

Issue No : Final
Issue Date : November 2010
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**AIR VENTILATION ASSESSMENT
OF THE PROPOSED
REDEVELOPMENT OF EX-YUEN
LONG ESTATE**

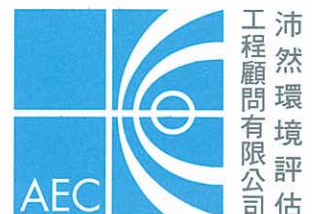
INITIAL STUDY

Report Prepared by :
Allied Environmental Consultants Ltd.

COMMERCIAL-IN-CONFIDENCE

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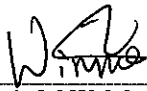
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EXECUTIVE SUMMARY

Allied Environmental Consultants Limited (AEC) was commissioned by the Hong Kong Housing Authority (HKHA) to undertake an Air Ventilation Assessment (AVA) Initial Study for the proposed public housing development and on behalf of the HKSAR Government for the future private housing development at Ex-Yuen Long Estate Site, at On Lok Road, Yuen Long (the Project). The AVA is to assess air ventilation performance of the building design and its impacts to the surrounding pedestrian accessible locations.

Computational Fluid Dynamic (CFD) modelling is used for quantitative ventilation performance evaluation in the Initial AVA Study. There are two Scenarios being reviewed in this Initial AVA Study including

1. Baseline Scenario: evaluating ventilation performance on the surrounding environment within 500m of the subject site of the proposed developments.
2. Proposed Scenario: evaluating ventilation performance on the surrounding environment within 500m of the subject site after the proposed developments are in place.

There are eight probable winds exceeded 75% of a year in the Mesoscale Model (MM5) grid (16, 36) including ENE, NE, E, NNE, ESE, SSE, SE and SSW.

Local Velocity Ratio (LVR) and Site Velocity Ratio (SVR) simulated results computed by analyzing the group of 67 overall test points and 36 perimeter test points are used to evaluate ventilation impacts due to the proposed developments. Comparison between Baseline and Proposed Scenarios shows an increase in the overall weighted LVR (0.004, 3.4%) and SVR (0.006, 5.5%), which indicates that the proposed developments would unlikely have any adverse impact on ventilation performance at pedestrian level in the vicinity and within the site. Design of the proposed Project has taken into consideration of wind availability in the vicinity in order to reduce potential wind blockage due to the proposed developments.

The AVA Initial Study findings reveal that the proposed redevelopment of Ex-Yuen Long Estate Site would unlikely have any adverse ventilation impact upon pedestrian areas in the vicinity of and within the site. In the event that the recommendations stated in this report are not adopted in the future design scheme, a further detailed AVA study shall be required to demonstrate that the future development scheme proposal would not have any significant or unacceptable pedestrian level air ventilation impact in the vicinity.

1. INTRODUCTION

1.1. PROJECT BACKGROUND

Allied Environmental Consultants Limited (AEC) was commissioned by the Hong Kong Housing Authority (HKHA) to undertake an Air Ventilation Assessment (AVA) Initial Study for the proposed public housing development and on behalf of the HKSAR Government for the future private housing development at Ex-Yuen Long Estate Site, at On Lok Road, Yuen Long (the Project). The AVA is to assess air ventilation performance of the building design and its impacts to the surrounding pedestrian accessible locations.

1.2. PROJECT OBJECTIVE

This AVA Initial Study is to assess wind performance at pedestrian level in the vicinity of the subject site compared between Scenario without the proposed project (Baseline Scenario) and Scenario with the proposed project (Proposed Scenario) based on methodology outlined in the *Technical Guide for Air Ventilation Assessment for Developments in Hong Kong* (Technical Guide) annexed in *Housing, Planning and Lands Bureau (HPLB) and Environment, Transport and Works Bureau (ETWB) Technical Circular No.1/06*. The main objectives of this AVA Initial Study include:

1. To assess the characteristics of the wind availability (V_{∞}) of the site;
2. To give a general pattern of the proposed developments and a quantitative estimate of wind performance at the pedestrian level (2m above ground) reported using Wind Velocity Ratio (VR);
3. To identify ventilation performance of the proposed developments and areas of concerns in the vicinity of the subject site; and
4. To recommend design improvement and suggest recommendations on ventilation mitigation measures.

1.3. PROJECT DETAILS

As shown in **Figure 1**, the Project comprises of public housing development and private housing development and the Project details are summarized in **Table 1**.

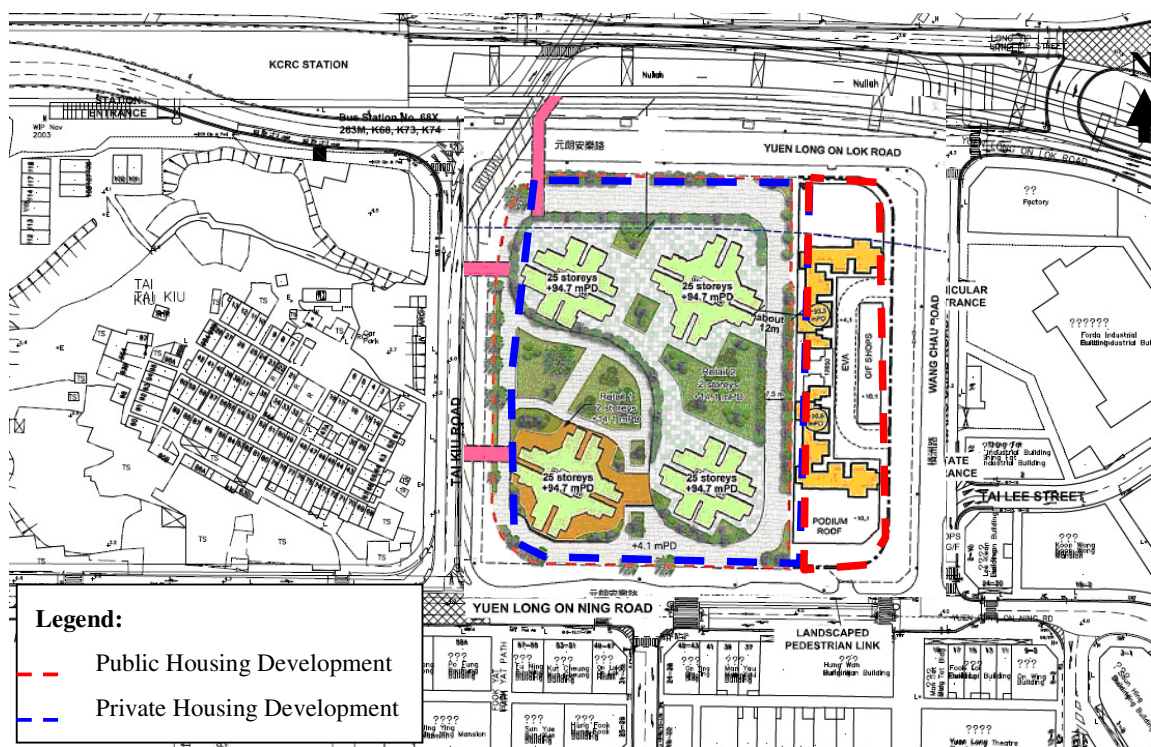


Figure 1 Conceptual Layout of the Proposed Developments

	Private Housing Development	Public Housing Development
Approximate Site Area	1.22ha	0.41ha
No of Residential Blocks	4	2
No of Residential Storeys Over Podium	25	30
No of flats	960 units	400 units
Podium	2-storey retail podium at 14.1mPD	Single-storey retail podium at 10 mPD
Building Height	4 blocks up to 100mPD	2 blocks up to 100mPD
Carpark	Basement carpark	Covered carpark under podium

Table 1 Conceptual Layout Plan of the Proposed Developments

2. EXPERT EVALUATION FOR AIR VENTILATION ASSESSMENT

2.1. SITE ENVIRON

The proposed redevelopment is located at the On Lok Road, Yuen Long and the current land use of the subject site is an outdoor car park at 4 mPD.

As shown in **Figure 2**, the subject is bounded by high-rise Forda Industrial Building, Tai Hang Building and Wing Wah Industrial Centre to its north, low-rise Tai Kiu Tsuen to its west and cluster of residential buildings (ranges from 30 to 60 mPD) to its south. The West Rail Track is situated at the north of the subject site. Some medium-to high-rise industrial buildings (30 to 60 mPD) is situated approximately 90m from the north of the subject site and low-rise residential buildings, Kwan Lok San Tsuen is located at further east to the subject site.



Figure 2 Existing Land Use of the Proposed Developments

2.2. PROJECT AREA, ASSESSMENT AREA BOUNDARY AND SURROUNDING AREA BOUNDARY

The project area is defined by project site boundaries including both public and private housing developments and all open areas for which pedestrian area likely to access. The shaded area as shown in *Figure 3* is equivalent to the project site area.

The assessment area (encoded by red boundary line) includes the site's surrounding environment up to a perpendicular distance H (where H is the height of the tallest building within the project site) as shown in *Figure 3*. For the project site, H is 100m.

The surrounding area should normally up to a perpendicular distance of $2H$ from the project boundary, which is 200m for this study. However, there are tall buildings and obstructive

buildings are located outside the assessment area regions; thus the surrounding area for this AVA Initial Study has been enlarged to 500m outside the project boundary as shown in **Figure 3** (encoded by blue boundary line).

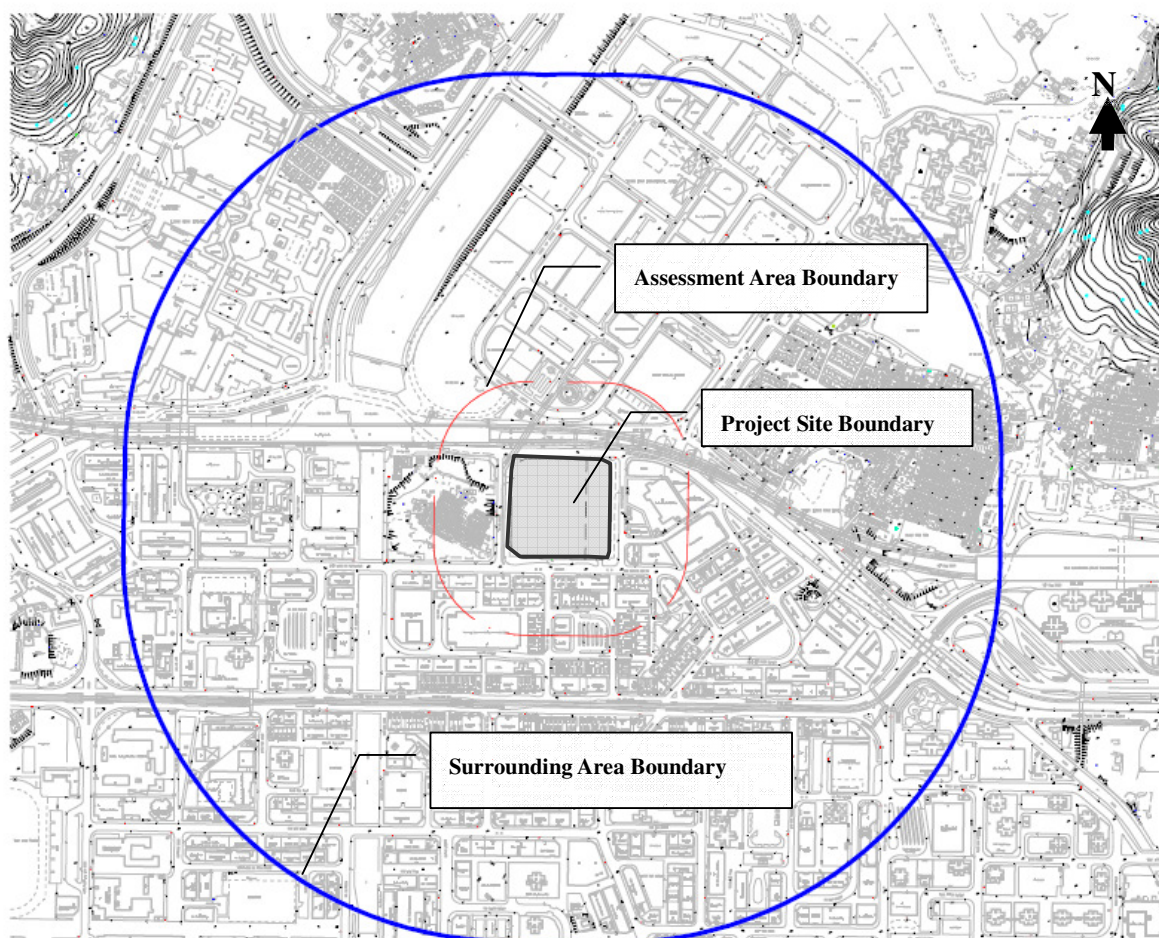


Figure 3 Project Site Boundary, Assessment Area Boundary and Surrounding Area Boundary

2.3. PREVAILING WIND CONDITION FOR EXISTING ENVIRONMENT

With respect to the wind availability of the subject site, based on the site wind availability data provided by the Planning Department for the immediate vicinity of the subject site in Yuen Long region, north-north easterly to south-south westerly winds occurrence exceed 75% of the time throughout the year (Refer **Section 3** for details).

Potential wind barriers to the overall wind environment of the subject site are high rise building blocks within close proximity including Forda Industrial Building, Tai Hang Building and Wing Wah Industrial Centre located at immediate east to the subject site,

medium-to high-rise industrial buildings situated to the north and east.



Figure 4 Wind Corridor Directing Air Circulation toward Subject Site

The low-rise Tai Kiu Tsuen situated at the immediate west of the subject site as well as open spaces and low-rise residential buildings situated to the south of the subject site encourage air circulation to the subject site; however wind enhancement to the subject site is substantially minimized due to the low probability occurrence of winds from these directions (Refer **Section 3** for details). Wind corridors are available along Po Yip Street and Wang Yip Street under north-eastern directions and allow penetration of prevailing winds to the subject site via passing through West Rail Track and diverting around building blocks. Also, On Lok Road and On Ning Road are wind corridors for prevailing winds under eastern direction passing through. However, the high rise industrial buildings located at immediate east to the

subject site (areas with red mark as shown in **Figure 4**) reduce penetrations of prevailing winds from north eastern directions.

Due to congested and high rise nature of surrounding developments and topography, wind availability is likely to be limited and the inherent wind conditions on the subject site should be relatively calm.

2.4. WIND CONDITION FOR PROPOSED DEVELOPMENTS

The site is currently used as outdoor car park upon the demolition of Ex-Yuen Long Housing Estate as discussed in **Section 2.1**. It is anticipated that the proposed developments on the subject site could potentially block prevailing winds from ENE, NE, NNE and E directions to pedestrian areas within close vicinity. The extent of these impacts was quantitatively investigated by CFD simulation and details of methodology are given in **Section 4**.

3. SITE WIND AVAILABILITY DATA

3.1. WIND DATA FROM MM5

Wind data used in CFD modelling is referred to the “Site Wind Availability Data” published by the Planning Department which is simulated by Fifth-Generation NCAR/ Penn State Mesoscale Model (MM5), as recommended in “Technical Guide for Air Ventilation Assessment for Developments in Hong Kong” published by Housing, Planning and Lands Bureau (HPLB) and Environment, Transport and Works Bureau (ETWB).

The wind rose of grid (16, 36) is the nearest grid to the subject site. The wind velocity ranges from 0 to 23ms^{-1} from 16 wind directions at 596m above the terrain level and the mean wind velocity is 6.54ms^{-1} at 596m above ground. The wind rose diagram of MM5 grid is shown in *Figure 5*.

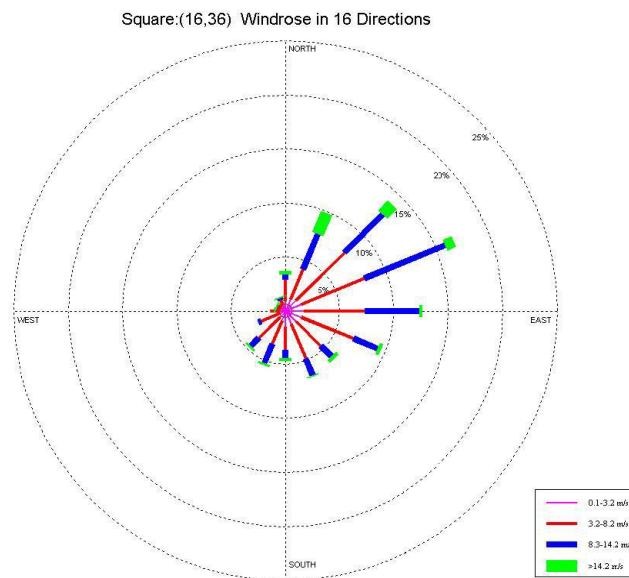


Figure 5 Wind Rose of Grid (16,36), MM5

The Technical Guide recommends prevailing wind directions which exceed 75% of a year to be used in assess ventilation impacts of the proposed developments in the Initial AVA Study. There are eight probable winds exceeded 75% of a year in the grid (16, 36) including ENE, NE, E, NNE, ESE, SSE, SE and SSW. The average wind velocities and wind probabilities

of these eight probable winds are summarized in **Table 2**. Details of the eight most probable winds can be referred to **Appendix 1**.

Prevailing Wind Direction	Degree of Wind Direction	Average Wind Velocities (m/s)	Probability (%)
ENE	67.5	8.48	16.6
NE	45	8.13	13.7
E	90	7.47	12.5
NNE	22.5	9.36	9.7
ESE	112.5	6.29	9.3
SSE	157.5	5.92	6.5
SE	135	5.62	6.2
SSW	202.5	6.91	5.3
		Total Probability:	79.8

Table 2 Summary of the Most Probable Wind Directions which Exceed 75% of a Year

4. ASSESSMENT APPROACH AND METHODOLOGY

A computational fluid dynamics (CFD) computer simulation model, ANSYS FLUENT, is used for the assessment. The CFD model solves algebraic equations resulting from the application of the conservation laws of physics to finite volumes of space and time to simulate wind flow.

There are two Scenarios being assessed by CFD modelling in this Initial AVA Study.

1. Baseline Scenario: evaluating ventilation performance within 500m of the subject site before the proposed developments are in place.
2. Proposed Scenario: evaluating ventilation performance within 500m of the subject site after the proposed developments as described in *Section 1.3* are in place.

4.1. GEOMETRY AND DOMAIN SETTING

Geometry and simulation options for the subject developments and surrounding environment have been set up to calculate the wind speed around the developments and in the surrounding ambient. Related wind speeds around the developments were assessed by setting up a geometry model of the developments with surrounding building structures. Computational Fluid Dynamics (CFD) simulation software FLUENT ANSYS shall be used in the Initial Study. Details regarding the CFD modelling settings shall be described in the following.

In this study, 3-dimensional models within the surrounding and assessment area were built in order to conduct CFD simulation as shown in *Figure 6* and *Figure 7*. The blockage ratio is 3.35%.

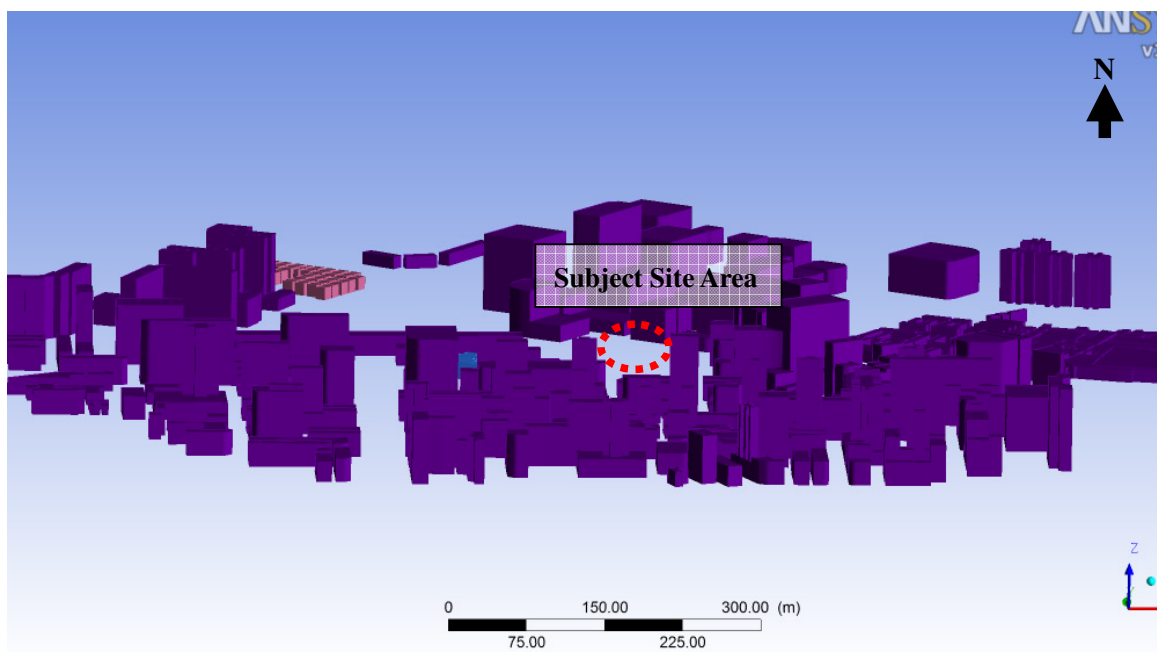


Figure 6 Dimensional Virtual Model of Baseline Scenario

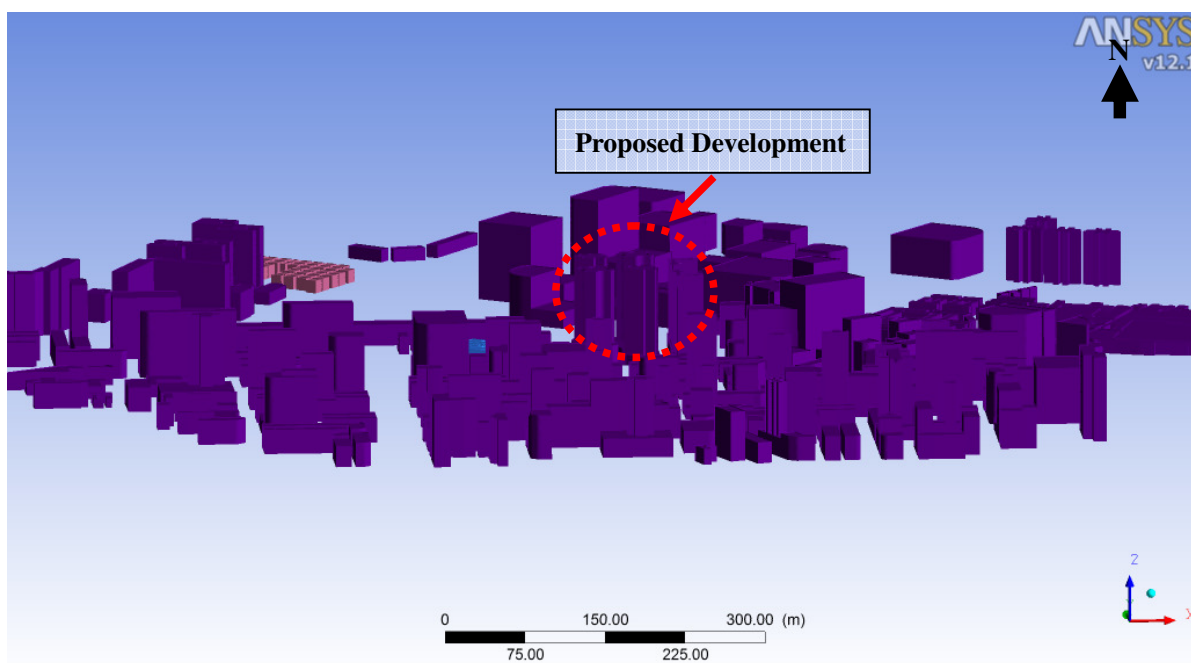


Figure 7 Dimensional Virtual Model of Proposed Scenario

The size of the computational domain is illustrated below and shown in *Figure 8* and *Figure 9*.

- x-direction = 5182m;
- y-direction = 2382m; and
- z-direction = 1000m

The four cardinal directions of Baseline and Proposed Scenarios are shown in *Figure 10* and *Figure 11*.

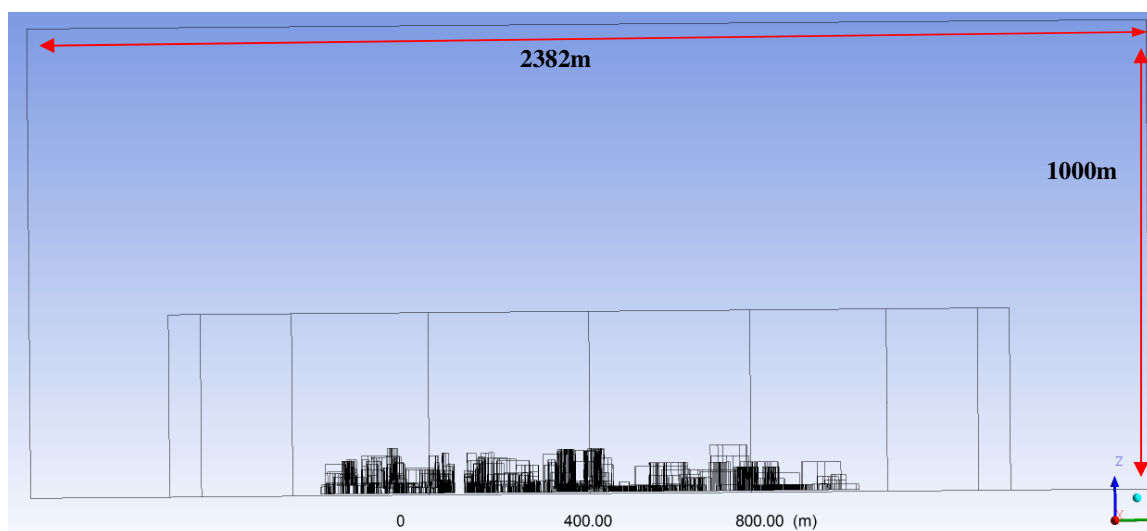


Figure 8 Side View of Domain Dimension

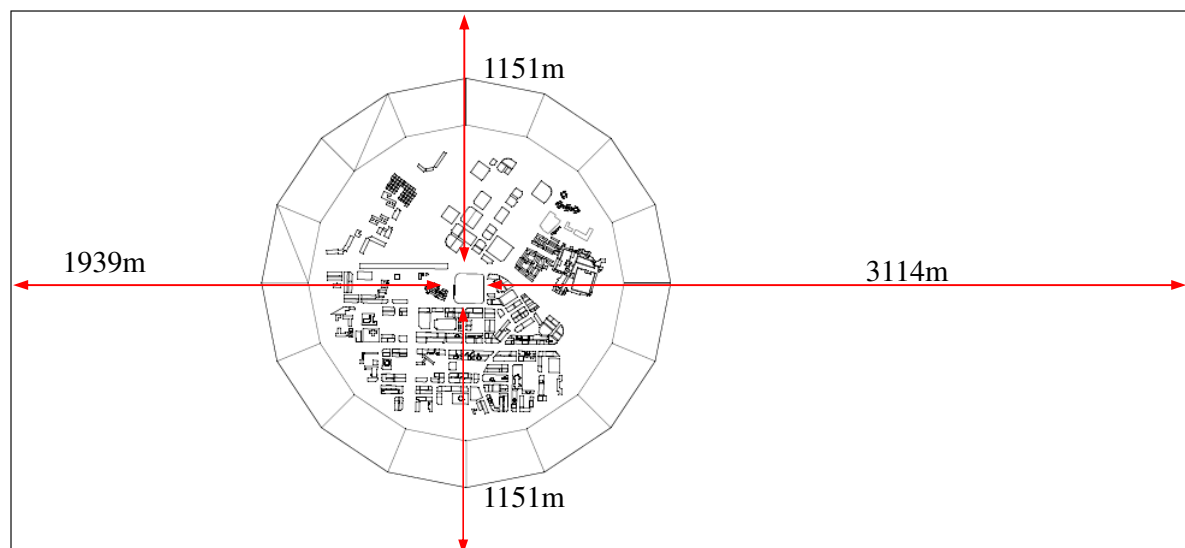


Figure 9 Bird View of Domain Dimension

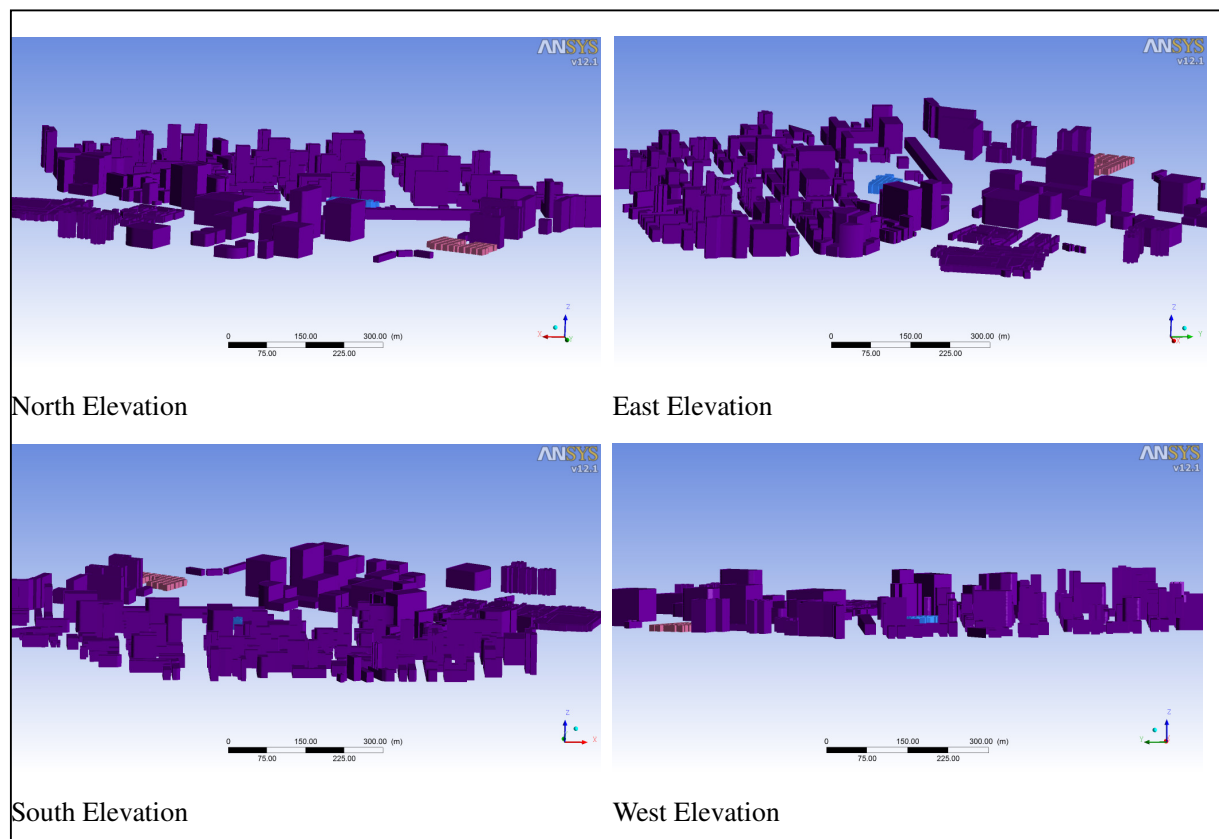


Figure 10 Four Cardinal Directions of Modelled Geometry of Baseline Scenario

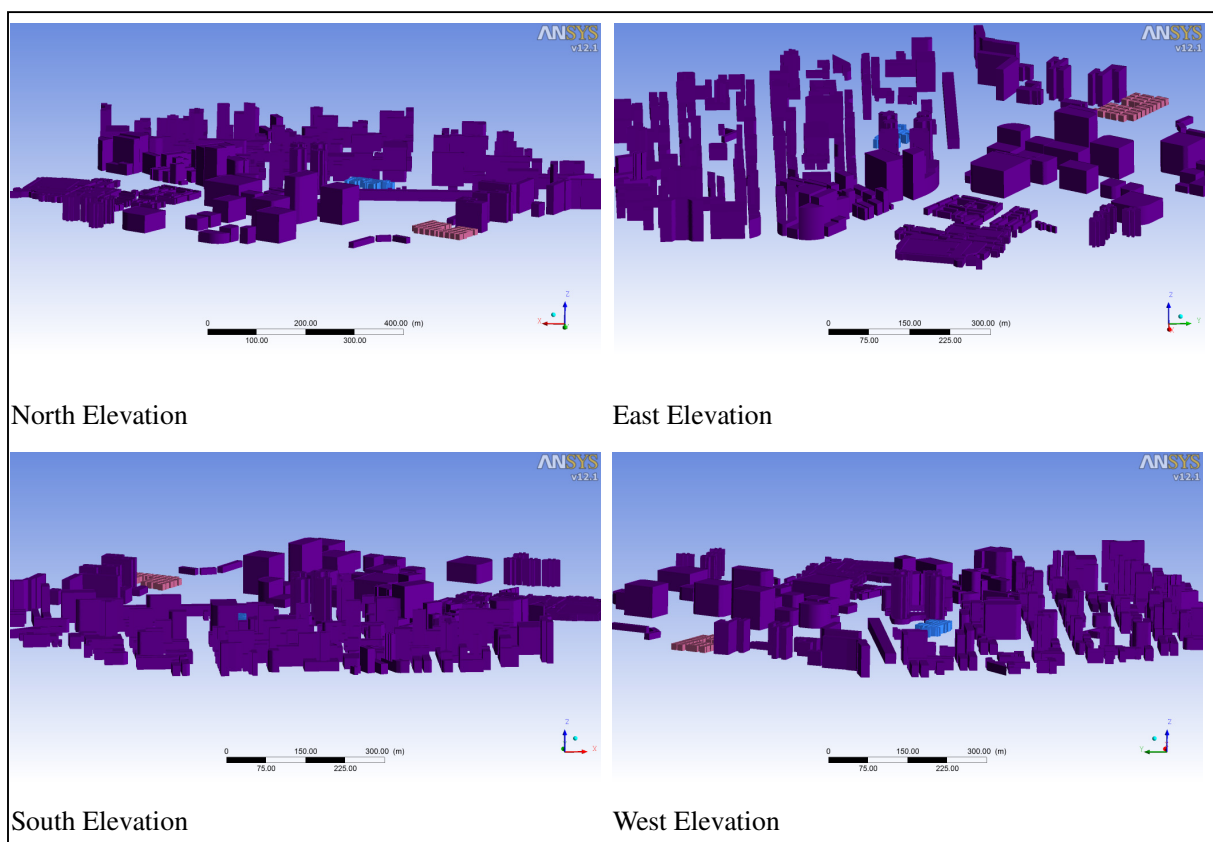
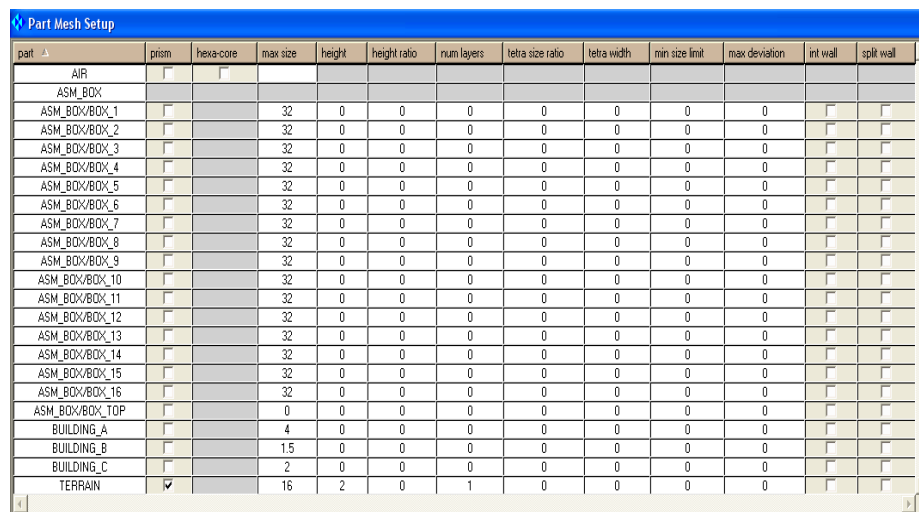


Figure 11 Four Cardinal Directions of Modeled Geometry of Proposed Scenario

4.2. MESH SETTING

Unstructured grid has been constructed by ANSYS ICEM CFD and the grid size can be manually adjusted in the aforesaid meshing tools. Within the assessment area, as shown in **Figure 12**, cells located across the x-axis and y-axis are posited with smaller intervals than those located further from the site location in order to produce a more precise result at higher resolution where it is required.



part	prism	hexa-core	max size	height	height ratio	num layers	tetra size ratio	tetra width	min size limit	max deviation	int wall	split wall
AIR												
ASM_BOX												
ASM_BOX/BOX_1			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_2			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_3			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_4			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_5			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_6			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_7			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_8			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_9			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_10			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_11			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_12			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_13			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_14			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_15			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_16			32	0	0	0	0	0	0	0		
ASM_BOX/BOX_TOP			0	0	0	0	0	0	0	0		
BUILDING_A			4	0	0	0	0	0	0	0		
BUILDING_B			1.5	0	0	0	0	0	0	0		
BUILDING_C			2	0	0	0	0	0	0	0		
TERRAIN	☒		16	2	0	1	0	0	0	0		

Figure 12 Mesh Set Up

The grid arrangement within the assessment height of 2m above ground shall be refined to facilitate the pedestrian wind environment study. For improved accuracy, smaller grid has been adopted in order to achieve a higher resolution at low levels of z-axis. Four prism layers at prism ratio of 1.00 are created at 2m above ground as shown in **Figure 13**. The expansion ratio between two consecutive cells approximate 1.0.

The mesh quality approximates 0.951, which is calculated as either aspect or determinant and more than 7 millions mesh cells are modeled. **Figure 13** and **Figure 14** illustrate the mesh of the model.

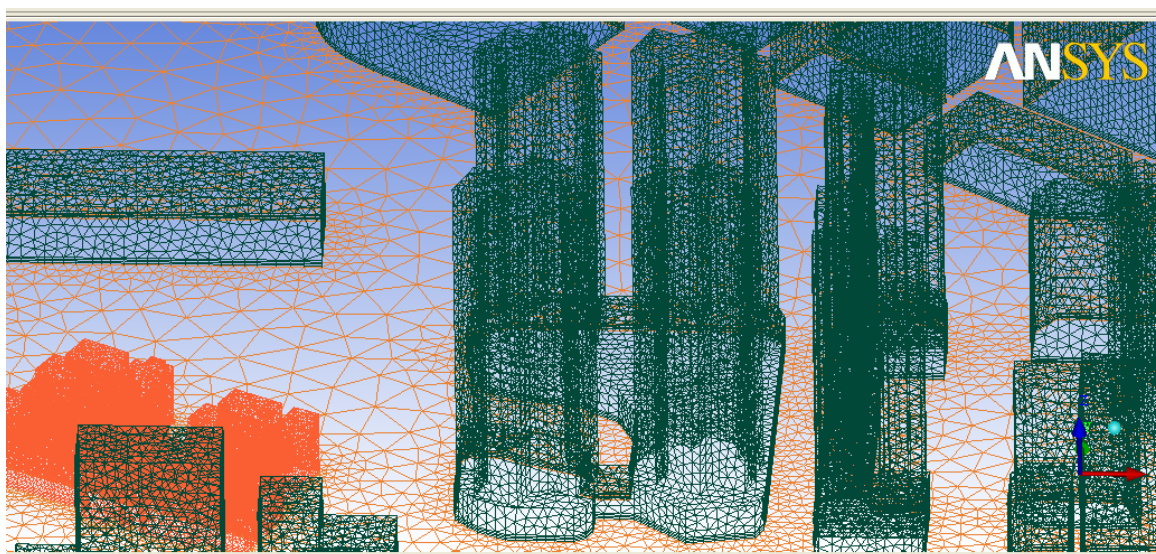


Figure 13 Side View of Meshing Arrangement near Ground Level



Figure 14 Bird View of Mesh Size

4.3. NUMERIC SCHEME SETTING

Turbulence model adopted in this study is realizable k-epsilon turbulence model in order to improve quantitatively the discomfort estimation compared to the standard k-epsilon model especially for pedestrian wind environment study. The realizable k-epsilon model converged to the second order is adopted in the simulation.

FLUENT uses iterative methods to solve the algebraic system of equations. The termination

criterion is usually based on the residuals of the corresponding equations. The termination criterion of 0.001 has been used in this study.

4.4. WIND PROFILE

Wind data used in CFD simulation should be referred to MM5 data published by Planning Department as recommended in the Technical Guide.

The occurrence of winds which exceed 75% of a reference year includes ENE, NE, E, NNE, ESE, SSE, SE and SSW winds. As MM5 data indicates wind availability at 596m above ground level, in order to evaluate wind availability at pedestrian level (2m above ground level), the wind velocities of the eight probable winds obtained from MM5 are converted to pedestrian level. Wind profiles of different prevailing direction are determined using the Power Law:

$$\frac{U_z}{U_G} = \left(\frac{Z_z}{Z_G} \right)^\alpha$$

Where U_z is the wind speed at height z from ground;

U_G is the wind speed at reference height (top of wind boundary layer);

Z_z is the height z from ground;

Z_G is the reference height (top of wind boundary layer); and

α is the power law exponent.

The power law exponent (α) is based on the roughness length of the approaching area outside the modeled area. As discussed in **Section 2.1**, the terrain condition in the southern and western parts of the approaching area is low- to medium- rise residential buildings and building heights are more than 5 storeys; while buildings located at the northern and eastern parts are high-rise and building heights can be more than 20 storeys.

With reference to the power law exponent suggested by CUHK¹ and Givoni (1998)², the power law exponent for the subject site is presented in **Table 3**. The suggested power law exponent for the local terrain condition applied in calculation of wind profile is 0.4 at a wind boundary layer with height of 600m, which is considered as conservative estimate.

Wind profile for the 75% of wind occurrence can be referred to **Appendix 1**.

¹ CUHK, (2005), *Feasibility Study for Establishment of Air Ventilation Assessment System, Final Report, Department of Architecture, Chinese University of Hong Kong*

² Givoni, B. (1998), *Climate Considerations in Building and Urban Design*, John Wiley & Sons

Reference	Description of Terrain Crossed by Approaching Wind	Power Law Exponent, α	Reference Height, Z_G (m)
CUHK, 2005	Suburban or mid-rise	~0.35	~500
	City centre or high-rise	~0.5	~600
Givoni, 1998	Medium size towns, building height up to 5 storeys, medium density centre, large cities	~0.3	~400
	Centre of city, buildings of more than 10 storeys	~0.4	~500
	Centre of large cities, buildings of more than 30 storeys	~0.5	~600

Table 3 Recommended Reference Height and Power Law Exponent

4.5. TEST POINTS

Test Points are the locations where Wind Velocity Ratio (VRs) at 2m above ground level is reported. Based on the VR of the test points, the resultant wind environment of the project can be assessed. Perimeter Test Points and Local Test Points are distributed around the project site.

Perimeter Test Points are distributed to areas around perimeters of the project site boundary which are likely to be frequently accessed by pedestrians. Test Points in this group are named with prefix “P” (i.e. P1, P2...). There is a total of 36 Perimeter Test Points distributed at a 15m interval along the perimeter of the subject site.

Local Test Points are distributed on areas within the assessment area boundary and project site boundary, which are frequently accessed by pedestrians. Test points in this group are named with prefix “O” (i.e. O1, O2...). There is a total of 67 overall test points evenly distributed on the streets, open space and places.

Special Test Points are positioned at the podium of proposed private development, where these areas are likely to be frequently accessed by pedestrians. Test points in this group are name with prefix “S” (i.e. S1, S2...). There is a total of 17 special test pints.

Locations of the perimeter test points, local test points and special test points are shown in **Figure 15** and coordinates of these test points are tabulated in **Table 4**.

Table 4 Coordinates of Perimeter Test Points, Overall Test Points and Special Test Points

Test points	Location	Description	Z, Height Above Ground(m)
P1	Site Perimeter (West)	Pedestrian Walkway	6.1
P2	Site Perimeter (West)	Pedestrian Walkway	6.1
P3	Site Perimeter (West)	Pedestrian Walkway	6.1
P4	Site Perimeter (West)	Pedestrian Walkway	6.1
P5	Site Perimeter (West)	Pedestrian Walkway	6.1
P6	Site Perimeter (West)	Pedestrian Walkway	6.1
P7	Site Perimeter (West)	Pedestrian Walkway	6.1
P8	Site Perimeter (West)	Pedestrian Walkway	6.1
P9	Site Perimeter (West)	Pedestrian Walkway	6.1
P10	Site Perimeter (West)	Pedestrian Walkway	6.1
P11	Site Perimeter (North)	Pedestrian Walkway	6.1
P12	Site Perimeter (South)	Pedestrian Walkway	6.1
P13	Site Perimeter (North)	Pedestrian Walkway	6.1
P14	Site Perimeter (South)	Pedestrian Walkway	6.1
P15	Site Perimeter (North)	Pedestrian Walkway	6.1
P16	Site Perimeter (South)	Pedestrian Walkway	6.1
P17	Site Perimeter (North)	Pedestrian Walkway	6.1
P18	Site Perimeter (South)	Pedestrian Walkway	6.1
P19	Site Perimeter (North)	Pedestrian Walkway	6.1
P20	Site Perimeter (South)	Pedestrian Walkway	6.1
P21	Site Perimeter (North)	Pedestrian Walkway	6.1
P22	Site Perimeter (South)	Pedestrian Walkway	6.1
P23	Site Perimeter (North)	Pedestrian Walkway	6.1
P24	Site Perimeter (South)	Pedestrian Walkway	6.1
P25	Site Perimeter (North)	Pedestrian Walkway	6.1
P26	Site Perimeter (South)	Pedestrian Walkway	6.1
P27	Site Perimeter (East)	Pedestrian Walkway	6.1
P28	Site Perimeter (East)	Pedestrian Walkway	6.1
P29	Site Perimeter (East)	Pedestrian Walkway	6.1
P30	Site Perimeter (East)	Pedestrian Walkway	6.1
P31	Site Perimeter (East)	Pedestrian Walkway	6.1

Test points	Location	Description	Z, Height Above Ground(m)
P32	Site Perimeter (East)	Pedestrian Walkway	6.1
P33	Site Perimeter (East)	Pedestrian Walkway	6.1
P34	Site Perimeter (East)	Pedestrian Walkway	6.1
P35	Site Perimeter (East)	Pedestrian Walkway	6.1
P36	Site Perimeter (East)	Pedestrian Walkway	6.1
O1	Electric Sub-station (Wang Yip Street East)	Pedestrian Walkway	6.5
O2	Wang Yip Street East	Pedestrian Walkway	6.5
O3	Wang Yip Street South	Pedestrian Walkway	6.5
O4	Rest Garden (Wang Yip Street South)	Pedestrian Walkway	6.5
O5	Sun Shun Fuk Centre	Pedestrian Walkway	6.5
O6	Garden (Long Yip Street)	Pedestrian Walkway	6.5
O7	Electric Sub-station (Long Yip South)	Pedestrian Walkway	6.5
O8	Long Yip Street	Pedestrian Walkway	6.5
O9	Long Yip Street	Pedestrian Walkway	6.5
O10	Long Yip Street	Pedestrian Walkway	6.5
O11	Long Yip Street	Pedestrian Walkway	6.5
O12	Long Yip Street	Pedestrian Walkway	6.5
O13	Long Yip Street	Pedestrian Walkway	6.5
O14	Long Yip Street	Pedestrian Walkway	6.5
O15	Long Yip Street	Pedestrian Walkway	6.5
O16	Po Yip Street	Pedestrian Walkway	6.5
O17	On Lok Industrial Building	Ground Level	6.5
O18	Keader Centre	Ground Level	6.5
O19	On Lok Road	Pedestrian Walkway	6.5
O20	On Lok Road	Pedestrian Walkway	6.5
O21	On Lok Road	Pedestrian Walkway	6.5
O22	On Lok Road	Pedestrian Walkway	6.5
O23	On Lok Road	Pedestrian Walkway	6.5
O24	On Lok Road	Pedestrian Walkway	6.5
O25	On Lok Road	Pedestrian Walkway	6.5
O26	On Lok Road	Pedestrian Walkway	6.5

Test points	Location	Description	Z, Height Above Ground(m)
O27	On Lok Road	Pedestrian Walkway	6.5
O28	Tai Kiu Road	Pedestrian Walkway	6.1
O29	Tai Kiu Road	Pedestrian Walkway	6.1
O30	Tai Kiu Road	Pedestrian Walkway	6.1
O31	Tai Kiu Road	Pedestrian Walkway	6.1
O32	Tai Kiu Road	Pedestrian Walkway	6.1
O33	Sun Wing Building (On Ning Road)	Ground Level	6.1
O34	Yue Fung Mansion (On Ning Road)	Ground Level	6.1
O35	Tung Cheong Building (On Ning Road)	Ground Level	6.1
O36	Fu Ning House (On Ning Road)	Ground Level	6.1
O37	On Lok House (On Ning Road)	Ground Level	6.1
O38	On Ding Building (On Ning Road)	Ground Level	6.1
O39	Hung Wan Building (On Ning Road)	Ground Level	6.1
O40	Hung Wan Building (On Ning Road)	Ground Level	6.1
O41	Fook Loi Building (On Ning Road)	Ground Level	6.1
O42	On Ning Road	Ground Level	6.1
O43	Sai Tai Street	Pedestrian Walkway	6.1
O44	Yuen Long Pau Cheung Square	Pedestrian Walkway	6.1
O45	Tung Lok Street	Pedestrian Walkway	6.1
O46	Yuen Long Government Offices and Tai Kiu Market (Squash Courts)	Ground Level	6.1
O47	Yuen Long Government Offices and Tai Kiu Market (Squash Courts)	Ground Level	6.1
O48	Yuen Long Government Offices and Tai Kiu Market (Squash Courts)	Ground Level	6.1
O49	Yuen Long Government Offices and Tai Kiu Market (Squash Courts)	Ground Level	6.1
O50	Fook Tak Street	Pedestrian Walkway	6.1
O51	Kam Wah Building	Ground Level	6.1
O52	Fook Tak Street	Pedestrian Walkway	6.1
O53	Fook Hong Street	Pedestrian Walkway	6.1
O54	Fook Tak Street	Pedestrian Walkway	6.1
O55	Man Tat Building	Ground Level	6.1

Test points	Location	Description	Z, Height Above Ground(m)
O56	Yuen Long Theatre	Ground Level	6.1
O57	Yuen Long Pau Cheung Square	Pedestrian Walkway	6.1
O58	Tai Hing Building (facing Tai Lee Street)	Ground Level	6.1
O59	Tai Hing Building (facing Tai Lee Street)	Ground Level	6.1
O60	Koon Wong Mansion (facing Tai Lee Street)	Ground Level	6.1
O61	Shing Fat Industrial Building (facing Wang Chau Road)	Ground Level	6.1
O62	Wang Chau Road	Pedestrian Walkway	6.1
O63	Wang Chau Road	Pedestrian Walkway	6.1
O64	Keader Centre (facing Wang Chau Road)	Ground Level	6.1
O65	Tung Lok Street	Pedestrian Walkway	6.1
O66	Public Light Bus Terminus	Pedestrian Walkway	6.1
O67	Fook Hong Street	Pedestrian Walkway	6.1
S1	Proposed Private Development	Podium	16.2
S2	Proposed Private Development	Podium	16.2
S3	Proposed Private Development	Podium	16.2
S4	Proposed Private Development	Ground Level	6.1
S5	Proposed Private Development	Ground Level	6.1
S6	Proposed Private Development	Podium	16.2
S7	Proposed Private Development	Podium	16.2
S8	Entry of Proposed Public Development	Ground Level	6.1
S9	EVA between Proposed Private and Public Development	Ground Level	6.1
S10	EVA between Proposed Private and Public Development	Ground Level	6.1
S11	EVA between Proposed Private and Public Development	Ground Level	6.1
S12	EVA between Proposed Private and Public Development	Ground Level	6.1
S13	EVA between Proposed Private and Public Development	Ground Level	6.1
S14	EVA between Proposed Private and Public Development	Ground Level	6.1
S15	Proposed Private Development	Ground Level	6.1
S16	Proposed Private Development	Podium	16.2

Test points	Location	Description	Z, Height Above Ground(m)
S17	Proposed Private Development	Ground Level	6.1

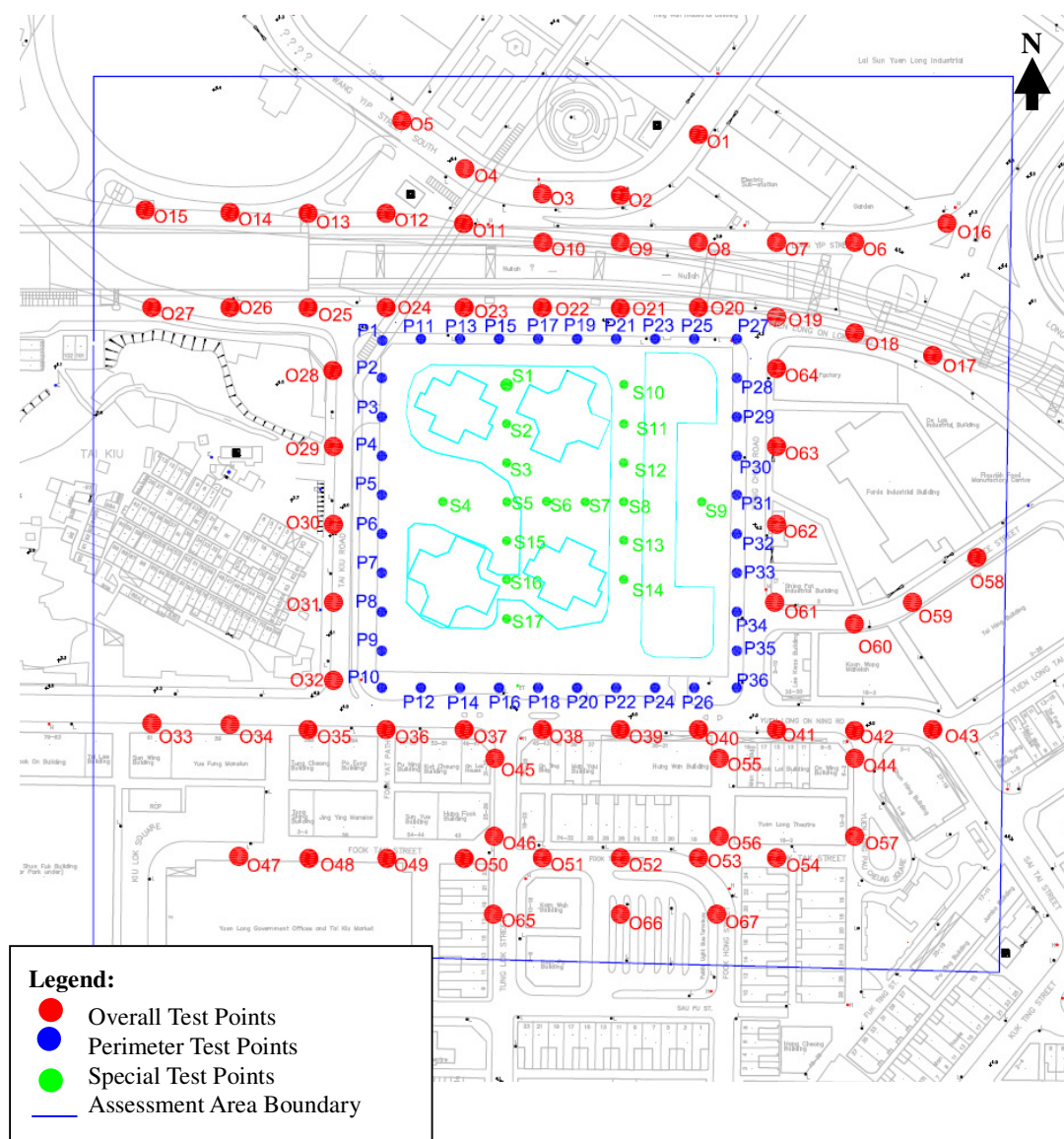


Figure 15 Positions for Perimeter Tests, Overall Test Points and Special Test Points

4.6. WIND VELOCITY RATIO

Wind velocity is assessed at 2m above ground level and podium level of the proposed residential tower. Wind Velocity Ratio (VR) should be used as an indicator of wind performance for the AVA. It indicates how much of the wind availability of a location could be experienced and enjoyed by pedestrians. The higher the wind velocity ratio, the less likely

would be the impact of the proposed developments on the wind availability.

Wind Velocity Ratio is defined as follows:

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

where

V_p is the wind velocity at the pedestrian level (2m above ground) after taking into account the effects of buildings; and

V_∞ is the wind availability of the site, i.e. wind velocity at the top of the wind boundary layer. MM5 data are used to determine velocity at infinity level for the project site.

The assessment on the overall wind performance of the current situation and the proposed developments were analyzed by comparing the weighted-mean wind velocity ratio (VR_w) to account for wind coming from the 8 wind directions. VR_w is the sum of the Wind Velocity Ratio of wind from direction i (VR_i) multiplied by the probability (Fi) of wind coming from that direction.

$$VR_i = \frac{V_{pi}}{V_{\infty i}} \quad VR_w = \sum_{i=1}^{16} Fi \times VR_i$$

where

V_{pi} is the wind velocity at the pedestrian level (2m above ground) when wind comes from direction i ; and

$V_{\infty i}$ is the wind availability of the site, when wind comes from direction i

Fi is the frequency occurrence of wind from direction i , 16 directions are considered.

VR_w is the wind velocity ratio

For the Site Air Ventilation Assessment, the Site spatial average Velocity Ratio (SVR) is reported, which takes into account the perimeter test points (Point P1 to P36) evenly positioned on the project site boundary as shown in **Figure 15**.

For the Local Air Ventilation Assessment, the Local spatial average Velocity Ratio (LVR) is reported, which takes into account both perimeter test points and the overall test points evenly distributed and positioned in the open spaces, on the streets within the assessment area (Point O1 to O67) as shown in **Figure 15**.

Special Test Points are assigned to evaluate the air ventilation performance on the internal street (Point S1 to S17) as shown in **Figure 15**.

5. AIR VENTILATION RESULTS AND ANALYSIS

Simulation results of pedestrian level velocity ratios and plots for each test point as described in *Section 4.5* before and after the simulation of the Project for each of the eight prevailing wind direction are provided in *Appendix 2*. The following sections provide a summary and discussions upon study findings.

5.1. WIND VELOCITY RATIO

Weighted average wind velocity ratio VR_w' for each perimeter and overall test point is also provided in *Appendix 3* and the differences of VR of each perimeter test point between baseline and proposed scenarios are presented in *Figure 16* while differences of VR of each overall test point is presented in *Figure 17* and *Figure 18*.

For the majority of perimeter test points, the individual VR_w' slightly varies with the proposed scenario comparing with the baseline scenario. The change in VR_w' of perimeter test points for the proposed scenario as compared with the baseline scenario ranges from 0.01 to 0.04 except P23, P25 and P27, which show increment in VR_w' from 0.05 to 0.06. These perimeter test points are located at the northeast part of the subject site.

Similarly, the majority of overall test points, the individual VR_w' of the proposed scenario slightly varies as compared with the baseline scheme. The change in wind velocity ratio ranges from 0.01 to 0.04 except O55 (VR_w' is 0.068), which is located at the ground level of Man Tat Building.

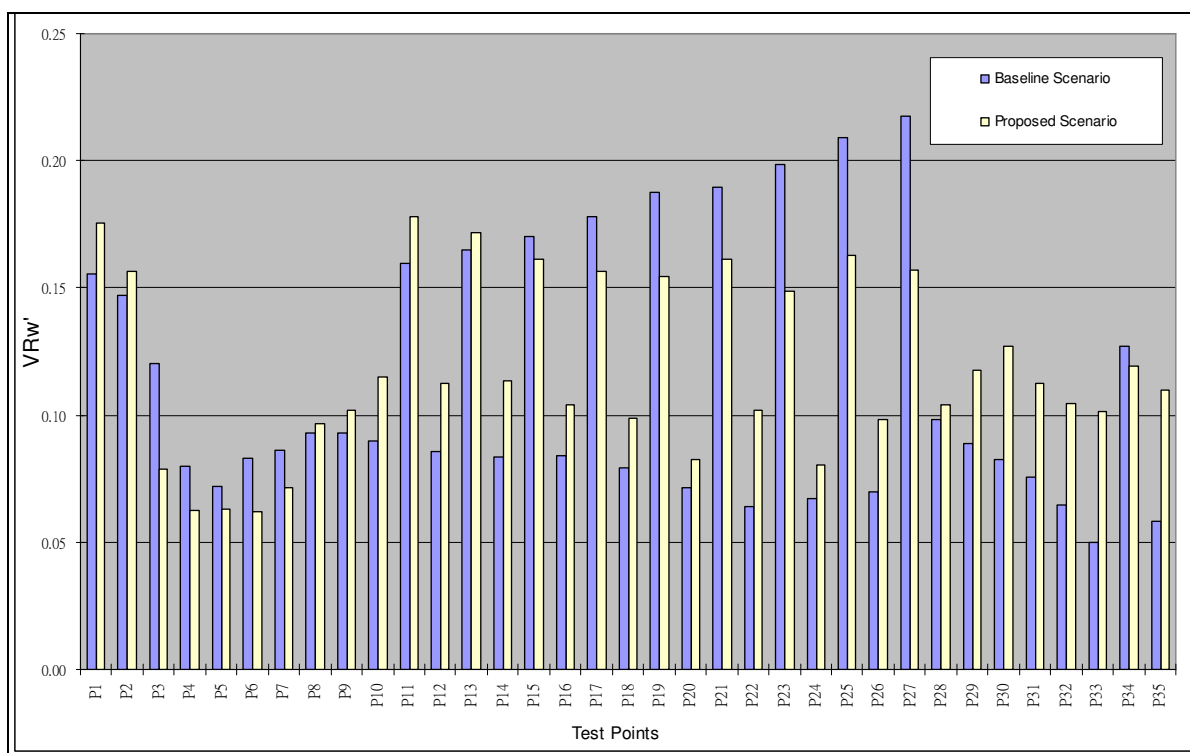


Figure 16 Wind Velocity Ratio (Weighted) (VRw') of Perimeter Test Points for Baseline and Proposed Scenarios

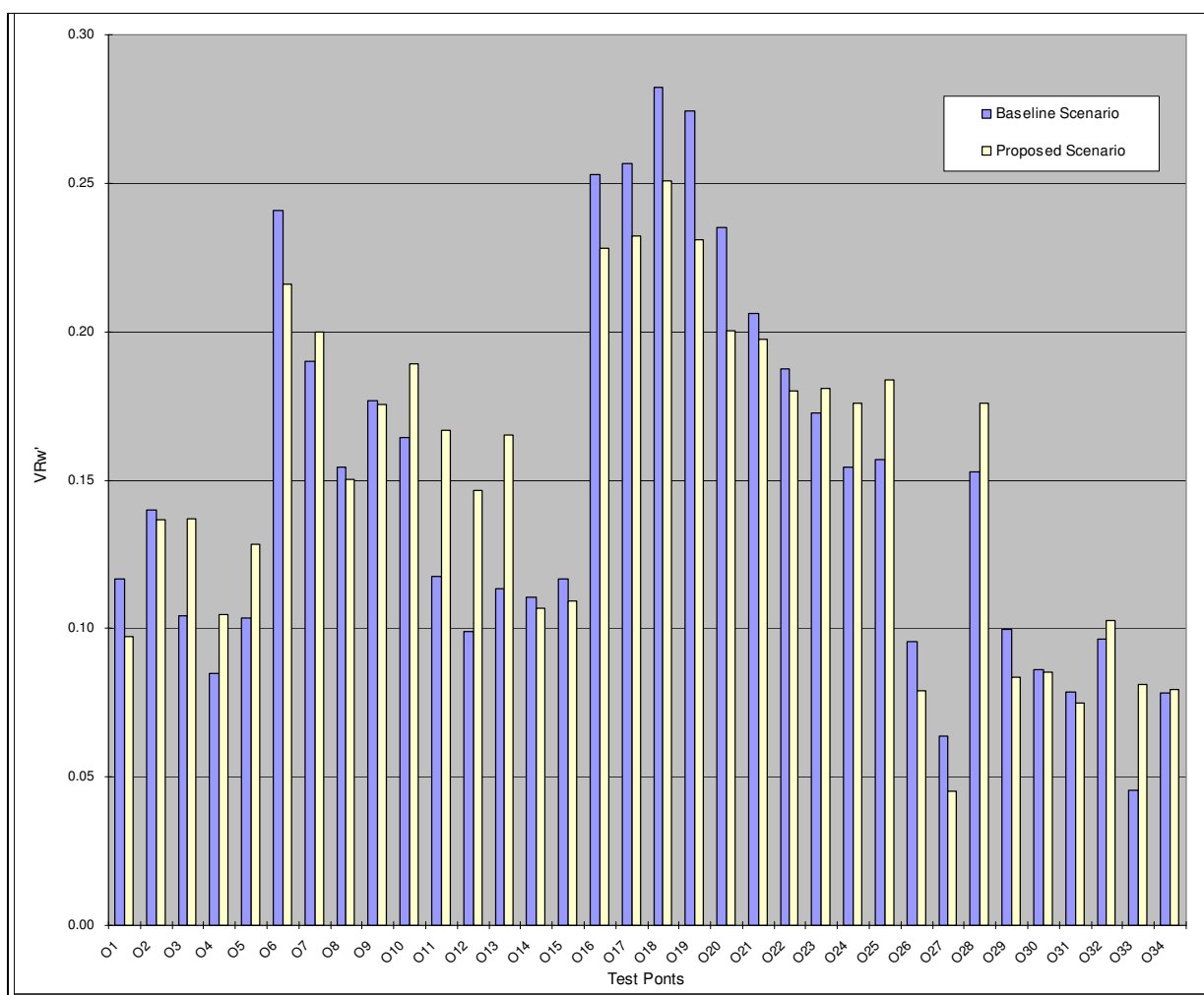


Figure 17 Wind Velocity Ratio (Weighted) (VRw') of Overall Test Points for Baseline and Proposed Scenario (O1 to O34)

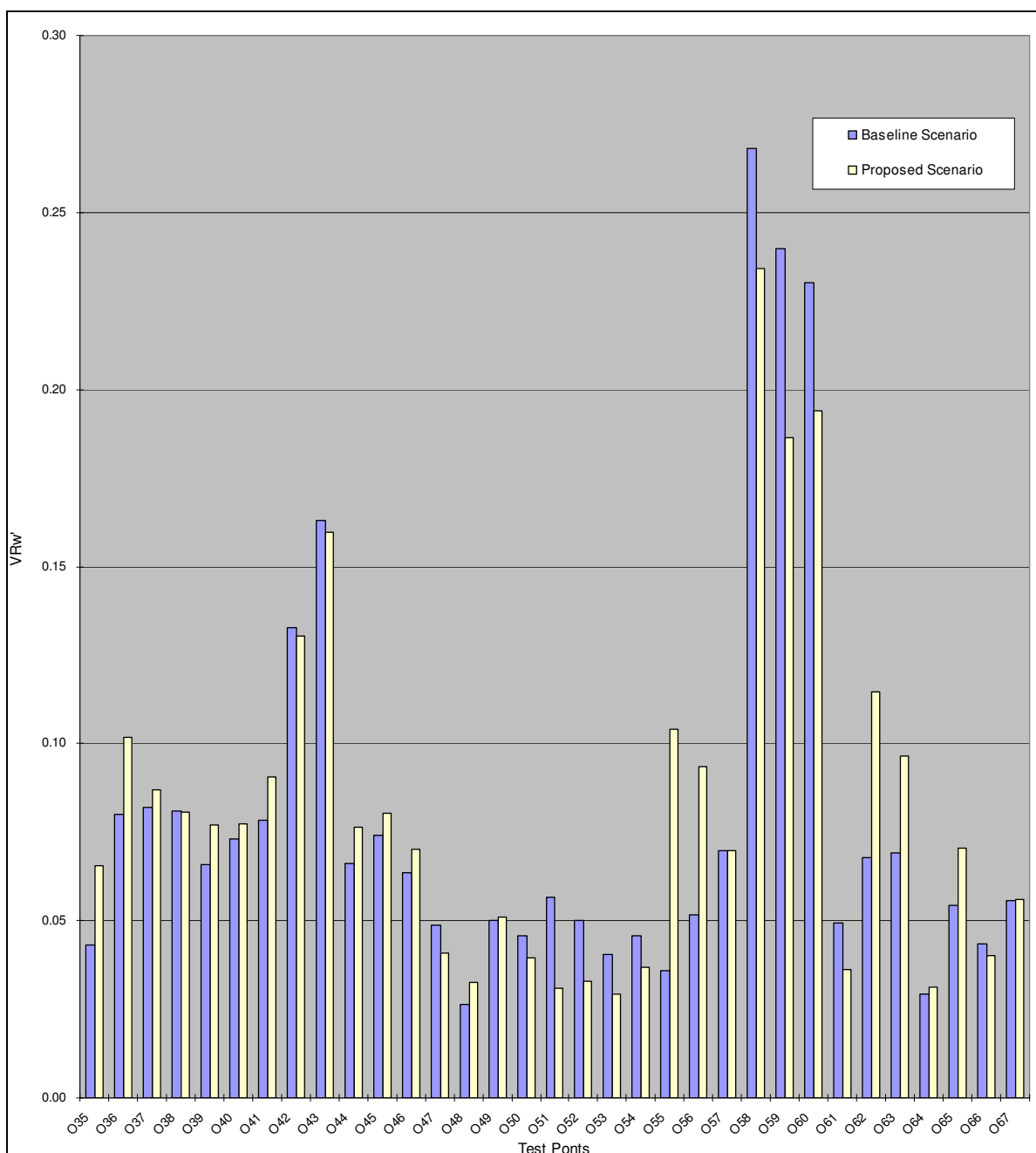


Figure 18 Wind Velocity Ratio (Weighted) (VRw') of Overall Test Points for Baseline and Proposed Scenario (O34 to O67)

Site AVA results (SVR) evaluated by considering perimeter test points (36 points) are tabulated in **Table 5**; while Local AVA results (LVR) evaluated by considering overall test points (67 test points) and perimeter test points are tabulated in **Table 6**. Both baseline and proposed scenarios had similar overall averaged results for both SVR and LVR.

Wind Directions	Baseline Scenario, VR _{average}	Proposed Scenario, VR _{average}	VR _{average} Change	% VR _{average} Change
E (90°)	0.136	0.127	-0.010	-7.0
ENE (67.5°)	0.137	0.153	0.017	12.4
NE (45°)	0.147	0.132	-0.015	-10.3
NNE (22.5°)	0.078	0.109	0.031	39.9
ESE (112.5°)	0.122	0.112	-0.010	-7.9
SE (135°)	0.077	0.080	0.003	4.1
SSE (157.5°)	0.068	0.072	0.004	5.6
SSW (202.5°)	0.032	0.078	0.047	147.2
SVRw'	0.112	0.118		
% Change in SVRw'	5.5			

Note: All the above figures and percentages shown are calculated and corrected from true values and details can be referred to Appendix 3.

Table 5 Summary of Site Velocity Ratios (P1 to P36) under Prevailing Wind Directions

Wind Directions	Baseline Scenario, VR _{average}	Proposed Scenario, VR _{average}	VR _{average} Change	% VR _{average} Change
E (90°)	0.135	0.130	-0.004	-3.2
ENE (67.5°)	0.138	0.151	0.013	9.3
NE (45°)	0.136	0.129	-0.007	-5.3
NNE (22.5°)	0.087	0.097	0.01	11.6
ESE (112.5°)	0.126	0.123	-0.003	-2.7
SE (135°)	0.085	0.089	0.004	4.6
SSE (157.5°)	0.072	0.072	-0.001	-1.3
SSW (202.5°)	0.039	0.063	0.024	61.7
LVRw'	0.113	0.117		
% Change in LVRw'	3.4			

Note: All the above figures and percentages shown are calculated and corrected from true values and details can be referred to Appendix 3.

Table 6 Summary of Local Velocity Ratios (P1 to P36 and O1 to O67) under Prevailing Wind Directions

5.2. SITE AIR VENTILATION ASSESSMENT FINDINGS

The SVR and the net directional values of the SVR of the Baseline and Proposed Scenarios under the prevailing wind direction have been summarized in **Table 5**. The analysis of the directional effects of the Baseline and Proposed Scenarios has been summarized in **Table 7**. It is revealed that the proposed developments will have slightly negative ventilation impacts on the test points under E, NE and ESE directions and that the reduction of VR under these winds range from 7.0 to 10.3%, which is slight reduction.

On the other hand, the proposed developments have ventilation improvement on local wind environment under ENE, NNE, SSE and SE prevailing winds, the improvement of VR ranges from 4.1 to 39.9%. As shown in **Table 5**, the proposed developments have large ventilation improvement on local wind environment under NNE and SSW. The change of overall SVR as compared with baseline and proposed scenarios is around increase of 5.5%, it is considered that the proposed developments slightly improves local wind environment as compared with baseline scenario.

Table 7 Summary Table for SVR under Prevailing Wind Directions

Site Air Ventilation Assessment Results (SVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
ENE	Baseline Scenario 0.03 - 0.295 Proposed Scenario 0.047 - 0.31	16.6%	Average VR 0.137	Average VR 0.153 <u>Affected Areas</u> - Immediate N & NW (Perimeter) of the site boundary. <u>Improved Areas</u> - Immediate E, SE & S (Perimeter) of the site boundary.	Average VR proposed Scenario - Average VR under interim Scenario 0.017 (12.4%) <u>Trend</u> - 13 out of 36 test points have been recorded with slightly decrease in VR. - The percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments improve local wind environment.*	The percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments have observable improvement on local wind environment.
NE	Baseline Scenario 0.035 - 0.28 Proposed Scenario 0.021 - 0.24	13.7%	Average VR 0.147	Average VR 0.132 <u>Affected Areas</u> - Immediate SW, W & NW (Perimeter) of the site boundary. <u>Improved Areas</u> - Immediate E (Perimeter) of the site boundary.	Average VR proposed Scenario - Average VR under interim Scenario -0.015 (-10.3%) <u>Trend</u> - 21 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is larger than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation.*	The percentage change in VR is slightly larger than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation and minimal impact on local wind environment is anticipated.

Site Air Ventilation Assessment Results (SVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
E	Baseline Scenario 0.044-0.294 Proposed Scenario 0.029-0.252	12.5%	Average VR 0.136	Average VR 0.127 <u>Affected Area</u> - Immediate W & NE (Perimeter) of the site boundary. <u>Improved Areas</u> - Immediate E (Perimeter) of the site	Average VR proposed Scenario - Average VR under interim Scenario -0.01 (-7.0%) <u>Trend</u> - 18 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is less than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation.*	The percentage change in VR is less than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation and minimal impact on local wind environment is anticipated.
NNE	Baseline Scenario 0.015 - 0.170 Proposed Scenario 0.037 - 0.180	9.7%	Average VR 0.078	Average VR 0.109 <u>Affected Area</u> - Immediate NE (Perimeter) of the site. <u>Improved Areas</u> - Immediate W (Perimeter) of the site. - Immediate E & SE (Perimeter) of the site.	Average VR proposed Scenario - Average VR under interim Scenario 0.031 (39.9%) <u>Trend</u> - 10 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments improve local wind environment.*	Although some affected areas were identified, the percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments have observable improvement on local wind environment.

Site Air Ventilation Assessment Results (SVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
ESE	<u>Baseline Scenario</u> 0.049 - 0.189 <u>Proposed Scenario</u> 0.017 - 0.191	9.3%	<u>Average VR</u> 0.122	<u>Average VR</u> 0.112 <u>Affected Area</u> - Immediate W (Perimeter) of the site. - Immediate N (Perimeter) of the site. <u>Improved Areas</u> - Immediate E (Perimeter) of the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> -0.01 (-7.9%) <u>Trend</u> - 21 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is less than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation.*	The percentage change in VR is less than 10%, overall reduction in VR ratio suggests proposed developments have slight reduction in ventilation and minimal impact on local wind environment is anticipated.
SSE	<u>Baseline Scenario</u> 0.032 - 0.97 <u>Proposed Scenario</u> 0.008 - 0.141	6.5%	<u>Average VR</u> 0.068	<u>Average VR</u> 0.072 <u>Affected Area</u> - Immediate N (Perimeter) of the site. <u>Improved Areas</u> - Nil	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.004 (5.6%) <u>Trend</u> - 16 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is less than 10%, overall improvement in VR ratio suggests proposed developments have slight improvement on local wind environment.*	The percentage change in VR is slightly larger than 5%, it is considered that the proposed developments have slight improvement on local wind environment.

Site Air Ventilation Assessment Results (SVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
SE	<u>Baseline Scenario</u> 0.014 - 0.162 <u>Proposed Scenario</u> 0.015 - 0.163	6.2%	<u>Average VR</u> 0.077	<u>Average VR</u> 0.08 <u>Affected Area</u> - Immediate W, NW & N (Perimeter) of the site. <u>Improved Areas</u> - Immediate W, NW & N (Perimeter) of the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.003 (4.1%) <u>Trend</u> - 21 out of 36 test points have been recorded with slightly decrease of VR. - The percentage change in VR is less than 5%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is less than 5%, it is considered that the proposed developments have similar ventilation performance as compared with baseline scenario.
SSW	<u>Baseline Scenario</u> 0.009 - 0.076 <u>Proposed Scenario</u> 0.03 - 0.171	5.3%	<u>Average VR</u> 0.032	<u>Average VR</u> 0.078 <u>Affected Areas</u> - Nil <u>Improved Areas</u> - Immediate N, E, S and W (Perimeter) of the site	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.047 (147.2%) <u>Trend</u> - 2 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is larger than 10%, the proposed developments have observable ventilation improvement as compared with baseline scenario.*	The percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments have observable improvement on local wind environment.

Site Air Ventilation Assessment Results (SVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
Weighted Average	<u>Baseline Scenario</u> 0.05 - 0.218 <u>Proposed Scenario</u> 0.06 - 0.178	79.8%	<u>Average VR</u> 0.112	<u>Average VR</u> 0.118 <u>Affected Area</u> - Immediate W (Perimeter) of the site. - Immediate N to NE (Perimeter) of the site. <u>Improved Areas</u> - Immediate WNW (Perimeter) of the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.006 (5.5%) <u>Trend</u> - 13 out of 36 test points have been recorded with decrease of VR. - The percentage change in VR is slightly larger than 5%, the proposed developments have slight improvement on local wind environment.*	The percentage change in VR is slightly larger than 5%, it is considered that the proposed developments have slight ventilation improvement as compared with baseline scenario.

Note:

*Scale of Changes:

0-5% Similar Ventilation
 6-10% Slightly Change
 >10% Observable Change

5.3. LOCAL AIR VENTILATION ASSESSMENT FINDINGS

The LVR obtained from the CFD simulation results revealed that ventilation performance of the surrounding areas under the proposed scenario is similar to that of Baseline Scenario as shown in **Table 8**. Though a slight improvement of LVRw' (i.e. 0.004 and 3.4%) is observed, the overall ventilation performance is considered comparable.

As predicted in **Section 2.4**, the proposed developments would potentially obstruct penetration of prevailing winds from east-northeastern to east-southeastern directions to residential buildings located at the downwind direction. Building gaps between public housing blocks as well as within private building blocks will form localized air paths facilitating air flows with the identified major breezeways along On Lok Road and On Ning Road.

As shown in **Figure 19** to **Figure 21**, prevailing winds from ENE, NE and E directions can smoothly flow along On Lok Road and penetrate across the subject site via the separation between building blocks within the subject site and therefore prevailing winds can reach downwind areas. The increase in LVR recorded in Tai Kiu Tsuen, northern and southern parts of the subject site indicates the effectiveness of air paths formed by the proposed building separation and reduced blockage of the proposed developments in the vicinity.

The reduction of VRw' is ranged from 0.001 to 0.06 (1 to 45.1%, referred to **Appendix 3** for details), which are located at Fook Tak Street, Tai Lee Street, On Lok Road, Long Yip Road near Long Ping West Rail Station. However, with negligible changes of LVRw' (less than 0.004, 3.4% improvement), it is anticipated that the proposed developments shall have no adverse impact on the wind environment of the local area.

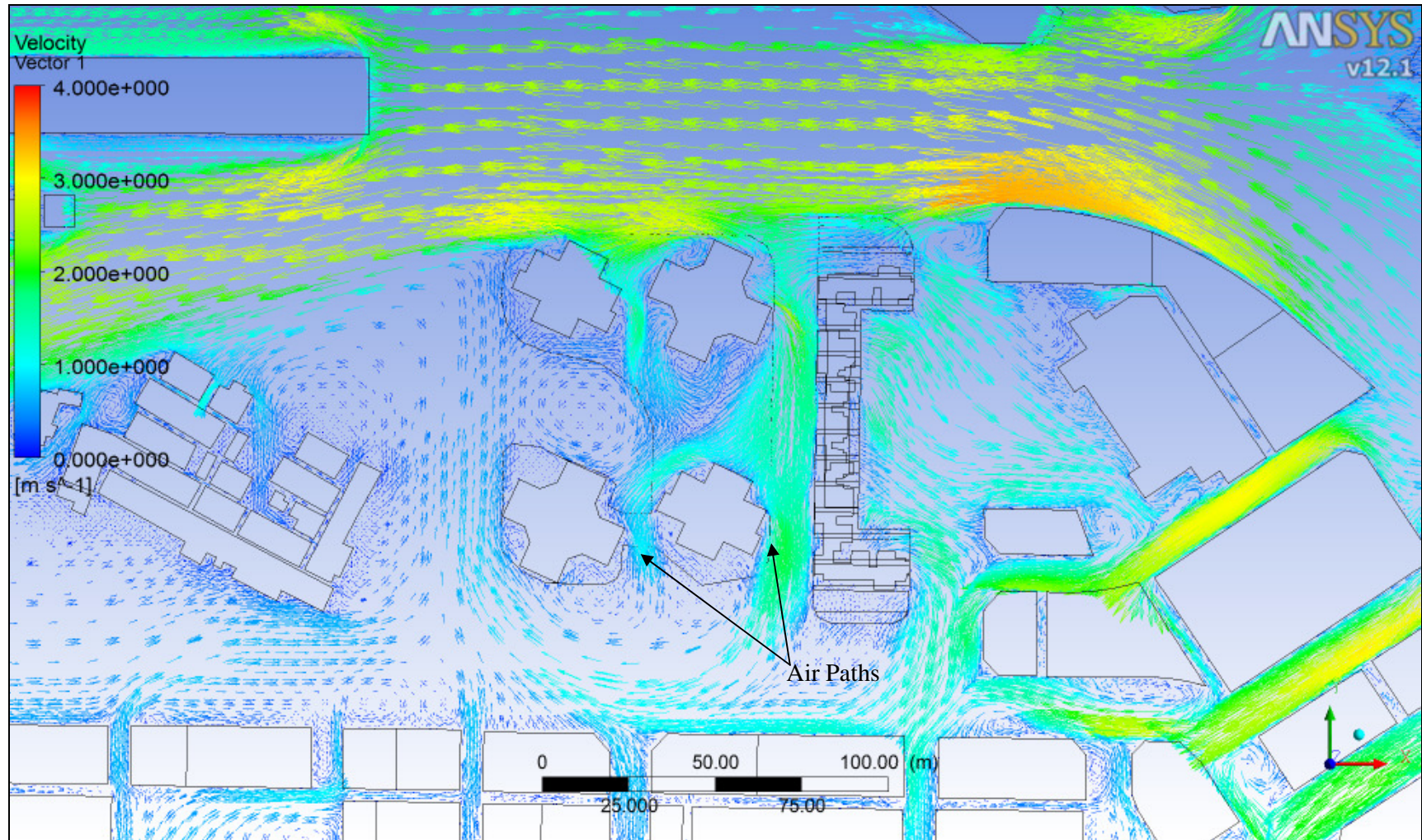


Figure 19 Wind Paths Created by the Building Separation within the Site (ENE Wind)

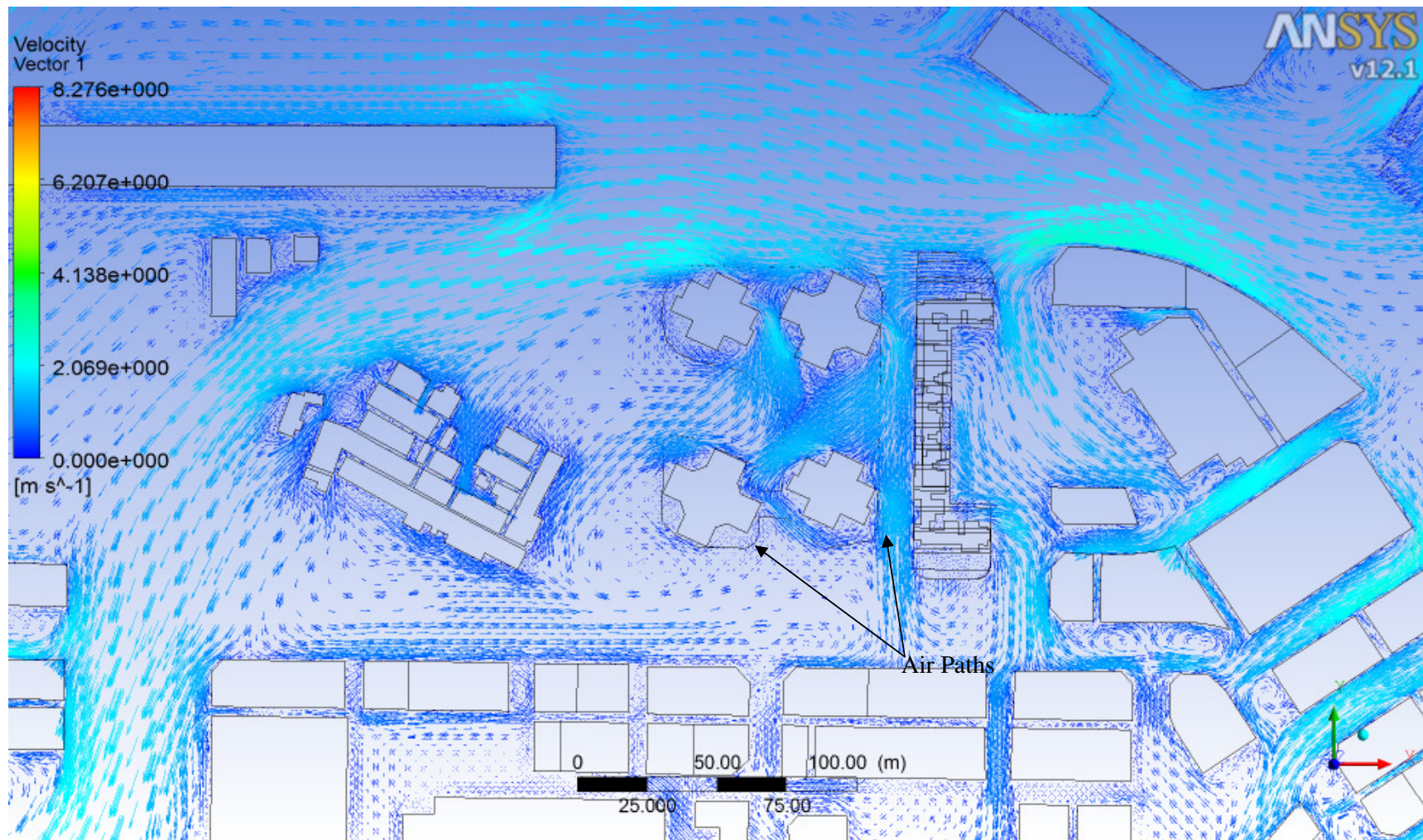


Figure 20 Wind Paths Created by the Building Separation within the Site (NE Wind)

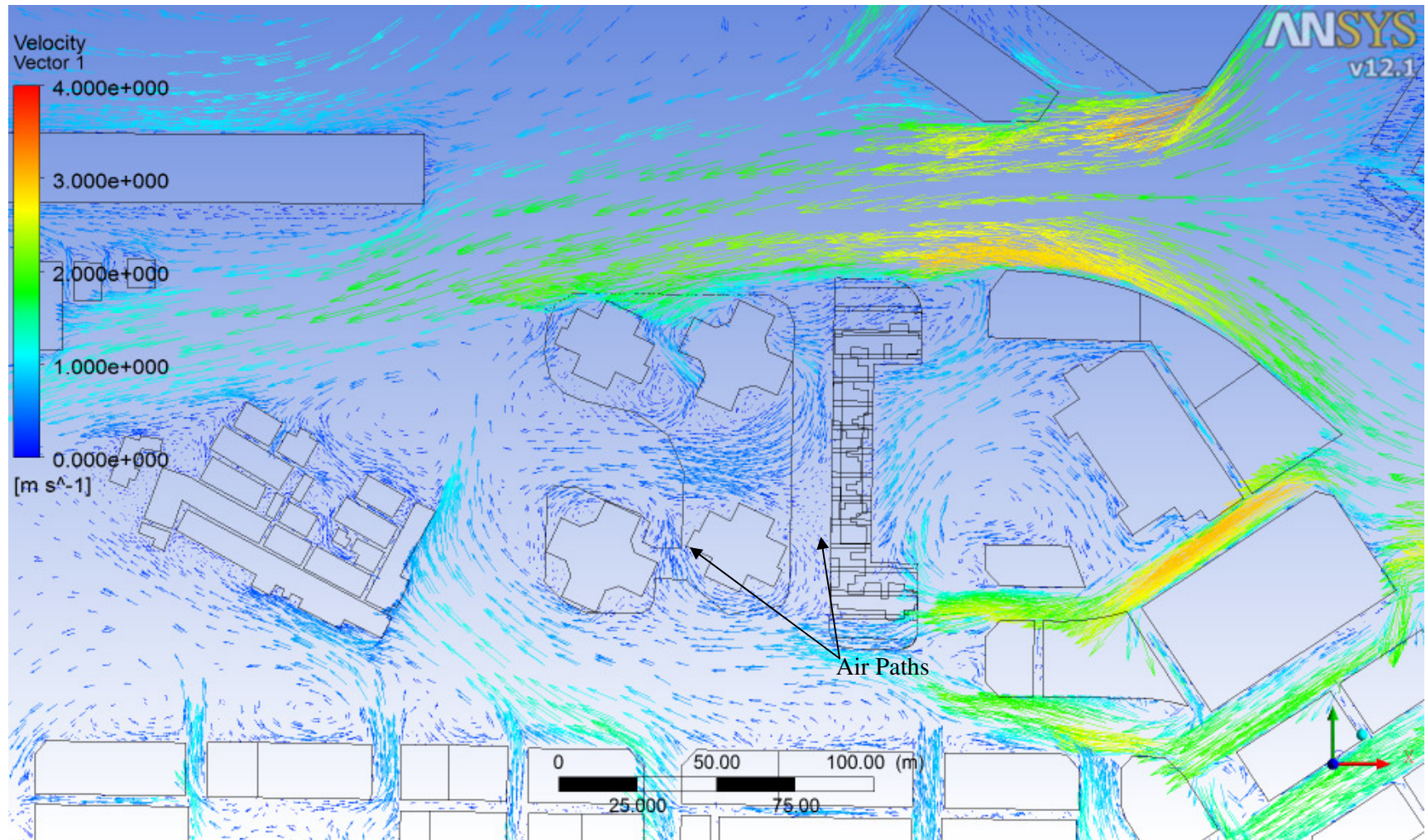


Figure 21 Wind Paths Created by the Building Separation within the Site (E Wind)

Table 8 Summary Table for LVR under Prevailing Wind Directions

Local Air Ventilation Assessment Results (LVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
ENE	Baseline Scenario 0.009 - 0.385 Proposed Scenario 0.011 - 0.375	16.6%	Average VR 0.138	Average VR 0.151 <u>Affected Areas</u> -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building -Public light bus terminal and Fook Tak Street S from the Site - Tai Kiu Tsuen Located West from the site -Long Yip Street and Po Yip Street located N from the Site <u>Improved Areas</u> -Long Yip Street near Long Ping Station -Buildings located along Wang Chau Road which is located immediate E from the Site. -Low-rise residential buildings located immediate S from the Site	Average VR proposed Scenario - Average VR under interim Scenario 0.013 (9.3%) <u>Trend</u> - 45 out of 103 test points have been recorded with slight decrease in VR. - The percentage change in VR is smaller than 10%, overall improvement in VR ratio suggests proposed developments have slightly changed local wind environment.*	The percentage change in VR is smaller than 10%, overall improvement in VR ratio suggests proposed developments have slight improvement on local wind environment.

Local Air Ventilation Assessment Results (LVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
NE	<u>Baseline Scenario</u> 0.014 - 0.315 <u>Proposed Scenario</u> 0.002 - 0.293	13.7%	Average VR 0.136	<u>Average VR</u> 0.129 <u>Affected Areas</u> -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building -Public light bus terminal and Fook Tak Street S from the Site - Tai Kiu Tsuen Located West from the site -Long Yip Street and Po Yip Street located N from the Site -Low-rise residential buildings located along On Ning Road <u>Improved Areas</u> -Pedestrian walkway near On Lok Road near Long Ping Station.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> -0.007 (-5.3 %) <u>Trend</u> - 63 out of 103 test points have been recorded with decrease of VR. - The percentage change in VR is 5.3%, the proposed developments slightly change local wind environment as compared with baseline scenario.*	- The percentage change in VR is 5.3 %, the proposed developments slightly change local wind environment and minimal impact is anticipated.
E	<u>Baseline Scenario</u> 0.013 - 0.374 <u>Proposed Scenario</u> 0.016 - 0.367	12.5%	<u>Average VR</u> 0.135	<u>Average VR</u> 0.13 <u>Affected Areas</u> -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building -Public light bus terminal and Fook Tak Street S from the Site - Tai Kiu Tsuen Located West from the site -Low-rise residential buildings located along On Ning Road <u>Improved Areas</u> - Nil	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> -0.004 (-3.2%) <u>Trend</u> - 49 out of 103 test points have been recorded with decrease of VR. - The percentage change in VR is 3.2%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is 3.2%, the proposed developments have similar ventilation performance as compared with baseline scenario.

Local Air Ventilation Assessment Results (LVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
NNE	<u>Baseline Scenario</u> 0.01 - 0.253 <u>Proposed Scenario</u> 0.01 - 0.2	9.7%	<u>Average VR</u> 0.087	<u>Average VR</u> 0.097 <u>Affected Area</u> -Long Yip Street and Po Yip Street located N from the Site -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building_ <u>Improved Areas</u> -Public light bus terminal located S from the Site - Tai Kiu Tsuen Located West from the site -Low-rise residential buildings located along On Ning Road	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.01 (11.6%) <u>Trend</u> - 10 out of 103 test points have been recorded with decrease of VR. - The percentage change in VR is larger than 10%, the proposed developments have observable improvement on local wind environment as compared with baseline scenario.*	Although some affected areas were identified, the percentage change in VR is 11.6%, overall improvement in VR ratio suggests proposed developments have observable improvement on local wind environment.
ESE	<u>Baseline Scenario</u> 0.017 - 0.378 <u>Proposed Scenario</u> 0.017 - 0.368	9.3%	<u>Average VR</u> 0.126	<u>Average VR</u> 0.123 <u>Affected Area</u> -Public light bus terminal located S from the Site -Long Ping Station near Tai Kiu Tsuen - Public Garden & Long Yip Road which located NE from the site. <u>Improved Areas</u> -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building -On Ning Road and Fook Tak Street located S from the site. - Public Garden & Long Yip Road which located NE from the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> -0.003 (-2.7%) <u>Trend</u> - 54 out of 103 test points have been recorded with decrease of VR. - The percentage change in VR is 2.7%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is 2.7%, the proposed developments have similar ventilation performance as compared with baseline scenario.

Local Air Ventilation Assessment Results (LVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
SSE	<u>Baseline Scenario</u> 0.005 - 0.165 <u>Proposed Scenario</u> 0.008 - 0.141	6.5%	<u>Average VR</u> 0.072	<u>Average VR</u> 0.072 <u>Affected Area</u> -Public light bus terminal located S from the Site -Long Ping Station near Tai Kiu Tsuen - Public Garden & Long Yip Road which located NE from the site. <u>Improved Areas</u> - Industrial buildings located immediate E from the Site. -On Ning Road and Fook Tak Street located S from the site. - Public Garden & Long Yip Road which located NE from the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> -0.001 (-1.3%) <u>Trend</u> - 52 out of 103 test points have been recorded with decrease of VR. The percentage change in VR is 1.3%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is 1.3%, the proposed developments have similar ventilation performance as compared with baseline scenario.
SE	<u>Baseline Scenario</u> 0.003 - 0.278 <u>Proposed Scenario</u> 0.006 - 0.277	6.2%	<u>Average VR</u> 0.085	<u>Average VR</u> 0.089 <u>Affected Area</u> - Wang Yip Street South located NW from the site. - On Ning located SE from the site. - W to NW from the site near Tai Kiu Tsuen. <u>Improved Areas</u> - W from the site near Tai Kiu Tsuen. -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building -Along Fok Tak Street	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.004 (4.6 %) <u>Trend</u> - 57 out of 103 test points have been recorded with slight decrease of VR. The percentage change in VR is 4.6%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is 4.6 %, the proposed developments have similar ventilation performance as compared with baseline scenario.*

Local Air Ventilation Assessment Results (LVR)						
Wind Direction	Velocity Ratio Range	Occurrence	Baseline Scenario	Proposed Scenario	Comparison between Baseline and Proposed Scenarios	Summary
SSW	<u>Baseline Scenario</u> 0.008 - 0.139 <u>Proposed Scenario</u> 0.007 - 0.171	5.3%	<u>Average VR</u> 0.039	<u>Average VR</u> 0.063 <u>Affected Areas</u> - Public Garden & Long Yip Road which located NE from the site. -Pedestrian walkway near On Lok Road near Long Ping Station. -Keader Centre located immediate NE from the Site. <u>Improved Areas</u> - Tai Kiu Tsuen which locate W from the site. -Pedestrian walkway along Tai Lee Street -Buildings along Fook Tak Street and On Ning Road - Public Garden & Long Yip Road which located NE from the site.	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.024 (61.7%) <u>Trend</u> - 25 out of 103 test points have been recorded with decrease of VR. - The percentage change in VR is larger than 10%, the proposed developments have observable ventilation improvement as compared with baseline scenario.*	The percentage change in VR is larger than 10%, overall improvement in VR ratio suggests proposed developments have observable improvement on local wind environment.
Weighted Average	<u>Baseline Scenario</u> 0.03 - 0.28 <u>Proposed Scenario</u> 0.03 - 0.251	79.8%	<u>Average VR</u> 0.113	<u>Average VR</u> 0.117 <u>Affected Area</u> - Public Garden & Long Yip Road which located NE from the site. -Pedestrian walkway along Tai Lee Street -Pedestrian walkway along Wang Chau Road near Shing Fat Industrial Building <u>Improved Areas</u> - Nil	<u>Average VR proposed Scenario - Average VR under interim Scenario</u> 0.004 (3.4%) <u>Trend</u> - 13 out of 103 test points have been recorded with decrease of VR. -The percentage change in VR is 3.4%, the proposed developments have similar ventilation performance as compared with baseline scenario.*	The percentage change in VR is smaller than 5%, it is considered that the proposed developments have no observable ventilation change on local wind environment as compared with baseline scenario.

Note:

*Scale of Changes:

0-5% Similar Ventilation
6-10% Slightly Change
>10% Observable Change

5.4. AIR VENTILATION PERFORMANCE OF SPECIAL TEST POINTS

The ventilation performance of special test points within the proposed developments as extracted from CFD simulation results are tabulated below (*Table 9*) and details of simulation results are summarized in *Appendix 3*.

Wind Directions	Baseline Scenario, $VR_{average}$	Proposed Scenario, $VR_{average}$	$VR_{average}$ Change	% $VR_{average}$ Change
E (90°)	0.073	0.036	-0.037	-50.7
ENE (67.5°)	0.080	0.103	0.023	29.4
NE (45°)	0.177	0.105	-0.071	-40.4
NNE (22.5°)	0.048	0.112	0.064	133.2
ESE (112.5°)	0.093	0.065	-0.027	-29.4
SE (135°)	0.064	0.081	0.018	27.8
SSE (157.5°)	0.043	0.092	0.049	112.2
SSW (202.5°)	0.019	0.103	0.085	455.6
Special VRw'	0.084	0.086		
% Change in Special VRw'	2.0			

Note: All the above figures and percentages shown are calculated and corrected from true values and details can be referred to Appendix 3.

Table 9 Summary of Special Test Points (S1 to S17) under Prevailing Wind Directions

As shown in *Table 9*, under ENE, NNE, SE, SSE and SSW prevailing winds, ventilation performance of special test points is enhanced with the $VR_{average}$ improvement ranging from 0.023 to 0.085. The wind barrier and obstructive nature of the site under E, NE and ESE prevailing winds with reductions of up to 0.071. Taking into account of annual probability occurrence of prevailing winds, there is no change of average VR. In terms of overall pedestrian level ventilation performance of special test points on site, the change of $VR_{average}$ is considered as minimal (increase of 2.0 % in Special VRw').

5.5. RECOMMENDATIONS

Taking into account the overall LVR and SVR analysis as shown in *Table 8*, the proposed developments would unlikely have any adverse impact on the wind environment of the local area.

	Baseline Scenario	Proposed Scenario
SVR	0.112	0.118
LVR	0.113	0.117

Table 10 Overall LVR and SVR

Building Separation

Regarding the design recommendation as stated in the Council of Sustainable Development (CSD)³, building permeability of development should be 20% to 33.3% for the sites with area greater than 2 ha or with continuous building width of greater than 60 metres. Ng and Wong (2009) revealed that building permeability provides “air paths” through development to the surrounding areas. As the building permeability is positively related to building separations and calculation of building permeability is used equation as the follows⁴:

$$P = \frac{\sum S}{\sum S + L_p}$$

where

P = Building Permeability, %

S = Building Separation (1/2S criteria is applied to façade ends with separation distance measured from the adjoining boundary line or the centreline of adjoining street)

L_p = Continuous Projected Façade Length, m (defined as total projected length of façade of a building or buildings if any separation in-between is less than 15m)

As shown in the **Table 1**, the total site area of the proposed public and private housing blocks are less than 2 ha and the height of the proposed buildings are higher than 60m. Therefore the optimum permeability of the proposed building should be 20% to 33.3% as recommended by the CSD. Permeability along major prevailing winds from East direction is calculated as recommended by Ng and Wong (2009).

With reference to the building deposition and design of the proposed public and private housing buildings, building gaps A to D as marked in **Figure 22** have significant contribution in determining the permeability of public and private housing developments. As the proposed public and private housing blocks would be built on the podium, the total façade length as shown in **Table 11** is the total projected length (TFL) of façade of buildings above

³ Council of Sustainable Development, 2009, Building Design to Foster a Quality and Sustainable Built Environment, Invitation for Response Document

⁴ Ng, E and Wong, K.S. (2009). Policies towards Greening, Permeability and Building Separation for Better City Planning in Hong Long

podium level in order to evaluate the performance of air paths formed among building blocks to facilitate ventilation at pedestrian level in the neighbouring areas. The permeability of the proposed width of building gaps A to D ranges from 23% to 46% which meets the permeability as recommended by CSD.

As discussed in **Section 5.3**, increase in LVR recorded in Tai Kiu Tsuen, northern and southern parts of the subject site indicates the effectiveness of air paths formed by the proposed building separation, which serves to reduce wind blockage caused by the proposed developments to the surrounding area.

Building Gap	A	B	C	D
Gap Width (m)	8	29	20.6	7.5
Total Separation between buildings and boundary (m)	21.75	59	30.6	28.5
Total Façade Length, (TEL) (m)	68	69	98	96
Permeability (%)	24	46	24	23

Table 11 Building Permeability of the Current Scheme of the Public and Private Developments

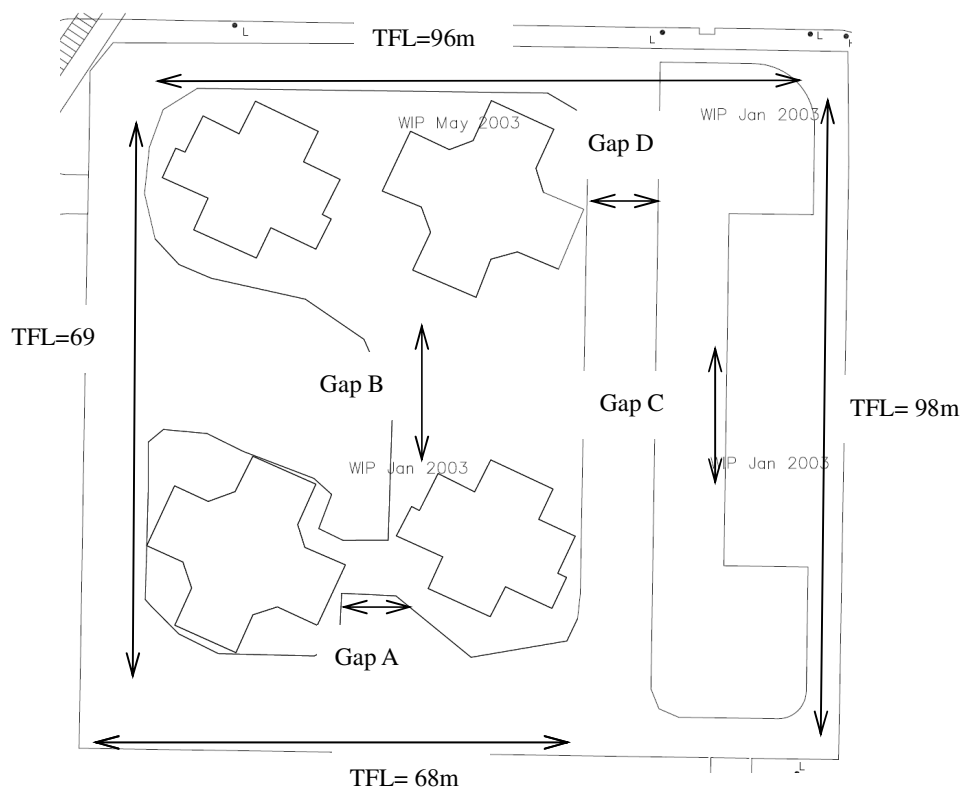


Figure 22 Proposed Building Gaps Located within the Subject Site

After reviewing the site constraints and characteristics, the maximum building façade length of the proposed building developments as well as the minimum building separation among the proposed building blocks are estimated and tabulated in **Table 12**.

Building Gap	A	B	C	D
Gap Width (m)	10	20	20	6.5
Total Separation between buildings and boundary (m)	20.25	40	30	24.75
Total Façade Length, (TEL) (m)	69.5	88	98.6	97.75
Permeability (%)	23	31	23	21

Table 12 Recommended Building Separation for the Future Scheme of the Proposed Public and Private Developments

Other Design Features

Furthermore, design features as recommended as follows shall be implemented as far as practicable in order to minimize any adverse ventilation impact on pedestrian level due to the proposed developments.

1. Separation between the proposed public housing blocks shall be maintained at least 20m in order to maintain building permeability for penetration of prevailing wind across the subject site.
2. Separation between the proposed public and private building structures shall be maintained at around 6.5m so that air path can be induced for penetration of northern and southern prevailing winds passing across the subject site.
3. In order to enhance penetration of prevailing winds, the simulated ventilation results revealed the significance and effectiveness of a cross-shaped ventilation corridor formed by the proposed number of private housing blocks in reducing wind blockage when the proposed developments are in place. Therefore, it is recommended that numbers of building blocks for private housing developments shall not be more than 4 blocks.
4. The widths of the cross-shaped ventilation corridor formed between private housing blocks are: at minimum of 10m for north-south ventilation path and at a minimum of 20m for east-west ventilation path or the widths of the cross-shaped ventilation corridor provided with range of 20-33.3% permeability.
5. The disposition of private housing blocks shall be parallel to the most occurrence prevailing winds (ENE or NE winds) so that wind blockage of the building blocks can be minimized as practicable as possible.
6. Podium structures with permeable features such as void deck podium, sky garden or structure with ventilated opening etc are recommended as practicable as possible in order to provide an unobtrusive pathway for prevailing winds passing through. Structures with permeable features on top of podium, such as covered walkway, garden, etc., with no adverse air ventilation impacts would be allowed.
7. Set back of podium structure of the proposed private housing development shall be maintained at least 5m from the nearest road curb of On Lok Road to form an integral part of the major breezeway to the north of the site.
8. In case the above recommendations were not adopted in the future design scheme, a further detailed AVA study shall be required to demonstrate that the future development scheme proposal would not have significant and unacceptable impact on pedestrian level air ventilation in the vicinity.

6. CONCLUSION

The AVA Initial Study findings reveal that the proposed developments of Ex-Yuen Long Estate Site would unlikely have any adverse ventilation impact upon pedestrian areas in the vicinity and within the site. The proposed public and private housing developments have a similar SVR and LVR when compared with that of the Baseline Scenario. As such, the ventilation performances of the tested Scenarios are considered comparable.

Design measures adopted in the current scheme of the proposed public and private developments and other features as recommended in **Section 5.5** shall be implemented as far as practicable to further enhance pedestrian level air ventilation.

In the event that the recommendations stated in this report are not adopted in the future design scheme, a further detailed AVA study shall be required to demonstrate that the future development scheme proposal would not have any significant or unacceptable pedestrian level air ventilation impact in the vicinity.

Appendix 1
Calculation of Wind Profile

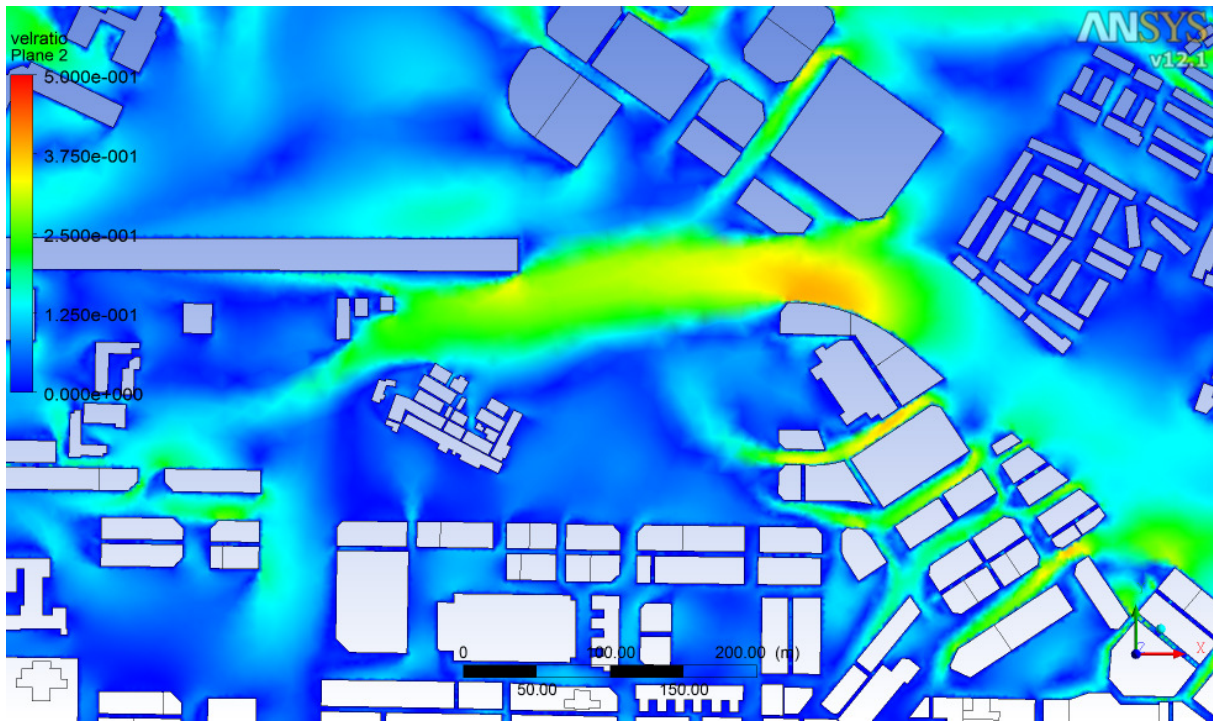
Power law $U_z/U_g = (Z_z/Z_g)^a$

ENE		NE		E		NNE	
U _g	8.48	U _g	8.13	U _g	7.47	U _g	9.36
Z _g	596	Z _g	596	Z _g	596	Z _g	596
a	0.4	a	0.4	a	0.4	a	0.4
Z _z	U _z	Z _z	U _z	Z _z	U _z	Z _z	U _z
10	1.65	10	1.58	10	1.46	10	1.82
20	2.18	20	2.09	20	1.92	20	2.41
30	2.57	30	2.46	30	2.26	30	2.83
40	2.88	40	2.76	40	2.53	40	3.18
50	3.15	50	3.02	50	2.77	50	3.47
60	3.38	60	3.24	60	2.98	60	3.73
70	3.60	70	3.45	70	3.17	70	3.97
80	3.80	80	3.64	80	3.34	80	4.19
90	3.98	90	3.82	90	3.51	90	4.39
100	4.15	100	3.98	100	3.66	100	4.58
150	4.88	150	4.68	150	4.30	150	5.39
200	5.48	200	5.25	200	4.83	200	6.04
250	5.99	250	5.74	250	5.28	250	6.61
300	6.44	300	6.18	300	5.67	300	7.11
350	6.85	350	6.57	350	6.04	350	7.56
400	7.23	400	6.93	400	6.37	400	7.98
450	7.58	450	7.26	450	6.67	450	8.36
500	7.90	500	7.58	500	6.96	500	8.72
550	8.21	550	7.87	550	7.23	550	9.06
600	8.50	600	8.15	600	7.49	600	9.38
ESE		SSE		SE		SSW	
U _g	6.29	U _g	5.92	U _g	5.62	U _g	6.91
Z _g	596	Z _g	596	Z _g	596	Z _g	596
a	0.4	a	0.4	a	0.4	a	0.4
Z _z	U _z	Z _z	U _z	Z _z	U _z	Z _z	U _z
10	1.23	10	1.15	10	1.10	10	1.35
20	1.62	20	1.52	20	1.45	20	1.78
30	1.90	30	1.79	30	1.70	30	2.09
40	2.14	40	2.01	40	1.91	40	2.34
50	2.33	50	2.20	50	2.09	50	2.56
60	2.51	60	2.36	60	2.24	60	2.76
70	2.67	70	2.51	70	2.39	70	2.93
80	2.82	80	2.65	80	2.52	80	3.09
90	2.95	90	2.78	90	2.64	90	3.24
100	3.08	100	2.90	100	2.75	100	3.38
150	3.62	150	3.41	150	3.24	150	3.98
200	4.06	200	3.82	200	3.63	200	4.46
250	4.44	250	4.18	250	3.97	250	4.88
300	4.78	300	4.50	300	4.27	300	5.25
350	5.08	350	4.78	350	4.54	350	5.58
400	5.36	400	5.04	400	4.79	400	5.89
450	5.62	450	5.29	450	5.02	450	6.17
500	5.86	500	5.51	500	5.24	500	6.44
550	6.09	550	5.73	550	5.44	550	6.69
600	6.31	600	5.93	600	5.64	600	6.92

Square	(16,36)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
V	infinity	0.037	0.097	0.137	0.166	0.125	0.093	0.062	0.065	0.046	0.053	0.047	0.027	0.014	0.009	0.009	0.013
0_to_1		0.001	0.0005	0.001	0.001	0.001	0.0015	0.0005	0.0015	0.0015	0.0005	0.0005	0.0005	0.0005	0.001	0.0005	0.0005
1_to_2		0.003	0.0045	0.0045	0.0075	0.0075	0.006	0.0075	0.006	0.0075	0.0045	0.0045	0.003	0.0045	0.0015	0.003	0.003
2_to_3		0.0125	0.0125	0.015	0.0175	0.0175	0.0175	0.015	0.0125	0.015	0.01	0.0075	0.0075	0.005	0.005	0.005	0.0075
3_to_4		0.0175	0.0245	0.0385	0.0315	0.035	0.028	0.0175	0.0175	0.0105	0.014	0.0105	0.0105	0.007	0.0035	0.007	0.014
4_to_5		0.0315	0.036	0.054	0.054	0.0405	0.045	0.027	0.0315	0.018	0.0225	0.018	0.0225	0.0135	0	0.0045	0.009
5_to_6		0.033	0.044	0.066	0.0715	0.0495	0.0715	0.0385	0.0385	0.022	0.022	0.044	0.0275	0.0055	0.0055	0	0
6_to_7		0.013	0.026	0.104	0.0975	0.0845	0.078	0.052	0.0455	0.0325	0.0325	0.0325	0.026	0.0065	0.0065	0.0065	0
7_to_8		0.0075	0.0225	0.0825	0.0975	0.105	0.06	0.0525	0.0525	0.03	0.0375	0.045	0.0225	0.0075	0	0	0
8_to_9		0.0085	0.0595	0.0935	0.1105	0.119	0.0765	0.034	0.051	0.017	0.051	0.051	0.0085	0	0	0	0
9_to_10		0.019	0.0665	0.076	0.152	0.1045	0.0665	0.0475	0.0475	0.019	0.0475	0.0285	0.0095	0	0	0	0
10_to_11		0.021	0.084	0.1155	0.189	0.084	0.042	0.021	0.0315	0.021	0.0315	0.0105	0.0105	0	0	0	0.0105
11_to_12		0	0.0575	0.115	0.1725	0.115	0.0345	0.023	0.023	0.0115	0.023	0	0	0	0	0	0
12_to_13		0	0.0375	0.075	0.15	0.0875	0.025	0.0125	0.0125	0	0.025	0.0125	0	0	0	0	0
13_to_14		0.0135	0.0675	0.081	0.0945	0.054	0.0135	0	0.0135	0	0.0135	0	0	0	0	0	0
14_to_15		0	0.1015	0.058	0.058	0.029	0	0	0	0	0.0145	0	0	0	0	0	0
15_to_16		0	0.093	0.031	0.031	0	0	0	0	0	0	0	0	0	0	0	0
16_to_17		0.0165	0.099	0.0495	0.0165	0	0	0	0	0.0165	0.0165	0	0	0	0	0	0
17_to_18		0.0175	0.0525	0.035	0.0175	0	0	0	0	0	0	0	0	0	0	0	0
18_to_19		0	0.0185	0.0185	0.0185	0	0	0	0	0.0185	0	0	0	0	0	0	0
19_to_20		0	0	0	0.0195	0	0.0195	0	0	0	0	0	0	0	0	0	0
20_to_21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21_to_22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22_to_23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23_to_24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24_to_25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0.215	0.9075	1.1135	1.4075	0.9335	0.585	0.3485	0.3845	0.2405	0.366	0.265	0.1485	0.05	0.023	0.0265	0.0445
		5.811	9.356	8.128	8.479	7.468	6.290	5.621	5.915	5.228	6.906	5.638	5.500	3.571	2.556	2.944	3.423

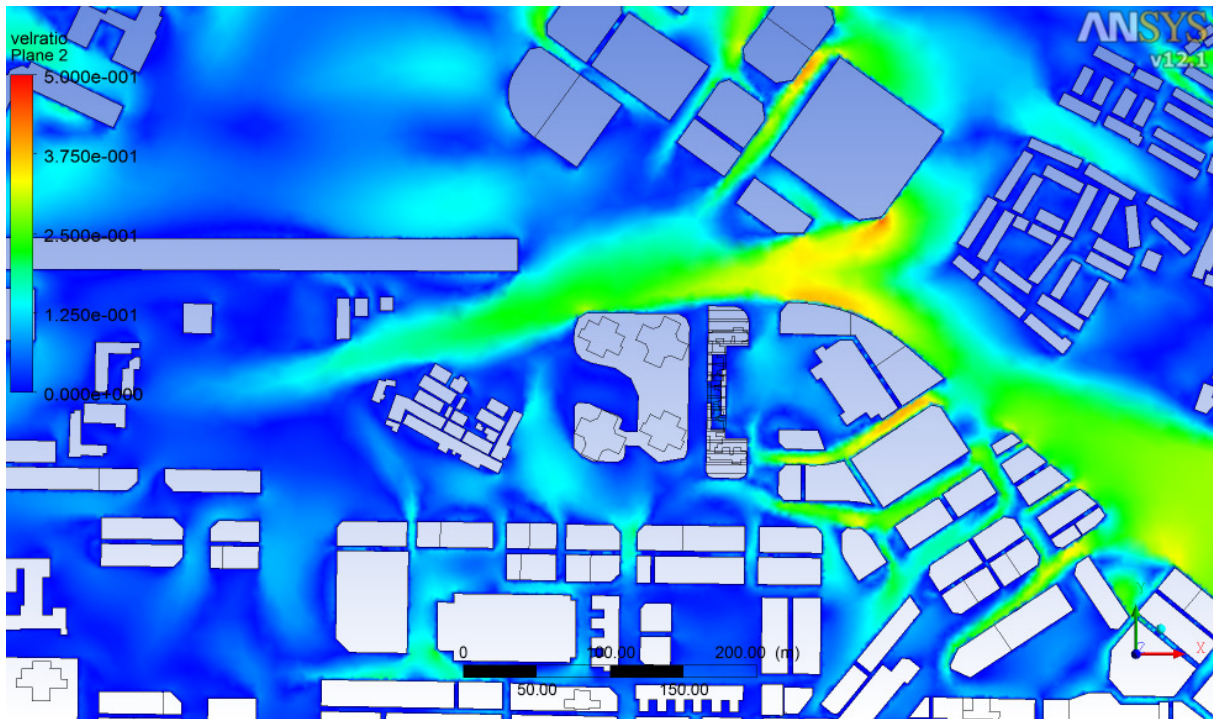
Appendix 2
Graphical Plot of Contour and
Vector Result of CFD Modelling

Baseline Scenario



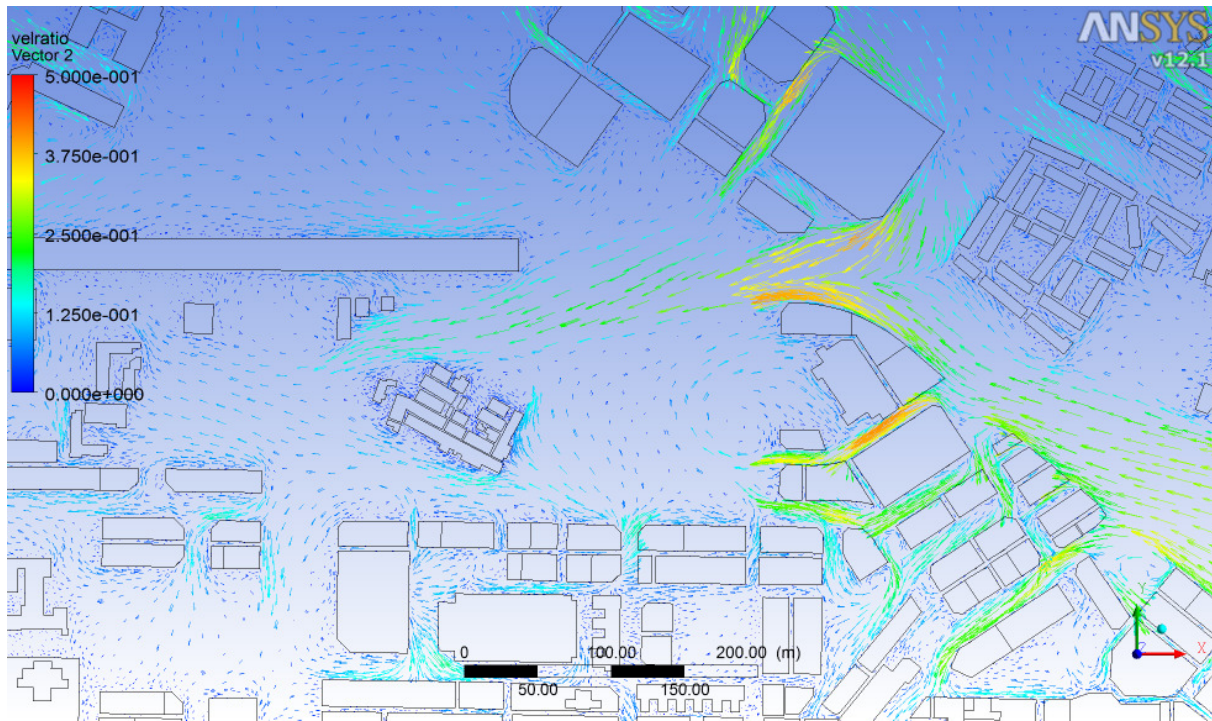
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – E wind

Proposed Scenario



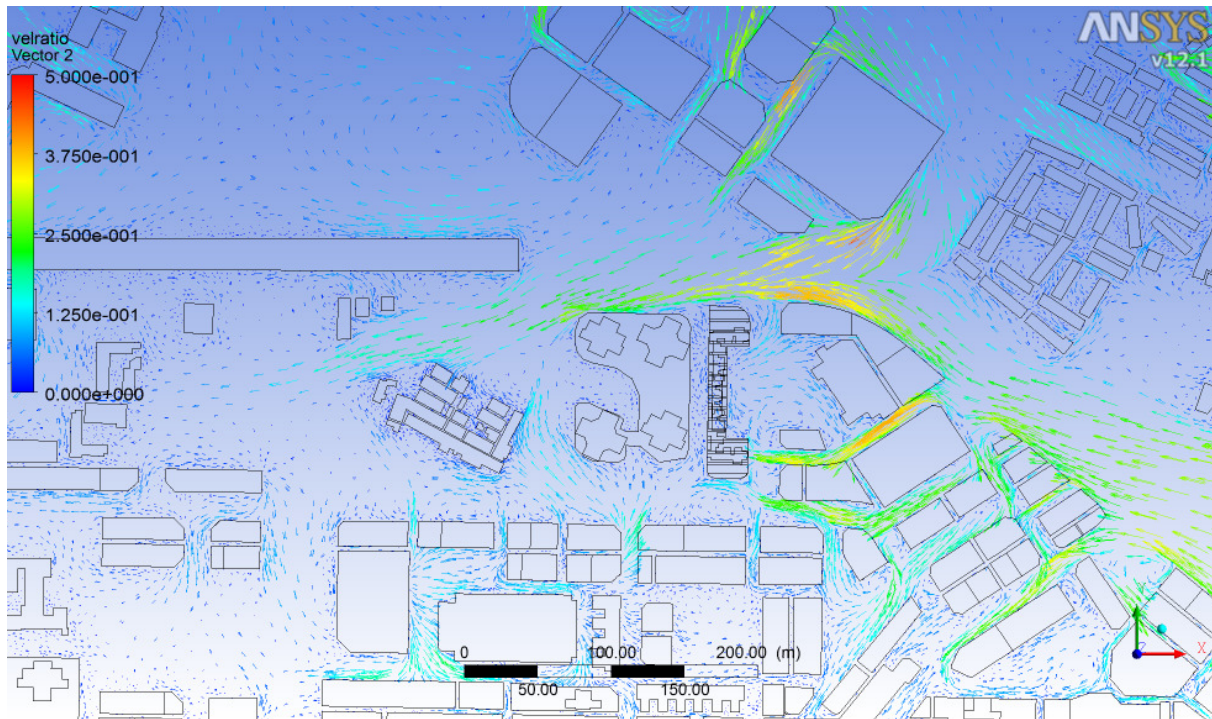
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – E wind

Baseline Scenario



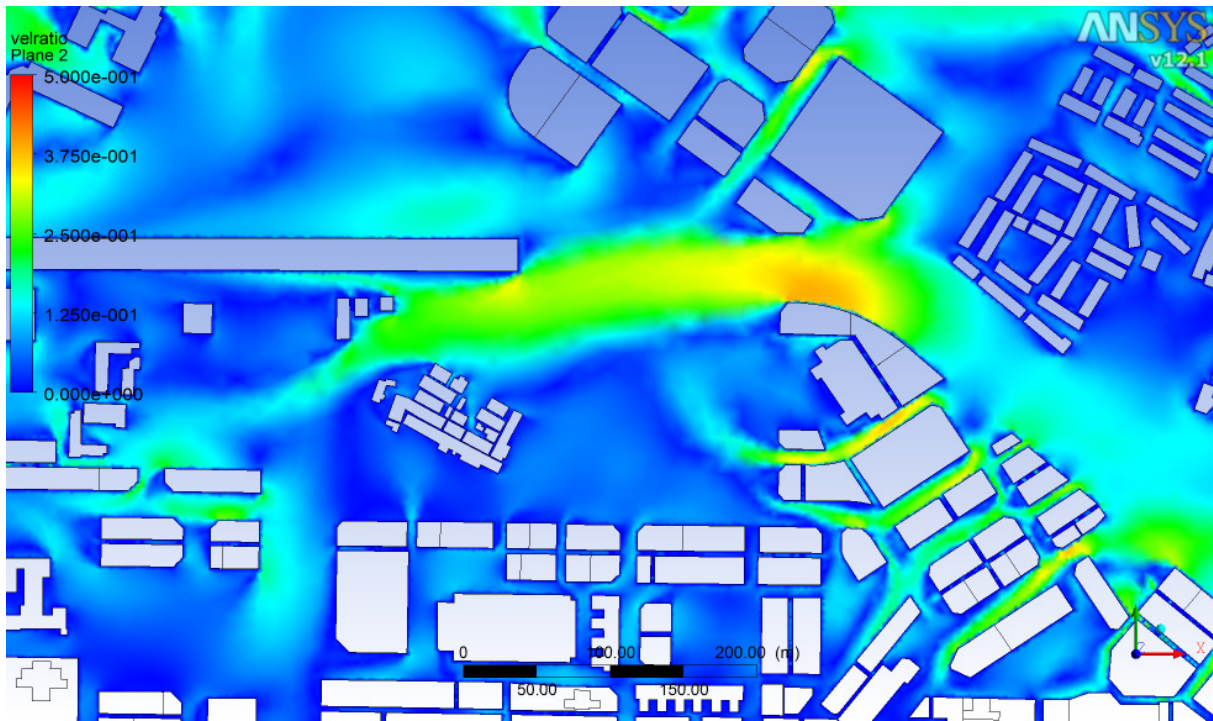
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – E wind

Proposed Scenario



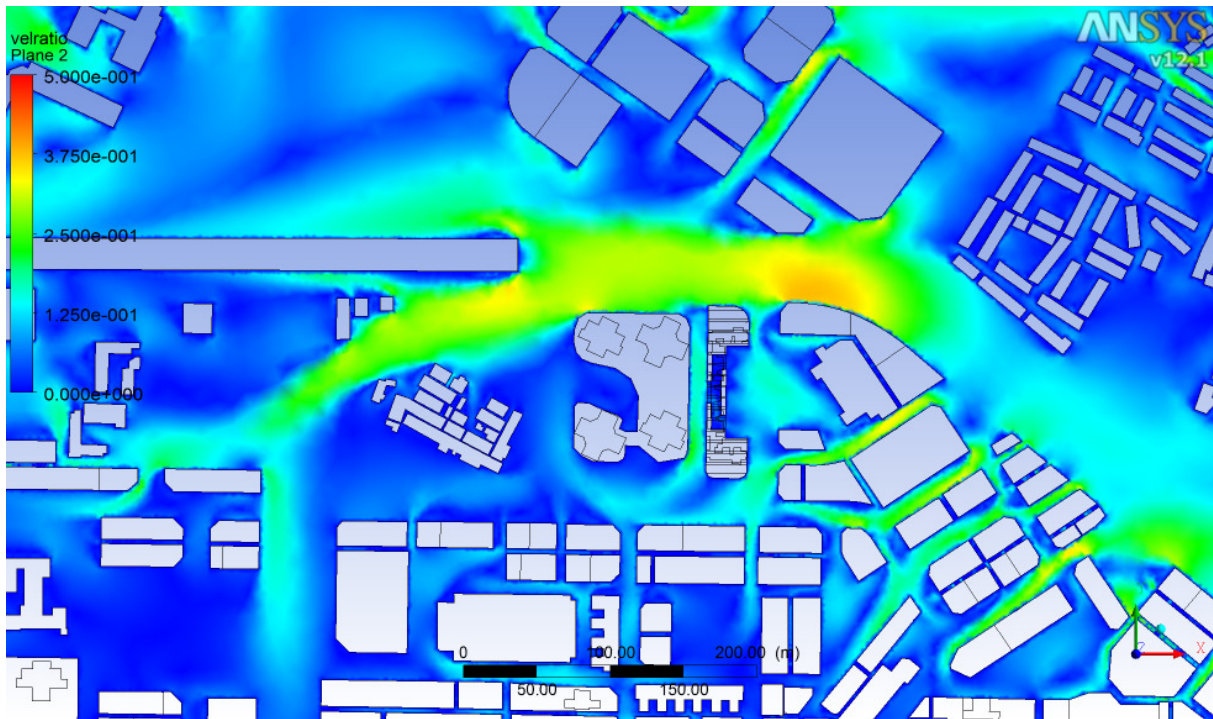
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – E Wind

Baseline Scenario



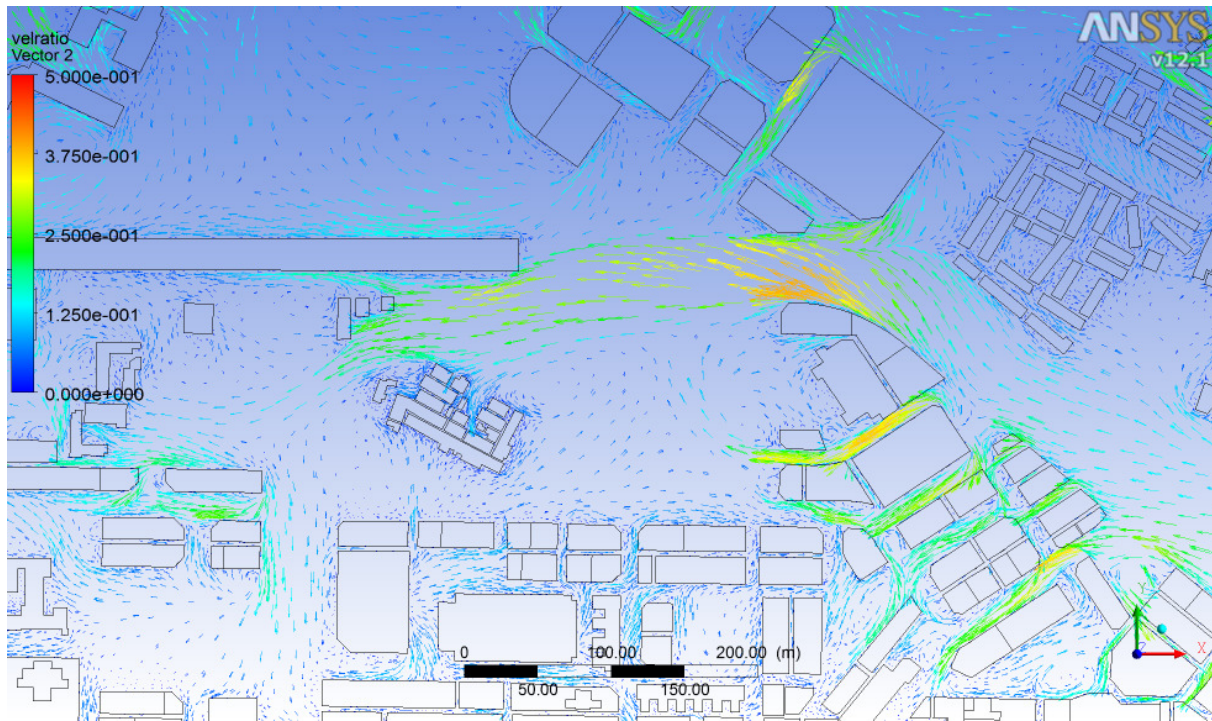
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – ENE wind

Proposed Scenario



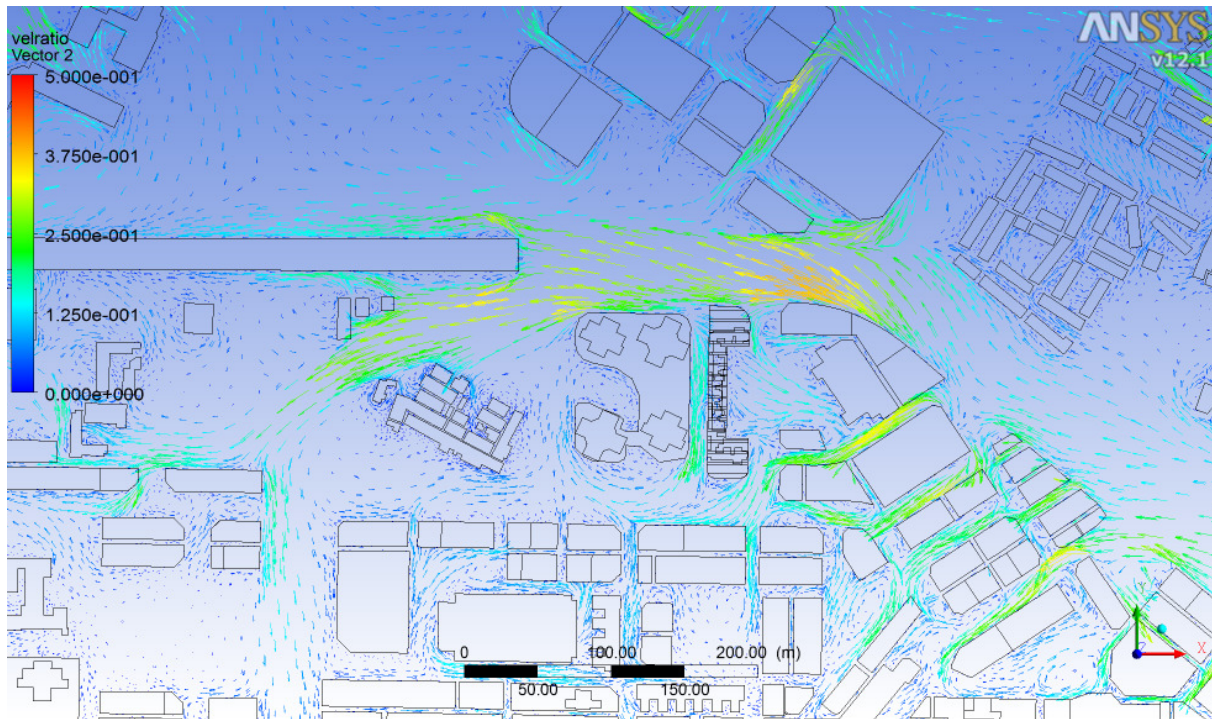
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – ENE Wind

Baseline Scenario



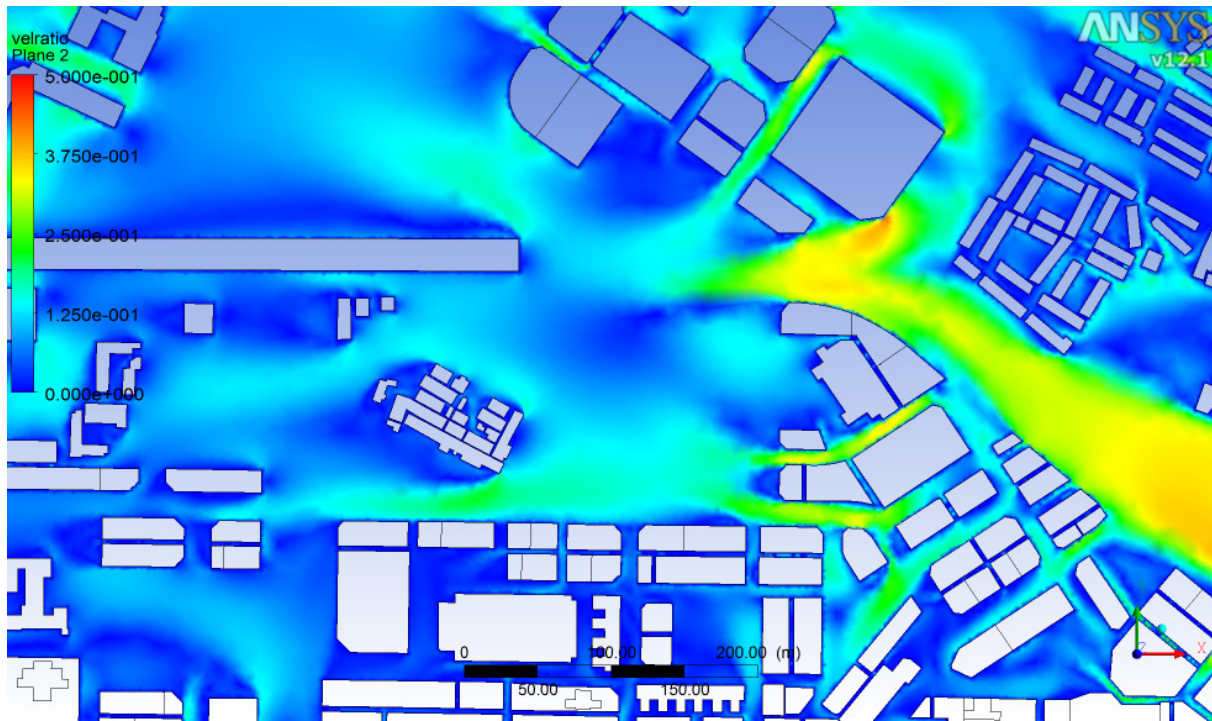
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – ENE wind

Proposed Scenario



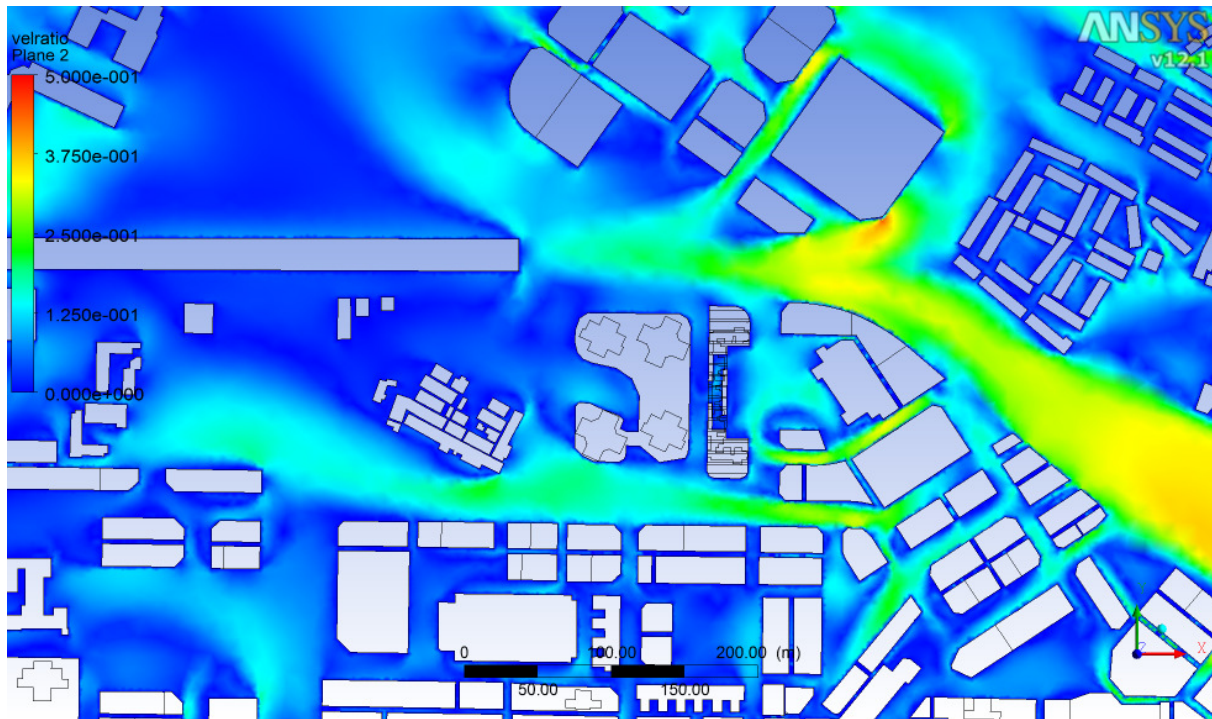
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – ENE Wind

Baseline Scenario



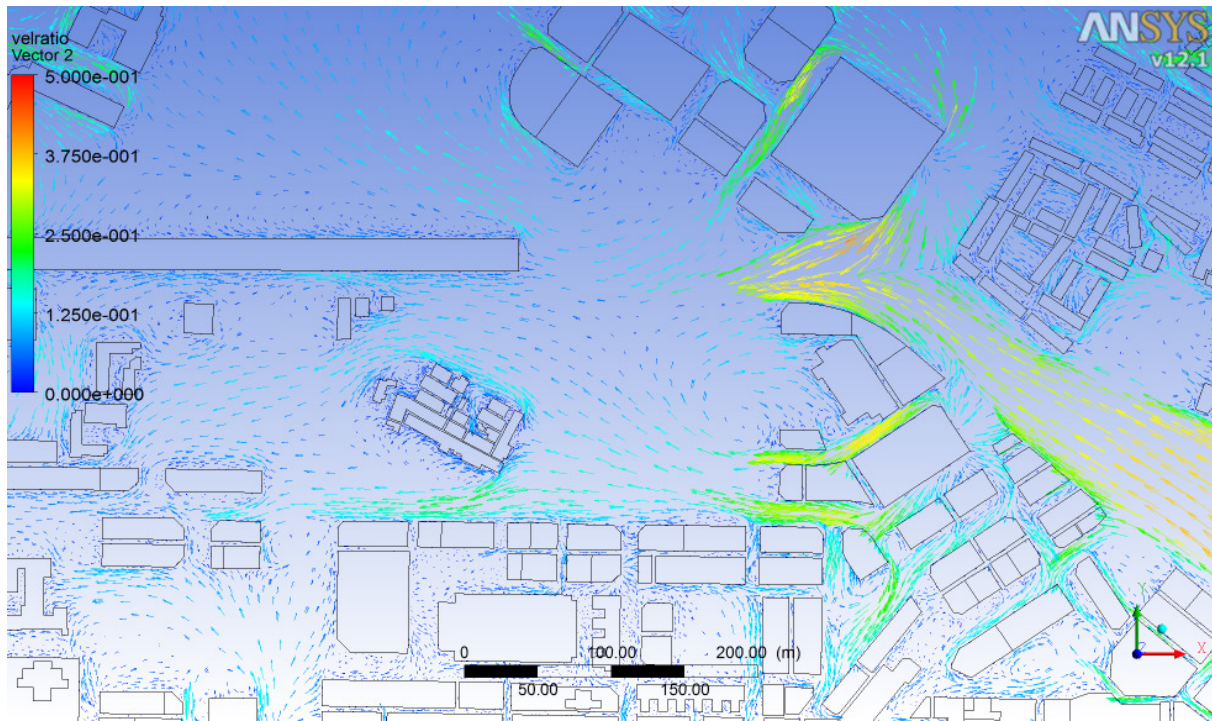
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – ESE wind

Proposed Scenario



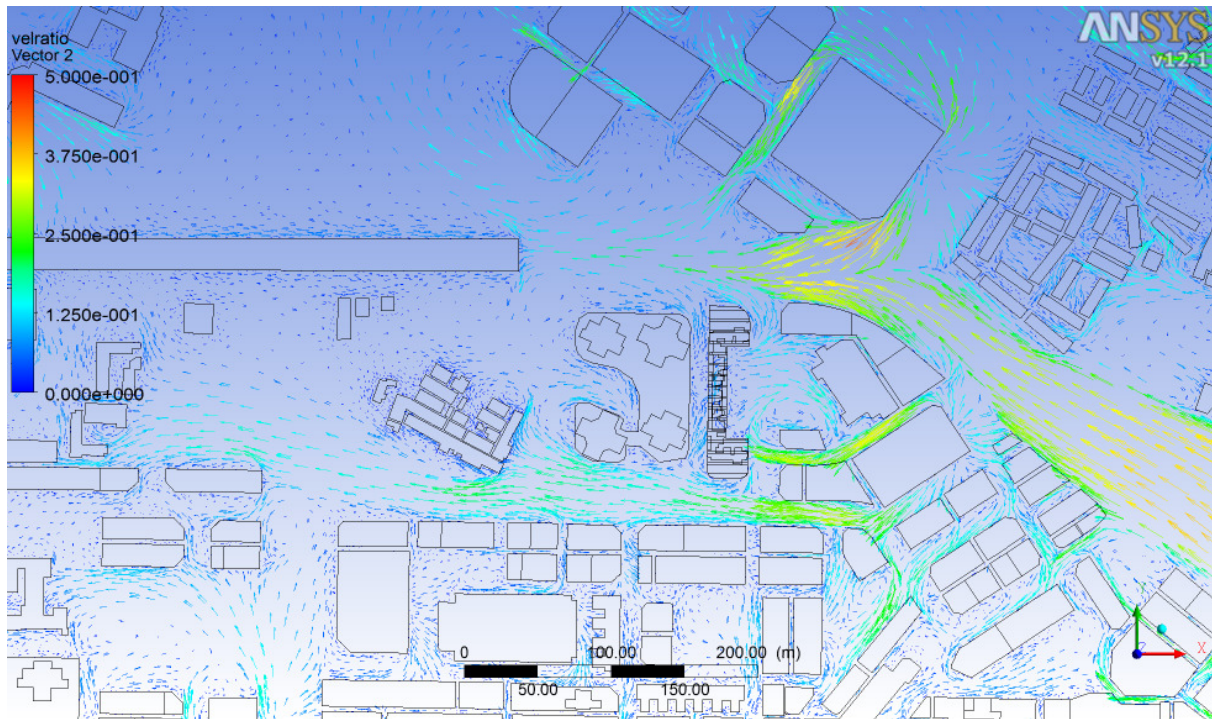
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – ESE Wind

Baseline Scenario



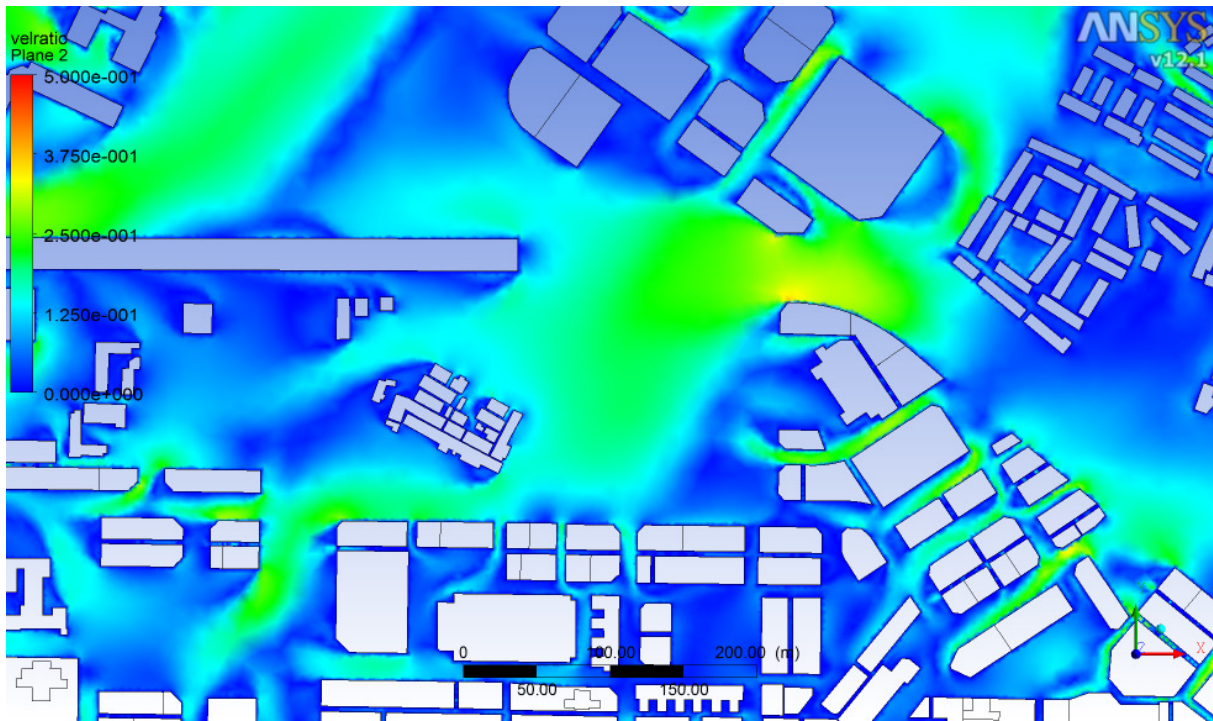
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – ESE wind

Proposed Scenario



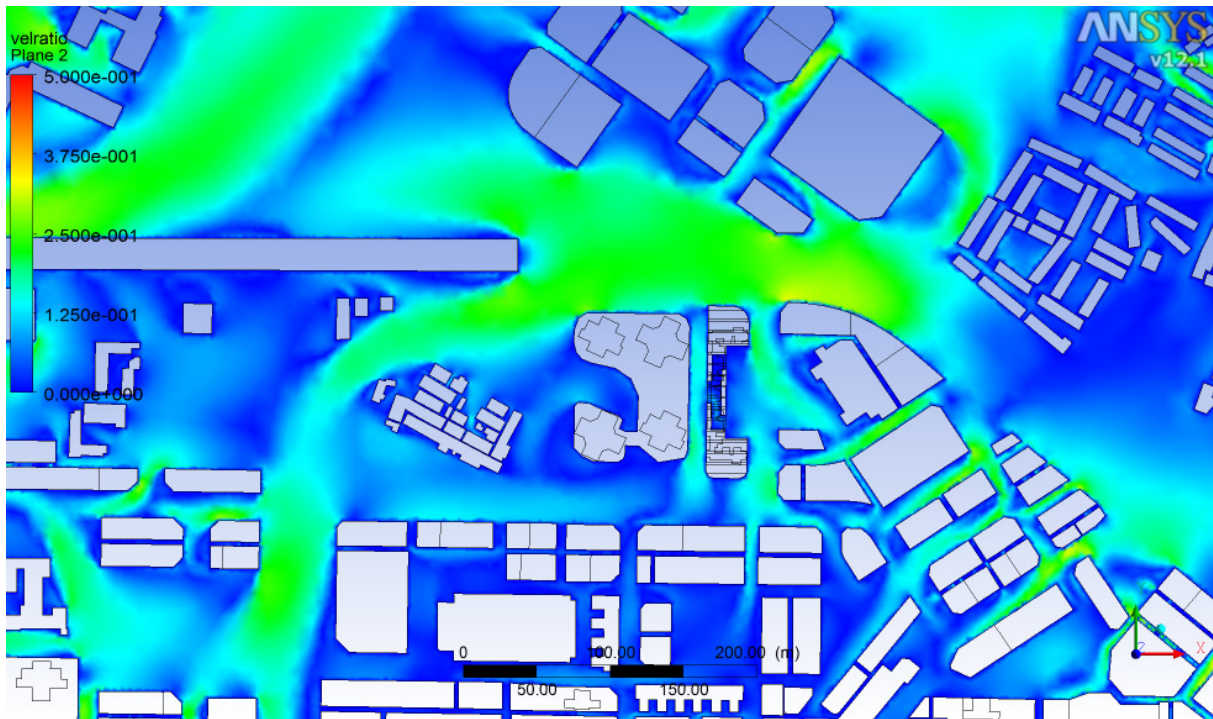
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – ESE Wind

Baseline Scenario



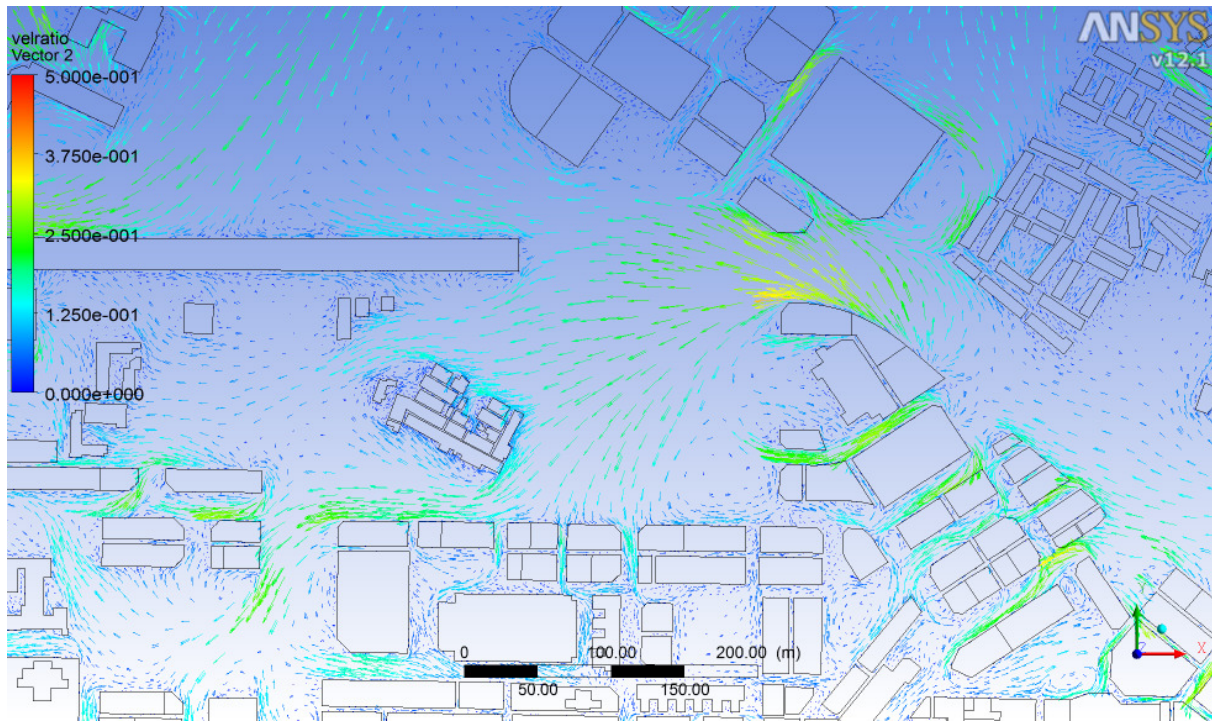
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – NE wind

Proposed Scenario



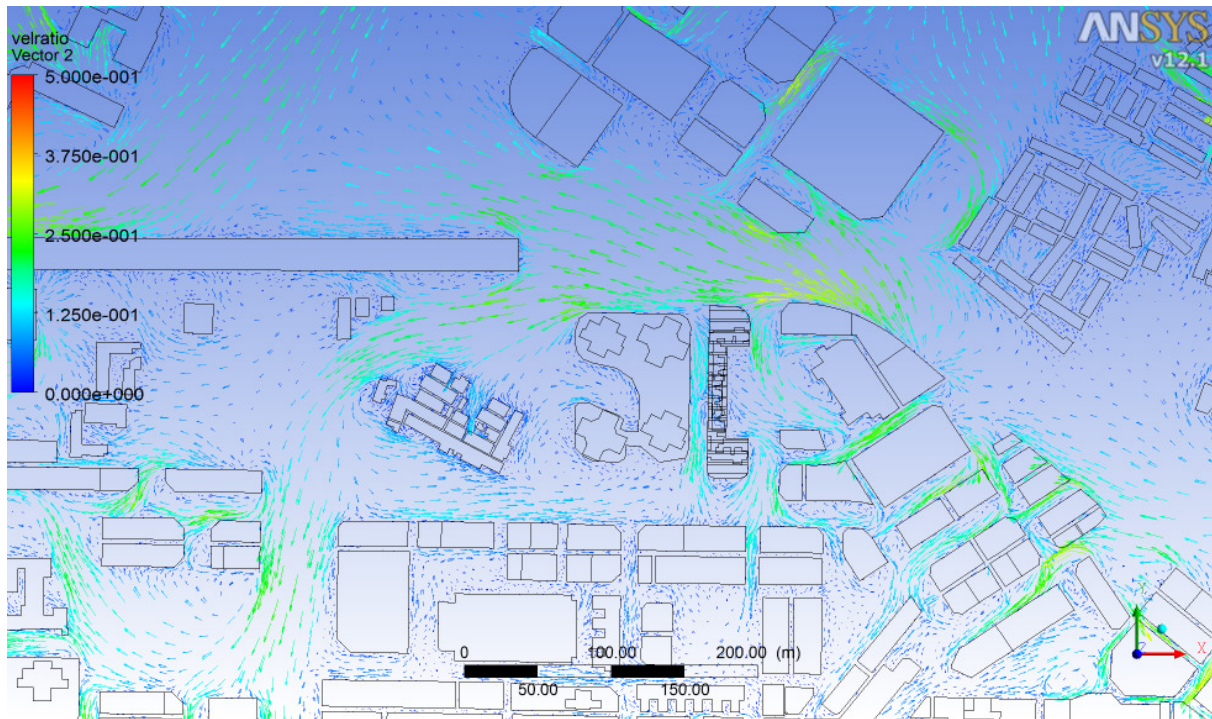
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – NE Wind

Baseline Scenario



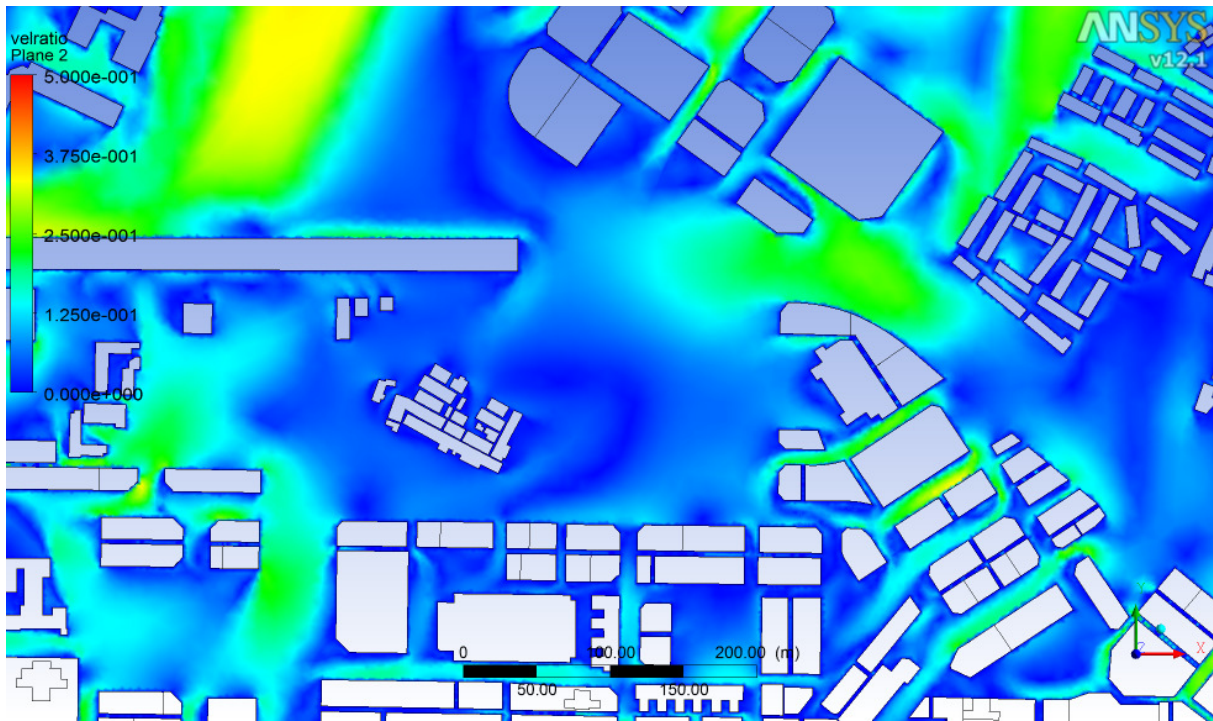
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – NE wind

Proposed Scenario



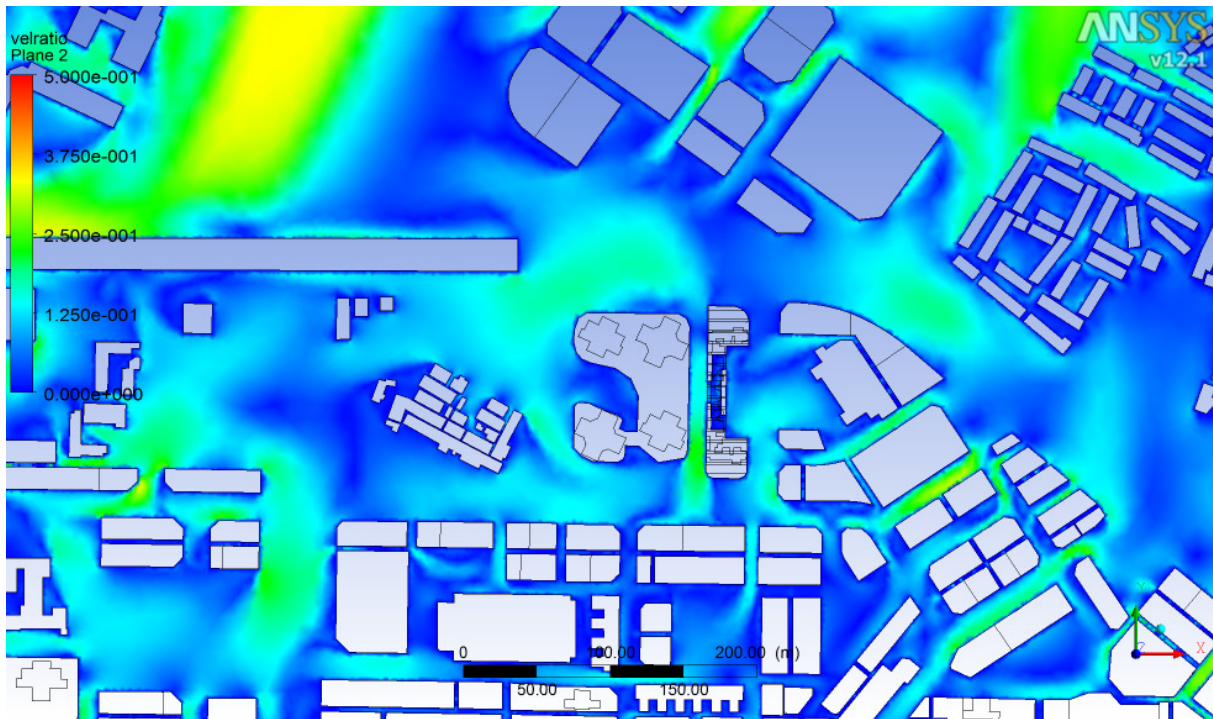
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – NE Wind

Baseline Scenario



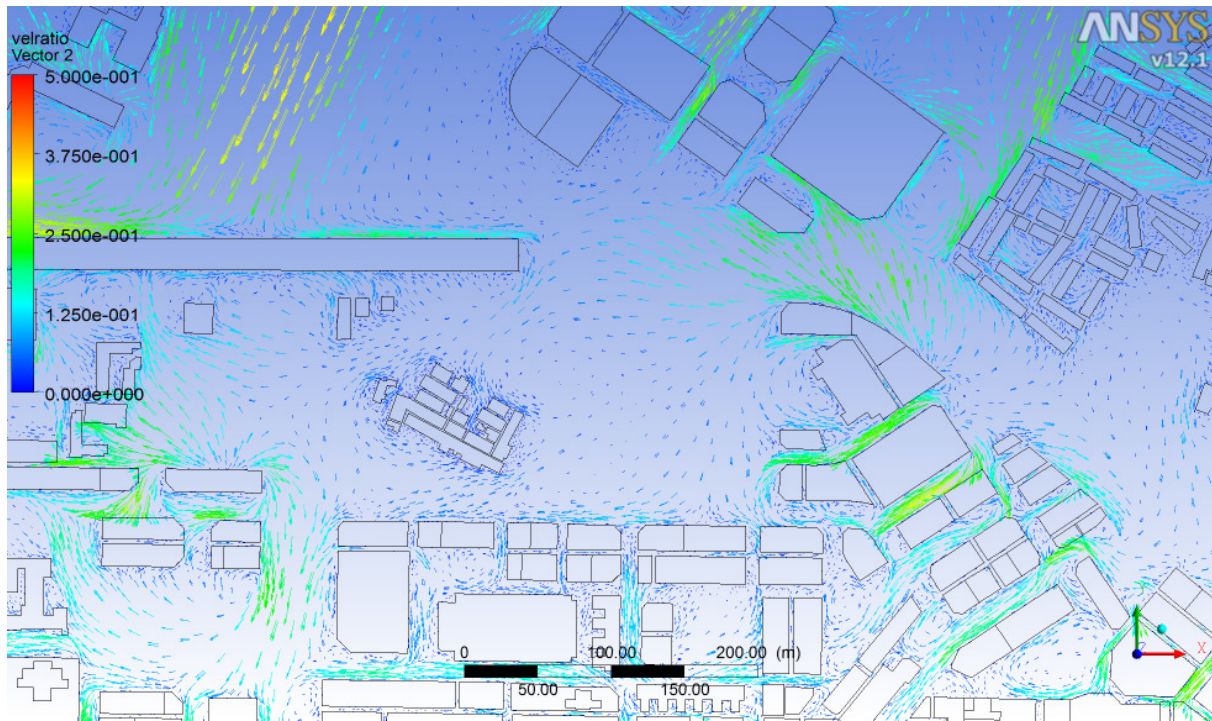
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – NNE wind

Proposed Scenario



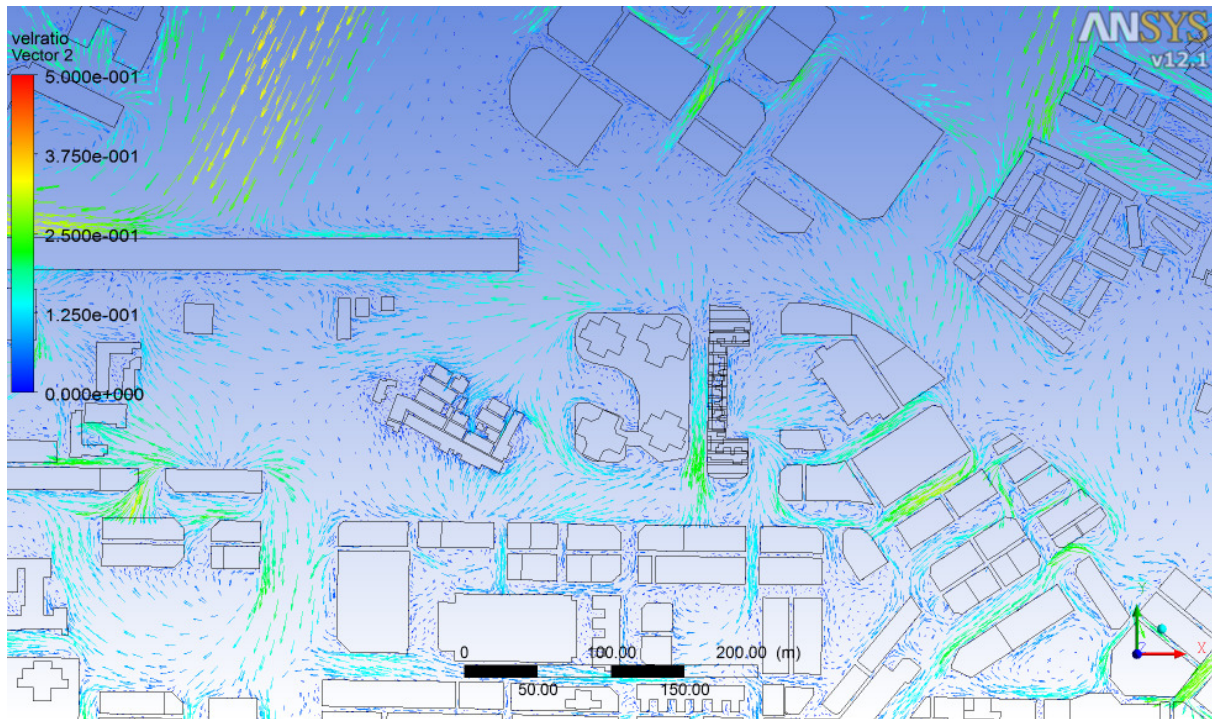
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – NNE Wind

Baseline Scenario



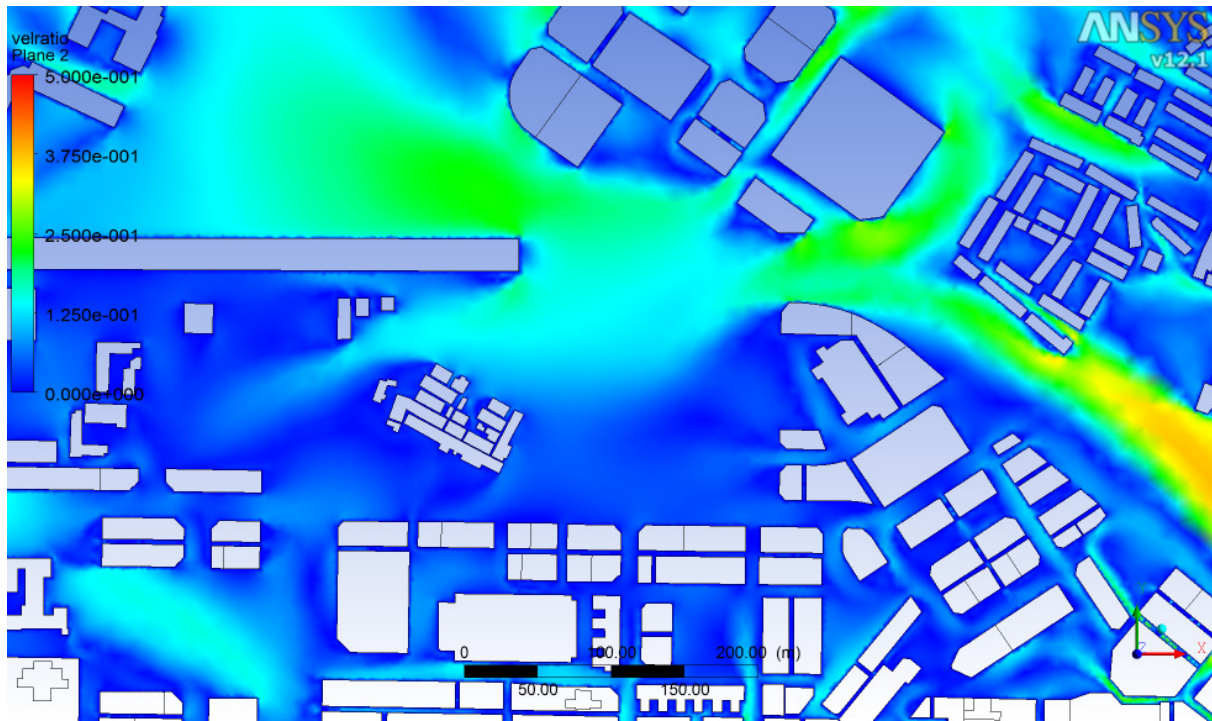
Wind Velocity Ratio (VRw') Vector (2m from the ground level) –NNE wind

Proposed Scenario



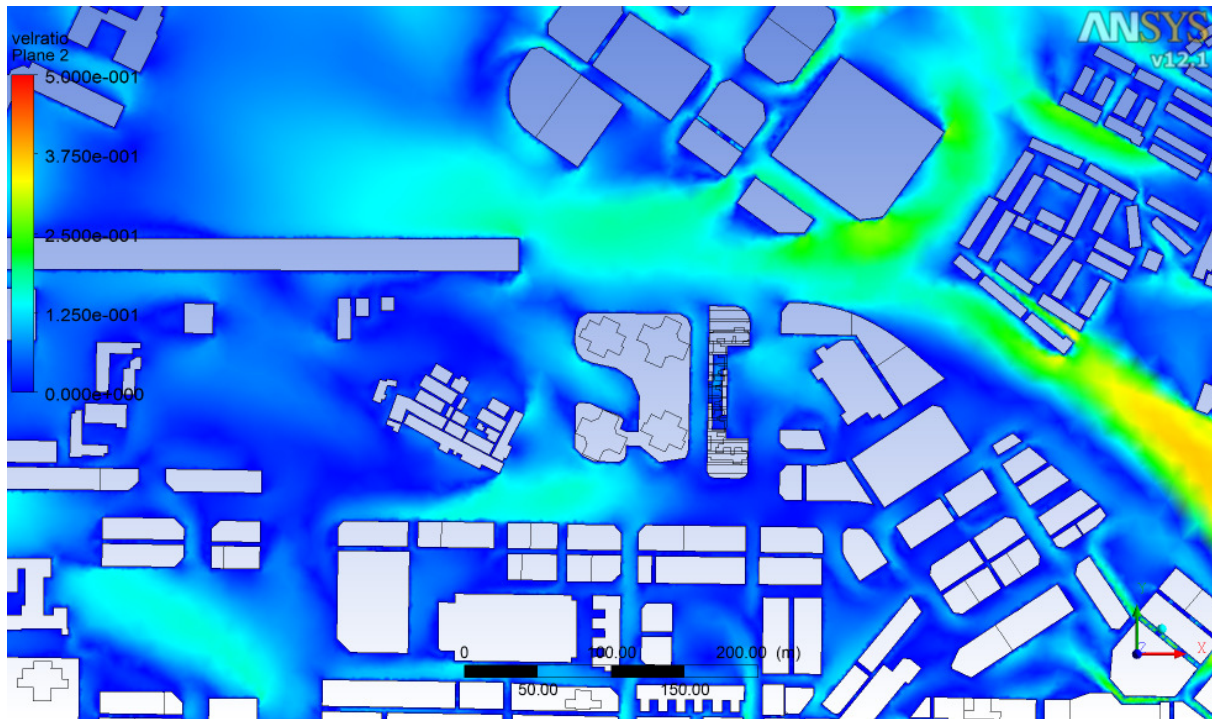
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – NNE Wind

Baseline Scenario



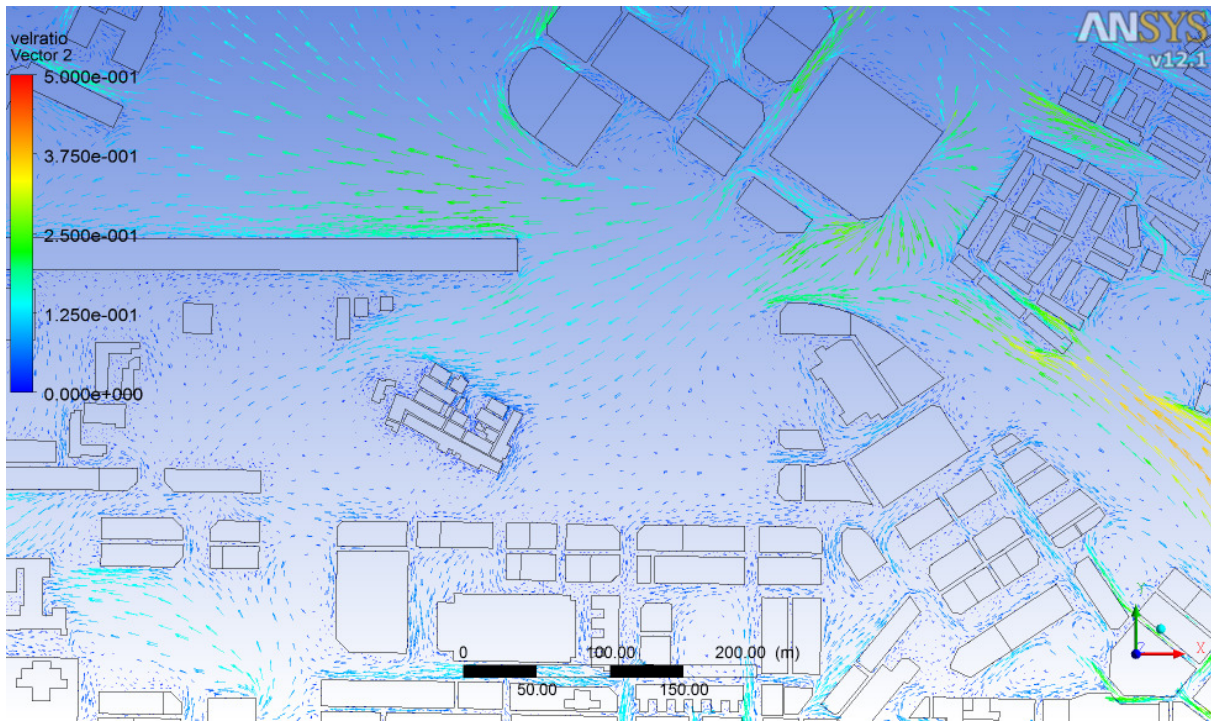
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SE wind

Proposed Scenario



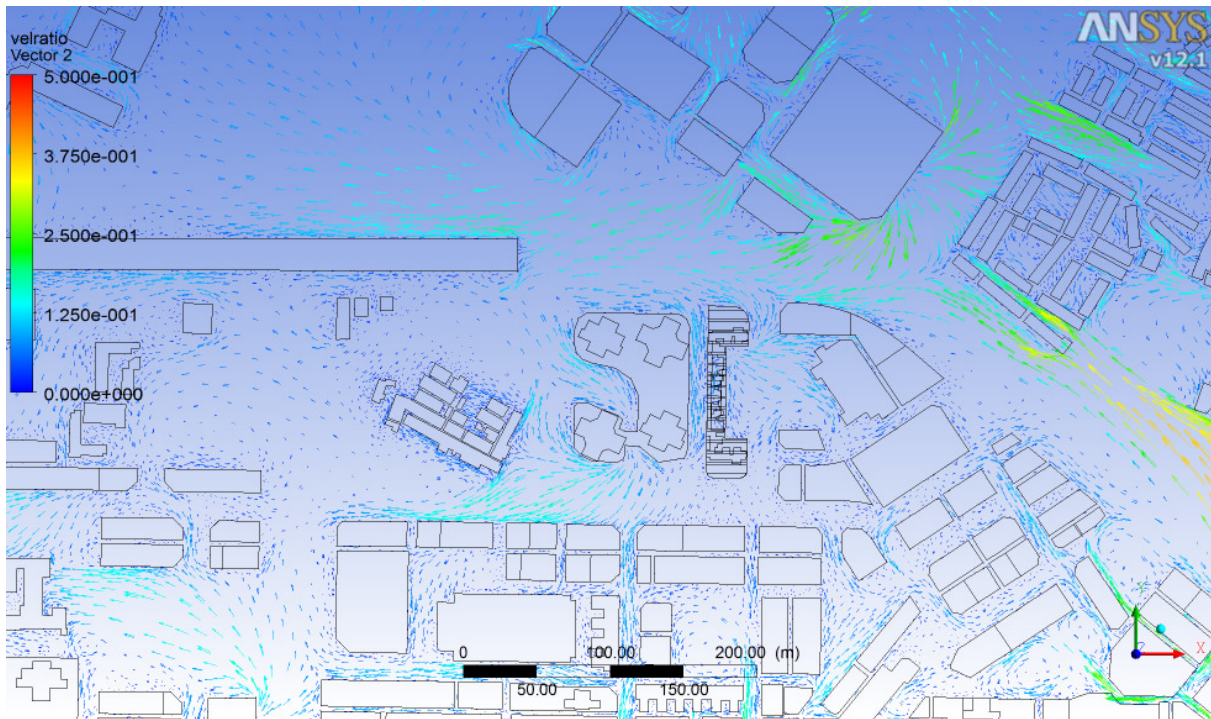
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SE Wind

Baseline Scenario



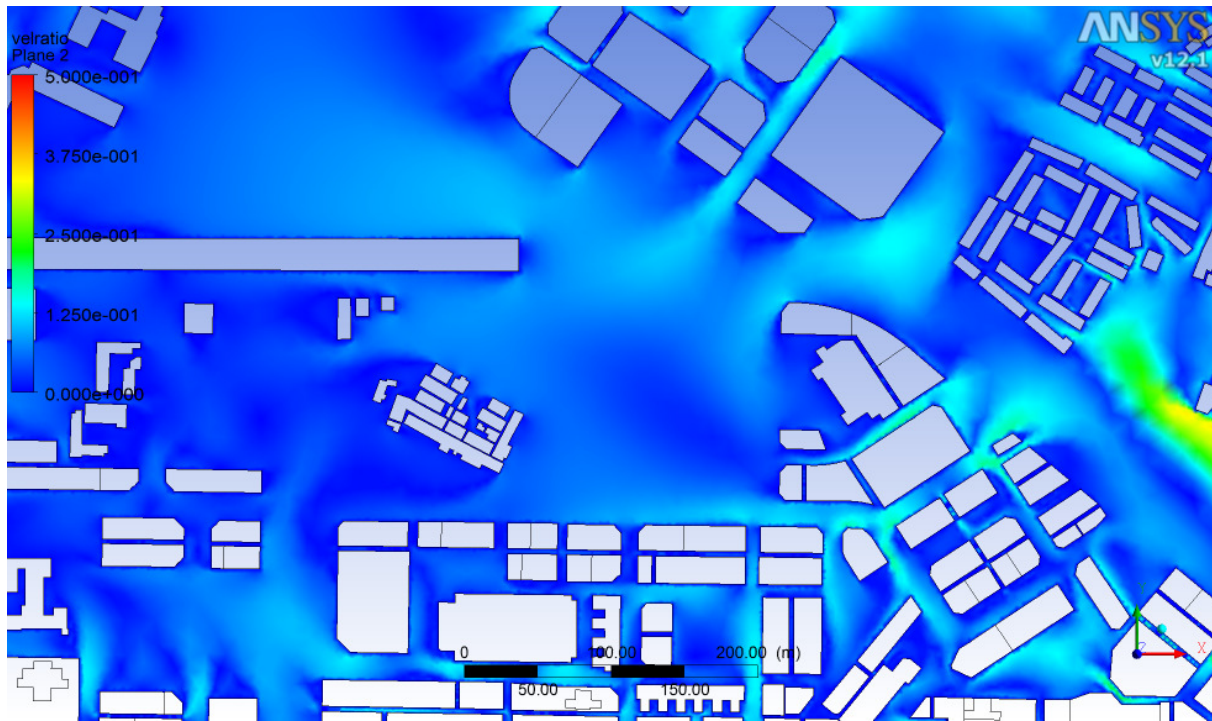
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – SE wind

Proposed Scenario



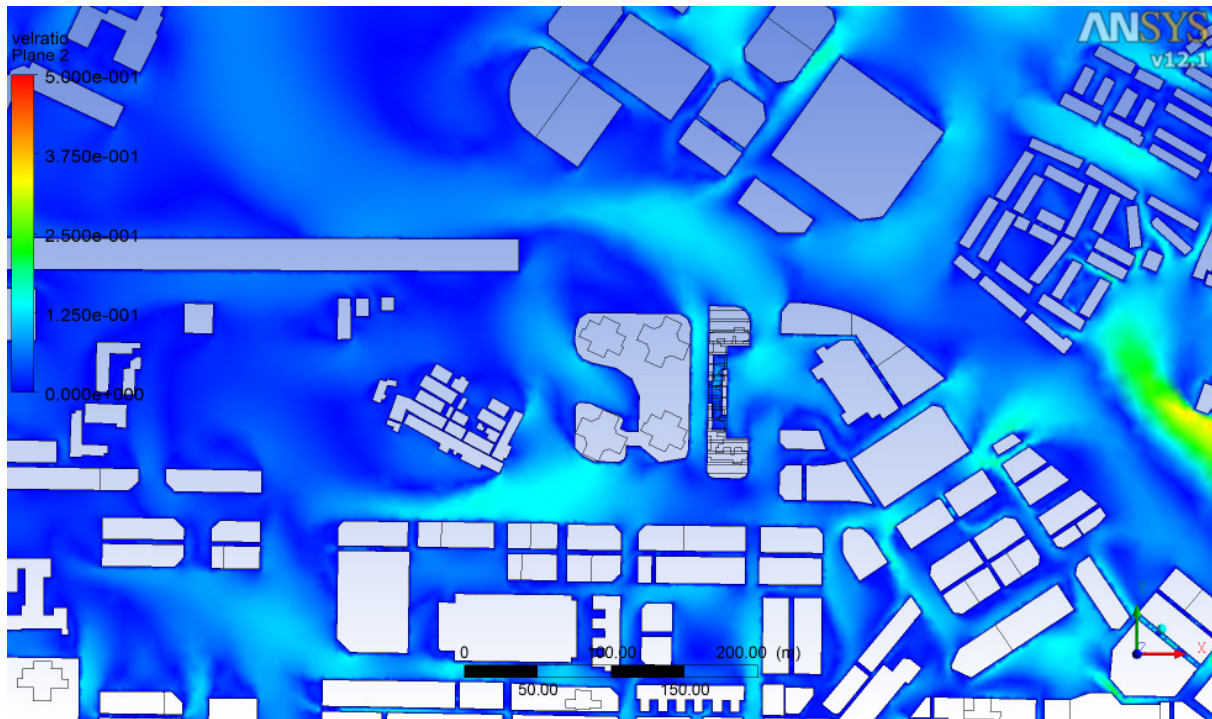
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – SE Wind

Baseline Scenario



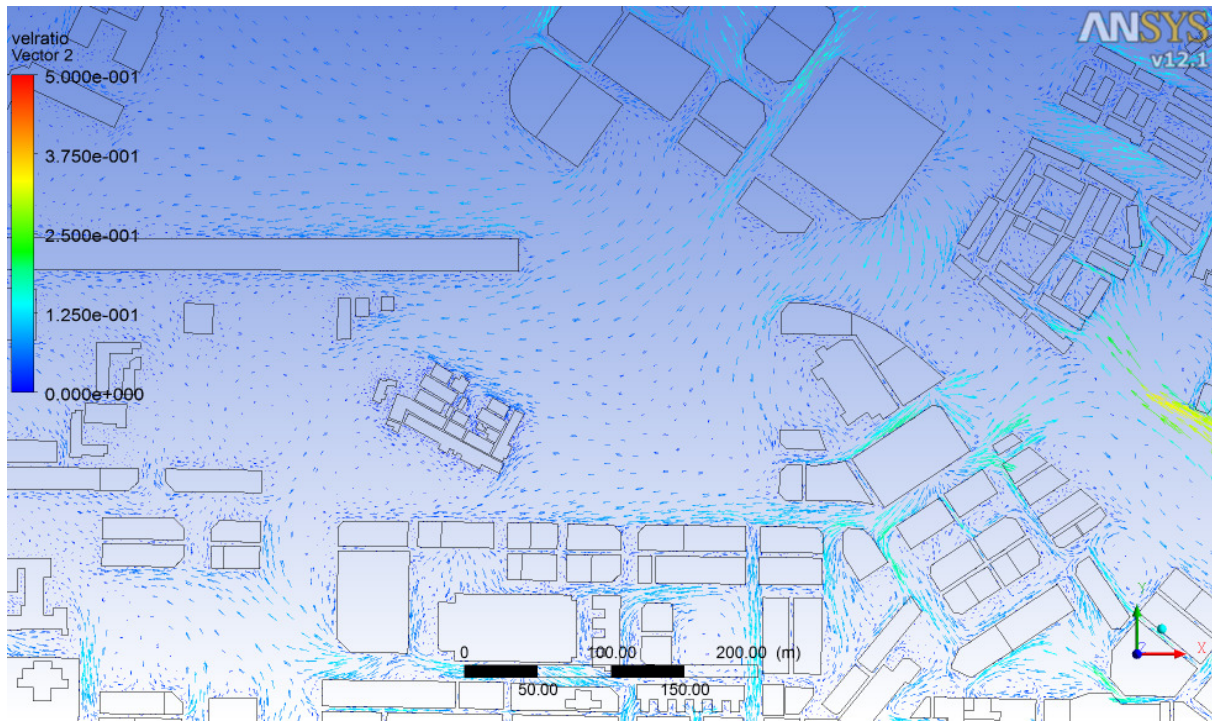
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SSE wind

Proposed Scenario



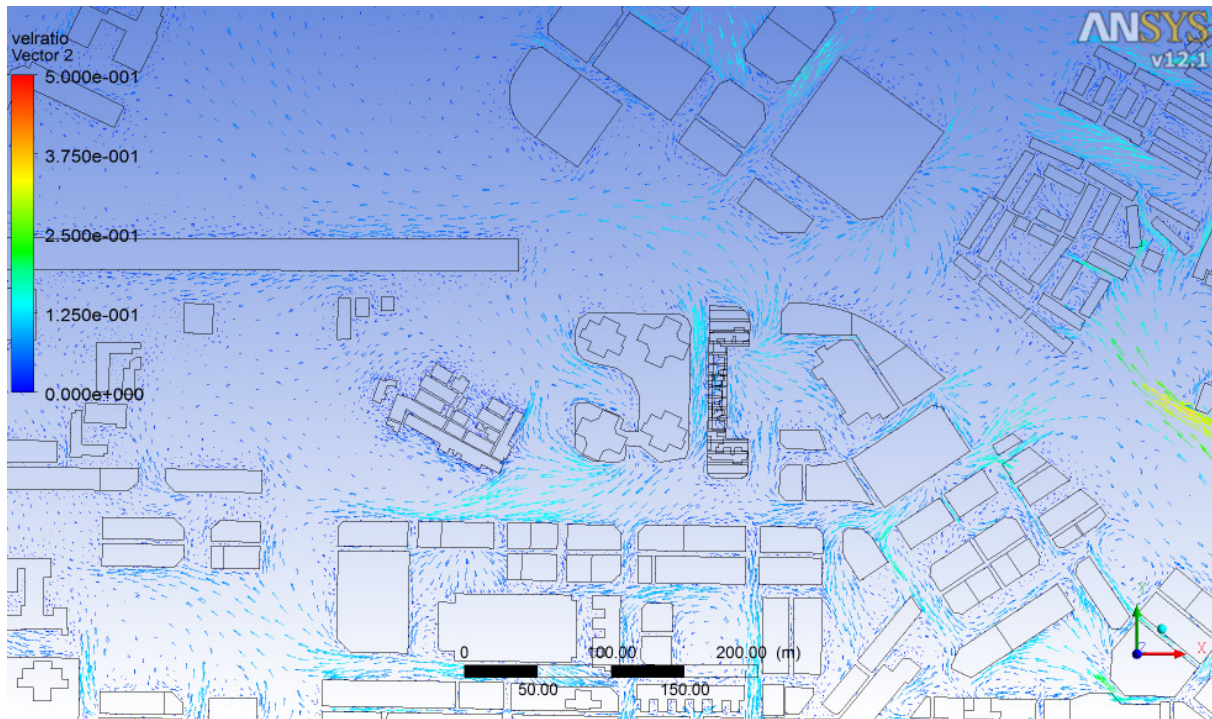
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SSE Wind

Baseline Scenario



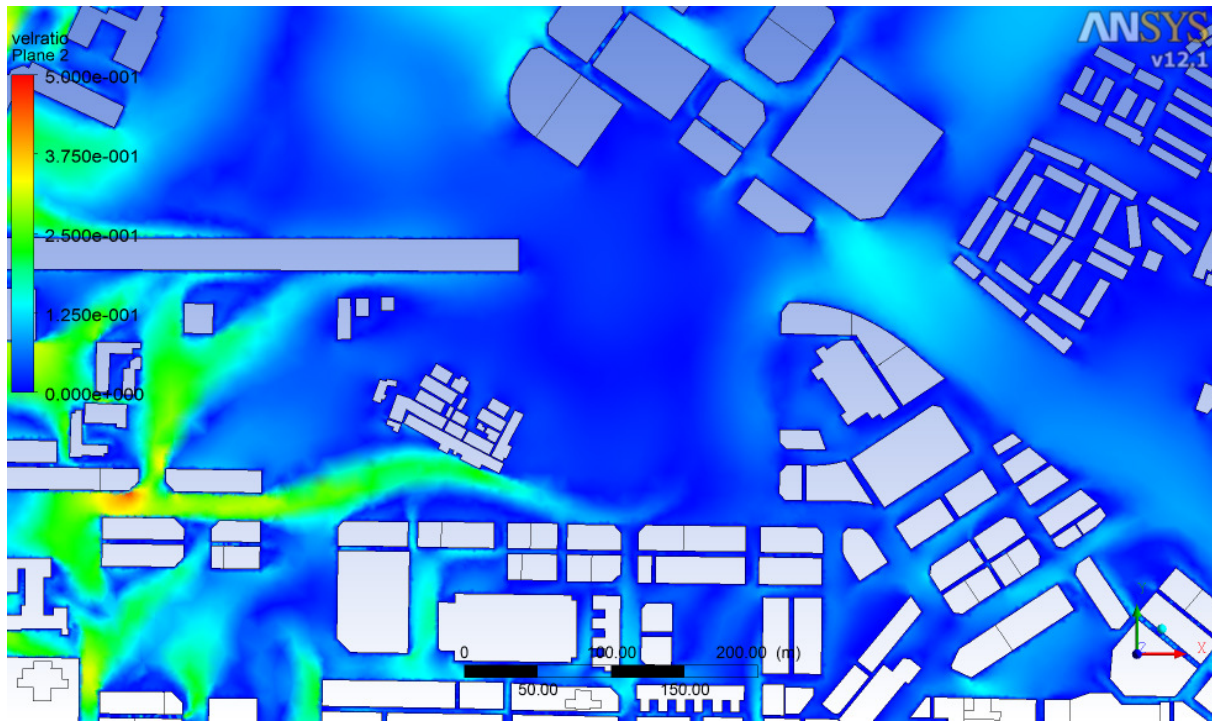
Wind Velocity Ratio (VRw') Vector (2m from the ground level) –SSE wind

Proposed Scenario



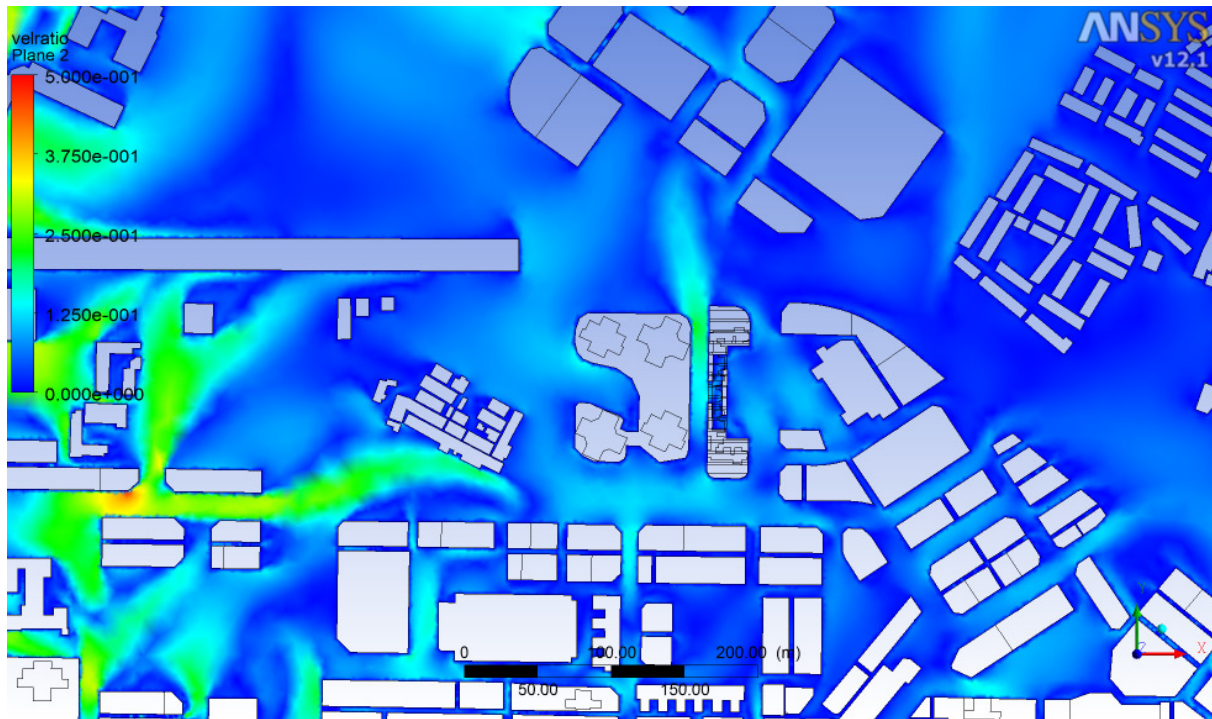
Wind Velocity Ratio (VRw') Vector (2m from the ground level) – SSE Wind

Baseline Scenario



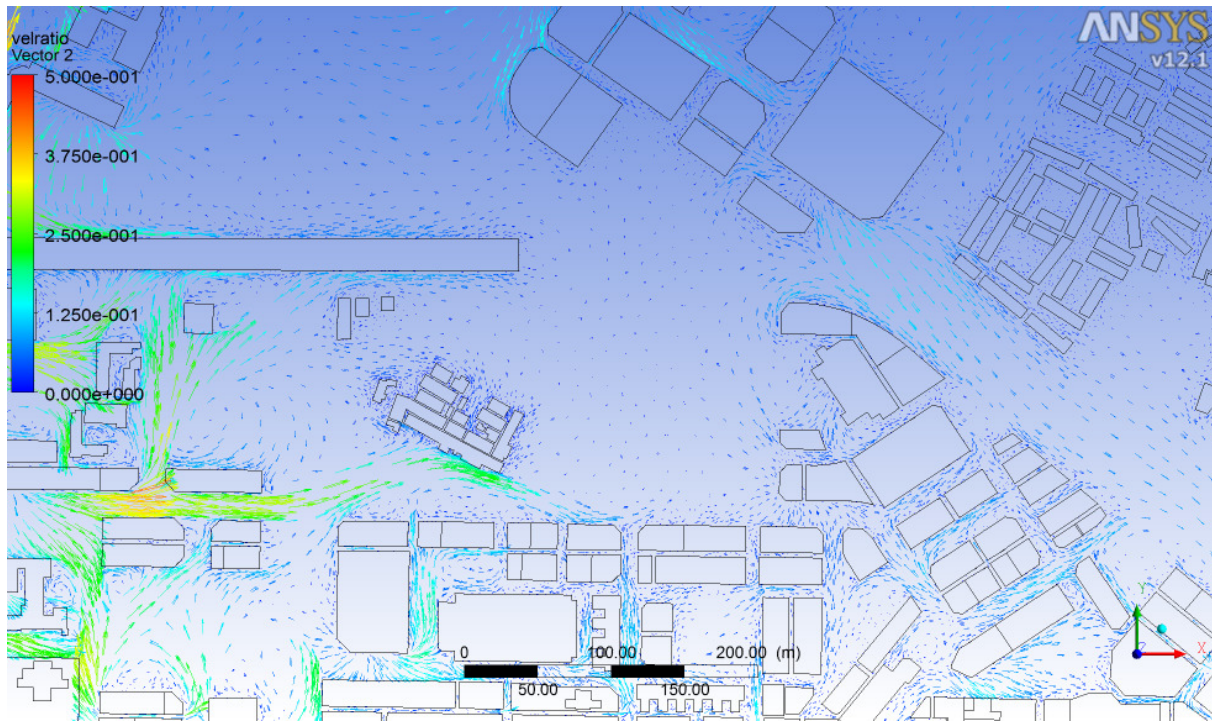
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SSW wind

Proposed Scenario



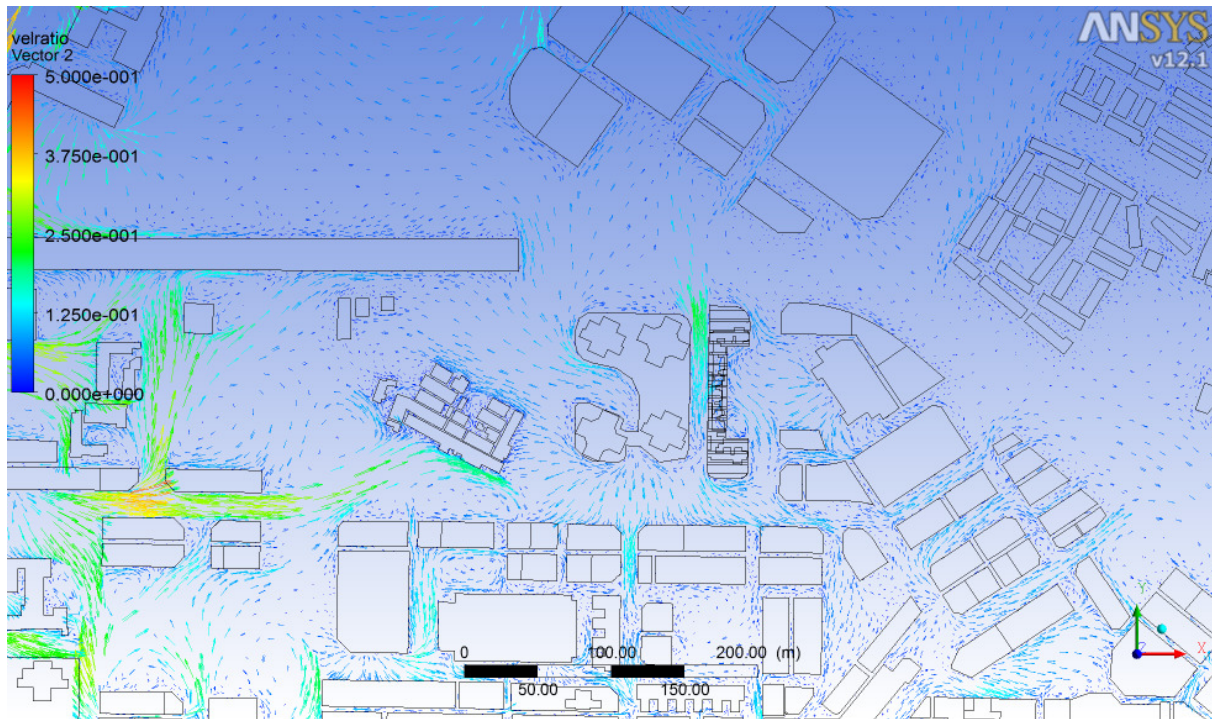
Wind Velocity Ratio (VRw') Contour (2m from the ground level) – SSW Wind

Baseline Scenario



Wind Velocity Ratio (VRw') Vector (2m from the ground level) – SSW wind

Proposed Scenario



Wind Velocity Ratio (VRw') Vector (2m from the ground level) –SSW Wind

Appendix 3
CFD Modelling Results

Yuen Long Housing AVA Results

Case ENE
Prevailing wind velocity 8.5 m/s
Prevailing wind direction 67.5 deg
Height of Anemometer 596.0 m
Wind velocity@600m 8.5 m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.50	1234.20	6.1	2.40	0.28	2.56	0.30	0.16	0.02	6.6
P2	2136.50	1219.20	6.1	2.11	0.25	2.02	0.24	-0.09	-0.01	-4.2
P3	2136.50	1204.20	6.1	1.49	0.17	0.56	0.07	-0.93	-0.11	-62.4
P4	2136.50	1189.20	6.1	0.65	0.08	0.40	0.05	-0.25	-0.03	-39.1
P5	2136.50	1174.20	6.1	0.25	0.03	0.52	0.06	0.27	0.03	106.6
P6	2136.50	1159.20	6.1	0.47	0.05	0.64	0.08	0.18	0.02	37.7
P7	2136.50	1144.20	6.1	0.55	0.06	0.75	0.09	0.19	0.02	35.1
P8	2136.50	1129.20	6.1	0.58	0.07	0.77	0.09	0.19	0.02	31.9
P9	2136.50	1114.20	6.1	0.55	0.06	0.61	0.07	0.06	0.01	11.1
P10	2136.50	1100.00	6.1	0.46	0.05	0.43	0.05	-0.03	-0.00	-6.7
P11	2151.60	1234.10	6.1	2.39	0.28	2.64	0.31	0.25	0.03	10.4
P12	2151.60	1100.00	6.1	0.47	0.06	0.59	0.07	0.12	0.01	25.9
P13	2166.50	1234.20	6.1	2.38	0.28	2.50	0.29	0.13	0.01	5.3
P14	2166.50	1100.00	6.1	0.52	0.06	0.97	0.11	0.45	0.05	85.8
P15	2181.50	1234.20	6.1	2.36	0.28	2.31	0.27	-0.05	-0.01	-2.0
P16	2181.50	1100.00	6.1	0.54	0.06	0.93	0.11	0.39	0.05	72.1
P17	2196.50	1234.20	6.1	2.37	0.28	2.25	0.26	-0.13	-0.01	-5.3
P18	2196.50	1100.00	6.1	0.52	0.06	0.91	0.11	0.39	0.05	74.9
P19	2211.50	1234.20	6.1	2.40	0.28	2.06	0.24	-0.34	-0.04	-14.3
P20	2211.50	1100.00	6.1	0.55	0.06	0.97	0.11	0.43	0.05	77.9
P21	2226.50	1234.20	6.1	2.35	0.28	1.91	0.22	-0.45	-0.05	-18.9
P22	2226.50	1100.00	6.1	0.60	0.07	0.55	0.07	-0.04	-0.01	-7.1
P23	2241.50	1234.20	6.1	2.40	0.28	2.20	0.26	-0.20	-0.02	-8.1
P24	2241.50	1100.00	6.1	0.57	0.07	0.60	0.07	0.03	0.00	5.7
P25	2256.50	1234.20	6.1	2.47	0.29	2.23	0.26	-0.24	-0.03	-9.8
P26	2256.50	1100.00	6.1	0.44	0.05	1.22	0.14	0.77	0.09	173.9
P27	2272.90	1234.20	6.1	2.50	0.29	2.25	0.26	-0.26	-0.03	-10.3
P28	2272.90	1219.20	6.1	0.82	0.10	1.22	0.14	0.40	0.05	48.9
P29	2272.90	1204.20	6.1	0.58	0.07	1.00	0.12	0.42	0.05	73.6
P30	2272.90	1189.20	6.1	0.68	0.08	1.32	0.16	0.64	0.08	94.2
P31	2272.90	1174.20	6.1	0.64	0.07	1.29	0.15	0.65	0.08	103.0
P32	2272.90	1159.20	6.1	0.46	0.05	1.10	0.13	0.64	0.07	138.3
P33	2272.90	1144.20	6.1	0.38	0.04	0.85	0.10	0.47	0.05	122.0
P34	2272.90	1129.20	6.1	1.88	0.22	0.92	0.11	-0.96	-0.11	-51.2
P35	2272.90	1114.20	6.1	0.41	0.05	1.47	0.17	1.06	0.12	259.8
P36	2272.90	1100.00	6.1	0.60	0.07	1.45	0.17	0.85	0.10	140.2

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.5	1.00	0.12	0.79	0.09	-0.21	-0.02	-21.0
O2	2229.07	1289.39	6.5	1.03	0.12	1.12	0.13	0.09	0.01	8.7
O3	2199.07	1289.92	6.5	0.65	0.08	1.25	0.15	0.60	0.07	92.1
O4	2169.34	1299.58	6.5	0.65	0.08	0.65	0.08	0.01	0.00	1.0
O5	2145.08	1318.12	6.5	1.01	0.12	1.31	0.15	0.30	0.03	29.2
O6	2319.07	1271.29	6.5	2.30	0.27	2.28	0.27	-0.02	-0.00	-0.9
O7	2289.07	1271.29	6.5	2.48	0.29	2.54	0.30	0.06	0.01	2.6
O8	2259.07	1271.29	6.5	1.99	0.23	2.15	0.25	0.16	0.02	7.9
O9	2229.07	1271.29	6.5	2.19	0.26	2.22	0.26	0.04	0.00	1.7
O10	2199.35	1271.29	6.5	2.02	0.24	2.47	0.29	0.44	0.05	21.9
O11	2168.87	1278.45	6.5	1.11	0.13	2.17	0.26	1.06	0.12	95.1
O12	2139.07	1282.45	6.5	0.82	0.10	1.93	0.23	1.11	0.13	135.6
O13	2109.05	1282.43	6.5	0.83	0.10	2.59	0.30	1.76	0.21	212.3
O14	2079.07	1282.74	6.5	1.17	0.14	1.55	0.18	0.38	0.04	32.4
O15	2046.51	1283.70	6.5	1.36	0.16	1.62	0.19	0.26	0.03	19.5
O16	2354.54	1278.59	6.5	2.25	0.26	2.22	0.26	-0.02	-0.00	-1.1
O17	2349.07	1227.72	6.5	2.88	0.34	2.80	0.33	-0.09	-0.01	-3.0
O18	2319.07	1236.40	6.5	3.27	0.38	3.19	0.37	-0.08	-0.01	-2.6
O19	2289.07	1242.55	6.5	3.11	0.37	3.06	0.36	-0.05	-0.01	-1.5
O20	2259.07	1246.21	6.5	2.83	0.33	2.59	0.30	-0.24	-0.03	-8.5
O21	2229.07	1245.87	6.5	2.67	0.31	2.41	0.28	-0.26	-0.03	-9.7
O22	2199.07	1246.21	6.5	2.59	0.31	2.48	0.29	-0.11	-0.01	-4.2
O23	2169.07	1246.21	6.5	2.53	0.30	2.55	0.30	0.02	0.00	0.8
O24	2139.07	1246.21	6.5	2.43	0.29	2.49	0.29	0.06	0.01	2.3
O25	2109.07	1246.21	6.5	2.64	0.31	2.73	0.32	0.09	0.01	3.4
O26	2079.07	1446.21	6.5	0.96	0.11	0.69	0.08	-0.27	-0.03	-28.3
O27	2049.07	1246.21	6.5	0.96	0.11	0.58	0.07	-0.38	-0.04	-39.8
O28	2118.56	1221.96	6.1	2.27	0.27	2.47	0.29	0.20	0.02	8.8
O29	2118.84	1192.74	6.1	1.13	0.13	0.64	0.08	-0.49	-0.06	-43.2
O30	2118.84	1162.74	6.1	0.38	0.04	0.33	0.04	-0.05	-0.01	-14.3

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.1	0.53	0.06	0.32	0.04	-0.21	-0.02	-39.5
O32	2118.84	1102.74	6.1	0.56	0.07	0.39	0.05	-0.16	-0.02	-29.5
O33	2118.84	1086.13	6.1	0.14	0.02	0.21	0.02	0.07	0.01	53.1
O34	2079.07	1085.70	6.1	0.23	0.03	0.10	0.01	-0.13	-0.02	-56.0
O35	2109.07	1083.75	6.1	0.08	0.01	0.21	0.03	0.14	0.02	173.3
O36	2139.07	1083.75	6.1	0.41	0.05	0.64	0.08	0.23	0.03	55.2
O37	2169.07	1083.75	6.1	0.52	0.06	0.35	0.04	-0.17	-0.02	-32.9
O38	2199.07	1083.75	6.1	0.70	0.08	1.06	0.12	0.36	0.04	51.4
O39	2229.07	1083.75	6.1	0.66	0.08	1.15	0.14	0.49	0.06	75.2
O40	2259.07	1083.75	6.1	0.50	0.06	0.93	0.11	0.43	0.05	85.7
O41	2289.07	1083.75	6.1	0.38	0.04	0.39	0.05	0.01	0.00	2.8
O42	2319.07	1083.75	6.1	1.54	0.18	1.56	0.18	0.01	0.00	0.8
O43	2349.07	1083.75	6.1	1.77	0.21	1.69	0.20	-0.08	-0.01	-4.6
O44	2319.07	1072.74	6.1	0.22	0.03	0.30	0.03	0.08	0.01	37.2
O45	2180.86	1072.74	6.1	0.13	0.01	0.67	0.08	0.54	0.06	425.2
O46	2180.56	1042.74	6.1	0.80	0.09	0.51	0.06	-0.29	-0.03	-36.3
O47	2082.46	1034.99	6.1	0.48	0.06	0.33	0.04	-0.15	-0.02	-30.7
O48	2109.42	1034.22	6.1	0.31	0.04	0.31	0.04	-0.00	-0.00	-1.1
O49	2139.42	1034.22	6.1	0.21	0.03	0.53	0.06	0.31	0.04	146.8
O50	2169.07	1034.22	6.1	0.40	0.05	0.20	0.02	-0.20	-0.02	-49.5
O51	2199.07	1034.22	6.1	0.80	0.09	0.28	0.03	-0.53	-0.06	-65.3
O52	2229.07	1034.42	6.1	0.43	0.05	0.25	0.03	-0.18	-0.02	-41.2
O53	2259.07	1034.42	6.1	0.37	0.04	0.26	0.03	-0.10	-0.01	-28.5
O54	2289.07	1034.42	6.1	0.42	0.05	0.34	0.04	-0.07	-0.01	-17.3
O55	2267.03	1072.74	6.1	0.14	0.02	1.42	0.17	1.28	0.15	908.6
O56	2267.02	1042.74	6.1	0.37	0.04	1.09	0.13	0.72	0.08	194.2
O57	2319.07	1042.74	6.1	0.49	0.06	0.72	0.08	0.22	0.03	45.8
O58	2366.02	1149.93	6.1	3.01	0.35	2.68	0.32	-0.34	-0.04	-11.1
O59	2341.30	1132.72	6.1	2.73	0.32	2.15	0.25	-0.57	-0.07	-21.0
O60	2318.95	1124.44	6.1	2.63	0.31	2.21	0.26	-0.43	-0.05	-16.2
O61	2288.35	1132.74	6.1	0.70	0.08	0.09	0.01	-0.61	-0.07	-87.2
O62	2289.07	1162.74	6.1	0.58	0.07	1.30	0.15	0.72	0.08	123.6
O63	2289.07	1192.74	6.1	0.50	0.06	0.66	0.08	0.16	0.02	32.5
O64	2286.03	1220.99	6.1	0.19	0.02	0.13	0.02	-0.06	-0.01	-30.3
O65	2180.26	1012.74	6.1	0.70	0.08	0.88	0.10	0.17	0.02	24.6
O66	2229.07	1012.74	6.1	0.63	0.07	0.35	0.04	-0.29	-0.03	-45.5
O67	2266.10	1012.74	6.1	0.40	0.05	0.70	0.08	0.30	0.03	74.5

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.030	0.047
	Maximum	0.295	0.310
	Average	0.137	0.153
	Change	0.017	
	% Change	12.4	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.009	0.011
	Maximum	0.385	0.375
	Average	0.138	0.151
	Change	0.013	
	% Change	9.3	

Yuen Long Housing AVA Results

Case	NE
Prevailing wind velocity	8.128 m/s
Prevailing wind direction	45 deg
Height of Anemometer	596 m
Wind velocity@600m	8.15 m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	1.39	0.17	1.90	0.23	0.50	0.06	36.2
P2	2136.5	1219.2	6.1	1.47	0.18	1.61	0.20	0.15	0.02	10.0
P3	2136.5	1204.2	6.1	1.49	0.18	0.78	0.10	-0.71	-0.09	-47.5
P4	2136.5	1189.2	6.1	1.48	0.18	0.34	0.04	-1.14	-0.14	-76.8
P5	2136.5	1174.2	6.1	1.46	0.18	0.53	0.07	-0.92	-0.11	-63.3
P6	2136.5	1159.2	6.1	1.41	0.17	0.55	0.07	-0.85	-0.10	-60.6
P7	2136.5	1144.2	6.1	1.39	0.17	0.17	0.02	-1.23	-0.15	-88.0
P8	2136.5	1129.2	6.1	1.37	0.17	0.24	0.03	-1.14	-0.14	-82.7
P9	2136.5	1114.2	6.1	1.25	0.15	0.20	0.02	-1.05	-0.13	-84.0
P10	2136.5	1100.0	6.1	0.97	0.12	0.79	0.10	-0.18	-0.02	-18.6
P11	2151.6	1234.1	6.1	1.50	0.18	1.96	0.24	0.46	0.06	30.5
P12	2151.6	1100.0	6.1	1.04	0.13	0.68	0.08	-0.37	-0.04	-35.1
P13	2166.5	1234.2	6.1	1.62	0.20	1.83	0.22	0.21	0.03	13.0
P14	2166.5	1100.0	6.1	1.06	0.13	0.66	0.08	-0.40	-0.05	-38.1
P15	2181.5	1234.2	6.1	1.72	0.21	1.62	0.20	-0.10	-0.01	-5.9
P16	2181.5	1100.0	6.1	1.11	0.14	0.60	0.07	-0.51	-0.06	-45.8
P17	2196.5	1234.2	6.1	1.83	0.22	1.55	0.19	-0.28	-0.03	-15.3
P18	2196.5	1100.0	6.1	0.93	0.11	0.53	0.06	-0.40	-0.05	-43.4
P19	2211.5	1234.2	6.1	1.90	0.23	1.49	0.18	-0.41	-0.05	-21.5
P20	2211.5	1100.0	6.1	0.64	0.08	0.37	0.05	-0.27	-0.03	-42.4
P21	2226.5	1234.2	6.1	1.95	0.24	1.44	0.18	-0.51	-0.06	-26.1
P22	2226.5	1100.0	6.1	0.35	0.04	0.95	0.12	0.60	0.07	172.7
P23	2241.5	1234.2	6.1	2.01	0.25	1.76	0.22	-0.25	-0.03	-12.6
P24	2241.5	1100.0	6.1	0.35	0.04	0.57	0.07	0.22	0.03	64.5
P25	2256.5	1234.2	6.1	2.11	0.26	1.76	0.22	-0.35	-0.04	-16.5
P26	2256.5	1100.0	6.1	0.38	0.05	0.88	0.11	0.50	0.06	131.8
P27	2272.9	1234.2	6.1	2.28	0.28	1.75	0.21	-0.53	-0.07	-23.2
P28	2272.9	1219.2	6.1	1.24	0.15	1.34	0.16	0.09	0.01	7.6
P29	2272.9	1204.2	6.1	0.89	0.11	1.64	0.20	0.74	0.09	83.2
P30	2272.9	1189.2	6.1	0.64	0.08	1.52	0.19	0.88	0.11	137.5
P31	2272.9	1174.2	6.1	0.65	0.08	1.06	0.13	0.40	0.05	61.4
P32	2272.9	1159.2	6.1	0.70	0.09	0.83	0.10	0.13	0.02	19.1
P33	2272.9	1144.2	6.1	0.51	0.06	1.07	0.13	0.56	0.07	109.6
P34	2272.9	1129.2	6.1	1.43	0.18	1.09	0.13	-0.34	-0.04	-23.9
P35	2272.9	1114.2	6.1	0.28	0.03	1.32	0.16	1.04	0.13	369.9
P36	2272.9	1100.0	6.1	0.33	0.04	1.32	0.16	0.99	0.12	300.5

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.50	0.93	0.11	0.80	0.10	-0.13	-0.02	-13.9
O2	2229.07	1289.39	6.50	1.76	0.22	1.75	0.21	-0.01	-0.00	-0.7
O3	2199.07	1289.92	6.50	1.54	0.19	1.65	0.20	0.11	0.01	7.3
O4	2169.34	1299.58	6.50	1.14	0.14	1.60	0.20	0.46	0.06	40.4
O5	2145.08	1318.12	6.50	1.10	0.14	1.77	0.22	0.67	0.08	60.4
O6	2319.07	1271.29	6.50	1.99	0.24	1.85	0.23	-0.14	-0.02	-6.9
O7	2289.07	1271.29	6.50	2.34	0.29	2.11	0.26	-0.22	-0.03	-9.5
O8	2259.07	1271.29	6.50	2.11	0.26	1.91	0.23	-0.20	-0.02	-9.5
O9	2229.07	1271.29	6.50	1.92	0.24	1.78	0.22	-0.14	-0.02	-7.1
O10	2199.35	1271.29	6.50	1.68	0.21	1.74	0.21	0.06	0.01	3.4
O11	2168.87	1278.45	6.50	1.39	0.17	1.68	0.21	0.28	0.03	20.1
O12	2139.07	1282.45	6.50	1.21	0.15	1.64	0.20	0.43	0.05	35.6
O13	2109.05	1282.43	6.50	1.29	0.16	1.87	0.23	0.58	0.07	45.3
O14	2079.07	1282.74	6.50	1.12	0.14	0.77	0.09	-0.35	-0.04	-31.2
O15	2046.51	1283.70	6.50	1.07	0.13	0.82	0.10	-0.25	-0.03	-23.3
O16	2354.54	1278.59	6.50	1.57	0.19	1.35	0.17	-0.21	-0.03	-13.7
O17	2349.07	1227.72	6.50	2.28	0.28	2.22	0.27	-0.06	-0.01	-2.7
O18	2319.07	1236.40	6.50	2.50	0.31	2.39	0.29	-0.11	-0.01	-4.4
O19	2289.07	1242.55	6.50	2.57	0.31	2.35	0.29	-0.22	-0.03	-8.6
O20	2259.07	1246.21	6.50	2.15	0.26	1.82	0.22	-0.33	-0.04	-15.2
O21	2229.07	1245.87	6.50	1.98	0.24	1.72	0.21	-0.26	-0.03	-13.0
O22	2199.07	1246.21	6.50	1.81	0.22	1.74	0.21	-0.07	-0.01	-3.9
O23	2169.07	1246.21	6.50	1.57	0.19	1.83	0.22	0.26	0.03	16.8
O24	2139.07	1246.21	6.50	1.30	0.16	1.84	0.23	0.55	0.07	42.1
O25	2109.07	1246.21	6.50	1.21	0.15	1.93	0.24	0.72	0.09	59.2
O26	2079.07	1446.21	6.50	0.46	0.06	0.63	0.08	0.17	0.02	36.5
O27	2049.07	1246.21	6.50	0.35	0.04	0.20	0.02	-0.15	-0.02	-42.4
O28	2118.56	1221.96	6.10	1.37	0.17	1.83	0.22	0.46	0.06	33.8
O29	2118.84	1192.74	6.10	1.34	0.16	0.73	0.09	-0.61	-0.08	-45.7
O30	2118.84	1162.74	6.10	1.11	0.14	0.34	0.04	-0.77	-0.10	-69.5

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.10	1.20	0.15	0.54	0.07	-0.67	-0.08	-55.4
O32	2118.84	1102.74	6.10	1.06	0.13	0.72	0.09	-0.34	-0.04	-32.2
O33	2118.84	1086.13	6.10	0.54	0.07	0.92	0.11	0.38	0.05	71.2
O34	2079.07	1085.70	6.10	1.31	0.16	1.03	0.13	-0.29	-0.03	-21.7
O35	2109.07	1083.75	6.10	0.80	0.10	0.79	0.10	-0.01	-0.00	-1.6
O36	2139.07	1083.75	6.10	0.99	0.12	0.75	0.09	-0.24	-0.03	-24.1
O37	2169.07	1083.75	6.10	0.67	0.08	0.70	0.09	0.04	0.00	5.5
O38	2199.07	1083.75	6.10	0.47	0.06	0.47	0.06	-0.00	-0.00	-0.0
O39	2229.07	1083.75	6.10	0.81	0.10	0.38	0.05	-0.43	-0.05	-53.1
O40	2259.07	1083.75	6.10	0.77	0.09	0.64	0.08	-0.13	-0.02	-16.7
O41	2289.07	1083.75	6.10	0.21	0.03	0.96	0.12	0.76	0.09	365.1
O42	2319.07	1083.75	6.10	0.48	0.06	0.46	0.06	-0.02	-0.00	-4.7
O43	2349.07	1083.75	6.10	0.80	0.10	0.90	0.11	0.10	0.01	12.7
O44	2319.07	1072.74	6.10	0.17	0.02	0.76	0.09	0.58	0.07	337.8
O45	2180.86	1072.74	6.10	1.36	0.17	0.19	0.02	-1.17	-0.14	-85.9
O46	2180.56	1042.74	6.10	0.20	0.03	0.38	0.05	0.18	0.02	87.2
O47	2082.46	1034.99	6.10	0.55	0.07	0.14	0.02	-0.41	-0.05	-74.0
O48	2109.42	1034.22	6.10	0.11	0.01	0.02	0.00	-0.09	-0.01	-83.0
O49	2139.42	1034.22	6.10	0.57	0.07	0.11	0.01	-0.46	-0.06	-80.4
O50	2169.07	1034.22	6.10	0.77	0.09	0.12	0.01	-0.65	-0.08	-84.3
O51	2199.07	1034.22	6.10	0.20	0.02	0.12	0.01	-0.07	-0.01	-37.8
O52	2229.07	1034.42	6.10	0.34	0.04	0.21	0.03	-0.13	-0.02	-39.0
O53	2259.07	1034.42	6.10	0.21	0.03	0.26	0.03	0.06	0.01	27.8
O54	2289.07	1034.42	6.10	0.20	0.02	0.17	0.02	-0.03	-0.00	-14.0
O55	2267.03	1072.74	6.10	0.19	0.02	1.25	0.15	1.06	0.13	568.0
O56	2267.02	1042.74	6.10	0.42	0.05	0.92	0.11	0.50	0.06	120.0
O57	2319.07	1042.74	6.10	0.11	0.01	0.10	0.01	-0.02	-0.00	-14.3
O58	2366.02	1149.93	6.10	2.27	0.28	1.96	0.24	-0.30	-0.04	-13.4
O59	2341.30	1132.72	6.10	2.06	0.25	1.53	0.19	-0.53	-0.06	-25.6
O60	2318.95	1124.44	6.10	1.97	0.24	1.49	0.18	-0.49	-0.06	-24.6
O61	2288.35	1132.74	6.10	0.66	0.08	0.33	0.04	-0.33	-0.04	-49.9
O62	2289.07	1162.74	6.10	0.80	0.10	1.20	0.15	0.40	0.05	50.0
O63	2289.07	1192.74	6.10	0.65	0.08	0.94	0.12	0.29	0.04	45.4
O64	2286.03	1220.99	6.10	0.34	0.04	0.27	0.03	-0.07	-0.01	-21.4
O65	2180.26	1012.74	6.10	0.21	0.03	0.57	0.07	0.35	0.04	164.3
O66	2229.07	1012.74	6.10	0.22	0.03	0.24	0.03	0.03	0.00	12.3
O67	2266.10	1012.74	6.10	0.35	0.04	0.32	0.04	-0.03	-0.00	-8.2

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.035	0.021
	Maximum	0.280	0.240
	Average	0.147	0.132
	Change	-0.015	
	% Change	-10.3	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.014	0.002
	Maximum	0.315	0.293
	Average	0.136	0.129
	Change	-0.007	
	% Change	-5.3	

Yuen Long Housing AVA Results

Case	E
Prevailing wind velocity	7.468 m/s
Prevailing wind direction	90 deg
Height of Anemometer	596 m
Wind velocity@600m	7.49 m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	1.51	0.20	1.68	0.22	0.17	0.02	11.0
P2	2136.5	1219.2	6.1	1.62	0.22	1.61	0.21	-0.01	-0.00	-0.5
P3	2136.5	1204.2	6.1	1.21	0.16	0.39	0.05	-0.83	-0.11	-68.2
P4	2136.5	1189.2	6.1	0.40	0.05	0.26	0.04	-0.14	-0.02	-34.8
P5	2136.5	1174.2	6.1	0.47	0.06	0.25	0.03	-0.23	-0.03	-47.5
P6	2136.5	1159.2	6.1	0.65	0.09	0.22	0.03	-0.43	-0.06	-66.1
P7	2136.5	1144.2	6.1	0.71	0.10	0.63	0.08	-0.08	-0.01	-11.5
P8	2136.5	1129.2	6.1	0.83	0.11	0.89	0.12	0.06	0.01	6.6
P9	2136.5	1114.2	6.1	0.97	0.13	1.04	0.14	0.07	0.01	7.5
P10	2136.5	1100.0	6.1	1.02	0.14	0.93	0.12	-0.10	-0.01	-9.5
P11	2151.6	1234.1	6.1	1.59	0.21	1.80	0.24	0.20	0.03	12.8
P12	2151.6	1100.0	6.1	0.87	0.12	0.80	0.11	-0.06	-0.01	-7.4
P13	2166.5	1234.2	6.1	1.67	0.22	1.76	0.23	0.09	0.01	5.4
P14	2166.5	1100.0	6.1	0.66	0.09	0.64	0.09	-0.02	-0.00	-2.6
P15	2181.5	1234.2	6.1	1.72	0.23	1.73	0.23	0.01	0.00	0.5
P16	2181.5	1100.0	6.1	0.53	0.07	0.56	0.08	0.04	0.00	7.0
P17	2196.5	1234.2	6.1	1.86	0.25	1.89	0.25	0.03	0.00	1.8
P18	2196.5	1100.0	6.1	0.46	0.06	0.63	0.08	0.16	0.02	35.7
P19	2211.5	1234.2	6.1	1.99	0.27	1.80	0.24	-0.19	-0.03	-9.5
P20	2211.5	1100.0	6.1	0.36	0.05	0.29	0.04	-0.07	-0.01	-20.4
P21	2226.5	1234.2	6.1	1.94	0.26	1.69	0.23	-0.25	-0.03	-12.9
P22	2226.5	1100.0	6.1	0.34	0.05	0.49	0.07	0.15	0.02	44.3
P23	2241.5	1234.2	6.1	1.98	0.27	1.50	0.20	-0.49	-0.06	-24.5
P24	2241.5	1100.0	6.1	0.33	0.04	0.43	0.06	0.10	0.01	31.3
P25	2256.5	1234.2	6.1	2.09	0.28	1.42	0.19	-0.67	-0.09	-31.9
P26	2256.5	1100.0	6.1	0.53	0.07	0.68	0.09	0.15	0.02	27.4
P27	2272.9	1234.2	6.1	2.20	0.29	1.26	0.17	-0.94	-0.13	-42.9
P28	2272.9	1219.2	6.1	0.63	0.08	0.45	0.06	-0.18	-0.02	-29.1
P29	2272.9	1204.2	6.1	0.83	0.11	0.86	0.12	0.03	0.00	3.8
P30	2272.9	1189.2	6.1	0.80	0.11	0.82	0.11	0.03	0.00	3.3
P31	2272.9	1174.2	6.1	0.63	0.08	0.72	0.10	0.09	0.01	15.0
P32	2272.9	1159.2	6.1	0.43	0.06	0.56	0.08	0.13	0.02	31.2
P33	2272.9	1144.2	6.1	0.35	0.05	0.51	0.07	0.16	0.02	46.5
P34	2272.9	1129.2	6.1	0.74	0.10	1.24	0.17	0.50	0.07	68.3
P35	2272.9	1114.2	6.1	0.68	0.09	0.60	0.08	-0.07	-0.01	-10.8
P36	2272.9	1100.0	6.1	1.12	0.15	1.12	0.15	-0.00	-0.00	-0.0

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.1	1312.7	6.5	0.97	0.13	0.88	0.12	-0.09	-0.01	-9.0
O2	2229.1	1289.4	6.5	1.03	0.14	1.01	0.13	-0.03	-0.00	-2.5
O3	2199.1	1289.9	6.5	0.64	0.08	0.68	0.09	0.04	0.01	6.5
O4	2169.3	1299.6	6.5	0.35	0.05	0.32	0.04	-0.03	-0.00	-8.3
O5	2145.1	1318.1	6.5	0.82	0.11	0.73	0.10	-0.09	-0.01	-10.9
O6	2319.1	1271.3	6.5	2.34	0.31	2.38	0.32	0.04	0.01	1.9
O7	2289.1	1271.3	6.5	1.33	0.18	1.89	0.25	0.56	0.08	42.4
O8	2259.1	1271.3	6.5	0.75	0.10	0.91	0.12	0.15	0.02	20.5
O9	2229.1	1271.3	6.5	1.25	0.17	1.25	0.17	-0.00	-0.00	-0.2
O10	2199.4	1271.3	6.5	1.26	0.17	1.31	0.18	0.05	0.01	4.1
O11	2168.9	1278.4	6.5	0.70	0.09	0.85	0.11	0.15	0.02	22.2
O12	2139.1	1282.5	6.5	0.43	0.06	0.54	0.07	0.11	0.01	24.4
O13	2109.1	1282.4	6.5	0.55	0.07	0.69	0.09	0.14	0.02	26.2
O14	2079.1	1282.7	6.5	0.83	0.11	0.85	0.11	0.02	0.00	2.4
O15	2046.5	1283.7	6.5	0.95	0.13	0.96	0.13	0.01	0.00	0.9
O16	2354.5	1278.6	6.5	2.78	0.37	2.75	0.37	-0.03	-0.00	-1.2
O17	2349.1	1227.7	6.5	2.54	0.34	2.51	0.33	-0.03	-0.00	-1.1
O18	2319.1	1236.4	6.5	2.80	0.37	2.75	0.37	-0.05	-0.01	-1.8
O19	2289.1	1242.5	6.5	2.62	0.35	2.50	0.33	-0.12	-0.02	-4.5
O20	2259.1	1246.2	6.5	2.28	0.30	2.34	0.31	0.06	0.01	2.5
O21	2229.1	1245.9	6.5	1.88	0.25	2.04	0.27	0.16	0.02	8.3
O22	2199.1	1246.2	6.5	1.66	0.22	1.71	0.23	0.05	0.01	2.9
O23	2169.1	1246.2	6.5	1.57	0.21	1.61	0.21	0.04	0.01	2.4
O24	2139.1	1246.2	6.5	1.33	0.18	1.50	0.20	0.17	0.02	12.8
O25	2109.1	1246.2	6.5	1.11	0.15	1.19	0.16	0.07	0.01	6.5
O26	2079.1	1446.2	6.5	0.79	0.11	0.54	0.07	-0.25	-0.03	-31.5
O27	2049.1	1246.2	6.5	0.10	0.01	0.20	0.03	0.10	0.01	104.5
O28	2118.6	1222.0	6.1	1.56	0.21	1.65	0.22	0.09	0.01	5.9
O29	2118.8	1192.7	6.1	0.74	0.10	0.58	0.08	-0.16	-0.02	-21.5
O30	2118.8	1162.7	6.1	1.00	0.13	1.00	0.13	0.00	0.00	0.3

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.8	1132.7	6.1	0.81	0.11	0.88	0.12	0.07	0.01	8.9
O32	2118.8	1102.7	6.1	0.95	0.13	0.74	0.10	-0.21	-0.03	-22.0
O33	2118.8	1086.1	6.1	0.22	0.03	0.32	0.04	0.10	0.01	48.3
O34	2079.1	1085.7	6.1	0.55	0.07	0.33	0.04	-0.21	-0.03	-39.1
O35	2109.1	1083.7	6.1	0.21	0.03	0.18	0.02	-0.03	-0.00	-16.4
O36	2139.1	1083.8	6.1	0.59	0.08	0.66	0.09	0.06	0.01	10.7
O37	2169.1	1083.7	6.1	0.74	0.10	0.68	0.09	-0.06	-0.01	-7.6
O38	2199.1	1083.7	6.1	0.84	0.11	0.26	0.03	-0.59	-0.08	-69.5
O39	2229.1	1083.7	6.1	0.69	0.09	0.31	0.04	-0.38	-0.05	-55.0
O40	2259.1	1083.8	6.1	0.40	0.05	0.24	0.03	-0.16	-0.02	-40.7
O41	2289.1	1083.7	6.1	0.47	0.06	0.27	0.04	-0.20	-0.03	-41.9
O42	2319.1	1083.7	6.1	1.57	0.21	1.46	0.19	-0.11	-0.01	-7.0
O43	2349.1	1083.8	6.1	2.02	0.27	1.97	0.26	-0.05	-0.01	-2.5
O44	2319.1	1072.7	6.1	1.11	0.15	1.10	0.15	-0.00	-0.00	-0.3
O45	2180.9	1072.7	6.1	1.20	0.16	1.25	0.17	0.05	0.01	3.9
O46	2180.6	1042.7	6.1	0.59	0.08	0.67	0.09	0.09	0.01	14.7
O47	2082.5	1035.0	6.1	0.38	0.05	0.37	0.05	-0.01	-0.00	-3.7
O48	2109.4	1034.2	6.1	0.38	0.05	0.44	0.06	0.06	0.01	16.3
O49	2139.4	1034.2	6.1	0.85	0.11	0.79	0.11	-0.06	-0.01	-6.8
O50	2169.1	1034.2	6.1	0.25	0.03	0.24	0.03	-0.00	-0.00	-1.2
O51	2199.1	1034.2	6.1	0.48	0.06	0.22	0.03	-0.26	-0.04	-54.8
O52	2229.1	1034.4	6.1	0.44	0.06	0.18	0.02	-0.26	-0.03	-58.2
O53	2259.1	1034.4	6.1	0.44	0.06	0.12	0.02	-0.32	-0.04	-73.5
O54	2289.1	1034.4	6.1	0.31	0.04	0.42	0.06	0.10	0.01	33.2
O55	2267.0	1072.7	6.1	0.49	0.07	0.69	0.09	0.20	0.03	40.3
O56	2267.0	1042.7	6.1	0.59	0.08	0.69	0.09	0.10	0.01	16.4
O57	2319.1	1042.7	6.1	0.96	0.13	0.98	0.13	0.02	0.00	1.8
O58	2366.0	1149.9	6.1	2.77	0.37	2.63	0.35	-0.14	-0.02	-5.1
O59	2341.3	1132.7	6.1	2.38	0.32	2.11	0.28	-0.27	-0.04	-11.1
O60	2319.0	1124.4	6.1	2.40	0.32	2.29	0.31	-0.11	-0.01	-4.6
O61	2288.4	1132.7	6.1	0.28	0.04	0.31	0.04	0.03	0.00	12.1
O62	2289.1	1162.7	6.1	0.47	0.06	0.51	0.07	0.05	0.01	10.4
O63	2289.1	1192.7	6.1	0.71	0.09	0.76	0.10	0.05	0.01	7.4
O64	2286.0	1221.0	6.1	0.22	0.03	0.40	0.05	0.17	0.02	78.7
O65	2180.3	1012.7	6.1	0.13	0.02	0.39	0.05	0.26	0.03	194.9
O66	2229.1	1012.7	6.1	0.28	0.04	0.29	0.04	0.00	0.00	0.6
O67	2266.1	1012.7	6.1	0.13	0.02	0.20	0.03	0.07	0.01	50.0

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.044	0.029
	Maximum	0.294	0.252
	Average	0.136	0.127
	Change	-0.010	
	% Change	-7.0	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.013	0.016
	Maximum	0.374	0.367
	Average	0.135	0.130
	Change	-0.004	
	% Change	-3.2	

Yuen Long Housing AVA Results

Case	NNE	
Prevailing wind velocity	9.356	m/s
Prevailing wind direction	22.5	deg
Height of Anemometer	596	m
Wind velocity@600m	9.38	m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	0.67	0.07	1.69	0.18	1.03	0.11	154.3
P2	2136.5	1219.2	6.1	0.52	0.06	1.41	0.15	0.89	0.09	171.5
P3	2136.5	1204.2	6.1	0.38	0.04	1.12	0.12	0.74	0.08	194.3
P4	2136.5	1189.2	6.1	0.18	0.02	0.91	0.10	0.73	0.08	403.9
P5	2136.5	1174.2	6.1	0.14	0.02	0.81	0.09	0.67	0.07	470.8
P6	2136.5	1159.2	6.1	0.33	0.04	1.07	0.11	0.74	0.08	222.7
P7	2136.5	1144.2	6.1	0.36	0.04	1.32	0.14	0.96	0.10	270.0
P8	2136.5	1129.2	6.1	0.48	0.05	1.43	0.15	0.95	0.10	198.0
P9	2136.5	1114.2	6.1	0.31	0.03	0.94	0.10	0.63	0.07	206.3
P10	2136.5	1100.0	6.1	0.29	0.03	1.25	0.13	0.97	0.10	337.9
P11	2151.6	1234.1	6.1	0.68	0.07	1.64	0.18	0.97	0.10	143.2
P12	2151.6	1100.0	6.1	0.35	0.04	1.19	0.13	0.85	0.09	244.4
P13	2166.5	1234.2	6.1	0.76	0.08	1.41	0.15	0.65	0.07	86.4
P14	2166.5	1100.0	6.1	0.50	0.05	1.15	0.12	0.65	0.07	131.5
P15	2181.5	1234.2	6.1	0.88	0.09	1.15	0.12	0.27	0.03	30.9
P16	2181.5	1100.0	6.1	0.67	0.07	1.04	0.11	0.37	0.04	54.8
P17	2196.5	1234.2	6.1	1.03	0.11	0.81	0.09	-0.23	-0.02	-22.2
P18	2196.5	1100.0	6.1	0.76	0.08	0.91	0.10	0.15	0.02	19.4
P19	2211.5	1234.2	6.1	1.21	0.13	0.97	0.10	-0.25	-0.03	-20.3
P20	2211.5	1100.0	6.1	0.74	0.08	0.61	0.06	-0.13	-0.01	-17.7
P21	2226.5	1234.2	6.1	1.38	0.15	1.02	0.11	-0.36	-0.04	-26.1
P22	2226.5	1100.0	6.1	0.63	0.07	1.67	0.18	1.03	0.11	163.7
P23	2241.5	1234.2	6.1	1.53	0.16	0.44	0.05	-1.09	-0.12	-71.1
P24	2241.5	1100.0	6.1	0.61	0.07	0.83	0.09	0.22	0.02	35.5
P25	2256.5	1234.2	6.1	1.59	0.17	0.50	0.05	-1.10	-0.12	-68.8
P26	2256.5	1100.0	6.1	0.72	0.08	0.76	0.08	0.04	0.00	5.1
P27	2272.9	1234.2	6.1	1.49	0.16	0.43	0.05	-1.07	-0.11	-71.4
P28	2272.9	1219.2	6.1	0.98	0.10	0.35	0.04	-0.63	-0.07	-64.5
P29	2272.9	1204.2	6.1	0.92	0.10	0.46	0.05	-0.46	-0.05	-49.7
P30	2272.9	1189.2	6.1	0.81	0.09	0.71	0.08	-0.10	-0.01	-12.4
P31	2272.9	1174.2	6.1	0.69	0.07	0.75	0.08	0.07	0.01	9.5
P32	2272.9	1159.2	6.1	0.66	0.07	1.28	0.14	0.62	0.07	93.1
P33	2272.9	1144.2	6.1	0.54	0.06	1.27	0.14	0.73	0.08	134.5
P34	2272.9	1129.2	6.1	0.47	0.05	1.13	0.12	0.66	0.07	140.1
P35	2272.9	1114.2	6.1	1.01	0.11	1.19	0.13	0.18	0.02	17.5
P36	2272.9	1100.0	6.1	1.06	0.11	1.24	0.13	0.17	0.02	16.4

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.50	0.82	0.09	5.99E-01	0.06	-0.22	-0.02	-27.0
O2	2229.07	1289.39	6.50	1.29	0.14	4.04E-01	0.04	-0.89	-0.09	-68.8
O3	2199.07	1289.92	6.50	1.05	0.11	1.19E+00	0.13	0.14	0.02	13.7
O4	2169.34	1299.58	6.50	0.78	0.08	1.04E+00	0.11	0.26	0.03	33.2
O5	2145.08	1318.12	6.50	0.29	0.03	9.70E-01	0.10	0.68	0.07	239.7
O6	2319.07	1271.29	6.50	2.05	0.22	8.23E-01	0.09	-1.22	-0.13	-59.8
O7	2289.07	1271.29	6.50	1.91	0.20	6.12E-01	0.07	-1.30	-0.14	-68.0
O8	2259.07	1271.29	6.50	1.80	0.19	4.18E-01	0.04	-1.38	-0.15	-76.8
O9	2229.07	1271.29	6.50	1.56	0.17	7.45E-01	0.08	-0.81	-0.09	-52.1
O10	2199.35	1271.29	6.50	1.23	0.13	1.52E+00	0.16	0.28	0.03	22.7
O11	2168.87	1278.45	6.50	0.95	0.10	1.40E+00	0.15	0.45	0.05	47.5
O12	2139.07	1282.45	6.50	0.70	0.07	1.13E+00	0.12	0.42	0.05	60.3
O13	2109.05	1282.43	6.50	0.77	0.08	5.93E-01	0.06	-0.18	-0.02	-23.4
O14	2079.07	1282.74	6.50	0.97	0.10	6.89E-01	0.07	-0.28	-0.03	-28.7
O15	2046.51	1283.70	6.50	0.94	0.10	4.30E-01	0.05	-0.51	-0.05	-54.2
O16	2354.54	1278.59	6.50	1.80	0.19	9.27E-01	0.10	-0.87	-0.09	-48.5
O17	2349.07	1227.72	6.50	2.09	0.22	1.38E+00	0.15	-0.71	-0.08	-34.0
O18	2319.07	1236.40	6.50	1.92	0.20	9.27E-01	0.10	-0.99	-0.11	-51.8
O19	2289.07	1242.55	6.50	1.85	0.20	6.73E-01	0.07	-1.17	-0.13	-63.6
O20	2259.07	1246.21	6.50	1.82	0.19	4.37E-01	0.05	-1.38	-0.15	-75.9
O21	2229.07	1245.87	6.50	1.54	0.16	1.17E+00	0.13	-0.37	-0.04	-23.9
O22	2199.07	1246.21	6.50	1.19	0.13	1.56E+00	0.17	0.37	0.04	31.2
O23	2169.07	1246.21	6.50	0.87	0.09	1.59E+00	0.17	0.72	0.08	82.0
O24	2139.07	1246.21	6.50	0.75	0.08	1.66E+00	0.18	0.91	0.10	122.4
O25	2109.07	1246.21	6.50	0.74	0.08	1.69E+00	0.18	0.95	0.10	128.6
O26	2079.07	1446.21	6.50	0.63	0.07	5.76E-01	0.06	-0.05	-0.01	-8.1
O27	2049.07	1246.21	6.50	0.38	0.04	1.09E+00	0.12	0.71	0.08	184.5
O28	2118.56	1221.96	6.10	0.65	0.07	1.61E+00	0.17	0.96	0.10	147.2
O29	2118.84	1192.74	6.10	0.25	0.03	1.27E+00	0.14	1.02	0.11	418.1
O30	2118.84	1162.74	6.10	0.38	0.04	1.33E+00	0.14	0.95	0.10	251.0

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.10	0.32	0.03	6.08E-01	0.06	0.28	0.03	87.2
O32	2118.84	1102.74	6.10	0.29	0.03	1.22E+00	0.13	0.93	0.10	325.0
O33	2118.84	1086.13	6.10	0.66	0.07	1.02E+00	0.11	0.36	0.04	54.6
O34	2079.07	1085.70	6.10	0.55	0.06	6.66E-01	0.07	0.12	0.01	21.8
O35	2109.07	1083.75	6.10	0.48	0.05	6.57E-01	0.07	0.18	0.02	37.7
O36	2139.07	1083.75	6.10	0.85	0.09	1.24E+00	0.13	0.39	0.04	45.5
O37	2169.07	1083.75	6.10	0.95	0.10	1.14E+00	0.12	0.19	0.02	19.9
O38	2199.07	1083.75	6.10	1.06	0.11	7.22E-01	0.08	-0.33	-0.04	-31.6
O39	2229.07	1083.75	6.10	0.28	0.03	8.48E-01	0.09	0.57	0.06	202.7
O40	2259.07	1083.75	6.10	0.85	0.09	4.66E-01	0.05	-0.38	-0.04	-45.1
O41	2289.07	1083.75	6.10	0.89	0.09	1.17E+00	0.12	0.28	0.03	31.5
O42	2319.07	1083.75	6.10	0.66	0.07	6.37E-01	0.07	-0.03	-0.00	-3.8
O43	2349.07	1083.75	6.10	0.92	0.10	1.02E+00	0.11	0.10	0.01	11.1
O44	2319.07	1072.74	6.10	0.49	0.05	9.44E-01	0.10	0.45	0.05	92.7
O45	2180.86	1072.74	6.10	0.21	0.02	1.59E-01	0.02	-0.05	-0.01	-23.7
O46	2180.56	1042.74	6.10	0.91	0.10	5.21E-01	0.06	-0.38	-0.04	-42.5
O47	2082.46	1034.99	6.10	0.43	0.05	7.14E-01	0.08	0.28	0.03	65.8
O48	2109.42	1034.22	6.10	0.22	0.02	4.22E-01	0.04	0.20	0.02	93.5
O49	2139.42	1034.22	6.10	0.34	0.04	6.98E-01	0.07	0.36	0.04	104.1
O50	2169.07	1034.22	6.10	0.09	0.01	6.33E-01	0.07	0.54	0.06	595.9
O51	2199.07	1034.22	6.10	0.52	0.06	3.14E-01	0.03	-0.20	-0.02	-39.4
O52	2229.07	1034.42	6.10	0.20	0.02	1.48E-01	0.02	-0.06	-0.01	-27.5
O53	2259.07	1034.42	6.10	0.10	0.01	3.80E-01	0.04	0.28	0.03	275.2
O54	2289.07	1034.42	6.10	0.13	0.01	1.82E-01	0.02	0.06	0.01	45.0
O55	2267.03	1072.74	6.10	0.41	0.04	1.27E+00	0.14	0.86	0.09	209.9
O56	2267.02	1042.74	6.10	0.21	0.02	1.29E+00	0.14	1.08	0.12	525.0
O57	2319.07	1042.74	6.10	0.19	0.02	1.26E-01	0.01	-0.06	-0.01	-33.2
O58	2366.02	1149.93	6.10	2.38	0.25	1.87E+00	0.20	-0.50	-0.05	-21.2
O59	2341.30	1132.72	6.10	2.15	0.23	1.50E+00	0.16	-0.65	-0.07	-30.4
O60	2318.95	1124.44	6.10	2.03	0.22	1.39E+00	0.15	-0.65	-0.07	-31.8
O61	2288.35	1132.74	6.10	0.14	0.02	5.57E-01	0.06	0.41	0.04	286.9
O62	2289.07	1162.74	6.10	0.78	0.08	1.22E+00	0.13	0.43	0.05	55.1
O63	2289.07	1192.74	6.10	0.81	0.09	5.19E-01	0.06	-0.29	-0.03	-35.6
O64	2286.03	1220.99	6.10	0.34	0.04	9.00E-02	0.01	-0.25	-0.03	-73.4
O65	2180.26	1012.74	6.10	1.04	0.11	7.44E-01	0.08	-0.29	-0.03	-28.2
O66	2229.07	1012.74	6.10	0.49	0.05	6.25E-01	0.07	0.14	0.01	28.1
O67	2266.10	1012.74	6.10	0.56	0.06	3.69E-01	0.04	-0.19	-0.02	-34.3

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.015	0.037
	Maximum	0.170	0.180
	Average	0.078	0.109
	Change	0.031	
	% Change	39.9	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.010	0.010
	Maximum	0.253	0.200
	Average	0.087	0.097
	Change	0.010	
	% Change	11.6	

Yuen Long Housing AVA Results

Case	ESE	
Prevailing wind velocity	6.290	m/s
Prevailing wind direction	112.5	deg
Height of Anemometer	596	m
Wind velocity@600m	6.31	m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	0.48	0.08	0.21	0.03	-0.27	-0.04	-56.3
P2	2136.5	1219.2	6.1	0.40	0.06	0.27	0.04	-0.14	-0.02	-34.0
P3	2136.5	1204.2	6.1	0.39	0.06	0.19	0.03	-0.20	-0.03	-51.4
P4	2136.5	1189.2	6.1	0.47	0.07	0.34	0.05	-0.13	-0.02	-27.1
P5	2136.5	1174.2	6.1	0.60	0.10	0.49	0.08	-0.11	-0.02	-18.9
P6	2136.5	1159.2	6.1	0.72	0.11	0.40	0.06	-0.32	-0.05	-44.8
P7	2136.5	1144.2	6.1	0.75	0.12	0.28	0.04	-0.47	-0.07	-62.6
P8	2136.5	1129.2	6.1	0.88	0.14	0.86	0.14	-0.03	-0.00	-3.0
P9	2136.5	1114.2	6.1	1.02	0.16	1.17	0.19	0.15	0.02	14.4
P10	2136.5	1100.0	6.1	1.09	0.17	1.21	0.19	0.12	0.02	10.7
P11	2151.6	1234.1	6.1	0.49	0.08	0.11	0.02	-0.38	-0.06	-77.8
P12	2151.6	1100.0	6.1	1.05	0.17	1.15	0.18	0.10	0.02	9.8
P13	2166.5	1234.2	6.1	0.49	0.08	0.29	0.05	-0.20	-0.03	-40.4
P14	2166.5	1100.0	6.1	1.03	0.16	1.09	0.17	0.06	0.01	5.9
P15	2181.5	1234.2	6.1	0.54	0.09	0.45	0.07	-0.09	-0.01	-16.3
P16	2181.5	1100.0	6.1	0.96	0.15	1.00	0.16	0.04	0.01	4.6
P17	2196.5	1234.2	6.1	0.63	0.10	0.48	0.08	-0.16	-0.02	-24.5
P18	2196.5	1100.0	6.1	0.91	0.14	1.02	0.16	0.11	0.02	11.7
P19	2211.5	1234.2	6.1	0.78	0.12	0.49	0.08	-0.29	-0.05	-36.8
P20	2211.5	1100.0	6.1	0.91	0.14	1.05	0.17	0.13	0.02	14.5
P21	2226.5	1234.2	6.1	0.85	0.14	0.50	0.08	-0.36	-0.06	-41.9
P22	2226.5	1100.0	6.1	0.99	0.16	1.17	0.19	0.18	0.03	18.3
P23	2241.5	1234.2	6.1	1.01	0.16	0.38	0.06	-0.63	-0.10	-62.2
P24	2241.5	1100.0	6.1	1.19	0.19	1.16	0.18	-0.03	-0.01	-2.9
P25	2256.5	1234.2	6.1	1.05	0.17	0.84	0.13	-0.22	-0.03	-20.7
P26	2256.5	1100.0	6.1	1.11	0.18	0.91	0.14	-0.20	-0.03	-18.3
P27	2272.9	1234.2	6.1	0.98	0.16	0.89	0.14	-0.09	-0.01	-9.4
P28	2272.9	1219.2	6.1	0.62	0.10	0.66	0.10	0.04	0.01	6.2
P29	2272.9	1204.2	6.1	0.83	0.13	0.76	0.12	-0.07	-0.01	-8.2
P30	2272.9	1189.2	6.1	0.82	0.13	0.79	0.13	-0.02	-0.00	-2.7
P31	2272.9	1174.2	6.1	0.68	0.11	0.80	0.13	0.12	0.02	17.7
P32	2272.9	1159.2	6.1	0.46	0.07	0.97	0.15	0.50	0.08	109.5
P33	2272.9	1144.2	6.1	0.31	0.05	0.77	0.12	0.46	0.07	147.0
P34	2272.9	1129.2	6.1	1.06	0.17	1.10	0.18	0.05	0.01	4.5
P35	2272.9	1114.2	6.1	0.45	0.07	0.52	0.08	0.08	0.01	17.2
P36	2272.9	1100.0	6.1	0.69	0.11	0.76	0.12	0.07	0.01	10.4

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.50	1.08	0.17	0.84	0.13	-0.24	-0.04	-22.4
O2	2229.07	1289.39	6.50	0.92	0.15	0.98	0.15	0.06	0.01	6.3
O3	2199.07	1289.92	6.50	0.46	0.07	0.82	0.13	0.35	0.06	76.6
O4	2169.34	1299.58	6.50	0.30	0.05	0.53	0.08	0.23	0.04	78.7
O5	2145.08	1318.12	6.50	0.63	0.10	0.72	0.11	0.09	0.01	13.4
O6	2319.07	1271.29	6.50	1.98	0.31	1.95	0.31	-0.03	-0.01	-1.6
O7	2289.07	1271.29	6.50	0.76	0.12	1.45	0.23	0.68	0.11	89.0
O8	2259.07	1271.29	6.50	0.52	0.08	0.74	0.12	0.22	0.04	43.4
O9	2229.07	1271.29	6.50	0.91	0.14	1.04	0.17	0.13	0.02	14.5
O10	2199.35	1271.29	6.50	0.86	0.14	1.15	0.18	0.29	0.05	33.8
O11	2168.87	1278.45	6.50	0.64	0.10	0.98	0.15	0.34	0.05	52.8
O12	2139.07	1282.45	6.50	0.69	0.11	0.80	0.13	0.11	0.02	16.7
O13	2109.05	1282.43	6.50	1.00	0.16	0.89	0.14	-0.10	-0.02	-10.5
O14	2079.07	1282.74	6.50	0.18	0.03	0.29	0.05	0.11	0.02	64.2
O15	2046.51	1283.70	6.50	0.11	0.02	0.37	0.06	0.26	0.04	248.0
O16	2354.54	1278.59	6.50	2.38	0.38	2.32	0.37	-0.06	-0.01	-2.7
O17	2349.07	1227.72	6.50	1.86	0.29	1.77	0.28	-0.09	-0.01	-4.6
O18	2319.07	1236.40	6.50	2.12	0.34	1.98	0.31	-0.14	-0.02	-6.7
O19	2289.07	1242.55	6.50	1.98	0.31	1.65	0.26	-0.34	-0.05	-17.0
O20	2259.07	1246.21	6.50	1.62	0.26	1.33	0.21	-0.29	-0.05	-17.7
O21	2229.07	1245.87	6.50	1.20	0.19	0.93	0.15	-0.26	-0.04	-22.0
O22	2199.07	1246.21	6.50	0.88	0.14	0.75	0.12	-0.13	-0.02	-14.8
O23	2169.07	1246.21	6.50	0.72	0.11	0.59	0.09	-0.13	-0.02	-18.7
O24	2139.07	1246.21	6.50	0.60	0.10	0.37	0.06	-0.23	-0.04	-38.3
O25	2109.07	1246.21	6.50	0.61	0.10	0.61	0.10	0.01	0.00	1.2
O26	2079.07	1446.21	6.50	0.86	0.14	0.73	0.12	-0.12	-0.02	-14.6
O27	2049.07	1246.21	6.50	0.60	0.09	0.21	0.03	-0.39	-0.06	-65.4
O28	2118.56	1221.96	6.10	0.51	0.08	0.21	0.03	-0.30	-0.05	-58.2
O29	2118.84	1192.74	6.10	0.56	0.09	0.26	0.04	-0.30	-0.05	-53.5
O30	2118.84	1162.74	6.10	0.88	0.14	0.49	0.08	-0.39	-0.06	-44.0

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.10	0.57	0.09	0.71	0.11	0.15	0.02	25.7
O32	2118.84	1102.74	6.10	1.12	0.18	1.18	0.19	0.06	0.01	5.6
O33	2118.84	1086.13	6.10	0.62	0.10	0.72	0.11	0.10	0.02	16.6
O34	2079.07	1085.70	6.10	0.96	0.15	0.79	0.12	-0.17	-0.03	-18.2
O35	2109.07	1083.75	6.10	0.49	0.08	0.64	0.10	0.15	0.02	31.2
O36	2139.07	1083.75	6.10	0.66	0.10	0.80	0.13	0.14	0.02	21.1
O37	2169.07	1083.75	6.10	0.71	0.11	0.90	0.14	0.19	0.03	27.4
O38	2199.07	1083.75	6.10	0.58	0.09	0.82	0.13	0.24	0.04	40.7
O39	2229.07	1083.75	6.10	0.20	0.03	0.76	0.12	0.56	0.09	275.1
O40	2259.07	1083.75	6.10	0.60	0.09	0.94	0.15	0.34	0.05	57.3
O41	2289.07	1083.75	6.10	1.51	0.24	1.45	0.23	-0.05	-0.01	-3.6
O42	2319.07	1083.75	6.10	1.70	0.27	1.70	0.27	0.00	0.00	0.1
O43	2349.07	1083.75	6.10	1.76	0.28	1.64	0.26	-0.12	-0.02	-6.6
O44	2319.07	1072.74	6.10	0.66	0.10	0.26	0.04	-0.40	-0.06	-60.7
O45	2180.86	1072.74	6.10	0.31	0.05	0.49	0.08	0.19	0.03	59.8
O46	2180.56	1042.74	6.10	0.37	0.06	0.52	0.08	0.15	0.02	39.8
O47	2082.46	1034.99	6.10	0.22	0.03	0.30	0.05	0.08	0.01	37.0
O48	2109.42	1034.22	6.10	0.16	0.03	0.27	0.04	0.11	0.02	70.8
O49	2139.42	1034.22	6.10	0.25	0.04	0.18	0.03	-0.07	-0.01	-27.5
O50	2169.07	1034.22	6.10	0.25	0.04	0.28	0.04	0.03	0.00	11.5
O51	2199.07	1034.22	6.10	0.20	0.03	0.11	0.02	-0.09	-0.01	-43.9
O52	2229.07	1034.42	6.10	0.35	0.05	0.20	0.03	-0.15	-0.02	-42.9
O53	2259.07	1034.42	6.10	0.48	0.08	0.22	0.03	-0.26	-0.04	-54.8
O54	2289.07	1034.42	6.10	0.67	0.11	0.38	0.06	-0.29	-0.05	-43.1
O55	2267.03	1072.74	6.10	0.46	0.07	0.28	0.04	-0.18	-0.03	-39.8
O56	2267.02	1042.74	6.10	0.36	0.06	0.26	0.04	-0.09	-0.01	-26.5
O57	2319.07	1042.74	6.10	1.05	0.17	0.80	0.13	-0.25	-0.04	-24.0
O58	2366.02	1149.93	6.10	2.03	0.32	1.91	0.30	-0.12	-0.02	-5.8
O59	2341.30	1132.72	6.10	1.83	0.29	1.57	0.25	-0.26	-0.04	-14.4
O60	2318.95	1124.44	6.10	1.82	0.29	1.77	0.28	-0.04	-0.01	-2.3
O61	2288.35	1132.74	6.10	0.44	0.07	0.51	0.08	0.07	0.01	15.8
O62	2289.07	1162.74	6.10	0.46	0.07	0.81	0.13	0.35	0.06	76.0
O63	2289.07	1192.74	6.10	0.77	0.12	0.80	0.13	0.03	0.01	4.4
O64	2286.03	1220.99	6.10	0.14	0.02	0.31	0.05	0.16	0.03	111.5
O65	2180.26	1012.74	6.10	0.11	0.02	0.27	0.04	0.16	0.03	147.4
O66	2229.07	1012.74	6.10	0.21	0.03	0.25	0.04	0.04	0.01	21.2
O67	2266.10	1012.74	6.10	0.74	0.12	0.65	0.10	-0.09	-0.01	-12.6

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.049	0.017
	Maximum	0.189	0.191
	Average	0.122	0.112
	Change	-0.010	
	% Change	-7.9	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.017	0.017
	Maximum	0.378	0.368
	Average	0.126	0.123
	Change	-0.003	
	% Change	-2.7	

Yuen Long Housing AVA Results

Case	SSE	
Prevailing wind velocity	5.915	m/s
Prevailing wind direction	225.0	deg
Height of Anemometer	596	m
Wind velocity@600m	5.93	m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	0.44	0.074	0.25	0.04	-0.19	-0.03	-44.0
P2	2136.5	1219.2	6.1	0.39	0.066	0.41	0.07	0.02	0.00	4.8
P3	2136.5	1204.2	6.1	0.34	0.058	0.56	0.09	0.22	0.04	63.3
P4	2136.5	1189.2	6.1	0.32	0.054	0.53	0.09	0.21	0.04	65.1
P5	2136.5	1174.2	6.1	0.32	0.054	0.32	0.05	-0.00	-0.00	-1.1
P6	2136.5	1159.2	6.1	0.33	0.056	0.20	0.03	-0.13	-0.02	-40.7
P7	2136.5	1144.2	6.1	0.33	0.055	0.29	0.05	-0.03	-0.01	-9.6
P8	2136.5	1129.2	6.1	0.34	0.057	0.59	0.10	0.24	0.04	71.8
P9	2136.5	1114.2	6.1	0.36	0.060	0.79	0.13	0.43	0.07	121.6
P10	2136.5	1100.0	6.1	0.37	0.062	0.84	0.14	0.47	0.08	126.0
P11	2151.6	1234.1	6.1	0.46	0.077	0.10	0.02	-0.36	-0.06	-78.9
P12	2151.6	1100.0	6.1	0.40	0.068	0.79	0.13	0.39	0.07	97.4
P13	2166.5	1234.2	6.1	0.47	0.079	0.05	0.01	-0.42	-0.07	-88.9
P14	2166.5	1100.0	6.1	0.42	0.071	0.69	0.12	0.27	0.05	64.1
P15	2181.5	1234.2	6.1	0.48	0.081	0.05	0.01	-0.44	-0.07	-90.5
P16	2181.5	1100.0	6.1	0.43	0.073	0.58	0.10	0.15	0.03	35.5
P17	2196.5	1234.2	6.1	0.48	0.081	0.06	0.01	-0.42	-0.07	-88.5
P18	2196.5	1100.0	6.1	0.44	0.074	0.51	0.09	0.08	0.01	17.5
P19	2211.5	1234.2	6.1	0.47	0.079	0.22	0.04	-0.25	-0.04	-52.7
P20	2211.5	1100.0	6.1	0.43	0.072	0.39	0.07	-0.04	-0.01	-9.3
P21	2226.5	1234.2	6.1	0.45	0.075	0.61	0.10	0.16	0.03	35.9
P22	2226.5	1100.0	6.1	0.42	0.071	0.27	0.05	-0.15	-0.03	-36.3
P23	2241.5	1234.2	6.1	0.41	0.070	0.30	0.05	-0.11	-0.02	-26.9
P24	2241.5	1100.0	6.1	0.42	0.071	0.20	0.03	-0.21	-0.04	-51.3
P25	2256.5	1234.2	6.1	0.44	0.075	0.55	0.09	0.10	0.02	23.5
P26	2256.5	1100.0	6.1	0.44	0.075	0.10	0.02	-0.34	-0.06	-77.5
P27	2272.9	1234.2	6.1	0.57	0.096	0.60	0.10	0.04	0.01	6.2
P28	2272.9	1219.2	6.1	0.57	0.097	0.61	0.10	0.03	0.01	5.7
P29	2272.9	1204.2	6.1	0.52	0.087	0.67	0.11	0.15	0.03	29.8
P30	2272.9	1189.2	6.1	0.44	0.073	0.78	0.13	0.34	0.06	78.6
P31	2272.9	1174.2	6.1	0.43	0.072	0.60	0.10	0.18	0.03	41.1
P32	2272.9	1159.2	6.1	0.39	0.065	0.29	0.05	-0.10	-0.02	-25.7
P33	2272.9	1144.2	6.1	0.30	0.050	0.46	0.08	0.16	0.03	52.1
P34	2272.9	1129.2	6.1	0.20	0.034	0.46	0.08	0.26	0.04	127.8
P35	2272.9	1114.2	6.1	0.19	0.032	0.36	0.06	0.17	0.03	91.7
P36	2272.9	1100.0	6.1	0.32	0.055	0.27	0.04	-0.06	-0.01	-18.2

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.1	1312.7	6.5	0.66	0.111	0.32	0.05	-0.34	-0.06	-51.1
O2	2229.1	1289.4	6.5	0.61	0.103	0.68	0.11	0.07	0.01	11.5
O3	2199.1	1289.9	6.5	0.40	0.067	0.72	0.12	0.33	0.05	81.8
O4	2169.3	1299.6	6.5	0.45	0.075	0.61	0.10	0.16	0.03	36.4
O5	2145.1	1318.1	6.5	0.54	0.091	0.35	0.06	-0.19	-0.03	-34.7
O6	2319.1	1271.3	6.5	0.56	0.095	0.50	0.08	-0.06	-0.01	-10.7
O7	2289.1	1271.3	6.5	0.22	0.037	0.34	0.06	0.12	0.02	56.3
O8	2259.1	1271.3	6.5	0.20	0.034	0.58	0.10	0.38	0.06	189.8
O9	2229.1	1271.3	6.5	0.60	0.101	0.69	0.12	0.09	0.02	15.9
O10	2199.4	1271.3	6.5	0.58	0.097	0.59	0.10	0.01	0.00	2.1
O11	2168.9	1278.4	6.5	0.50	0.084	0.44	0.07	-0.06	-0.01	-11.3
O12	2139.1	1282.5	6.5	0.50	0.084	0.34	0.06	-0.16	-0.03	-31.5
O13	2109.1	1282.4	6.5	0.59	0.099	0.30	0.05	-0.29	-0.05	-49.6
O14	2079.1	1282.7	6.5	0.52	0.088	0.36	0.06	-0.17	-0.03	-31.8
O15	2046.5	1283.7	6.5	0.51	0.087	0.41	0.07	-0.10	-0.02	-20.3
O16	2354.5	1278.6	6.5	0.76	0.128	0.63	0.11	-0.12	-0.02	-16.1
O17	2349.1	1227.7	6.5	0.28	0.047	0.23	0.04	-0.05	-0.01	-18.5
O18	2319.1	1236.4	6.5	0.38	0.065	0.21	0.04	-0.17	-0.03	-44.4
O19	2289.1	1242.5	6.5	0.60	0.102	0.41	0.07	-0.20	-0.03	-32.6
O20	2259.1	1246.2	6.5	0.40	0.067	0.62	0.10	0.22	0.04	55.9
O21	2229.1	1245.9	6.5	0.47	0.080	0.50	0.08	0.03	0.00	6.0
O22	2199.1	1246.2	6.5	0.56	0.094	0.14	0.02	-0.42	-0.07	-75.3
O23	2169.1	1246.2	6.5	0.53	0.089	0.13	0.02	-0.40	-0.07	-74.9
O24	2139.1	1246.2	6.5	0.46	0.078	0.20	0.03	-0.26	-0.04	-56.9
O25	2109.1	1246.2	6.5	0.49	0.083	0.27	0.04	-0.22	-0.04	-45.5
O26	2079.1	1446.2	6.5	0.25	0.043	0.09	0.02	-0.16	-0.03	-62.6
O27	2049.1	1246.2	6.5	0.33	0.056	0.08	0.01	-0.25	-0.04	-74.6
O28	2118.6	1222.0	6.1	0.42	0.071	0.45	0.08	0.03	0.00	6.9
O29	2118.8	1192.7	6.1	0.37	0.062	0.42	0.07	0.06	0.01	15.0
O30	2118.8	1162.7	6.1	0.34	0.057	0.62	0.11	0.29	0.05	84.1

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.8	1132.7	6.1	0.26	0.044	0.43	0.07	0.17	0.03	64.9
O32	2118.8	1102.7	6.1	0.32	0.054	0.82	0.14	0.50	0.08	158.2
O33	2118.8	1086.1	6.1	0.33	0.055	0.79	0.13	0.46	0.08	140.2
O34	2079.1	1085.7	6.1	0.25	0.042	0.69	0.12	0.44	0.07	175.7
O35	2109.1	1083.7	6.1	0.25	0.043	0.61	0.10	0.36	0.06	141.3
O36	2139.1	1083.8	6.1	0.42	0.071	0.67	0.11	0.25	0.04	59.2
O37	2169.1	1083.7	6.1	0.50	0.084	0.54	0.09	0.04	0.01	8.4
O38	2199.1	1083.7	6.1	0.56	0.095	0.43	0.07	-0.14	-0.02	-24.0
O39	2229.1	1083.7	6.1	0.54	0.092	0.24	0.04	-0.30	-0.05	-54.9
O40	2259.1	1083.8	6.1	0.64	0.108	0.30	0.05	-0.34	-0.06	-53.5
O41	2289.1	1083.7	6.1	0.70	0.118	0.51	0.09	-0.19	-0.03	-27.6
O42	2319.1	1083.7	6.1	0.60	0.101	0.38	0.06	-0.22	-0.04	-36.1
O43	2349.1	1083.8	6.1	0.72	0.122	0.67	0.11	-0.05	-0.01	-7.0
O44	2319.1	1072.7	6.1	0.60	0.101	0.50	0.08	-0.10	-0.02	-16.2
O45	2180.9	1072.7	6.1	0.21	0.036	0.41	0.07	0.20	0.03	96.3
O46	2180.6	1042.7	6.1	0.13	0.022	0.32	0.05	0.19	0.03	147.5
O47	2082.5	1035.0	6.1	0.17	0.028	0.17	0.03	0.00	0.00	1.2
O48	2109.4	1034.2	6.1	0.10	0.017	0.10	0.02	-0.00	-0.00	-1.1
O49	2139.4	1034.2	6.1	0.27	0.045	0.26	0.04	-0.00	-0.00	-0.4
O50	2169.1	1034.2	6.1	0.47	0.079	0.48	0.08	0.01	0.00	2.0
O51	2199.1	1034.2	6.1	0.61	0.103	0.60	0.10	-0.01	-0.00	-1.8
O52	2229.1	1034.4	6.1	0.61	0.103	0.60	0.10	-0.01	-0.00	-1.0
O53	2259.1	1034.4	6.1	0.22	0.037	0.23	0.04	0.01	0.00	5.7
O54	2289.1	1034.4	6.1	0.21	0.035	0.25	0.04	0.05	0.01	22.5
O55	2267.0	1072.7	6.1	0.26	0.044	0.17	0.03	-0.09	-0.02	-35.6
O56	2267.0	1042.7	6.1	0.60	0.101	0.46	0.08	-0.14	-0.02	-22.8
O57	2319.1	1042.7	6.1	0.71	0.119	0.60	0.10	-0.11	-0.02	-15.5
O58	2366.0	1149.9	6.1	0.98	0.165	0.58	0.10	-0.40	-0.07	-40.9
O59	2341.3	1132.7	6.1	0.83	0.140	0.29	0.05	-0.54	-0.09	-65.5
O60	2319.0	1124.4	6.1	0.57	0.097	0.07	0.01	-0.50	-0.08	-87.4
O61	2288.4	1132.7	6.1	0.03	0.005	0.09	0.02	0.07	0.01	239.9
O62	2289.1	1162.7	6.1	0.30	0.050	0.39	0.07	0.09	0.02	31.0
O63	2289.1	1192.7	6.1	0.16	0.027	0.69	0.12	0.53	0.09	326.7
O64	2286.0	1221.0	6.1	0.17	0.028	0.32	0.05	0.16	0.03	94.1
O65	2180.3	1012.7	6.1	0.46	0.077	0.55	0.09	0.10	0.02	21.5
O66	2229.1	1012.7	6.1	0.25	0.043	0.26	0.04	0.01	0.00	2.7
O67	2266.1	1012.7	6.1	0.69	0.116	0.62	0.10	-0.07	-0.01	-10.2

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.032	0.008
	Maximum	0.097	0.141
	Average	0.068	0.072
	Change	0.004	
	% Change	5.6	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.005	0.008
	Maximum	0.165	0.141
	Average	0.072	0.072
	Change	-0.001	
	% Change	-1.3	

Yuen Long Housing AVA Results

Case	SE
Prevailing wind velocity	5.621 m/s
Prevailing wind direction	135 deg
Height of Anemometer	596 m
Wind velocity@600m	5.64 m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	0.84	0.15	0.23	0.04	-0.62	-0.11	-73.2
P2	2136.5	1219.2	6.1	0.80	0.14	0.39	0.07	-0.41	-0.07	-51.3
P3	2136.5	1204.2	6.1	0.74	0.13	0.60	0.11	-0.14	-0.02	-18.7
P4	2136.5	1189.2	6.1	0.64	0.11	0.56	0.10	-0.07	-0.01	-11.3
P5	2136.5	1174.2	6.1	0.51	0.09	0.32	0.06	-0.20	-0.03	-38.3
P6	2136.5	1159.2	6.1	0.38	0.07	0.21	0.04	-0.17	-0.03	-44.2
P7	2136.5	1144.2	6.1	0.30	0.05	0.46	0.08	0.15	0.03	51.0
P8	2136.5	1129.2	6.1	0.27	0.05	0.53	0.09	0.26	0.05	94.2
P9	2136.5	1114.2	6.1	0.25	0.04	0.75	0.13	0.50	0.09	204.0
P10	2136.5	1100.0	6.1	0.19	0.03	0.92	0.16	0.73	0.13	389.0
P11	2151.6	1234.1	6.1	0.83	0.15	0.42	0.07	-0.41	-0.07	-49.4
P12	2151.6	1100.0	6.1	0.21	0.04	0.89	0.16	0.67	0.12	316.9
P13	2166.5	1234.2	6.1	0.82	0.15	0.52	0.09	-0.30	-0.05	-36.8
P14	2166.5	1100.0	6.1	0.23	0.04	0.79	0.14	0.56	0.10	240.5
P15	2181.5	1234.2	6.1	0.80	0.14	0.52	0.09	-0.28	-0.05	-35.3
P16	2181.5	1100.0	6.1	0.24	0.04	0.66	0.12	0.42	0.07	179.1
P17	2196.5	1234.2	6.1	0.77	0.14	0.47	0.08	-0.30	-0.05	-38.5
P18	2196.5	1100.0	6.1	0.24	0.04	0.51	0.09	0.26	0.05	109.2
P19	2211.5	1234.2	6.1	0.74	0.13	0.49	0.09	-0.25	-0.04	-34.2
P20	2211.5	1100.0	6.1	0.23	0.04	0.38	0.07	0.15	0.03	64.1
P21	2226.5	1234.2	6.1	0.75	0.13	0.45	0.08	-0.29	-0.05	-39.2
P22	2226.5	1100.0	6.1	0.22	0.04	0.22	0.04	-0.01	-0.00	-2.4
P23	2241.5	1234.2	6.1	0.79	0.14	0.47	0.08	-0.31	-0.06	-40.0
P24	2241.5	1100.0	6.1	0.21	0.04	0.11	0.02	-0.10	-0.02	-47.9
P25	2256.5	1234.2	6.1	0.86	0.15	0.63	0.11	-0.24	-0.04	-27.6
P26	2256.5	1100.0	6.1	0.20	0.04	0.10	0.02	-0.10	-0.02	-50.8
P27	2272.9	1234.2	6.1	0.91	0.16	0.54	0.10	-0.38	-0.07	-41.1
P28	2272.9	1219.2	6.1	0.21	0.04	0.45	0.08	0.24	0.04	113.2
P29	2272.9	1204.2	6.1	0.08	0.01	0.54	0.10	0.46	0.08	569.6
P30	2272.9	1189.2	6.1	0.14	0.02	0.67	0.12	0.53	0.09	394.0
P31	2272.9	1174.2	6.1	0.21	0.04	0.47	0.08	0.26	0.05	127.8
P32	2272.9	1159.2	6.1	0.23	0.04	0.24	0.04	0.01	0.00	3.2
P33	2272.9	1144.2	6.1	0.15	0.03	0.30	0.05	0.15	0.03	104.9
P34	2272.9	1129.2	6.1	0.26	0.05	0.21	0.04	-0.06	-0.01	-22.1
P35	2272.9	1114.2	6.1	0.11	0.02	0.08	0.01	-0.03	-0.01	-25.7
P36	2272.9	1100.0	6.1	0.18	0.03	0.12	0.02	-0.06	-0.01	-35.9

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.50	0.86	0.15	0.78	0.14	-0.08	-0.01	-9.7
O2	2229.07	1289.39	6.50	0.94	0.17	0.97	0.17	0.03	0.01	3.3
O3	2199.07	1289.92	6.50	1.03	0.18	1.01	0.18	-0.02	-0.00	-2.2
O4	2169.34	1299.58	6.50	1.06	0.19	0.87	0.15	-0.19	-0.03	-17.7
O5	2145.08	1318.12	6.50	0.99	0.18	0.74	0.13	-0.25	-0.04	-25.1
O6	2319.07	1271.29	6.50	1.19	0.21	1.18	0.21	-0.01	-0.00	-0.8
O7	2289.07	1271.29	6.50	0.46	0.08	1.01	0.18	0.55	0.10	117.6
O8	2259.07	1271.29	6.50	0.55	0.10	0.74	0.13	0.19	0.03	34.7
O9	2229.07	1271.29	6.50	0.83	0.15	0.88	0.16	0.06	0.01	6.9
O10	2199.35	1271.29	6.50	0.92	0.16	0.94	0.17	0.02	0.00	2.3
O11	2168.87	1278.45	6.50	1.01	0.18	1.00	0.18	-0.01	-0.00	-0.9
O12	2139.07	1282.45	6.50	1.05	0.19	0.95	0.17	-0.10	-0.02	-9.5
O13	2109.05	1282.43	6.50	1.20	0.21	1.00	0.18	-0.19	-0.03	-16.3
O14	2079.07	1282.74	6.50	1.12	0.20	0.92	0.16	-0.20	-0.04	-17.8
O15	2046.51	1283.70	6.50	1.11	0.20	0.84	0.15	-0.27	-0.05	-24.5
O16	2354.54	1278.59	6.50	1.57	0.28	1.56	0.28	-0.01	-0.00	-0.4
O17	2349.07	1227.72	6.50	0.86	0.15	0.72	0.13	-0.15	-0.03	-17.2
O18	2319.07	1236.40	6.50	1.11	0.20	0.90	0.16	-0.21	-0.04	-19.2
O19	2289.07	1242.55	6.50	1.06	0.19	0.69	0.12	-0.37	-0.07	-35.2
O20	2259.07	1246.21	6.50	0.86	0.15	0.74	0.13	-0.12	-0.02	-14.0
O21	2229.07	1245.87	6.50	0.76	0.13	0.67	0.12	-0.09	-0.02	-12.0
O22	2199.07	1246.21	6.50	0.81	0.14	0.65	0.12	-0.16	-0.03	-19.6
O23	2169.07	1246.21	6.50	0.85	0.15	0.68	0.12	-0.17	-0.03	-19.7
O24	2139.07	1246.21	6.50	0.85	0.15	0.55	0.10	-0.30	-0.05	-35.6
O25	2109.07	1246.21	6.50	0.97	0.17	0.73	0.13	-0.24	-0.04	-24.7
O26	2079.07	1446.21	6.50	0.58	0.10	0.34	0.06	-0.24	-0.04	-41.0
O27	2049.07	1246.21	6.50	0.36	0.06	0.11	0.02	-0.24	-0.04	-68.4
O28	2118.56	1221.96	6.10	0.84	0.15	0.39	0.07	-0.46	-0.08	-54.0
O29	2118.84	1192.74	6.10	0.67	0.12	0.45	0.08	-0.22	-0.04	-32.8
O30	2118.84	1162.74	6.10	0.37	0.07	0.67	0.12	0.30	0.05	79.9

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.10	0.24	0.04	0.40	0.07	0.16	0.03	64.1
O32	2118.84	1102.74	6.10	0.20	0.04	0.86	0.15	0.66	0.12	320.2
O33	2118.84	1086.13	6.10	0.04	0.01	0.84	0.15	0.79	0.14	1836.0
O34	2079.07	1085.70	6.10	0.22	0.04	0.83	0.15	0.62	0.11	286.5
O35	2109.07	1083.75	6.10	0.03	0.00	0.70	0.12	0.68	0.12	2549.4
O36	2139.07	1083.75	6.10	0.13	0.02	0.74	0.13	0.61	0.11	465.2
O37	2169.07	1083.75	6.10	0.16	0.03	0.49	0.09	0.34	0.06	212.2
O38	2199.07	1083.75	6.10	0.25	0.04	0.38	0.07	0.13	0.02	52.9
O39	2229.07	1083.75	6.10	0.21	0.04	0.10	0.02	-0.12	-0.02	-54.9
O40	2259.07	1083.75	6.10	0.28	0.05	0.13	0.02	-0.16	-0.03	-54.8
O41	2289.07	1083.75	6.10	0.27	0.05	0.03	0.01	-0.24	-0.04	-88.5
O42	2319.07	1083.75	6.10	0.14	0.03	0.21	0.04	0.06	0.01	42.7
O43	2349.07	1083.75	6.10	0.39	0.07	0.22	0.04	-0.17	-0.03	-43.9
O44	2319.07	1072.74	6.10	0.34	0.06	0.35	0.06	0.01	0.00	3.7
O45	2180.86	1072.74	6.10	0.23	0.04	0.49	0.09	0.26	0.05	117.1
O46	2180.56	1042.74	6.10	0.15	0.03	0.51	0.09	0.37	0.07	251.0
O47	2082.46	1034.99	6.10	0.11	0.02	0.06	0.01	-0.05	-0.01	-42.3
O48	2109.42	1034.22	6.10	0.07	0.01	0.11	0.02	0.04	0.01	53.5
O49	2139.42	1034.22	6.10	0.11	0.02	0.16	0.03	0.05	0.01	44.5
O50	2169.07	1034.22	6.10	0.11	0.02	0.26	0.05	0.15	0.03	131.8
O51	2199.07	1034.22	6.10	0.22	0.04	0.23	0.04	0.02	0.00	8.0
O52	2229.07	1034.42	6.10	0.30	0.05	0.18	0.03	-0.12	-0.02	-39.1
O53	2259.07	1034.42	6.10	0.11	0.02	0.13	0.02	0.02	0.00	20.8
O54	2289.07	1034.42	6.10	0.28	0.05	0.08	0.02	-0.20	-0.04	-70.2
O55	2267.03	1072.74	6.10	0.02	0.00	0.20	0.03	0.18	0.03	1081.6
O56	2267.02	1042.74	6.10	0.20	0.04	0.35	0.06	0.15	0.03	76.9
O57	2319.07	1042.74	6.10	0.10	0.02	0.14	0.02	0.04	0.01	35.9
O58	2366.02	1149.93	6.10	0.51	0.09	0.24	0.04	-0.27	-0.05	-52.9
O59	2341.30	1132.72	6.10	0.36	0.06	0.12	0.02	-0.23	-0.04	-65.8
O60	2318.95	1124.44	6.10	0.30	0.05	0.21	0.04	-0.09	-0.02	-30.6
O61	2288.35	1132.74	6.10	0.11	0.02	0.10	0.02	-0.01	-0.00	-7.0
O62	2289.07	1162.74	6.10	0.17	0.03	0.37	0.07	0.21	0.04	126.5
O63	2289.07	1192.74	6.10	0.08	0.01	0.68	0.12	0.60	0.11	768.4
O64	2286.03	1220.99	6.10	0.05	0.01	0.22	0.04	0.17	0.03	360.0
O65	2180.26	1012.74	6.10	0.16	0.03	0.48	0.08	0.31	0.06	188.9
O66	2229.07	1012.74	6.10	0.21	0.04	0.29	0.05	0.08	0.01	40.5
O67	2266.10	1012.74	6.10	0.37	0.07	0.13	0.02	-0.24	-0.04	-64.0

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.014	0.015
	Maximum	0.162	0.163
	Average	0.077	0.080
	Change	0.003	
	% Change	4.1	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.003	0.006
	Maximum	0.278	0.277
	Average	0.085	0.089
	Change	0.004	
	% Change	4.6	

Yuen Long Housing AVA Results

Case SSW
Prevailing wind velocity 6.90566 m/s
Prevailing wind direction 202.5 deg
Height of Anemometer 596 m
Wind velocity@600m 6.92 m/s

Perimeter Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
P1	2136.5	1234.2	6.1	0.11	0.016	0.53	0.08	0.42	0.06	377.0
P2	2136.5	1219.2	6.1	0.09	0.012	0.54	0.08	0.45	0.07	526.7
P3	2136.5	1204.2	6.1	0.07	0.009	0.70	0.10	0.63	0.09	965.5
P4	2136.5	1189.2	6.1	0.06	0.009	0.72	0.10	0.66	0.10	1077.3
P5	2136.5	1174.2	6.1	0.11	0.016	0.54	0.08	0.43	0.06	394.0
P6	2136.5	1159.2	6.1	0.17	0.024	0.31	0.05	0.15	0.02	89.2
P7	2136.5	1144.2	6.1	0.19	0.027	0.37	0.05	0.18	0.03	93.7
P8	2136.5	1129.2	6.1	0.21	0.030	0.52	0.07	0.31	0.04	148.8
P9	2136.5	1114.2	6.1	0.22	0.032	0.65	0.09	0.43	0.06	194.1
P10	2136.5	1100.0	6.1	0.53	0.076	0.65	0.09	0.13	0.02	23.7
P11	2151.6	1234.1	6.1	0.16	0.022	0.41	0.06	0.26	0.04	165.2
P12	2151.6	1100.0	6.1	0.21	0.031	0.77	0.11	0.56	0.08	260.0
P13	2166.5	1234.2	6.1	0.17	0.024	0.32	0.05	0.15	0.02	88.9
P14	2166.5	1100.0	6.1	0.11	0.016	0.76	0.11	0.65	0.09	567.9
P15	2181.5	1234.2	6.1	0.16	0.023	0.30	0.04	0.14	0.02	90.2
P16	2181.5	1100.0	6.1	0.18	0.025	0.79	0.11	0.61	0.09	347.0
P17	2196.5	1234.2	6.1	0.13	0.019	0.27	0.04	0.14	0.02	106.8
P18	2196.5	1100.0	6.1	0.19	0.028	0.77	0.11	0.58	0.08	301.7
P19	2211.5	1234.2	6.1	0.10	0.015	0.33	0.05	0.23	0.03	215.2
P20	2211.5	1100.0	6.1	0.20	0.029	0.72	0.10	0.51	0.07	253.5
P21	2226.5	1234.2	6.1	0.10	0.014	1.18	0.17	1.09	0.16	1134.1
P22	2226.5	1100.0	6.1	0.06	0.009	0.77	0.11	0.71	0.10	1185.5
P23	2241.5	1234.2	6.1	0.14	0.020	0.31	0.04	0.17	0.02	124.3
P24	2241.5	1100.0	6.1	0.11	0.015	0.76	0.11	0.66	0.10	621.2
P25	2256.5	1234.2	6.1	0.25	0.037	0.40	0.06	0.14	0.02	56.1
P26	2256.5	1100.0	6.1	0.20	0.029	0.58	0.08	0.38	0.06	188.3
P27	2272.9	1234.2	6.1	0.47	0.068	0.21	0.03	-0.26	-0.04	-55.4
P28	2272.9	1219.2	6.1	0.46	0.066	0.61	0.09	0.15	0.02	32.8
P29	2272.9	1204.2	6.1	0.37	0.054	0.48	0.07	0.11	0.02	29.0
P30	2272.9	1189.2	6.1	0.31	0.044	0.31	0.05	0.01	0.00	2.8
P31	2272.9	1174.2	6.1	0.34	0.049	0.48	0.07	0.14	0.02	41.7
P32	2272.9	1159.2	6.1	0.43	0.062	0.67	0.10	0.24	0.04	56.2
P33	2272.9	1144.2	6.1	0.41	0.059	0.67	0.10	0.26	0.04	64.7
P34	2272.9	1129.2	6.1	0.35	0.050	0.44	0.06	0.09	0.01	26.4
P35	2272.9	1114.2	6.1	0.27	0.040	0.26	0.04	-0.01	-0.00	-3.6
P36	2272.9	1100.0	6.1	0.27	0.039	0.40	0.06	0.13	0.02	46.3

Overall Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O1	2259.07	1312.74	6.5	0.18	0.025	0.41	0.06	0.23	0.03	131.7
O2	2229.07	1289.39	6.5	0.16	0.023	0.55	0.08	0.39	0.06	245.9
O3	2199.07	1289.92	6.5	0.11	0.016	0.37	0.05	0.26	0.04	242.9
O4	2169.34	1299.58	6.5	0.15	0.022	0.51	0.07	0.35	0.05	230.3
O5	2145.08	1318.12	6.5	0.24	0.034	0.29	0.04	0.05	0.01	20.9
O6	2319.07	1271.29	6.5	0.67	0.097	0.21	0.03	-0.47	-0.07	-69.0
O7	2289.07	1271.29	6.5	0.37	0.053	0.05	0.01	-0.32	-0.05	-87.5
O8	2259.07	1271.29	6.5	0.22	0.032	0.17	0.02	-0.05	-0.01	-22.1
O9	2229.07	1271.29	6.5	0.10	0.014	0.73	0.11	0.63	0.09	645.4
O10	2199.35	1271.29	6.5	0.12	0.017	0.32	0.05	0.20	0.03	166.6
O11	2168.87	1278.45	6.5	0.17	0.025	0.47	0.07	0.29	0.04	167.6
O12	2139.07	1282.45	6.5	0.18	0.026	0.60	0.09	0.41	0.06	226.2
O13	2109.05	1282.43	6.5	0.20	0.029	0.54	0.08	0.34	0.05	172.7
O14	2079.07	1282.74	6.5	0.28	0.041	0.28	0.04	-0.01	-0.00	-2.6
O15	2046.51	1283.70	6.5	0.44	0.064	0.28	0.04	-0.16	-0.02	-36.1
O16	2354.54	1278.59	6.5	0.75	0.108	0.30	0.04	-0.45	-0.06	-60.4
O17	2349.07	1227.72	6.5	0.71	0.102	0.10	0.01	-0.61	-0.09	-86.3
O18	2319.07	1236.40	6.5	0.59	0.085	0.08	0.01	-0.50	-0.07	-85.6
O19	2289.07	1242.55	6.5	0.62	0.090	0.09	0.01	-0.54	-0.08	-86.0
O20	2259.07	1246.21	6.5	0.24	0.035	0.15	0.02	-0.09	-0.01	-36.8
O21	2229.07	1245.87	6.5	0.11	0.015	1.04	0.15	0.93	0.13	870.5
O22	2199.07	1246.21	6.5	0.13	0.019	0.19	0.03	0.05	0.01	37.4
O23	2169.07	1246.21	6.5	0.18	0.027	0.32	0.05	0.13	0.02	71.7
O24	2139.07	1246.21	6.5	0.13	0.019	0.57	0.08	0.44	0.06	330.2
O25	2109.07	1246.21	6.5	0.29	0.041	0.43	0.06	0.14	0.02	49.8
O26	2079.07	1446.21	6.5	0.96	0.139	0.94	0.14	-0.03	-0.00	-2.7
O27	2049.07	1246.21	6.5	0.54	0.078	0.19	0.03	-0.35	-0.05	-65.5
O28	2118.56	1221.96	6.1	0.08	0.012	0.64	0.09	0.55	0.08	676.1
O29	2118.84	1192.74	6.1	0.09	0.014	0.68	0.10	0.59	0.09	627.9
O30	2118.84	1162.74	6.1	0.19	0.027	0.55	0.08	0.36	0.05	190.0

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
O31	2118.84	1132.74	6.1	0.21	0.030	0.50	0.07	0.29	0.04	139.8
O32	2118.84	1102.74	6.1	0.87	0.126	0.29	0.04	-0.58	-0.08	-66.3
O33	2118.84	1086.13	6.1	0.20	0.029	0.22	0.03	0.02	0.00	10.5
O34	2079.07	1085.70	6.1	0.25	0.036	0.51	0.07	0.26	0.04	104.4
O35	2109.07	1083.75	6.1	0.13	0.018	0.25	0.04	0.12	0.02	96.0
O36	2139.07	1083.75	6.1	0.60	0.086	0.69	0.10	0.09	0.01	14.5
O37	2169.07	1083.75	6.1	0.58	0.083	0.42	0.06	-0.16	-0.02	-27.5
O38	2199.07	1083.75	6.1	0.18	0.026	0.41	0.06	0.23	0.03	126.4
O39	2229.07	1083.75	6.1	0.17	0.024	0.46	0.07	0.30	0.04	178.2
O40	2259.07	1083.75	6.1	0.27	0.039	0.67	0.10	0.40	0.06	148.4
O41	2289.07	1083.75	6.1	0.33	0.048	0.62	0.09	0.29	0.04	87.7
O42	2319.07	1083.75	6.1	0.30	0.043	0.47	0.07	0.17	0.03	58.4
O43	2349.07	1083.75	6.1	0.22	0.032	0.36	0.05	0.13	0.02	59.3
O44	2319.07	1072.74	6.1	0.35	0.051	0.21	0.03	-0.14	-0.02	-39.7
O45	2180.86	1072.74	6.1	0.29	0.041	0.99	0.14	0.70	0.10	245.0
O46	2180.56	1042.74	6.1	0.48	0.069	0.74	0.11	0.26	0.04	54.1
O47	2082.46	1034.99	6.1	0.40	0.058	0.39	0.06	-0.01	-0.00	-2.4
O48	2109.42	1034.22	6.1	0.05	0.008	0.20	0.03	0.14	0.02	272.1
O49	2139.42	1034.22	6.1	0.12	0.018	0.14	0.02	0.02	0.00	15.4
O50	2169.07	1034.22	6.1	0.18	0.026	0.39	0.06	0.22	0.03	122.0
O51	2199.07	1034.22	6.1	0.23	0.034	0.09	0.01	-0.14	-0.02	-60.9
O52	2229.07	1034.42	6.1	0.25	0.036	0.31	0.04	0.06	0.01	21.9
O53	2259.07	1034.42	6.1	0.34	0.049	0.14	0.02	-0.20	-0.03	-59.3
O54	2289.07	1034.42	6.1	0.42	0.060	0.23	0.03	-0.18	-0.03	-44.0
O55	2267.03	1072.74	6.1	0.12	0.017	0.18	0.03	0.07	0.01	56.8
O56	2267.02	1042.74	6.1	0.24	0.035	0.11	0.02	-0.13	-0.02	-52.4
O57	2319.07	1042.74	6.1	0.35	0.050	0.42	0.06	0.08	0.01	21.8
O58	2366.02	1149.93	6.1	0.18	0.027	0.24	0.03	0.06	0.01	30.6
O59	2341.30	1132.72	6.1	0.33	0.048	0.34	0.05	0.01	0.00	4.1
O60	2318.95	1124.44	6.1	0.30	0.043	0.55	0.08	0.25	0.04	84.6
O61	2288.35	1132.74	6.1	0.07	0.010	0.13	0.02	0.07	0.01	99.9
O62	2289.07	1162.74	6.1	0.25	0.035	0.56	0.08	0.32	0.05	129.3
O63	2289.07	1192.74	6.1	0.09	0.013	0.49	0.07	0.40	0.06	440.1
O64	2286.03	1220.99	6.1	0.28	0.040	0.05	0.01	-0.23	-0.03	-83.2
O65	2180.26	1012.74	6.1	0.63	0.091	0.12	0.02	-0.51	-0.07	-80.5
O66	2229.07	1012.74	6.1	0.14	0.021	0.08	0.01	-0.07	-0.01	-45.6
O67	2266.10	1012.74	6.1	0.16	0.023	0.22	0.03	0.06	0.01	38.9

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.009	0.030
	Maximum	0.076	0.171
	Average	0.032	0.078
	Change	0.047	
	% Change	147.2	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.008	0.007
	Maximum	0.139	0.171
	Average	0.039	0.063
	Change	0.024	
	% Change	61.7	

Perimeter Test Points

Test points	Baseline Scenario_VRw'	Proposed Scenario_VRw'	Different in VRw'	%VRw' Change
P1	0.156	0.175	0.020	12.8
P2	0.147	0.156	0.009	6.2
P3	0.120	0.079	-0.041	-34.4
P4	0.080	0.063	-0.017	-21.6
P5	0.072	0.063	-0.009	-12.7
P6	0.083	0.062	-0.021	-25.6
P7	0.086	0.071	-0.015	-17.5
P8	0.093	0.097	0.003	3.7
P9	0.093	0.102	0.009	9.5
P10	0.090	0.115	0.025	28.2
P11	0.160	0.178	0.018	11.5
P12	0.085	0.113	0.027	31.8
P13	0.165	0.172	0.007	4.2
P14	0.084	0.114	0.030	35.9
P15	0.170	0.161	-0.009	-5.0
P16	0.084	0.104	0.020	23.6
P17	0.178	0.157	-0.022	-12.1
P18	0.079	0.099	0.020	24.6
P19	0.188	0.154	-0.033	-17.7
P20	0.071	0.083	0.011	16.0
P21	0.190	0.161	-0.028	-15.0
P22	0.064	0.102	0.038	58.9
P23	0.199	0.149	-0.050	-25.1
P24	0.067	0.081	0.013	19.9
P25	0.209	0.163	-0.046	-22.1
P26	0.070	0.098	0.028	40.2
P27	0.218	0.157	-0.061	-27.9
P28	0.098	0.104	0.006	6.0
P29	0.089	0.118	0.029	32.9
P30	0.083	0.127	0.045	54.0
P31	0.076	0.112	0.037	48.8
P32	0.065	0.105	0.040	62.3
P33	0.050	0.102	0.051	102.4
P34	0.127	0.119	-0.008	-6.1
P35	0.058	0.110	0.051	88.4
P36	0.081	0.126	0.045	55.5

Overall Test Points

Test Points	Baseline Scenario_VRw'	Proposed Scenario_VRw'	Different in VRw'	%VRw' Change
O1	0.117	0.097	-0.019	-16.6
O2	0.140	0.136	-0.003	-2.5
O3	0.104	0.137	0.033	31.2
O4	0.085	0.105	0.020	23.6
O5	0.104	0.128	0.025	23.8
O6	0.241	0.216	-0.025	-10.3
O7	0.190	0.200	0.010	5.3
O8	0.155	0.150	-0.004	-2.8
O9	0.177	0.176	-0.001	-0.6
O10	0.164	0.189	0.025	15.1
O11	0.117	0.167	0.050	42.3
O12	0.099	0.147	0.048	48.0
O13	0.113	0.165	0.052	45.7
O14	0.111	0.107	-0.004	-3.6
O15	0.117	0.109	-0.007	-6.2
O16	0.253	0.228	-0.025	-9.8
O17	0.257	0.232	-0.024	-9.5
O18	0.282	0.251	-0.032	-11.2
O19	0.275	0.231	-0.043	-15.8
O20	0.235	0.200	-0.035	-14.9

Test points	Baseline Scenario_VRw'	Proposed Scenario_VRw'	Different in VRw'	%VRw' Change
O21	0.206	0.197	-0.009	-4.3
O22	0.188	0.180	-0.007	-3.8
O23	0.173	0.181	0.008	4.8
O24	0.155	0.176	0.022	14.0
O25	0.157	0.184	0.027	17.1
O26	0.096	0.079	-0.017	-17.5
O27	0.064	0.045	-0.019	-29.1
O28	0.153	0.176	0.023	15.3
O29	0.100	0.083	-0.016	-16.5
O30	0.086	0.085	-0.001	-1.0
O31	0.079	0.075	-0.004	-4.8
O32	0.096	0.103	0.006	6.5
O33	0.046	0.081	0.035	77.5
O34	0.078	0.080	0.001	1.8
O35	0.043	0.066	0.023	52.5
O36	0.080	0.102	0.022	27.5
O37	0.082	0.087	0.005	6.0
O38	0.081	0.081	-0.000	-0.5
O39	0.066	0.077	0.011	16.5
O40	0.073	0.077	0.004	5.8
O41	0.078	0.091	0.012	15.8
O42	0.133	0.131	-0.002	-1.8
O43	0.163	0.160	-0.003	-2.0
O44	0.066	0.076	0.010	15.5
O45	0.074	0.081	0.006	8.5
O46	0.064	0.070	0.007	10.3
O47	0.049	0.041	-0.008	-16.6
O48	0.026	0.033	0.006	23.5
O49	0.050	0.051	0.001	2.1
O50	0.046	0.039	-0.006	-13.9
O51	0.057	0.031	-0.026	-45.1
O52	0.050	0.033	-0.017	-34.2
O53	0.041	0.029	-0.011	-27.6
O54	0.046	0.037	-0.009	-20.0
O55	0.036	0.104	0.068	188.6
O56	0.052	0.094	0.042	80.5
O57	0.070	0.070	0.000	0.3
O58	0.268	0.234	-0.034	-12.7
O59	0.240	0.186	-0.053	-22.2
O60	0.230	0.194	-0.036	-15.7
O61	0.050	0.036	-0.013	-26.6
O62	0.068	0.115	0.047	68.7
O63	0.069	0.096	0.027	39.3
O64	0.029	0.031	0.002	7.1
O65	0.054	0.071	0.016	29.6
O66	0.044	0.040	-0.003	-7.6
O67	0.056	0.056	0.000	0.6

	Baseline Scenario		Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.050	0.062
	Maximum	0.218	0.178
	Average	0.112	0.118
	Change	0.006	
	%Change	5.5	
Local Spatial Average Velocity Ratio (LVR):	Minimum	0.026	0.029
	Maximum	0.282	0.251
	Average	0.113	0.117
	Change	0.004	
	%Change	3.41	

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR
P1	0.202	0.282	0.171	0.071	0.077	0.150	0.074	0.016
P2	0.216	0.248	0.180	0.055	0.064	0.143	0.066	0.012
P3	0.162	0.175	0.182	0.040	0.062	0.131	0.058	0.009
P4	0.054	0.076	0.181	0.019	0.075	0.113	0.054	0.009
P5	0.063	0.030	0.179	0.015	0.096	0.091	0.054	0.016
P6	0.086	0.055	0.173	0.035	0.114	0.067	0.056	0.024
P7	0.095	0.065	0.171	0.038	0.119	0.054	0.055	0.027
P8	0.111	0.068	0.169	0.051	0.140	0.048	0.057	0.030
P9	0.129	0.064	0.153	0.033	0.162	0.044	0.060	0.032
P10	0.137	0.054	0.119	0.031	0.173	0.033	0.062	0.076
P11	0.213	0.281	0.184	0.072	0.077	0.148	0.077	0.022
P12	0.116	0.055	0.128	0.037	0.166	0.038	0.068	0.031
P13	0.223	0.280	0.199	0.081	0.077	0.146	0.079	0.024
P14	0.088	0.061	0.130	0.053	0.163	0.041	0.071	0.016
P15	0.229	0.278	0.211	0.094	0.086	0.142	0.081	0.023
P16	0.070	0.064	0.136	0.071	0.152	0.042	0.073	0.025
P17	0.248	0.279	0.224	0.110	0.100	0.136	0.081	0.019
P18	0.062	0.061	0.114	0.081	0.145	0.043	0.074	0.028
P19	0.266	0.283	0.233	0.129	0.124	0.131	0.079	0.015
P20	0.048	0.064	0.078	0.079	0.145	0.041	0.072	0.029
P21	0.259	0.277	0.239	0.147	0.135	0.132	0.075	0.014
P22	0.045	0.070	0.043	0.067	0.157	0.039	0.071	0.009
P23	0.265	0.282	0.247	0.163	0.161	0.140	0.070	0.020
P24	0.044	0.067	0.043	0.065	0.189	0.037	0.071	0.015
P25	0.279	0.290	0.259	0.170	0.167	0.153	0.075	0.037
P26	0.071	0.052	0.047	0.077	0.177	0.035	0.075	0.029
P27	0.294	0.295	0.280	0.159	0.156	0.162	0.096	0.068
P28	0.084	0.096	0.152	0.105	0.098	0.037	0.097	0.066
P29	0.111	0.068	0.110	0.098	0.132	0.014	0.087	0.054
P30	0.106	0.080	0.078	0.086	0.130	0.024	0.073	0.044
P31	0.083	0.075	0.080	0.073	0.108	0.037	0.072	0.049
P32	0.057	0.054	0.086	0.071	0.073	0.041	0.065	0.062
P33	0.046	0.045	0.063	0.058	0.049	0.026	0.050	0.059
P34	0.098	0.222	0.176	0.050	0.168	0.047	0.034	0.050
P35	0.090	0.048	0.035	0.108	0.071	0.020	0.032	0.040
P36	0.150	0.071	0.040	0.113	0.110	0.032	0.055	0.039
Wind VR	0.136	0.137	0.147	0.078	0.122	0.077	0.068	0.032
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
SVR (Weighted)	0.021	0.028	0.025	0.009	0.014	0.006	0.006	0.002
							Overall SVR	0.112

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR
O1	0.130	0.118	0.114	0.087	0.171	0.153	0.111	0.025
O2	0.138	0.122	0.216	0.138	0.146	0.166	0.103	0.023
O3	0.085	0.077	0.189	0.112	0.073	0.183	0.067	0.016
O4	0.047	0.076	0.140	0.083	0.047	0.187	0.075	0.022
O5	0.109	0.119	0.135	0.030	0.101	0.176	0.091	0.034
O6	0.312	0.271	0.244	0.218	0.314	0.211	0.095	0.097
O7	0.178	0.292	0.287	0.204	0.121	0.082	0.037	0.053
O8	0.101	0.234	0.259	0.192	0.082	0.098	0.034	0.032
O9	0.167	0.257	0.236	0.166	0.144	0.147	0.101	0.014
O10	0.169	0.238	0.206	0.132	0.136	0.163	0.097	0.017
O11	0.093	0.131	0.171	0.101	0.101	0.179	0.084	0.025
O12	0.058	0.097	0.148	0.075	0.109	0.186	0.084	0.026
O13	0.073	0.097	0.158	0.083	0.158	0.213	0.099	0.029
O14	0.111	0.138	0.138	0.103	0.028	0.198	0.088	0.041
O15	0.127	0.160	0.132	0.100	0.017	0.197	0.087	0.064
O16	0.371	0.264	0.192	0.192	0.378	0.278	0.128	0.108
O17	0.339	0.339	0.280	0.223	0.294	0.153	0.047	0.102
O18	0.374	0.385	0.307	0.205	0.337	0.197	0.065	0.085
O19	0.349	0.366	0.315	0.197	0.314	0.188	0.102	0.090
O20	0.305	0.333	0.264	0.194	0.257	0.153	0.067	0.035
O21	0.251	0.314	0.243	0.164	0.190	0.135	0.080	0.015
O22	0.221	0.305	0.223	0.127	0.139	0.144	0.094	0.019
O23	0.210	0.298	0.192	0.093	0.114	0.151	0.089	0.027
O24	0.178	0.286	0.159	0.080	0.096	0.151	0.078	0.019
O25	0.149	0.310	0.148	0.079	0.096	0.173	0.083	0.041
O26	0.106	0.113	0.057	0.067	0.136	0.102	0.043	0.139
O27	0.013	0.112	0.043	0.041	0.095	0.063	0.056	0.078
O28	0.208	0.267	0.168	0.069	0.081	0.150	0.071	0.012
O29	0.099	0.133	0.165	0.026	0.089	0.119	0.062	0.014
O30	0.134	0.045	0.137	0.040	0.139	0.066	0.057	0.027
O31	0.108	0.062	0.148	0.035	0.090	0.043	0.044	0.030
O32	0.126	0.066	0.130	0.031	0.177	0.036	0.054	0.126
O33	0.029	0.016	0.066	0.070	0.098	0.008	0.055	0.029
O34	0.073	0.027	0.161	0.058	0.152	0.038	0.042	0.036
O35	0.028	0.009	0.099	0.051	0.077	0.005	0.043	0.018
O36	0.079	0.049	0.122	0.091	0.104	0.023	0.071	0.086
O37	0.099	0.061	0.082	0.102	0.112	0.028	0.084	0.083
O38	0.113	0.082	0.058	0.113	0.092	0.044	0.095	0.026
O39	0.092	0.077	0.100	0.030	0.032	0.038	0.092	0.024
O40	0.053	0.059	0.094	0.091	0.095	0.051	0.108	0.039
O41	0.063	0.045	0.025	0.095	0.239	0.048	0.118	0.048
O42	0.209	0.182	0.059	0.071	0.270	0.026	0.101	0.043
O43	0.270	0.208	0.098	0.098	0.279	0.070	0.122	0.032
O44	0.148	0.025	0.021	0.052	0.104	0.060	0.101	0.051
O45	0.160	0.015	0.167	0.022	0.049	0.040	0.036	0.041
O46	0.079	0.094	0.025	0.097	0.059	0.026	0.022	0.069
O47	0.051	0.056	0.068	0.046	0.035	0.019	0.028	0.058
O48	0.051	0.036	0.014	0.023	0.025	0.013	0.017	0.008
O49	0.113	0.025	0.070	0.036	0.040	0.020	0.045	0.018
O50	0.033	0.047	0.094	0.010	0.039	0.020	0.079	0.026
O51	0.064	0.095	0.024	0.055	0.031	0.038	0.103	0.034
O52	0.059	0.051	0.042	0.022	0.055	0.054	0.103	0.036
O53	0.059	0.043	0.025	0.011	0.076	0.019	0.037	0.049
O54	0.042	0.049	0.024	0.013	0.106	0.050	0.035	0.060
O55	0.066	0.017	0.023	0.044	0.074	0.003	0.044	0.017
O56	0.079	0.044	0.051	0.022	0.057	0.035	0.101	0.035
O57	0.129	0.058	0.014	0.020	0.167	0.018	0.119	0.050
O58	0.370	0.355	0.278	0.253	0.322	0.090	0.165	0.027
O59	0.318	0.321	0.253	0.229	0.291	0.063	0.140	0.048
O60	0.321	0.310	0.242	0.217	0.288	0.053	0.097	0.043
O61	0.037	0.082	0.081	0.015	0.070	0.020	0.005	0.010
O62	0.062	0.068	0.098	0.084	0.073	0.029	0.050	0.035
O63	0.095	0.059	0.079	0.086	0.122	0.014	0.027	0.013
O64	0.030	0.023	0.041	0.036	0.023	0.008	0.028	0.040

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR
O65	0.018	0.083	0.026	0.110	0.017	0.029	0.077	0.091
O66	0.038	0.075	0.027	0.052	0.033	0.037	0.043	0.021
O67	0.018	0.047	0.043	0.060	0.118	0.066	0.116	0.023
Wind VR (Perimeter + Overall Test Points)	0.135	0.138	0.136	0.087	0.126	0.085	0.072	0.039
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
LVR (Weighted)	0.021	0.029	0.023	0.011	0.015	0.007	0.006	0.003
							Overall LVR	0.114

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR
P1	0.224	0.301	0.233	0.180	0.034	0.040	0.042	0.077
P2	0.215	0.237	0.198	0.150	0.042	0.070	0.069	0.078
P3	0.051	0.066	0.096	0.119	0.030	0.107	0.094	0.101
P4	0.035	0.047	0.042	0.097	0.055	0.100	0.090	0.104
P5	0.033	0.061	0.066	0.086	0.078	0.056	0.054	0.077
P6	0.029	0.075	0.068	0.114	0.063	0.037	0.033	0.045
P7	0.084	0.088	0.021	0.141	0.044	0.081	0.050	0.053
P8	0.119	0.090	0.029	0.152	0.136	0.094	0.099	0.075
P9	0.139	0.072	0.025	0.100	0.186	0.133	0.133	0.093
P10	0.124	0.051	0.097	0.134	0.191	0.163	0.141	0.095
P11	0.240	0.310	0.240	0.175	0.017	0.075	0.016	0.060
P12	0.107	0.070	0.083	0.127	0.183	0.158	0.133	0.112
P13	0.235	0.295	0.225	0.150	0.046	0.092	0.009	0.046
P14	0.086	0.114	0.080	0.122	0.172	0.140	0.117	0.110
P15	0.231	0.272	0.199	0.123	0.072	0.092	0.008	0.043
P16	0.075	0.109	0.074	0.111	0.159	0.117	0.098	0.114
P17	0.252	0.264	0.190	0.086	0.076	0.084	0.009	0.039
P18	0.084	0.107	0.065	0.097	0.162	0.090	0.087	0.111
P19	0.241	0.242	0.183	0.103	0.078	0.086	0.037	0.048
P20	0.038	0.114	0.045	0.065	0.166	0.068	0.065	0.104
P21	0.225	0.225	0.177	0.109	0.079	0.080	0.102	0.171
P22	0.065	0.065	0.117	0.178	0.186	0.038	0.045	0.112
P23	0.200	0.259	0.216	0.047	0.061	0.084	0.051	0.044
P24	0.058	0.071	0.070	0.089	0.184	0.020	0.034	0.110
P25	0.190	0.262	0.217	0.053	0.133	0.111	0.092	0.057
P26	0.090	0.143	0.108	0.080	0.144	0.017	0.017	0.084
P27	0.168	0.264	0.215	0.046	0.141	0.096	0.102	0.030
P28	0.060	0.144	0.164	0.037	0.104	0.079	0.102	0.088
P29	0.115	0.118	0.201	0.049	0.121	0.096	0.113	0.070
P30	0.110	0.156	0.186	0.076	0.126	0.119	0.131	0.045
P31	0.096	0.152	0.130	0.080	0.127	0.083	0.102	0.069
P32	0.075	0.129	0.102	0.136	0.153	0.042	0.048	0.097
P33	0.068	0.100	0.131	0.136	0.122	0.054	0.077	0.097
P34	0.166	0.108	0.134	0.120	0.175	0.036	0.078	0.063
P35	0.081	0.173	0.162	0.127	0.083	0.015	0.061	0.038
P36	0.150	0.171	0.162	0.132	0.121	0.020	0.045	0.057
Wind VR	0.127	0.153	0.132	0.109	0.112	0.080	0.072	0.078
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
SVR (Weighted)	0.020	0.032	0.023	0.013	0.013	0.006	0.006	0.005
							Overall SVR	0.118

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR
O1	0.118	0.093	0.098	0.064	0.133	0.138	0.054	0.059
O2	0.134	0.132	0.215	0.043	0.155	0.172	0.114	0.080
O3	0.091	0.147	0.203	0.127	0.129	0.179	0.122	0.054
O4	0.043	0.077	0.197	0.111	0.084	0.154	0.103	0.073
O5	0.097	0.154	0.217	0.103	0.114	0.132	0.059	0.041
O6	0.318	0.268	0.227	0.088	0.309	0.210	0.085	0.030
O7	0.253	0.299	0.259	0.065	0.229	0.179	0.057	0.007
O8	0.121	0.253	0.234	0.045	0.118	0.132	0.098	0.025
O9	0.167	0.262	0.219	0.079	0.165	0.157	0.117	0.105
O10	0.176	0.290	0.213	0.162	0.182	0.167	0.100	0.046
O11	0.114	0.256	0.206	0.149	0.155	0.177	0.074	0.067
O12	0.072	0.227	0.201	0.120	0.127	0.168	0.058	0.086
O13	0.092	0.304	0.230	0.063	0.142	0.178	0.050	0.079
O14	0.114	0.182	0.095	0.073	0.046	0.163	0.060	0.040
O15	0.128	0.191	0.101	0.046	0.059	0.149	0.069	0.041
O16	0.367	0.261	0.166	0.099	0.368	0.277	0.107	0.043
O17	0.335	0.329	0.273	0.147	0.281	0.127	0.039	0.014
O18	0.367	0.375	0.293	0.099	0.314	0.159	0.036	0.012
O19	0.334	0.360	0.288	0.072	0.261	0.122	0.069	0.013
O20	0.312	0.304	0.224	0.047	0.211	0.131	0.104	0.022
O21	0.272	0.284	0.211	0.125	0.148	0.118	0.085	0.150
O22	0.228	0.292	0.214	0.167	0.119	0.116	0.023	0.027
O23	0.215	0.300	0.225	0.169	0.093	0.121	0.022	0.046
O24	0.200	0.293	0.226	0.177	0.059	0.097	0.033	0.082
O25	0.158	0.321	0.236	0.180	0.097	0.130	0.045	0.062
O26	0.072	0.081	0.078	0.061	0.116	0.060	0.016	0.135
O27	0.027	0.068	0.025	0.117	0.033	0.020	0.014	0.027
O28	0.221	0.291	0.225	0.171	0.034	0.069	0.076	0.092
O29	0.078	0.076	0.090	0.135	0.042	0.080	0.071	0.099
O30	0.134	0.038	0.042	0.142	0.078	0.118	0.105	0.079
O31	0.117	0.038	0.066	0.065	0.113	0.071	0.073	0.073
O32	0.099	0.046	0.088	0.130	0.187	0.153	0.139	0.042
O33	0.043	0.025	0.113	0.109	0.115	0.149	0.133	0.032
O34	0.044	0.012	0.126	0.071	0.125	0.148	0.116	0.073
O35	0.024	0.025	0.097	0.070	0.101	0.125	0.104	0.036
O36	0.088	0.075	0.092	0.132	0.127	0.131	0.113	0.099
O37	0.091	0.041	0.086	0.122	0.143	0.088	0.091	0.061
O38	0.034	0.125	0.058	0.077	0.130	0.068	0.072	0.059
O39	0.041	0.135	0.047	0.090	0.120	0.017	0.041	0.067
O40	0.032	0.110	0.079	0.050	0.149	0.023	0.050	0.097
O41	0.036	0.046	0.118	0.124	0.230	0.006	0.085	0.090
O42	0.195	0.183	0.056	0.068	0.270	0.037	0.065	0.068
O43	0.263	0.199	0.110	0.109	0.260	0.039	0.114	0.052
O44	0.148	0.035	0.093	0.101	0.041	0.062	0.084	0.031
O45	0.167	0.079	0.024	0.017	0.078	0.087	0.070	0.143
O46	0.090	0.060	0.047	0.056	0.082	0.091	0.054	0.107
O47	0.049	0.039	0.018	0.076	0.047	0.011	0.028	0.056
O48	0.059	0.036	0.002	0.045	0.043	0.020	0.017	0.028
O49	0.105	0.062	0.014	0.074	0.029	0.028	0.045	0.021
O50	0.032	0.024	0.015	0.068	0.044	0.046	0.081	0.057
O51	0.029	0.033	0.015	0.034	0.018	0.041	0.101	0.013
O52	0.025	0.030	0.026	0.016	0.031	0.033	0.102	0.044
O53	0.016	0.031	0.032	0.041	0.035	0.023	0.039	0.020
O54	0.055	0.041	0.021	0.019	0.060	0.015	0.043	0.034
O55	0.092	0.168	0.154	0.135	0.044	0.035	0.028	0.026
O56	0.093	0.128	0.113	0.137	0.042	0.062	0.078	0.017
O57	0.131	0.084	0.012	0.013	0.127	0.025	0.101	0.061
O58	0.351	0.315	0.241	0.200	0.304	0.042	0.098	0.035
O59	0.282	0.253	0.188	0.160	0.249	0.022	0.048	0.050
O60	0.306	0.260	0.183	0.148	0.281	0.036	0.012	0.079
O61	0.041	0.011	0.041	0.059	0.081	0.018	0.016	0.019
O62	0.069	0.153	0.147	0.130	0.128	0.066	0.066	0.081
O63	0.102	0.078	0.115	0.055	0.127	0.121	0.116	0.071
O64	0.053	0.016	0.033	0.010	0.048	0.039	0.055	0.007
O65	0.052	0.103	0.069	0.079	0.043	0.084	0.093	0.018
O66	0.038	0.041	0.030	0.067	0.040	0.052	0.044	0.011
O67	0.027	0.082	0.039	0.039	0.103	0.024	0.104	0.032
Wind VR (Perimeter + Overall Test Points)	0.130	0.151	0.129	0.099	0.123	0.089	0.072	0.063
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
LVR (Weighted)	0.020	0.031	0.022	0.012	0.014	0.007	0.006	0.004
							Overall LVR	0.117

Yuen Long Housing AVA Results

Case ENE
 Prevailing wind velocity 8.5 m/s
 Prevailing wind direction 67.5 deg
 Height of Anemometer 596.0 m
 Wind velocity@600m 8.5 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.39	1216.44	16.2	1.69	0.20	1.48	0.17	-0.20	-0.02	-12.0
S2	2185.32	1201.45	16.2	0.61	0.07	1.00	0.12	0.39	0.05	64.0
S3	2185.37	1186.43	16.2	0.26	0.03	0.80	0.09	0.54	0.06	204.7
S4	2162.28	1173.85	6.1	0.39	0.05	0.17	0.02	-0.22	-0.03	-56.7
S5	2185.42	1171.39	6.1	0.34	0.04	0.24	0.03	-0.10	-0.01	-29.4
S6	2200.68	1171.59	16.2	0.38	0.04	0.26	0.03	-0.13	-0.01	-33.1
S7	2215.57	1171.38	16.2	0.76	0.09	0.98	0.11	0.21	0.03	28.0
S8	2230.43	1171.43	6.1	0.95	0.11	1.34	0.16	0.39	0.05	40.5
S9	2260.33	1171.42	6.1	0.59	0.07	0.64	0.08	0.05	0.01	8.3
S10	2230.40	1216.58	6.1	1.09	0.13	1.03	0.12	-0.06	-0.01	-5.7
S11	2230.39	1201.41	6.1	0.61	0.07	1.35	0.16	0.74	0.09	121.7
S12	2230.30	1186.46	6.1	0.81	0.10	1.41	0.17	0.60	0.07	73.4
S13	2230.36	1156.62	6.1	0.92	0.11	1.39	0.16	0.48	0.06	52.0
S14	2230.31	1141.53	6.1	0.69	0.08	1.68	0.20	0.99	0.12	143.3
S15	2185.35	1156.43	6.1	0.40	0.05	0.17	0.02	-0.23	-0.03	-56.8
S16	2185.35	1141.48	16.2	0.45	0.05	0.81	0.09	0.36	0.04	79.0
S17	2185.35	1126.43	6.1	0.57	0.07	0.16	0.02	-0.41	-0.05	-71.9

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.031	0.019
	Maximum	0.198	0.197
	Average	0.080	0.103
	Change	0.023	
	% Change	29.4	

Yuen Long Housing AVA Results

Case NE
 Prevailing wind velocity 8.128 m/s
 Prevailing wind direction 45 deg
 Height of Anemometer 596 m
 Wind velocity@600m 8.15 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.39	1216.44	16.2	1.61	0.20	0.46	0.06	-1.15	-0.14	-71.4
S2	2185.32	1201.45	16.2	1.67	0.21	1.03	0.13	-0.64	-0.08	-38.3
S3	2185.37	1186.43	16.2	1.72	0.21	1.11	0.14	-0.62	-0.08	-35.8
S4	2162.28	1173.85	6.1	1.60	0.20	0.55	0.07	-1.06	-0.13	-65.9
S5	2185.42	1171.39	6.1	1.64	0.20	0.40	0.05	-1.25	-0.15	-75.9
S6	2200.68	1171.59	16.2	1.65	0.20	0.69	0.09	-0.95	-0.12	-57.9
S7	2215.57	1171.38	16.2	1.45	0.18	1.09	0.13	-0.36	-0.04	-25.0
S8	2230.43	1171.43	6.1	1.24	0.15	1.05	0.13	-0.19	-0.02	-15.1
S9	2260.33	1171.42	6.1	0.65	0.08	0.59	0.07	-0.06	-0.01	-9.5
S10	2230.40	1216.58	6.1	1.82	0.22	0.84	0.10	-0.98	-0.12	-53.9
S11	2230.39	1201.41	6.1	1.62	0.20	1.20	0.15	-0.42	-0.05	-26.1
S12	2230.30	1186.46	6.1	1.43	0.18	1.21	0.15	-0.22	-0.03	-15.5
S13	2230.36	1156.62	6.1	1.00	0.12	1.08	0.13	0.08	0.01	8.0
S14	2230.31	1141.53	6.1	0.85	0.10	1.37	0.17	0.52	0.06	61.3
S15	2185.35	1156.43	6.1	1.63	0.20	0.28	0.03	-1.35	-0.17	-82.7
S16	2185.35	1141.48	16.2	1.45	0.18	0.80	0.10	-0.66	-0.08	-45.2
S17	2185.35	1126.43	6.1	1.42	0.17	0.08	0.01	-1.34	-0.16	-94.2

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.080	0.035
	Maximum	0.223	0.168
	Average	0.177	0.105
	Change	-0.071	
	% Change	-40.4	

Yuen Long Housing AVA Results

Case	E
Prevailing wind velocity	7.468 m/s
Prevailing wind direction	90 deg
Height of Anemometer	596 m
Wind velocity@600m	7.49 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	1.33	0.18	0.52	0.07	-0.82	-0.11	-61.2
S2	2185.3	1201.4	16.2	0.22	0.03	0.26	0.04	0.04	0.01	17.7
S3	2185.4	1186.4	16.2	0.33	0.04	0.28	0.04	-0.05	-0.01	-14.7
S4	2162.3	1173.8	6.1	0.29	0.04	0.18	0.02	-0.12	-0.02	-39.8
S5	2185.4	1171.4	6.1	0.25	0.03	0.11	0.01	-0.14	-0.02	-54.9
S6	2200.7	1171.6	16.2	0.35	0.05	0.48	0.06	0.13	0.02	37.2
S7	2215.6	1171.4	16.2	0.59	0.08	0.50	0.07	-0.09	-0.01	-15.9
S8	2230.4	1171.4	6.1	0.77	0.10	0.22	0.03	-0.55	-0.07	-71.5
S9	2260.3	1171.4	6.1	0.61	0.08	0.45	0.06	-0.16	-0.02	-26.4
S10	2230.4	1216.6	6.1	0.76	0.10	0.28	0.04	-0.48	-0.06	-62.9
S11	2230.4	1201.4	6.1	0.64	0.09	0.23	0.03	-0.41	-0.05	-63.6
S12	2230.3	1186.5	6.1	0.80	0.11	0.24	0.03	-0.56	-0.07	-69.8
S13	2230.4	1156.6	6.1	0.77	0.10	0.13	0.02	-0.64	-0.09	-83.1
S14	2230.3	1141.5	6.1	0.86	0.12	0.15	0.02	-0.72	-0.10	-83.2
S15	2185.4	1156.4	6.1	0.18	0.02	0.15	0.02	-0.04	-0.00	-20.1
S16	2185.4	1141.5	16.2	0.18	0.02	0.31	0.04	0.13	0.02	76.0
S17	2185.4	1126.4	6.1	0.40	0.05	0.12	0.02	-0.28	-0.04	-69.6

Site Spatial Average Velocity Ratio (SVR):	Baseline Scenario		Proposed Scenario
	Minimum	0.023	0.015
	Maximum	0.178	0.069
	Average	0.073	0.036
	Change	-0.037	
	% Change	-50.7	

Yuen Long Housing AVA Results

Case NNE
 Prevailing wind velocity 9.356 m/s
 Prevailing wind direction 22.5 deg
 Height of Anemometer 596 m
 Wind velocity@600m 9.38 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	0.54	0.06	0.32	0.03	-0.21	-0.02	-39.5
S2	2185.3	1201.4	16.2	0.37	0.04	1.40	0.15	1.03	0.11	276.3
S3	2185.4	1186.4	16.2	0.24	0.03	1.87	0.20	1.63	0.17	679.9
S4	2162.3	1173.8	6.1	0.21	0.02	0.46	0.05	0.25	0.03	114.4
S5	2185.4	1171.4	6.1	0.17	0.02	0.64	0.07	0.47	0.05	269.9
S6	2200.7	1171.6	16.2	0.26	0.03	1.23	0.13	0.96	0.10	364.8
S7	2215.6	1171.4	16.2	0.40	0.04	1.67	0.18	1.26	0.13	311.5
S8	2230.4	1171.4	6.1	0.54	0.06	1.36	0.14	0.82	0.09	152.3
S9	2260.3	1171.4	6.1	0.62	0.07	0.68	0.07	0.06	0.01	9.3
S10	2230.4	1216.6	6.1	1.13	0.12	0.47	0.05	-0.66	-0.07	-58.6
S11	2230.4	1201.4	6.1	0.86	0.09	0.90	0.10	0.04	0.00	5.1
S12	2230.3	1186.5	6.1	0.63	0.07	1.29	0.14	0.66	0.07	104.2
S13	2230.4	1156.6	6.1	0.53	0.06	1.48	0.16	0.96	0.10	182.1
S14	2230.3	1141.5	6.1	0.55	0.06	1.92	0.20	1.37	0.15	251.2
S15	2185.4	1156.4	6.1	0.14	0.01	0.30	0.03	0.16	0.02	120.2
S16	2185.4	1141.5	16.2	0.19	0.02	1.54	0.16	1.35	0.14	712.2
S17	2185.4	1126.4	6.1	0.25	0.03	0.28	0.03	0.03	0.00	11.4

Site Spatial Average Velocity Ratio (SVR):	Baseline Scenario		Proposed Scenario
	Minimum	0.015	0.030
	Maximum	0.121	0.204
	Average	0.048	0.112
	Change	0.064	
	% Change	133.2	

Yuen Long Housing AVA Results

Case ESE
 Prevailing wind velocity 6.290 m/s
 Prevailing wind direction 112.5 deg
 Height of Anemometer 596 m
 Wind velocity@600m 6.31 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	0.16	0.02	0.38	0.06	0.23	0.04	144.5
S2	2185.3	1201.4	16.2	0.17	0.03	0.23	0.04	0.06	0.01	37.8
S3	2185.4	1186.4	16.2	0.28	0.04	0.42	0.07	0.14	0.02	49.0
S4	2162.3	1173.8	6.1	0.51	0.08	0.59	0.09	0.08	0.01	16.6
S5	2185.4	1171.4	6.1	0.53	0.08	0.43	0.07	-0.10	-0.02	-19.5
S6	2200.7	1171.6	16.2	0.49	0.08	0.74	0.12	0.24	0.04	49.5
S7	2215.6	1171.4	16.2	0.54	0.09	0.52	0.08	-0.02	-0.00	-4.5
S8	2230.4	1171.4	6.1	0.57	0.09	0.19	0.03	-0.38	-0.06	-66.5
S9	2260.3	1171.4	6.1	0.65	0.10	0.37	0.06	-0.28	-0.04	-42.7
S10	2230.4	1216.6	6.1	0.67	0.11	0.54	0.09	-0.13	-0.02	-19.7
S11	2230.4	1201.4	6.1	0.69	0.11	0.30	0.05	-0.39	-0.06	-56.6
S12	2230.3	1186.5	6.1	0.62	0.10	0.16	0.03	-0.46	-0.07	-73.6
S13	2230.4	1156.6	6.1	0.72	0.11	0.31	0.05	-0.40	-0.06	-56.2
S14	2230.3	1141.5	6.1	0.94	0.15	0.58	0.09	-0.37	-0.06	-39.1
S15	2185.4	1156.4	6.1	0.67	0.11	0.32	0.05	-0.35	-0.06	-52.6
S16	2185.4	1141.5	16.2	0.82	0.13	0.77	0.12	-0.05	-0.01	-5.9
S17	2185.4	1126.4	6.1	0.90	0.14	0.16	0.03	-0.74	-0.12	-82.4

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.025	0.025
	Maximum	0.150	0.122
	Average	0.093	0.065
	Change	-0.027	
	% Change	-29.4	

Yuen Long Housing AVA Results

Case SSE
 Prevailing wind velocity 5.915 m/s
 Prevailing wind direction 225.0 deg
 Height of Anemometer 596 m
 Wind velocity@600m 5.93 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	0.30	0.051	0.34	0.06	0.04	0.01	12.4
S2	2185.3	1201.4	16.2	0.24	0.040	0.26	0.04	0.02	0.00	8.3
S3	2185.4	1186.4	16.2	0.22	0.037	0.65	0.11	0.43	0.07	196.2
S4	2162.3	1173.8	6.1	0.25	0.042	0.56	0.09	0.31	0.05	124.7
S5	2185.4	1171.4	6.1	0.18	0.031	0.19	0.03	0.01	0.00	3.7
S6	2200.7	1171.6	16.2	0.19	0.031	0.55	0.09	0.37	0.06	197.5
S7	2215.6	1171.4	16.2	0.15	0.026	0.61	0.10	0.46	0.08	301.2
S8	2230.4	1171.4	6.1	0.23	0.039	0.63	0.11	0.40	0.07	170.0
S9	2260.3	1171.4	6.1	0.42	0.071	0.56	0.09	0.14	0.02	33.2
S10	2230.4	1216.6	6.1	0.39	0.066	0.82	0.14	0.43	0.07	108.7
S11	2230.4	1201.4	6.1	0.36	0.060	0.78	0.13	0.43	0.07	119.9
S12	2230.3	1186.5	6.1	0.30	0.051	0.70	0.12	0.39	0.07	129.5
S13	2230.4	1156.6	6.1	0.16	0.028	0.63	0.11	0.47	0.08	283.7
S14	2230.3	1141.5	6.1	0.13	0.021	0.59	0.10	0.47	0.08	365.9
S15	2185.4	1156.4	6.1	0.20	0.033	0.18	0.03	-0.02	-0.00	-7.8
S16	2185.4	1141.5	16.2	0.35	0.058	0.87	0.15	0.53	0.09	152.7
S17	2185.4	1126.4	6.1	0.30	0.051	0.35	0.06	0.05	0.01	15.9

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.021	0.030
	Maximum	0.071	0.147
	Average	0.043	0.092
	Change	0.049	
	% Change	112.2	

Yuen Long Housing AVA Results

Case SE
 Prevailing wind velocity 5.621 m/s
 Prevailing wind direction 135 deg
 Height of Anemometer 596 m
 Wind velocity@600m 5.64 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	0.65	0.12	0.36	0.06	-0.29	-0.05	-44.8
S2	2185.3	1201.4	16.2	0.58	0.10	0.24	0.04	-0.33	-0.06	-57.8
S3	2185.4	1186.4	16.2	0.47	0.08	0.45	0.08	-0.02	-0.00	-4.5
S4	2162.3	1173.8	6.1	0.50	0.09	0.63	0.11	0.13	0.02	25.2
S5	2185.4	1171.4	6.1	0.44	0.08	0.41	0.07	-0.03	-0.01	-7.7
S6	2200.7	1171.6	16.2	0.28	0.05	0.51	0.09	0.23	0.04	82.0
S7	2215.6	1171.4	16.2	0.19	0.03	0.46	0.08	0.28	0.05	146.6
S8	2230.4	1171.4	6.1	0.22	0.04	0.45	0.08	0.23	0.04	107.7
S9	2260.3	1171.4	6.1	0.22	0.04	0.32	0.06	0.10	0.02	47.9
S10	2230.4	1216.6	6.1	0.74	0.13	0.56	0.10	-0.18	-0.03	-24.3
S11	2230.4	1201.4	6.1	0.57	0.10	0.55	0.10	-0.02	-0.00	-3.4
S12	2230.3	1186.5	6.1	0.35	0.06	0.48	0.08	0.13	0.02	38.1
S13	2230.4	1156.6	6.1	0.09	0.02	0.45	0.08	0.37	0.06	407.6
S14	2230.3	1141.5	6.1	0.11	0.02	0.43	0.08	0.33	0.06	313.5
S15	2185.4	1156.4	6.1	0.28	0.05	0.19	0.03	-0.09	-0.02	-31.9
S16	2185.4	1141.5	16.2	0.22	0.04	0.89	0.16	0.67	0.12	302.2
S17	2185.4	1126.4	6.1	0.20	0.04	0.40	0.07	0.20	0.04	98.8

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.016	0.033
	Maximum	0.131	0.157
	Average	0.064	0.081
	Change	0.018	
	% Change	27.8	

Yuen Long Housing AVA Results

Case SSW
 Prevailing wind velocity 6.90566 m/s
 Prevailing wind direction 202.5 deg
 Height of Anemometer 596 m
 Wind velocity@600m 6.92 m/s

Special Test Points

Test point	x	y	z	Velocity (Baseline Scenario) (m/s)	VR (Baseline Scenario)	Velocity (Proposed Scenario) (m/s)	VR (Proposed Scenario)	Diff Velocity	Diff VR	% VR Change
S1	2185.4	1216.4	16.2	0.20	0.028	0.92	0.13	0.72	0.10	367.9
S2	2185.3	1201.4	16.2	0.15	0.022	0.35	0.05	0.20	0.03	134.1
S3	2185.4	1186.4	16.2	0.11	0.016	0.48	0.07	0.37	0.05	330.5
S4	2162.3	1173.8	6.1	0.07	0.010	0.56	0.08	0.50	0.07	719.9
S5	2185.4	1171.4	6.1	0.09	0.013	0.39	0.06	0.30	0.04	340.2
S6	2200.7	1171.6	16.2	0.06	0.009	0.59	0.09	0.53	0.08	834.7
S7	2215.6	1171.4	16.2	0.05	0.007	0.78	0.11	0.73	0.11	1546.4
S8	2230.4	1171.4	6.1	0.13	0.018	0.91	0.13	0.78	0.11	611.5
S9	2260.3	1171.4	6.1	0.39	0.056	0.51	0.07	0.12	0.02	32.0
S10	2230.4	1216.6	6.1	0.08	0.012	1.47	0.21	1.38	0.20	1685.5
S11	2230.4	1201.4	6.1	0.09	0.013	1.30	0.19	1.21	0.17	1391.4
S12	2230.3	1186.5	6.1	0.11	0.016	1.08	0.16	0.97	0.14	867.7
S13	2230.4	1156.6	6.1	0.14	0.020	0.80	0.12	0.66	0.10	478.7
S14	2230.3	1141.5	6.1	0.13	0.018	0.50	0.07	0.37	0.05	291.5
S15	2185.4	1156.4	6.1	0.12	0.018	0.20	0.03	0.07	0.01	59.6
S16	2185.4	1141.5	16.2	0.10	0.015	0.93	0.13	0.83	0.12	802.1
S17	2185.4	1126.4	6.1	0.17	0.025	0.38	0.05	0.20	0.03	117.0

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR):	Minimum	0.007	0.028
	Maximum	0.056	0.212
	Average	0.019	0.103
	Change	0.085	
	% Change	455.6	

Special Test Points

Test points	Baseline Scenario_VRw'	Proposed Scenario_VRw'	Different in VRw'	%VRw' Change
S1	0.128	0.087	-0.040	-31.6
S2	0.075	0.084	0.009	12.0
S3	0.069	0.100	0.032	46.0
S4	0.073	0.058	-0.014	-20.0
S5	0.070	0.045	-0.024	-35.1
S6	0.071	0.081	0.010	14.0
S7	0.082	0.111	0.029	35.3
S8	0.090	0.104	0.014	15.6
S9	0.073	0.070	-0.003	-4.6
S10	0.124	0.098	-0.025	-20.6
S11	0.099	0.111	0.012	12.2
S12	0.096	0.112	0.016	16.2
S13	0.084	0.107	0.023	27.0
S14	0.082	0.127	0.045	55.3
S15	0.070	0.030	-0.040	-57.0
S16	0.071	0.110	0.039	55.0
S17	0.080	0.029	-0.052	-64.3

		Baseline Scenario	Proposed Scenario
Site Spatial Average Velocity Ratio (SVR)	Minimum	0.069	0.029
	Maximum	0.128	0.127
	Average	0.084	0.086
	Change	0.002	
	%Change	2.0	

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR	Baseline Scenario_VR
S1	0.178	0.198	0.197	0.057	0.025	0.115	0.051	0.028
S2	0.030	0.072	0.205	0.040	0.027	0.103	0.040	0.022
S3	0.045	0.031	0.211	0.026	0.044	0.084	0.037	0.016
S4	0.039	0.046	0.197	0.023	0.080	0.089	0.042	0.010
S5	0.033	0.040	0.202	0.019	0.085	0.078	0.031	0.013
S6	0.047	0.045	0.202	0.028	0.078	0.050	0.031	0.009
S7	0.079	0.090	0.178	0.043	0.086	0.033	0.026	0.007
S8	0.103	0.112	0.152	0.057	0.091	0.039	0.039	0.018
S9	0.082	0.069	0.080	0.066	0.102	0.039	0.071	0.056
S10	0.101	0.128	0.223	0.121	0.106	0.131	0.066	0.012
S11	0.085	0.071	0.198	0.091	0.110	0.101	0.060	0.013
S12	0.106	0.095	0.176	0.067	0.098	0.061	0.051	0.016
S13	0.103	0.108	0.123	0.056	0.114	0.016	0.028	0.020
S14	0.115	0.081	0.104	0.058	0.150	0.019	0.021	0.018
S15	0.024	0.047	0.200	0.015	0.106	0.049	0.033	0.018
S16	0.023	0.053	0.178	0.020	0.129	0.039	0.058	0.015
S17	0.053	0.067	0.174	0.027	0.142	0.036	0.051	0.025
Wind VR	0.073	0.080	0.176	0.048	0.093	0.064	0.043	0.019
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
SVR (Weighted)	0.011	0.017	0.030	0.006	0.011	0.005	0.004	0.001
							Overall SVR	0.085

	E	ENE	NE	NNE	ESE	SE	SSE	SSW
Test points	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR	Proposed Scenario_VR
S1	0.069	0.175	0.056	0.035	0.061	0.063	0.057	0.133
S2	0.035	0.118	0.127	0.149	0.037	0.043	0.044	0.051
S3	0.038	0.094	0.136	0.200	0.066	0.080	0.110	0.070
S4	0.024	0.020	0.067	0.049	0.094	0.112	0.095	0.081
S5	0.015	0.028	0.049	0.069	0.068	0.072	0.032	0.056
S6	0.064	0.030	0.085	0.131	0.117	0.091	0.093	0.085
S7	0.066	0.115	0.134	0.178	0.082	0.082	0.103	0.113
S8	0.029	0.157	0.129	0.145	0.030	0.080	0.106	0.131
S9	0.060	0.075	0.073	0.072	0.059	0.057	0.095	0.073
S10	0.037	0.121	0.103	0.050	0.085	0.099	0.138	0.212
S11	0.031	0.158	0.147	0.096	0.048	0.097	0.132	0.187
S12	0.032	0.166	0.149	0.138	0.026	0.085	0.118	0.157
S13	0.017	0.164	0.132	0.158	0.050	0.081	0.106	0.116
S14	0.019	0.197	0.168	0.204	0.091	0.077	0.100	0.072
S15	0.020	0.020	0.035	0.032	0.050	0.033	0.030	0.028
S16	0.041	0.095	0.098	0.164	0.122	0.157	0.147	0.134
S17	0.016	0.019	0.010	0.030	0.025	0.071	0.059	0.054
Wind VR	0.036	0.103	0.100	0.112	0.065	0.081	0.092	0.103
Relative Weighting	15.7%	20.8%	17.2%	12.2%	11.7%	7.8%	8.1%	6.6%
SVR (Weighted)	0.006	0.021	0.017	0.014	0.008	0.006	0.008	0.007
							Overall SVR	0.086