	0.15	0.19	0.15	0.09	0.05	0.02	0.04	0.05	0.17	0.08
O117	0.18	0.33	0.35	0.17	0.14	0.06	0.05	0.18	0.16	0.05
O118	0.21	0.29	0.29	0.20	0.16	0.11	0.19	0.07	0.15	0.08
O119	0.14	0.10	0.07	0.09	0.02	0.04	0.02	0.16	0.19	0.05
O120	0.11	0.11	0.19	0.16	0.03	0.02	0.06	0.31	0.42	0.09
O121	0.09	0.16	0.28	0.17	0.04	0.06	0.05	0.39	0.45	0.10
O122	0.11	0.20	0.31	0.16	0.03	0.06	0.04	0.42	0.47	0.08
O123	0.18	0.25	0.35	0.16	0.05	0.26	0.09	0.34	0.45	0.27
O124	0.06	0.07	0.12	0.03	0.24	0.16	0.09	0.42	0.36	0.09
O125	0.23	0.32	0.29	0.15	0.25	0.07	0.06	0.44	0.36	0.08
O126	0.23	0.36	0.32	0.19	0.27	0.16	0.03	0.31	0.39	0.17
O127	0.26	0.37	0.36	0.19	0.28	0.20	0.02	0.31	0.42	0.17
O128	0.26	0.36	0.36	0.18	0.27	0.25	0.11	0.32	0.43	0.06
O129	0.25	0.37	0.36	0.18	0.21	0.29	0.13	0.33	0.43	0.05
O130	0.24	0.38	0.38	0.19	0.07	0.33	0.14	0.36	0.46	0.12
O131	0.23	0.40	0.40	0.19	0.06	0.24	0.10	0.41	0.52	0.23
O132	0.24	0.41	0.42	0.18	0.05	0.05	0.03	0.42	0.55	0.07
O133	0.26	0.41	0.42	0.15	0.06	0.08	0.05	0.40	0.54	0.04
O134	0.29	0.41	0.42	0.14	0.07	0.05	0.08	0.36	0.52	0.05
O135	0.23	0.39	0.41	0.15	0.06	0.06	0.07	0.39	0.56	0.03
O136	0.18	0.38	0.42	0.19	0.05	0.06	0.11	0.39	0.54	0.05
O137	0.17	0.38	0.42	0.18	0.06	0.08	0.08	0.38	0.50	0.11
O138	0.22	0.38	0.43	0.26	0.12	0.13	0.11	0.39	0.54	0.29
O139	0.24	0.39	0.42	0.29	0.13	0.15	0.12	0.40	0.51	0.32
O140	0.23	0.40	0.44	0.25	0.11	0.13	0.12	0.38	0.55	0.19
O141	0.25	0.41	0.42	0.30	0.12	0.15	0.12	0.39	0.49	0.27
O142	0.23	0.41	0.44	0.24	0.09	0.10	0.11	0.36	0.54	0.12
O143	0.27	0.42	0.43	0.31	0.11	0.13	0.09	0.37	0.45	0.21
O144	0.24	0.42	0.44	0.24	0.08	0.11	0.08	0.33	0.53	0.10
O145	0.26	0.43	0.44	0.28	0.09	0.11	0.07	0.32	0.46	0.15
O146	0.31	0.41	0.43	0.32	0.10	0.09	0.10	0.38	0.35	0.21
O147	0.25	0.43	0.44	0.22	0.08	0.10	0.05	0.33	0.52	0.08
O148	0.24	0.41	0.41	0.26	0.08	0.05	0.04	0.18	0.29	0.10
O149	0.34	0.40	0.43	0.32	0.10	0.19	0.14	0.39	0.26	0.20
O150	0.26	0.44	0.43	0.22	0.06	0.04	0.08	0.41	0.51	0.08
O151	0.24	0.42	0.43	0.28	0.06	0.23	0.14	0.38	0.44	0.16
O152	0.35	0.39	0.42	0.33	0.11	0.40	0.17	0.33	0.13	0.19
O153	0.22	0.36	0.39	0.27	0.09	0.36	0.17	0.36	0.33	0.12

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O154	0.24	0.38	0.37	0.20	0.07	0.26	0.13	0.41	0.48	0.18
O155	0.23	0.37	0.37	0.21	0.07	0.35	0.15	0.40	0.45	0.14
O156	0.20	0.37	0.39	0.25	0.08	0.35	0.17	0.34	0.32	0.09
O157	0.22	0.27	0.30	0.23	0.08	0.35	0.13	0.14	0.02	0.06
O158	0.33	0.35	0.39	0.31	0.10	0.32	0.10	0.21	0.14	0.23
O159	0.18	0.33	0.29	0.18	0.07	0.30	0.13	0.15	0.11	0.12
O160	0.15	0.19	0.27	0.20	0.06	0.18	0.10	0.25	0.10	0.09
O161	0.21	0.26	0.24	0.13	0.15	0.18	0.09	0.32	0.08	0.07
O162	0.17	0.33	0.33	0.20	0.10	0.21	0.12	0.31	0.12	0.12
O163	0.19	0.36	0.37	0.21	0.05	0.30	0.15	0.38	0.34	0.10
O164	0.20	0.37	0.39	0.24	0.06	0.33	0.16	0.29	0.24	0.17
O165	0.10	0.15	0.21	0.15	0.07	0.33	0.14	0.18	0.15	0.24
O166	0.20	0.23	0.29	0.24	0.08	0.31	0.12	0.27	0.24	0.32
O167	0.21	0.21	0.31	0.28	0.06	0.18	0.12	0.12	0.30	0.32
O168	0.19	0.24	0.32	0.24	0.04	0.12	0.18	0.45	0.01	0.04
O169	0.22	0.23	0.27	0.17	0.13	0.12	0.14	0.40	0.06	0.07
O170	0.32	0.30	0.39	0.33	0.11	0.36	0.15	0.33	0.24	0.32
O171	0.30	0.27	0.37	0.32	0.09	0.24	0.16	0.16	0.30	0.34
O172	0.27	0.25	0.36	0.31	0.02	0.16	0.10	0.05	0.32	0.33
O173	0.30	0.30	0.40	0.33	0.18	0.05	0.07	0.14	0.32	0.30
O174	0.31	0.37	0.43	0.34	0.03	0.09	0.08	0.09	0.31	0.25
O175	0.35	0.40	0.44	0.34	0.10	0.03	0.18	0.16	0.27	0.15
O176	0.34	0.39	0.41	0.32	0.03	0.16	0.13	0.16	0.12	0.08
O177	0.08	0.14	0.15	0.05	0.11	0.08	0.05	0.08	0.20	0.19
O178	0.12	0.10	0.18	0.07	0.11	0.05	0.06	0.13	0.25	0.25
O179	0.13	0.20	0.23	0.10	0.14	0.10	0.07	0.19	0.29	0.29
O180	0.16	0.29	0.29	0.11	0.14	0.16	0.07	0.25	0.36	0.31
O181	0.25	0.31	0.33	0.09	0.09	0.15	0.06	0.30	0.46	0.35
O182	0.28	0.26	0.32	0.11	0.11	0.15	0.08	0.28	0.47	0.38
O183	0.13	0.24	0.17	0.13	0.18	0.17	0.11	0.09	0.16	0.19
O184	0.23	0.28	0.32	0.12	0.22	0.17	0.13	0.31	0.41	0.18
O185	0.35	0.40	0.38	0.22	0.20	0.16	0.13	0.36	0.10	0.07
O186	0.38	0.34	0.08	0.14	0.18	0.11	0.09	0.13	0.06	0.10
O187	0.16	0.16	0.07	0.11	0.20	0.12	0.13	0.08	0.10	0.10
O188	0.24	0.06	0.06	0.04	0.24	0.15	0.14	0.11	0.09	0.03
O189	0.33	0.37	0.38	0.29	0.23	0.15	0.10	0.13	0.05	0.11
O190	0.31	0.27	0.38	0.26	0.03	0.04	0.09	0.26	0.31	0.31
O191	0.34	0.31	0.35	0.33	0.06	0.06	0.14	0.36	0.36	0.50
O192	0.28	0.30	0.27	0.32	0.08	0.13	0.15	0.32	0.40	0.48
O193	0.21	0.25	0.27	0.24	0.12	0.12	0.16	0.30	0.28	0.27
O194	0.11	0.20	0.21	0.18	0.13	0.19	0.07	0.16	0.27	0.25
O195	0.07	0.21	0.19	0.17	0.15	0.15	0.08	0.28	0.46	0.36
O196	0.11	0.10	0.20	0.19	0.17	0.12	0.09	0.28	0.32	0.25
O197	0.09	0.08	0.13	0.20	0.19	0.10	0.09	0.21	0.13	0.16
O198	0.03	0.08	0.06	0.18	0.19	0.08	0.09	0.13	0.05	0.12
O199	0.08	0.06	0.04	0.12	0.15	0.08	0.07	0.05	0.06	0.13
O200	0.05	0.03	0.05	0.10	0.16	0.06	0.09	0.11	0.05	0.23
O201	0.07	0.03	0.04	0.11	0.17	0.05	0.12	0.19	0.13	0.26
O202	0.06	0.03	0.04	0.12	0.18	0.07	0.14	0.25	0.21	0.35
O203	0.11	0.12	0.12	0.08	0.17	0.04	0.12	0.24	0.19	0.33
O204	0.23	0.20	0.15	0.14	0.02	0.19	0.11	0.26	0.25	0.32

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O205	0.06	0.12	0.13	0.14	0.19	0.10	0.13	0.33	0.30	0.38
O206	0.15	0.19	0.21	0.20	0.19	0.03	0.13	0.36	0.38	0.41
O207	0.18	0.26	0.24	0.22	0.19	0.09	0.15	0.36	0.41	0.42
O208	0.22	0.26	0.17	0.11	0.09	0.21	0.13	0.19	0.33	0.24
O209	0.19	0.26	0.25	0.21	0.17	0.17	0.14	0.35	0.40	0.41
O210	0.17	0.20	0.22	0.19	0.16	0.23	0.13	0.30	0.39	0.39
O211	0.15	0.14	0.21	0.18	0.17	0.16	0.15	0.34	0.47	0.40
O212	0.20	0.27	0.22	0.22	0.15	0.27	0.13	0.08	0.18	0.12
O213	0.21	0.25	0.28	0.23	0.13	0.28	0.14	0.13	0.18	0.14
O214	0.21	0.27	0.28	0.22	0.16	0.25	0.16	0.26	0.40	0.37
O215	0.22	0.28	0.29	0.22	0.16	0.33	0.15	0.30	0.47	0.41
O216	0.24	0.29	0.30	0.23	0.15	0.34	0.14	0.29	0.49	0.42
O217	0.19	0.22	0.25	0.21	0.12	0.30	0.17	0.26	0.38	0.33
O218	0.20	0.29	0.28	0.27	0.17	0.30	0.14	0.11	0.22	0.14
O219	0.12	0.14	0.18	0.24	0.15	0.25	0.12	0.11	0.16	0.13
O220	0.23	0.27	0.31	0.26	0.14	0.30	0.16	0.36	0.49	0.42
O221	0.26	0.32	0.32	0.25	0.15	0.33	0.13	0.24	0.49	0.44
O222	0.27	0.34	0.34	0.28	0.14	0.33	0.13	0.21	0.49	0.45
O223	0.25	0.28	0.33	0.28	0.15	0.30	0.16	0.32	0.49	0.42
O224	0.15	0.19	0.22	0.26	0.14	0.23	0.15	0.39	0.47	0.38
O225	0.19	0.22	0.23	0.16	0.10	0.21	0.13	0.37	0.40	0.37
O226	0.20	0.22	0.26	0.26	0.14	0.25	0.16	0.34	0.47	0.38
O227	0.26	0.28	0.34	0.28	0.15	0.28	0.15	0.26	0.48	0.42
O228	0.27	0.33	0.34	0.29	0.14	0.30	0.12	0.20	0.48	0.46
O229	0.27	0.33	0.34	0.30	0.14	0.25	0.12	0.22	0.44	0.44
O230	0.26	0.28	0.33	0.28	0.15	0.24	0.15	0.21	0.47	0.42
O231	0.22	0.25	0.28	0.27	0.15	0.22	0.15	0.29	0.47	0.39
O232	0.20	0.26	0.25	0.21	0.13	0.19	0.13	0.36	0.44	0.36
O233	0.17	0.26	0.27	0.25	0.16	0.13	0.12	0.32	0.45	0.36
O234	0.21	0.27	0.29	0.28	0.16	0.16	0.14	0.27	0.47	0.39
O235	0.25	0.28	0.33	0.29	0.16	0.18	0.15	0.19	0.46	0.41
O236	0.27	0.32	0.33	0.30	0.15	0.19	0.14	0.22	0.40	0.41
O237	0.27	0.31	0.34	0.31	0.15	0.13	0.16	0.25	0.34	0.37
O238	0.23	0.28	0.33	0.29	0.16	0.11	0.16	0.16	0.44	0.40
O239	0.17	0.27	0.30	0.28	0.16	0.08	0.14	0.25	0.46	0.38
O240	0.11	0.26	0.27	0.26	0.17	0.05	0.10	0.30	0.44	0.35
O241	0.07	0.19	0.24	0.23	0.20	0.03	0.09	0.31	0.37	0.33
O242	0.05	0.09	0.22	0.23	0.20	0.02	0.09	0.31	0.37	0.34
O243	0.05	0.24	0.27	0.26	0.18	0.02	0.06	0.30	0.42	0.33
O244	0.11	0.28	0.30	0.28	0.17	0.03	0.12	0.22	0.44	0.36
O245	0.20	0.29	0.33	0.30	0.17	0.04	0.17	0.11	0.41	0.39
O246	0.25	0.30	0.34	0.31	0.16	0.03	0.17	0.24	0.30	0.32
O247	0.24	0.30	0.34	0.31	0.16	0.06	0.17	0.27	0.26	0.26
O248	0.17	0.30	0.34	0.31	0.18	0.06	0.17	0.11	0.39	0.37
O249	0.09	0.31	0.33	0.33	0.19	0.07	0.12	0.19	0.42	0.37
O250	0.05	0.23	0.29	0.30	0.20	0.07	0.04	0.29	0.43	0.33
O251	0.11	0.05	0.21	0.26	0.22	0.06	0.08	0.31	0.36	0.32
O252	0.16	0.10	0.22	0.30	0.23	0.10	0.07	0.31	0.35	0.28
O253	0.11	0.22	0.30	0.32	0.21	0.10	0.03	0.30	0.42	0.30
O254	0.07	0.30	0.32	0.33	0.19	0.10	0.04	0.24	0.43	0.36
O255	0.14	0.29	0.33	0.31	0.17	0.08	0.13	0.12	0.38	0.35

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
O256	0.23	0.29	0.33	0.31	0.15	0.07	0.17	0.31	0.24	0.23
O257	0.12	0.27	0.29	0.28	0.16	0.10	0.06	0.13	0.36	0.32
O258	0.08	0.24	0.27	0.27	0.17	0.12	0.04	0.25	0.43	0.34
O259	0.12	0.15	0.24	0.26	0.19	0.12	0.06	0.29	0.33	0.25
O260	0.13	0.10	0.16	0.24	0.21	0.10	0.08	0.25	0.21	0.20
O261	0.11	0.09	0.07	0.20	0.21	0.08	0.10	0.23	0.21	0.24

Table 6 Special Test Points of Proposed Scheme

Points	NNE	NE	ENE	E	ESE	SSE	S	SSW	SW	WSW
S1	0.38	0.41	0.36	0.22	0.13	0.08	0.09	0.31	0.09	0.20
S2	0.05	0.20	0.16	0.10	0.14	0.12	0.13	0.24	0.06	0.10
S3	0.24	0.06	0.06	0.02	0.21	0.18	0.22	0.22	0.02	0.06
S4	0.32	0.38	0.41	0.32	0.02	0.04	0.06	0.05	0.29	0.26
S5	0.35	0.38	0.41	0.32	0.06	0.03	0.04	0.07	0.29	0.21
S6	0.38	0.38	0.42	0.31	0.06	0.10	0.17	0.12	0.24	0.08
S7	0.03	0.06	0.05	0.03	0.02	0.08	0.13	0.26	0.08	0.11
S8	0.06	0.14	0.12	0.12	0.23	0.12	0.03	0.24	0.18	0.25
S9	0.30	0.30	0.17	0.12	0.17	0.09	0.06	0.29	0.18	0.26
S10	0.37	0.39	0.40	0.26	0.11	0.09	0.11	0.35	0.03	0.08
S11	0.32	0.33	0.34	0.22	0.10	0.08	0.16	0.39	0.05	0.05
S12	0.12	0.10	0.16	0.12	0.22	0.19	0.17	0.07	0.03	0.05
S13	0.18	0.17	0.31	0.28	0.16	0.17	0.13	0.06	0.30	0.31
S14	0.29	0.38	0.38	0.31	0.09	0.03	0.05	0.04	0.29	0.30