

## **THEAKSTON ENVIRONMENTAL**

### **Consulting Engineers**

596 Glengarry Cr., P.O. Box 390  
Fergus Ontario N1M 3E2

Telephone: (519) 787-2910

Line 2: (519) 787-2918

[www.theakston.com](http://www.theakston.com)

[spollock@theakston.com](mailto:spollock@theakston.com)

**May 15, 2020**

## **Preliminary Pedestrian Level Wind Study 3575 Kaneff Crescent Mississauga, Ontario**

**Theakston Project No. 19570**

### **Submitted To:**

**Kaneff Properties Limited  
c/o Kristina and Anna-Maria Kaneff  
8501 Mississauga Road  
Brampton, ON  
L6Y 5G8**

### **Submitted By:**

**Theakston Environmental  
Consulting Engineers  
596 Glengarry Crescent  
Fergus, Ontario  
N1M 3E2**

**Stephen Pollock, P.Eng.**

## 1. EXECUTIVE SUMMARY

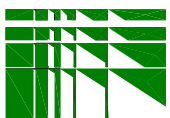
The proposed 3575 Kaneff Crescent Development, herein referred to as the Development, involves a proposal to build a 29 storey residential building on lands that are currently assigned to at grade parking. The Development is situated to the southwest of Mississauga Valley Boulevard, northwest of Elm Drive East, northeast of Obelisk Way, and southeast of Kaneff Crescent. Based upon our analysis, wind conditions on and around the proposed Development are predicted to be suitable for walking, standing, or better, year-round, under normal to high ambient wind conditions.

The surrounding lands pertinent to prevailing winds currently realised on and about the Development site present a mix of terrain types comprised of high-rise residential, to most compass points along with associated open parking areas and green space supporting mature vegetation, with exception; to the east of the site is Iona Plaza, a low-rise commercial property with associated open parking areas. These open lands present limited roughness to the wind's streamlines, affording wind opportunity to accelerate on approach. In contrast, the surrounding high-rise residential buildings present roughness that will moderate winds upon approach, however, they will create localised zones of high energy winds, usually at their corners and in the gaps between.

As such, wind conditions realised at the 3575 Kaneff Crescent Development site and along the above-named roads proximate to the Development, are for the most part comfortable. With strong winds approaching from over open settings, windy, though not likely uncomfortable conditions will be realised, from time to time, during the winter months, and this is directly attributable to the setting.

Insertion of a large building into such a setting can prove challenging, from a pedestrian comfort perspective, understanding that winds that formerly flowed over the site must be redirected to flow over, down and around the Development. The 3575 Kaneff Crescent Development utilises wind friendly design elements. These include inclusion of a podium, orientation and conformation of the building relative to the base building, the surroundings and prevailing wind climate, the presence of stepped façades that are punctuated with balconies, landscaping, and others. When considered in concert, these elements allow much of the impending wind climate opportunity to flow over and around, as opposed to down, the 3575 Kaneff Crescent Development.

With the introduction of the new building there will be a realignment of winds at the pedestrian level. This is well managed by the layout of the proposed Development, and as such, comfort conditions are predicted similar to those in the current setting over most of the flanking roads, for much of the prevailing wind climate. Under strong or gusty wind conditions several of the proposed Development's corners will realise windy



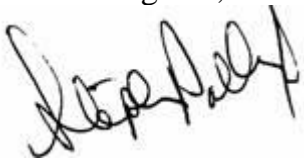
conditions, however, the site will remain suitable to the area's intended purpose. Further, the Development will pose little appreciable effect upon pedestrian comfort conditions currently realised along the adjacent streets removed from said corners.

A mitigation plan has been recommended for the 5<sup>th</sup> level amenity area's landscaping and architectural designs in order to achieve the longer exposures required to accommodate the desired activities. Said plan for the space might include 1.8m windscreens about the perimeter of the space, trellises, plantings in raised planters, and others.

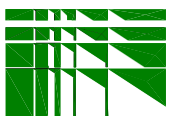
Comfort conditions expected at the proposed Development site are considered appropriate to the surrounding context, based upon qualitative analysis. Additional wind mitigation at the pedestrian level is not required at this stage.

Should you have questions or comments, please do not hesitate to call.

Kindest Regards,



Stephen Pollock, P.Eng



## **2. INTRODUCTION**

Mark Condello of Glen Schnarr & Associates Inc. requested a preliminary pedestrian level wind study for the Proposed 3575 Kaneff Crescent Development, based upon project plans prepared by Turner Fleischer Architects Inc. The objective of this primary analysis is to estimate pedestrian level wind conditions resulting from inclusion of the proposed development, relative to comfort and safety. The analysis is based upon historical meteorological data of wind conditions for the Mississauga area, architectural plans dated May 6, 2020, our experience with similar microclimatic analyses that were conducted on other properties in the area, and/or similar projects, and our understanding of wind flows around buildings. The qualitative assessment utilises numerical analysis of local wind data predicted at the site and provides a synopsis of pedestrian comfort conditions anticipated on, and adjacent to, the property. It is a precursor to physical scale model testing, the quantitative analysis that will further define anticipated wind conditions, and mitigation, should such measures be required.

## **3. SITE INFORMATION**

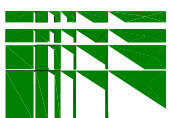
The 3575 Kaneff Crescent property occupies a block of lands bound by; Mississauga Valley Boulevard to the northeast, Elm Drive East to the southeast, Obelisk Way to the southwest, and Kaneff Crescent to the northwest, in the City of Mississauga. The property has a total area of 0.2739 hectares and currently accommodates surface parking and some green space.

The Development is comprised of a 29 storey residential building with a 4 storey wing to the northwest that accommodates a Rooftop Amenity Space. The Tower steps back along the west, east, north, and southeast façades at the 3<sup>rd</sup> level, the rooftop accommodating residential terraces. A one-way driveway provides vehicular access from Obelisk Way to the vehicular drop off and main residential lobby entrance situated on the southwest side of the 4 storey wing. The driveway also provides access to the services and underground parking, before exiting on Kaneff Crescent. Secondary residential entrances are proposed along the east and southeast façades, accessed from Elm Drive East and Obelisk Way, respectively. The site plan is depicted in Figure 2.

## **4. SURROUNDING AREA**

The proposed Development site is surrounded to prevailing wind directions by a mix of terrain types including low through high-rise residential, low-rise commercial, related parking lots, and open green spaces, some supporting mature vegetation.

The most significant buildings relative to the proposed Development include:



To the northeast of the proposed Development site, across Mississauga Valley Boulevard, a 22 storey slab style apartment building.

Similarly, across Kaneff Crescent, to the northwest of the proposed Development, is a 24 storey cruciform style building.

To the west of the site, across Obelisk Way, is a tennis court and parking area, with an associated 19 storey L-shaped apartment building beyond.

South of the proposed Development site, between Elm Street East and Central Parkway East, are three 19 storey slab style apartment buildings with associated parking areas.

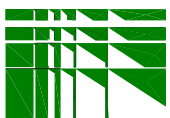
Mid to high-rise residential buildings with significant open areas and mature vegetation dominate the more distant surrounds as well with low-density residential neighbourhoods beyond.

Urban intensification is taking place in the surroundings with Solmar Developments proposal to constructed three towers on lands to the south of the intersection of Hurontario Street with Elm Drive West that are in the order of 30 and 50 storeys.

The pertinent site exposures are, for all intents and purposes, considered urban to all compass points. As mentioned, the surrounding buildings are for the most part well spread-out, the interstitial areas between presenting roughness in the form of mature deciduous, and to a lesser degree, coniferous vegetation. As such considerable roughness for the most part is presented to winds upon approach. With respect to pedestrian level wind comfort, the areas of concern include the building entrances, street related sidewalks, and outdoor amenity spaces. The site and surroundings are depicted in Figure 1.



*View of the 3575 Kaneff Crescent Development Site looking north (Google).*



## 5. METEOROLOGICAL DATA

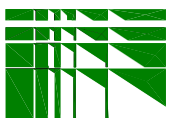
For studies in the City of Mississauga, historical weather data recorded at the Pearson International Airport are analysed for the summer and winter seasons, May through October and November through April respectively, and the resulting wind roses are presented as velocity and percent frequency in Figure 3. The velocities presented in the wind roses are measured at an elevation of 10m. Thus, representative ground level velocities at a height of 2m, for an urban macroclimate, are 52% of the mean values indicated on the wind rose, (for suburban and rural macroclimates the values are 63% and 78% respectively). Historical weather data recorded at the Toronto Island Airport was also considered in this analysis.

Although mainly urban, the macroclimate for this area is dependent upon wind direction and varies, to a degree, with direction. Winds from the north through west are predominant during the summer months with northerly and westerly directions most significant, as indicated in Figure 3 - Summer. Winds from the same quadrants dominate the winter with westerly directions most significant during the winter, as indicated in Figure 3 - Winter. Figure 3 also depicts wind velocity categories relative to directionality at the airport with strong winds, greater than 28km/h (8.3m/s) occurring approximately 6% of the time during the summer and 13% during the winter, and emanating from the aforementioned quadrants during both the winter and summer seasons, with calm conditions occurring approximately 6% of the time.

## 6. COMFORT CRITERIA

The assignment of pedestrian comfort takes into consideration pedestrian safety and comfort attributable to mean and gust wind speeds. Gusts have a significant bearing on safety, as they can affect a person's balance, while winds flowing at or near mean velocities have a greater influence upon comfort. The effects of mean and gust wind conditions are described as suitable for Sitting or Standing or Walking over 80% of the time. In order for a point to be rated as suitable for Sitting, for example, the wind conditions must be less than 10 km/h. The rating would include conditions ranging from calm up to wind speeds that would rustle tree leaves or wave flags slightly. As the name infers, the category is recommended for outdoor space such as terraces and patios where people might sit for extended periods and generally applied to the summer months.

The Standing category is slightly more tolerant of wind, including wind speeds from calm up to 14km/h. In this situation, the wind would rustle tree leaves and, on occasion, move smaller branches while flags would be partially extended. This category would be suitable for locations where people might sit for short periods or stand in relative comfort, such as building entrances and drop-off areas. The Walking category includes wind speeds from calm up to 19km/h. These winds would set tree limbs in motion, lift leaves, litter and dust, and the locations are suitable for sidewalks and parking. The Uncomfortable category covers a broad range of wind





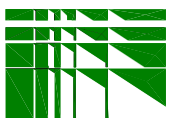
conditions, including wind speeds above 19km/h. These winds would set trees in motion, cause inconvenience when walking, and are not generally suitable to activities. Safety concerns are associated with wind speeds that are beyond the uncomfortable category, being sufficient to affect a person's balance.

Many variables contribute to a person's perception of the wind environment beyond the seasonal variations presented. While people are generally more tolerant of wind during the summer months, than during the winter, due to the wind cooling effect, people become acclimatized to a particular wind environment. Persons dwelling near the shore of an ocean, large lake or open field are more tolerant of wind than someone residing in a sheltered wind environment.

## **7. PEDESTRIAN LEVEL WIND ASSESSMENT**

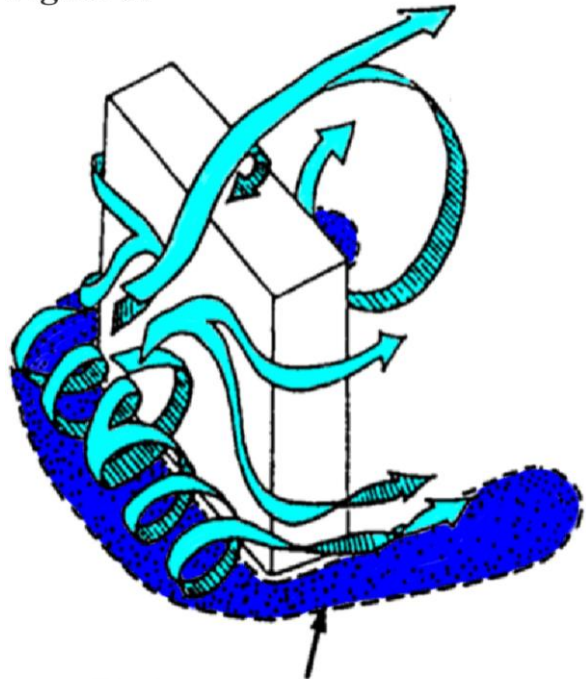
Variables beyond the orientation and conformation of a proposed development must be considered in predicting wind speed and occurrence at a given location. These include the previously discussed historical wind climate, surrounding terrain, and neighbouring buildings, each of which is quantified and/or analysed in the microclimatic analysis of pedestrian level winds. The results of such quantitative analyses have afforded a knowledge base that allows an estimation of pedestrian level wind conditions.

The site and the surrounds in the present circumstances is a mix of terrain types including low through high-rise residential, low-rise commercial, related parking lots, and open green spaces, some supporting mature vegetation; all have a sympathetic relationship with the existing wind climate. Urban development provides turbulence inducing surface roughness that can be wind friendly, while open settings afford wind the opportunity to accelerate as the wind's boundary layer profile thickens at the pedestrian level, owing to lack of surface roughness. Transition zones from open to urban settings can prove problematic, as winds exacerbated by the open setting are redirected to flow over, down, around and between buildings.



Large buildings may exacerbate wind conditions within their immediate vicinity, to varying degrees, by redirecting wind currents to the ground level and along streets and open areas. In general, wind will split upon impact with a large building, with portions flowing down the face of the building to the pedestrian level as downwash where it is deflected, or otherwise redirected to flow along the building and around its corners, creating localized zones of increased pedestrian level wind (Figure A). Conversely, points situated to the leeward side, or in the wake of buildings will often enjoy an improvement in pedestrian comfort. As such, it is reasonable to expect inclusion of the proposed development will alter wind conditions under specific wind directions and velocities from those of the existing site condition, resulting in an improvement over the existing conditions at some points, with more windy conditions at others.

**Figure A**



**Area of Strong Surface Wind**

### **Discussion of Northerly Winds**

Northerly winds make up a significant percentage of the prevailing wind climate; they tend to be of moderate velocity, particularly during the winter months, and are afforded limited opportunity to accelerate from over relatively suburban lands followed by green space associated with Cooksville Creek. Once upon the large slab style 22 storey residential building at 1477 Mississauga Valley Boulevard northerly winds are deflected to flow along the boulevard and ultimately over the proposed development site. The subject neighbourhood is for the most part apartment blocks that are in the order of 40 years old. The surrounding lands were landscaped with, for the most part, deciduous trees with the occasional conifer. As such, the vegetation in the neighbourhood is mature and presents an appreciably rough approach to winds that will substantially reduce the wind's energy at the pedestrian level. Further, the 22 storey slab style apartment building to the northeast of the property, at 1547 Mississauga Valley Boulevard will deflect northerly wind and northerly winds with easterly components to flow around or up and over leeward portions of Mississauga Valley Boulevard, and portions of the proposed Development site.

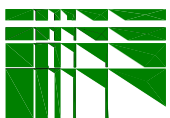


The result is relatively comfortable northerly wind conditions in the existing setting, along Mississauga Valley Boulevard in the aerodynamic shade region of said neighbouring development. Slightly more windy conditions will be realised at the Development site and adjacent streets that are exposed to northerly winds deflected to flow along the Boulevard. Comfort conditions along the Mississauga Valley Boulevard sidewalk proximate to the neighbouring 22 storey apartment building are comfortable, suitable for standing during the winter and for activities requiring longer exposures during the summer. Northern portions of Mississauga Valley Boulevard, as well as Kaneff Crescent, Obelisk Way, and Elm Drive East, will realise winter wind conditions that are more suitable for Walking, adjacent to the proposed Development site, where exposed to northerly winds, and standing in the aerodynamic shade regions created by neighbouring buildings.

Northerly winds approaching the proposed 3575 Kaneff Crescent Development's tower in upper streamlines will come into contact with the north corner. This will result in a propensity for northerly winds to flow along the respective sides of the tower, around the corners, and beyond, without significantly influencing the pedestrian level. Northerly winds approaching with westerly components will approach the tower's north façade at angles nearer to perpendicular, and as such will display a greater propensity to downwash, however, the narrow façade of the tower component presented to the north will limit downwash. Downwash that does occur will come into contact with the roof of the 4 storey podium, and step at the 3<sup>rd</sup> level, where the wind will deflect to flow along the building over the podium, around the corners, and beyond, at elevations well above the pedestrian level. As such, the tower component of the proposed 3575 Kaneff Crescent Development is expected to pose limited influence upon pedestrian comfort with northerly winds, and components thereof.

Northerly winds approaching the 3575 Kaneff Crescent Development at or near the pedestrian level will similarly split upon contact with the northmost corner of the proposed Development, however, the bulk of the wind will be directed to flow along the Mississauga Valley Boulevard façade of the podium, with minor portions deflected to flow along the building's Kaneff Crescent façade. This will result in moderately windy conditions along the Mississauga Valley Boulevard façade, however, given the modest height of the podium, favourable windward terrain, and mature landscaping along the street, said winds would not be inordinate, or uncomfortable, and the Mississauga Valley Boulevard sidewalk adjacent to the Proposed Development will remain reasonably comfortable, suitable for walking or standing during the winter months, and for activities requiring longer exposures during the balance of the seasons.

Winds deflected to flow along Kaneff Crescent will cause a minor upset to pedestrian level winds that will not likely change the existing ratings. Once around the westmost corner of the podium northerly winds will continue over the subject and neighbouring sidewalks of Obelisk Way where they will dissipate into the relatively open setting. Given the aforementioned it is not likely that a significant portion of the northerly wind climate will



be deflected by the windward façade of the Proposed Development to the pedestrian level, and the leeward pedestrian areas will be comfortable. The Kaneff Crescent Development's vehicular drop-off, related sidewalks and main entrance are in the aerodynamic shade region of the building, and as such will be comfortable, suitable for sitting most of the time, standing on occasion during the winter months.

The areas proximate to the corners and for a distance along the respective sidewalks will realise windier conditions than the sidewalks and boulevards of the existing setting, however, they will remain comfortable, suitable to the areas' intended purposes. As such, with inclusion of the proposed Development, the subject and neighbouring residential properties will continue to realise reasonably comfortable conditions, suitable for the areas' intended purpose.

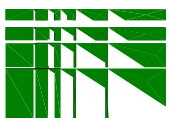
The sidewalks along Elm Drive East will realise comfort conditions that are similar to the existing setting, suitable for standing to the leeward side of the subject and neighbouring buildings, with localised areas exposed to northerly winds approaching from over open areas, suitable for walking during the winter.

### **Discussion of Westerly Winds**

Westerly winds make up a more significant percentage of the prevailing wind climate; they can be of higher velocity, relative to northerly winds, particularly during the winter months, and are similarly preconditioned upon approach by a context comprised of mid to high-rise residential and office buildings. Said buildings to the west of Hurontario Street will introduce significant turbulence into the approaching wind's streamlines, substantially reducing the energy realised at the proposed Development site. However, the windward 20 storey "L" shaped building at 3590 Kaneff Crescent and the 23 storey slab style building at 3620 Kaneff Crescent will deflect westerly winds to flow down, around and through the gap between, and ultimately over the proposed Development site. A portion of the terrain leeward to said buildings has been planted with coniferous and deciduous plantings that will moderate winds realised at the proposed Development site.

This results in moderately windy conditions over the site and the flanking streets in the immediate surrounding, on the occasion of high ambient westerly winds, and components thereof. As such, the subject site and adjacent streets will realise comfort conditions that are for the most part suitable for walking during the winter months, and standing during the summer, along the sidewalks adjacent to the 3575 Kaneff Crescent Development site.

Westerly winds approaching the proposed Development's tower in upper streamlines will come into contact with the west corner of the proposed Development's tower, resulting in said winds displaying a propensity towards splitting upon contact, flowing along the

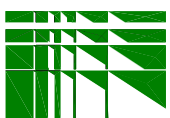


adjacent façades, around the leeward corners, and beyond, without significantly influencing the pedestrian level. Westerly winds approaching with northerly or southerly components will respectively shift the above-mentioned windward 3620 Kaneff Crescent and 3590 Kaneff Crescent towers into the approach flow, resulting in the proposed Development being covered by their aerodynamic shade regions, resulting in similarly comfortable, or more comfortable, conditions.

Downwash that does occur will come into contact with the roof of the 4 storey podium and step at the 3<sup>rd</sup> level, where the wind will deflect to flow along the building over the podium, around the corner, and beyond, at elevations well above the pedestrian level. As such the tower component of the proposed 3575 Kaneff Crescent Development is expected to pose limited influence upon pedestrian comfort with westerly winds, and components thereof.

Westerly winds approaching at and near the Pedestrian level will be deflected to flow up and over the 4 storey wing of the proposed Development and or around the building. This will create an area of turbulent wind flows in and about the inside corner proximate to the entrance and vehicular drop off, however, the wind's energy will be moderated by the approach, and as such, the area will remain relatively comfortable. Westerly winds will continue along the Obelisk Way or Kaneff Crescent facades, around the corners, and beyond. This will result in an acceleration of winds as the wind's streamlines are redirected to flow along the building, causing windy conditions at the south corner of the proposed Development, however, the upset is not significant and the area will remain suitable for walking during the winter months and for activities requiring longer exposures during the balance of the seasons. Winds, once beyond the corner, will diffuse rapidly into the leeward open areas.

The northerly flow along Kaneff Crescent will continue over the grounds and will eventually flow over Mississauga Valley Boulevard. This will result in moderately windy conditions over the grounds from time to time that will increase with progression along the building, coming to a peak at the northmost corner. However, given the slope of the site and orientation and conformation of the building, existing and proposed landscaping, much of the wind's streamlines will have opportunity to diffuse, moderating the influence upon the pedestrian level. As such the walkway along the northwest side of the proposed Development will be windy from time to time, but remain suitable for walking or better during the winter months. Similarly, the sidewalk along Mississauga Valley Boulevard will realise localised moderately windy conditions, suitable for walking, but will be suitable for sitting in the proposed Development aerodynamic shade region.



## **Discussion of Southerly Winds**

Southerly winds make up a less significant percentage of the prevailing wind climate, tend to be of lower velocity, and are similarly preconditioned upon approach by a context comprised of mid to high-rise residential and office buildings. Buildings to the immediate south of Elm Drive East will introduce significant turbulence into the approaching wind's streamlines, substantially reducing the energy realised at the proposed Development site.

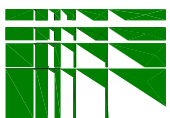
The immediately windward buildings that include 19 storey slab style buildings at 30 and 50 Elm Drive East and a 20 storey slab style building at 1580 Mississauga Valley Boulevard, collectively deflect southerly winds to flow down, around and through the gap between, and ultimately over the proposed Development site. A significant portion of the terrain windward to and to the lee side of said buildings, has been planted with coniferous and deciduous plantings that have had opportunity to mature, resulting in a moderation of the winds ultimately realised at the proposed Development site.

This results in relatively comfortable wind conditions over the site and the flanking streets in the immediate surrounding, on the occasion of southerly winds, and components thereof. As such, the subject site and adjacent sidewalks will realise comfort conditions that are suitable for standing during the winter months and sitting during the summer.

Southerly winds approaching the proposed Development's tower in upper streamlines will come into contact with the south corner of the proposed Development's tower resulting in said winds splitting to flowing along the adjacent façades, around the corners and beyond, again without significantly influencing the pedestrian level. As such the tower component of the proposed 3575 Kaneff Crescent Development is expected to pose limited influence upon pedestrian comfort with southerly winds.

Southerly winds approaching the 3575 Kaneff Crescent Development at or near the pedestrian level will split upon contact with the southmost corner to flow along Elm Drive East and Obelisk Way. This will result in moderately windy conditions along the respective sidewalks, however, given the favourable windward terrain that includes an abundance of mature coniferous and deciduous trees, said winds will remain comfortable along the sidewalks adjacent to the Proposed Development, suitable for standing during the winter months, and for activities requiring longer exposures during the balance of the seasons.

Said winds deflected to flow along Kaneff Crescent will cause a minor upset to pedestrian level winds that will not likely change the existing ratings. Once around the westmost corner of the podium southerly winds will continue over the subject and neighbouring sidewalks of Obelisk Way where they will dissipate into the relatively open setting. Given the aforementioned, it is not likely that a significant portion of the southerly wind climate will be deflected by the windward façade of the proposed Development, and the leeward



pedestrian areas will be comfortable. The Kaneff Crescent Development's vehicular drop-off, related sidewalks and main entrance are in the aerodynamic shade region of the building and as such will be comfortable, suitable for sitting most of the time during the summer, standing during the winter months.

As such, with inclusion of the proposed 3575 Kaneff Crescent Development the above-mentioned areas will continue to realise reasonably comfortable conditions, suitable for the areas' intended purpose.

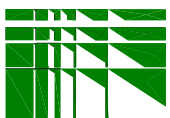
### **Discussion of Easterly Winds**

Easterly winds are infrequent; however, they can be strong and are often associated with storms. Easterly winds are favourably preconditioned upon approach by a mix of terrain types that include the low-density residential neighbourhood to the east beyond Central Parkway East. However, the Iona Plaza at 1585 Mississauga Valley Boulevard, which presents relatively large flat roofed single storey buildings to wind, along with an expansive parking lot, allows winds opportunity to accelerate upon approach. Said winds come into contact with the east façade of the 20 storey slab style building at 1580 Mississauga Valley Boulevard where they are, for the most part, deflected to flow in a northerly direction, around it's corner and over the 3575 Kaneff Crescent Development site.

As such, comfort conditions along Mississauga Valley Boulevard, Elm Drive East, Kaneff Crescent and Obelisk Way, proximate to the subject Development, are expected to be windy at times, but otherwise comfortable, suitable for standing during the summer months, walking or better during the winter.

Easterly winds approaching the proposed Development's tower in upper streamlines will come into contact with the eastmost corner of the proposed Development's tower. The tower presents irregular façades that are punctuated with balconies that, considered in concert, results in much of the flow being deflected to continue along the building and beyond at elevations above the pedestrian level. Downwash will be limited and that which occurs will be redirected by the step at the 3<sup>rd</sup> level to flow around the building above the pedestrian level. Upper level winds that do find their way to the pedestrian level will flow out from the base of the building before turning to continue along the building in northwesterly and southwesterly directions, around the corners and beyond, contributing slightly to the pedestrian level winds discussed below.

Easterly winds approaching at and near the Pedestrian level will be deflected to flow over the windward Iona Plaza and around the 20 storey apartment building, as discussed above. Once upon contact with the proposed Development they will again split upon contact with



the eastmost corner to flow along Mississauga Valley Boulevard and Elm Drive East, around the corners and over Kaneff Crescent and Obelisk Way, respectively.

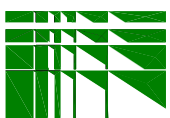
This will result in windy conditions along the respective façades that gradually increase in velocity with progression along the façades, culminating at the north and south corners of the proposed Development. However, the upset will not cause uncomfortable conditions, and the area will remain suitable for walking during the winter months and for activities requiring longer exposures during the balance of the seasons. Winds, once beyond the corners, will diffuse rapidly into the leeward open areas.

The proposed Development's at grade activity areas, sidewalks, and entrances are, for all intents and purposes, in the aerodynamic shade region created by the subject building, and will be comfortable, suitable for the intended purpose. The area will be comfortable, appropriate for standing during the winter and for activities requiring longer exposures during the balance of the seasons.

### **Discussion of Ordinal Winds**

Ordinal Winds approaching from remaining directions, northwesterly, northeasterly, southeasterly, and southwesterly directions, approach from over similar terrain types, and will contact the broad façades of the Proposed Development at angles less skewed than those discussed above. As such, a downwash of wind to the pedestrian level is more likely with ordinal winds, particularly when emanating from directions near to perpendicular with the building's broader façades. The magnitude of the resulting downwash is dependent upon several variables; those commanding primary consideration are the building height, the effective width of the presented façade, the windward terrain, and wind mitigative design features. It is intuitive that short and/or narrow façades reduce the propensity for downwash, and the façades of the Proposed Development will display a marked tendency to deflect wind to flow around, as opposed to down the building, for these directions. The reasonable setbacks and stepped conditions along the west, north, east, and southwest sides, and punctuating the building façades with balconies, indentations, and other design features, as illustrated in the drawings, further mitigates the propensity of wind to downwash from the building.

Further, the 3575 Kaneff Crescent Development is in the aerodynamic shade region of the 22 storey slab style building at 1547 Mississauga Valley Boulevard, with northeasterly winds, the 20 storey building at 1580 Mississauga Valley Boulevard, with southeasterly winds, the 19 storey building at 30 Elm Avenue East, with southwesterly winds and the 24 storey cruciform style building at 3575 Kaneff Crescent, with northwesterly winds, said buildings substantially reducing the incidence of winds acting upon the tower, thus reducing the incidence of downwash.





Given the size and height of the subject building, wind mitigative design features, and the relatively wind friendly surroundings to many compass points, the pedestrian comfort conditions are predicted to remain suitable for walking at the corners during the winter, and appropriate for activities requiring longer exposures during the balance of the seasons.

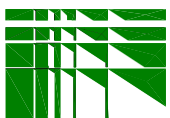
### **Main Building Entrance**

The Main Entrance, located in the southwest façade of the building podium, is recessed into the “L” shaped massing of the building, incorporates a canopy, and is therefore removed from much of the wind climate, and will be comfortable, suitable for standing during the winter months, much of the time. However, strong or gusty winds approaching from near southwesterly directions, through the gaps between the above-mentioned windward buildings, will result in windy conditions at the entrance and along the sidewalks adjacent to the entrance, from time to time. The pedestrian comfort conditions at the entrance are rated as comfortable, suitable for standing during the winter months, and the sidewalks beyond for standing or walking, the rating also dependent upon wind directionality and strength. The ratings are appropriate for the intended purpose, however, incorporation of coarse landscape elements on the grounds to the west of the entrance will result in winds being moderated, resulting in more comfortable conditions.

### **Outdoor Amenity Space**

Outdoor amenity space is proposed on the podium at the 5<sup>th</sup> level along the northwest façade of the proposed Development’s tower. The amenity space, or portions thereof, is in the wake of the proposed Development’s tower, and/or the neighbouring buildings, with significant portions of the prevailing wind climate, and is therefore protected from said winds. This will result in comfortable conditions much of the time. However, the amenity space will be susceptible to segments of the wind climate emanating from the north through west to southwest, that will be deflected to flow down and/or around the tower and over the space, resulting in localised windy conditions, on the occasion of high ambient winds from said directions. Conditions are expected to be windy at times and comfort conditions will be suitable for sitting during the summer months under normal to moderate ambient wind conditions and standing during higher wind speeds and during portions of the shoulder seasons. The rating is dependent upon wind directionality and speed, and also proximity to the Building’s tower, that will cause a downwash of winds to the amenity space.

The amenity space is predicted to be marginally suitable for the intended purpose part of the time, but portions further removed from the tower will realise conditions that are appropriate, most of the time. In order to achieve the longer exposures required to accommodate the desired activities, it is recommended that a mitigation plan incorporated



into the amenity area's landscaping and architectural designs. This may include 1.8m windscreens about the perimeter of the space, trellises, plantings in raised planters, buffer plantings, and others, situated about the space. We expect the space will be subject to seasonal use and will, with mitigation in place, reflect a reasonable balance between pedestrian comfort and functionality, and will be suitable for its intended purpose. Note: To the extent mitigation is required is best determined through the quantitative analysis that will be conducted as part of the requirement for Site Plan Approval.

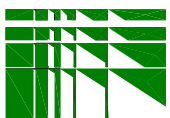
## **8. MITIGATION STRATEGIES**

The Proposed Development, as reflected in the plans reviewed, and considered in concert with the existing buildings, employs wind mitigative design features that include:

- stepped building façades
- overhangs
- canopies
- balconies
- landscaping

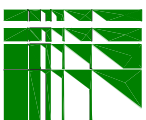
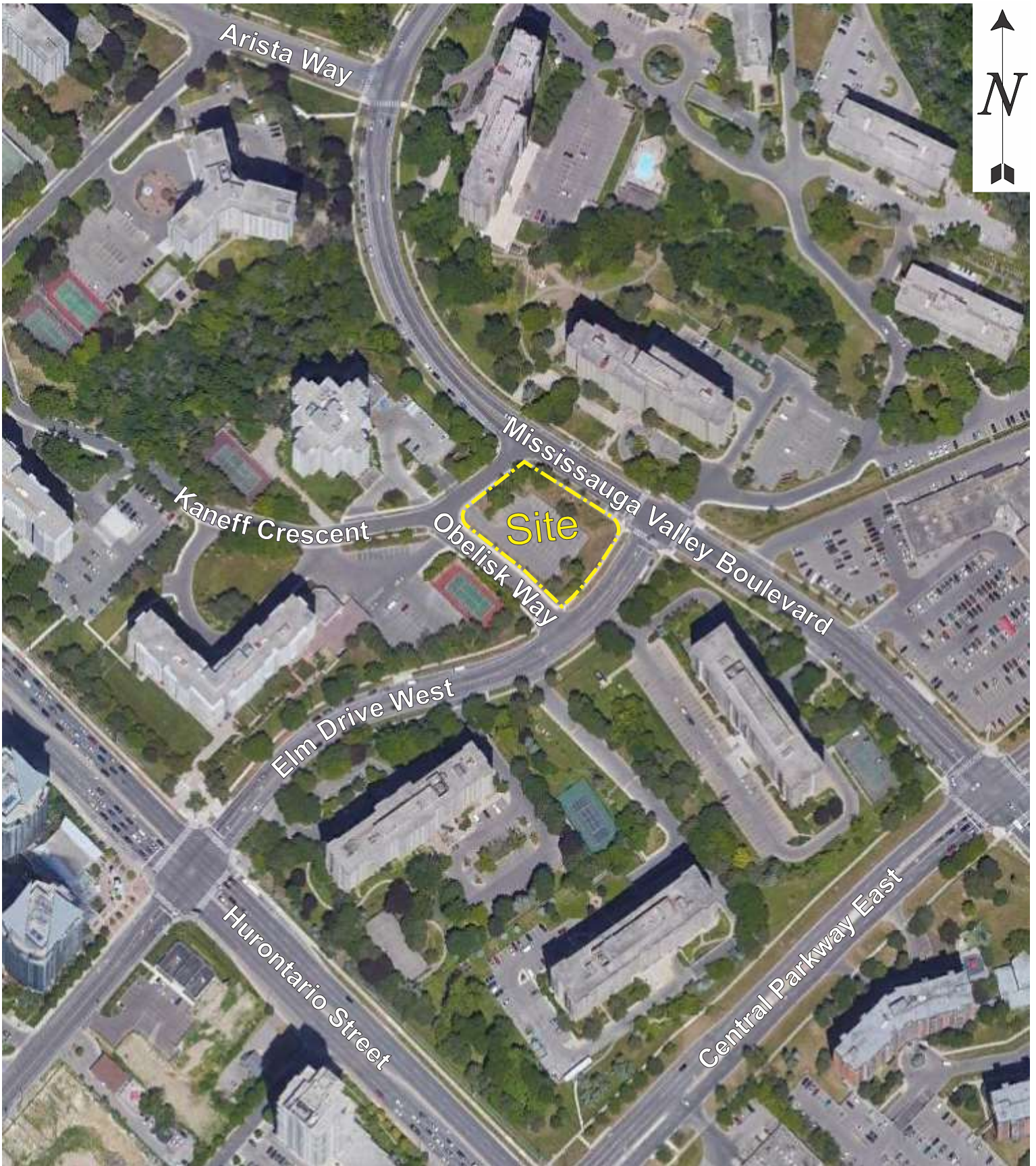
and others, that will increase surface roughness apparent to the wind.

Mitigation features that were incorporated into the Proposed Development contribute to pedestrian comfort conditions that are suitable to the context. As a result, the entrances to the Proposed Development as well as the Outdoor Amenity Areas will realise wind conditions that are appropriate to the intended purpose, most of the time. Additional mitigation in the form of large caliper plantings, preferably coniferous, raised planters, recessed seating areas, screen walls, trellises, rocks, berms, porous fencing, and others might be considered if it is desirable to further improve pedestrian comfort levels. The landscape plan should be developed in consultation with the consultant. Said items, appropriately positioned about the property would extend the usefulness of the spaces further into the shoulder seasons. Mitigation will be required to ensure that the 5<sup>th</sup> level Amenity Space will be suitable for the intended purpose.



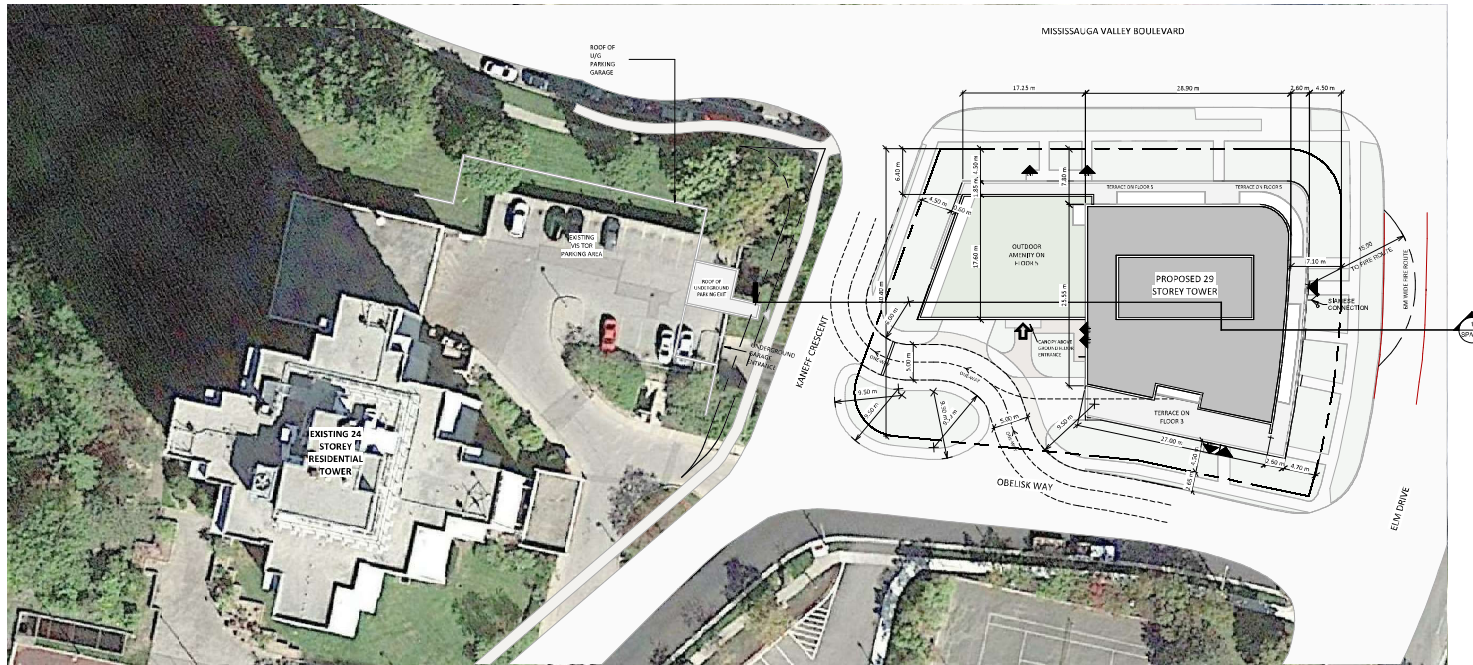


**Figure 1: Site Aerial Photo**





# Figure 2: Site Plan



SPA-SITE PLAN / ROOF PLAN  
1:300

## TURNER FLEISCHER

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Toronto, ON M5S 2T8  
416-462-2222  
turnerfleischer.com

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### LEGEND

- PRIMARY RESIDENTIAL ENTRANCE
- SECONDARY RESIDENTIAL ENTRANCE
- RETAIL ENTRANCE
- EXIT
- FIRE HYDRANT
- SIAMESE CONNECTION

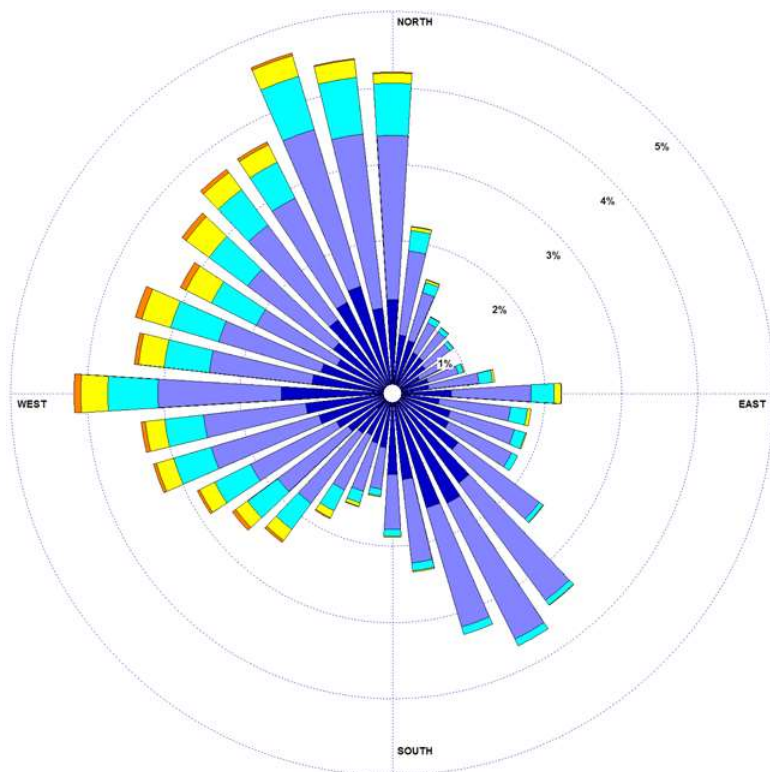
NO.	DATE	DESCRIPTION

PROJECT	KANEFF CRESCENT
LOCATION	MISSISSAUGA, ON

DRAWING	SITE PLAN / ROOF PLAN
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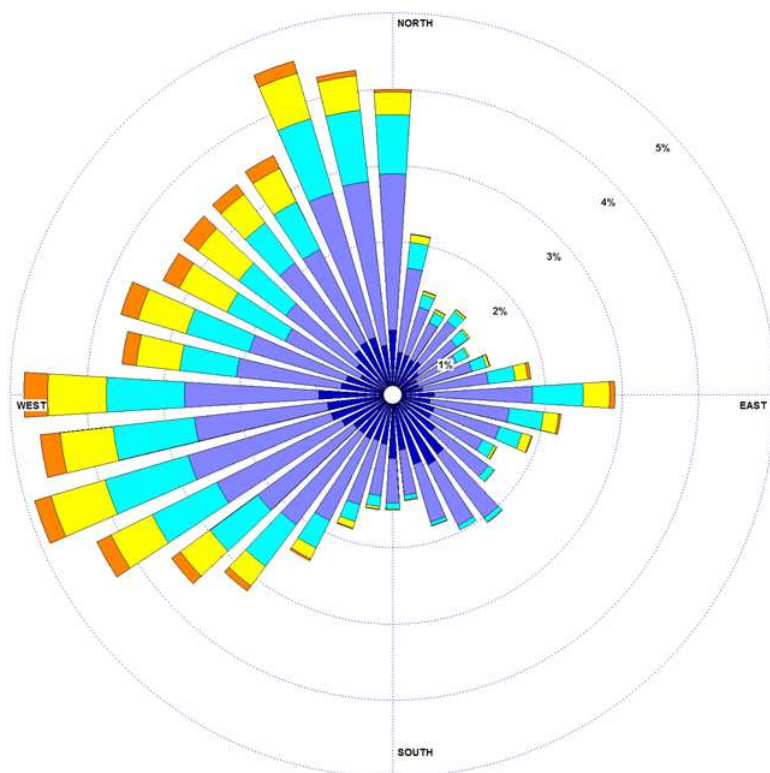
PROJECT NO.	10000
PROJECT DATE	2017-04-10
DRAWN BY	USA
CHECKED BY	MM
SCALE	As Indicated
DATE	2017-04-10
DESIGN NO.	SPA003

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Speed Range	Probability (%)
Calm	7%
1 - 8km/h	33%
9 - 16km/h	42%
17 - 28km/h	12%
29 - 40km/h	5%
> 40km/h	1%

Summer - May through October, 1980 to 2017



Speed Range	Probability (%)
Calm	5%
1 - 8km/h	24%
9 - 16km/h	41%
17 - 28km/h	17%
29 - 40km/h	10%
> 40km/h	3%

Winter - November through April, 1980 to 2017

