

2150 LAKE SHORE PARKS & OPEN SPACE

2150 - 2194 - LAKE SHORE
BOULEVARD WEST
23 PARK LAWN ROAD
TORONTO

CPPIB Park Lawn Canada Inc
FCR (Park Lawn) LP

This document, 2150 Lake Shore Parks and Open Space, has been prepared by Allies and Morrison Architects, Grossmax and DTAH on behalf of the land owners, FCR (Park Lawn) LP and CPPIB Park Lawn Canada Inc., in support of an Official Plan Amendment application for the redevelopment of 2150-2194 Lake Shore Boulevard West and 23 Park Lawn Road (“the site” or “2150 Lake Shore”). This document is also intended to provide input into the City’s Secondary Plan for the site and immediately adjacent lands.

PARKS & OPEN SPACE PLAN

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This Parks and Open Space Plan illustrates the provision of parks and open spaces in the Master Plan. It has been provided in relation to Site and Area Specific Policy 15, Policy 4, which requires that a Secondary Plan study for 2150 Lake Shore include “A Parks and Open Space Plan that identifies locations of new public parks and other open spaces and that includes a full unencumbered parkland dedication on the lands.”

A 5,175 sqm sustainable public park is a central feature of the overall network of open spaces provided in the Mater Plan. The park will offer a green reprieve at grade with strong visual connections to the green podiums, amenity spaces, roof terraces and elevated tree planted areas. There are a series of privately-owned publicly accessible spaces (POPS) proposed as well, that will seamlessly connect the public and private roadways to building entrances and squares. Together, the public park, POPS, and system of new streets and connections will form a porous pedestrian network that creates a distinct community that is both inviting and inspiring.

The public park is strategically located along the main interior street. It offers a visual connection to Humber Bay Park to help guests, workers and residents connect to the anchor of Toronto – Lake Ontario. At grade, a hotel and retail will frame the northern and eastern edges with a direct park connection to a secondary street to the east.

The public park has an excellent opportunity to support passive stormwater management, provide space for children’s play, an open green lawn for picnics and leisure as well as the possibility for a dog off leash area. The landmark Christie water tower will anchor the north edge of the park with many inspiring reuse possibilities. The design team has considered the design of the park holistically, with a full appreciation of the vibrant new community that will evolve at 2150 Lake Shore Boulevard West.

A triangular POPS space to the west of the public park will offer a privately funded and maintained extension of the public park. A few steps further to the west is the proposed new GO Transit station connected by a TTC streetcar loop and large square. This area will support commercial office use and retail at grade. The POPS are strategically situated to create a series of pedestrian friendly spaces and connections to the park, adjacent towers, streets and courtyards. Retail at grade will encourage ‘eyes on the space’ and a comfortable experience for all. These spaces will include tree canopies with generous seating areas, lighting and robust materials, offering a unique set of urban experiences. The two private streets have generous POPS space adjacent to the street frontage, prioritizing pedestrian movement with microclimate considerations.

A significant advantage of POPS is that private capital is used to create and support publicly accessible open space and squares. For users with a discerning eye, the finishes of the space will denote the departure from the public ROW and park material palette. For most people, POPS will provide a generous public realm and squares with streets that will have irregular built form, creating a hierarchy of special niches that will create a unique character and neighbourhood.

The ability to afford significant POPS at 2150 Lake Shore Boulevard West is due to parking and services being located below grade. This reduces the impact of vehicles at grade and allows the public realm and squares to be contiguous and pedestrian focuses spaces. Together, the public park and POPS make up 29,570 sqm or 32% of the overall neighbourhood.

1.1.1 LANDSCAPE VISION

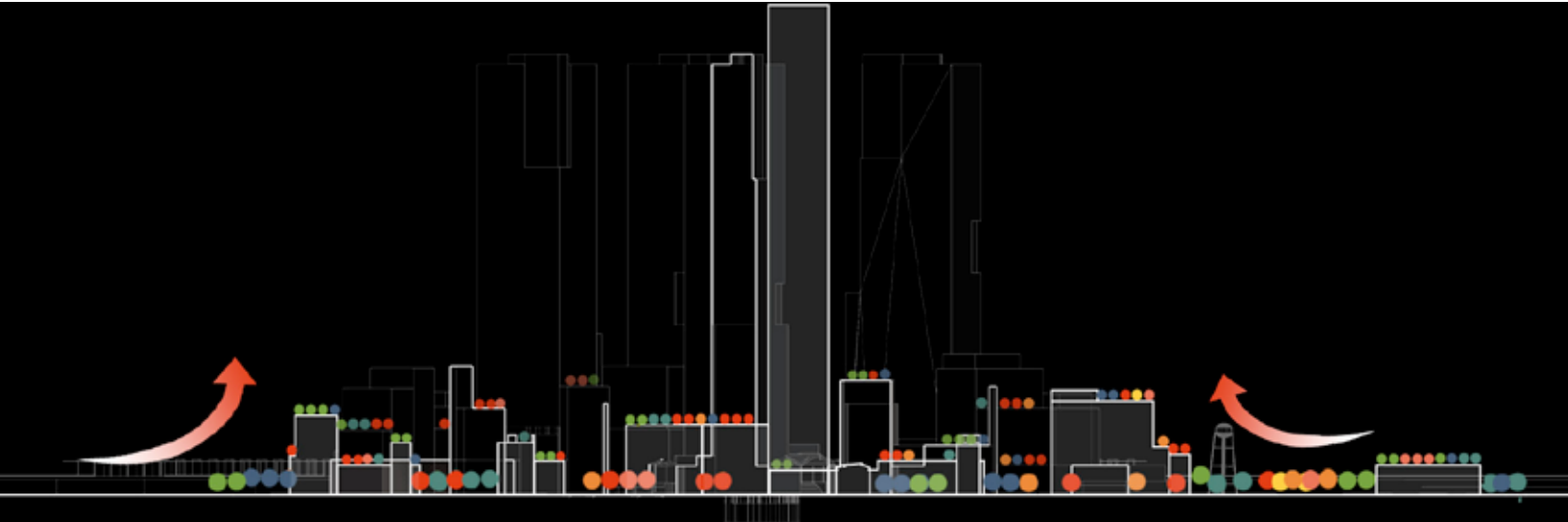
The landscape vision for the 2150 Lake Shore Development is to create a unique landscape setting for high-density metropolitan living. The scheme comprises an intricate network of public spaces which will provide a vibrant place for a spectrum of public activities and allow for a creative synergy of living, working and cultural entertainment.

The landscape will promote an environmentally friendly lifestyle with fantastic opportunities for both active and passive recreation framed by an iconic skyline. The concept of ‘urban-picturesque’ creates a dynamic interplay between landscape and build form. The public landscape of the ground plane visually extends upwards with landscaped podium decks and terraces at varying heights, blending architecture and nature into a panoramic skyline. Careful consideration has been given on the modification of the micro-climate and sunlight penetration. The view from the Gardiner Expressway will provide an iconic landmark image.

The landscape vision for 2150 Lake Shore is inspired by the City of Toronto’s ambition to increase its tree cover.

To achieve this, trees are not only integral to the public realm but also become part of the built development and are fully integrated into the podium, balconies and green roofs. This requires specific technical solutions in relation to loading and provision of soil-depth. To deliver the tree concept, consideration will be given to establish an on-site tree nursery as part of the meanwhile land-use of a phased development.

The 2150 Lake Shore landscape will be expressed by the concept of a ‘ravine’ woodland in the sky with tree canopies stepped across the multi-level site; visually connecting the embankment with various podium gardens and extending onto a multitude of roof gardens, balconies and sky terraces. The aim is to maximize the tree canopy expressing the unique quality of Toronto as a city in a forest. Such a ‘green skyline’ will be more than the sum of its component parts and will be composed of an accumulation of public, semi-public and private green spaces. It should become a place for experimental and pioneering design – including urban food production - exemplifying a greener, more sustainable and resilient Toronto. Sustainability and ‘city-nature’ will be fully integrated and become the backbone of the area’s future identity and urban life.



Expanding the tree canopy by creating a ‘ravine in the sky’ as trees are planted on podium and roof landscapes



Aerial view of the masterplan



Illustrative landscape plan

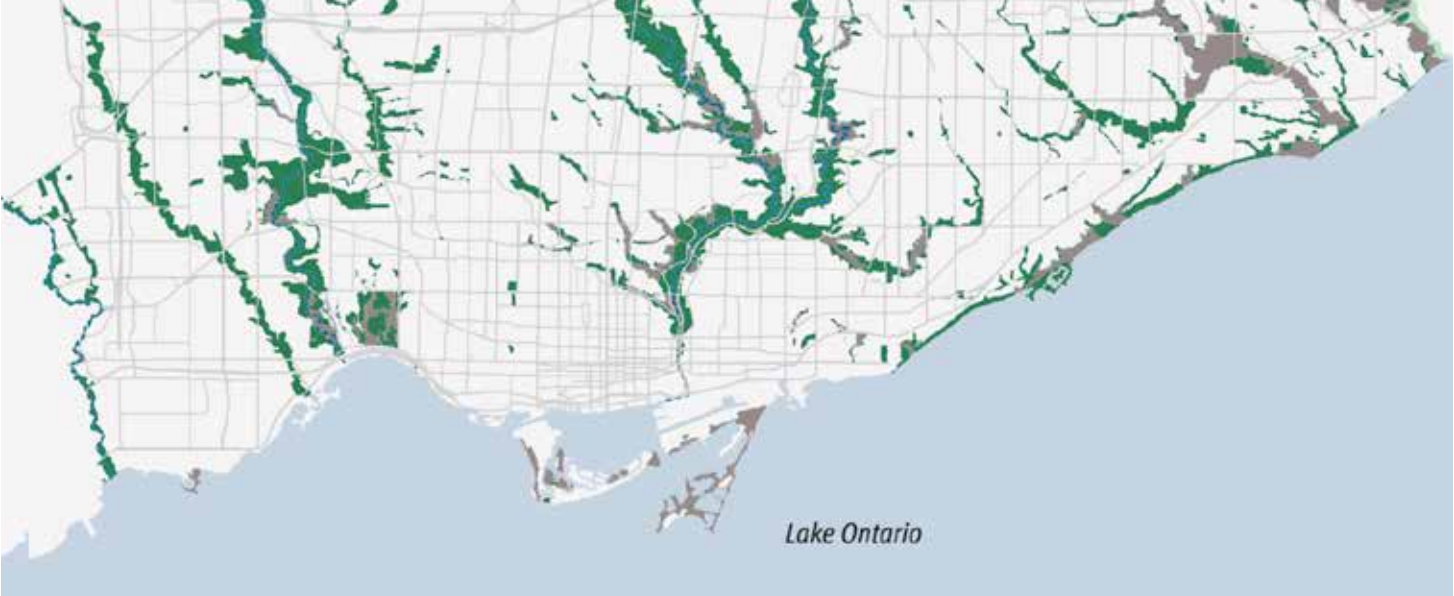
1.1.2 LANDSCAPE STRUCTURE

The landscape framework for 2150 Lake Shore will create a distinct sense of place based upon the site's unique setting and development opportunity. It expresses spatial hierarchy and will create cohesion, orientation and legibility between distinct urban districts. It envisions a system of interconnected green spaces orientated towards the Lake Ontario Waterfront and Mimico ravine ensuring a feeling of light, air and space throughout the master plan. The configuration of the site, sandwiched between infrastructure and ravine, allows the urban grid to be dissolved into a more organic composition creating a sense of gravity and centre. The resulting streetscape allows for a serial vision which may be expressed as shared spaces rather than traditional through-streets with sidewalks.

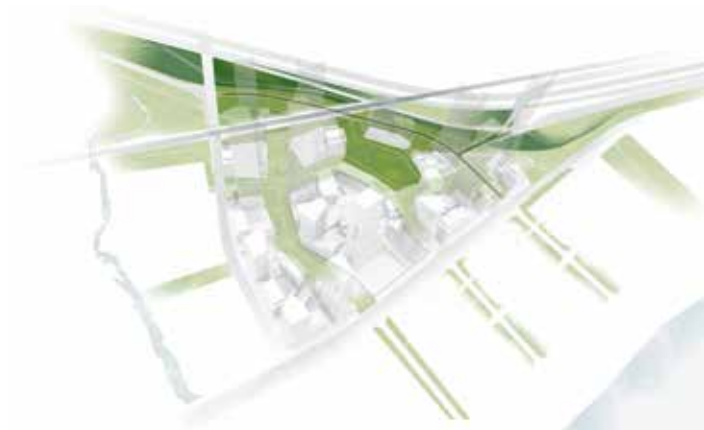
The site is situated at the confluence of natural, north-south wooded river valleys and east-west rail and expressway corridors. The dynamics of this context is expressed in the overall landscape strategy which combines the natural and the man-made in a cohesive urban quarter which dissolves the traditional urban grid into a plan anchored around a central core with the galleria, and three key urban squares.

The landscape structure is inspired by Toronto's topography, drawing fingers of green along the streets like the ravines that traverse the city. A green spine of trees connects the various districts echoing their individual identities whilst creating a network of public spaces, gardens and squares which will improve microclimate and also create wildlife corridors that promote biodiversity.

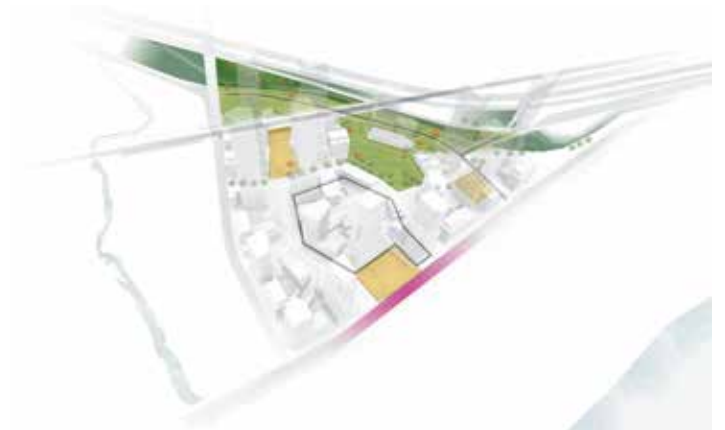
The landscape structure will form part of a wider green infrastructure which extends and connects to the natural landscape of the Mimico Creek ravine landscape and also the lake shore. The visual impact of major infrastructure will be reduced by incorporating ecological corridors with naturalised planting alongside the Gardiner Expressway and rail corridor.



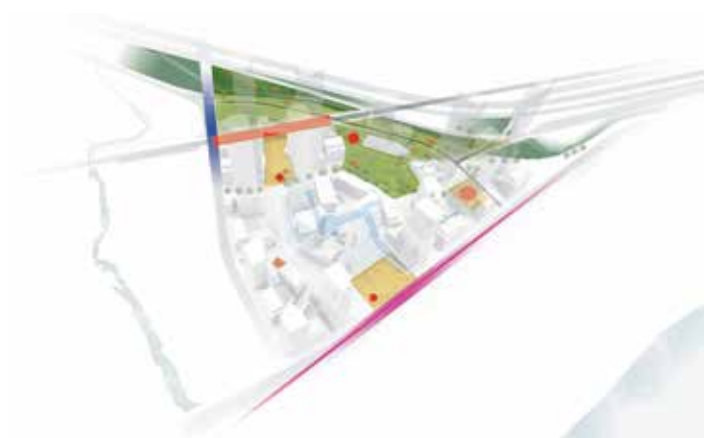
Toronto’s unique ravine system



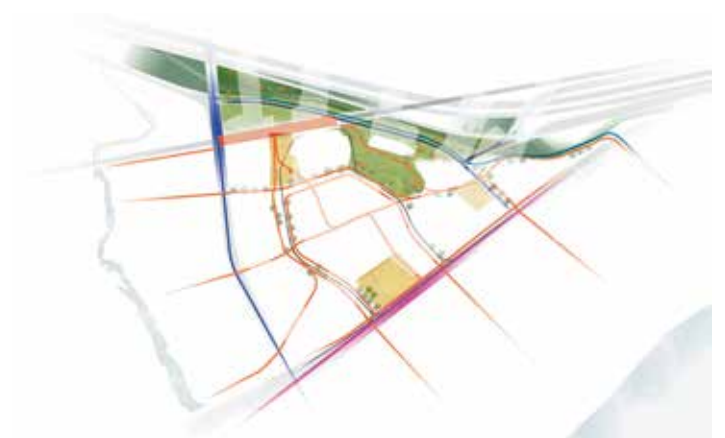
Green ravines seep into the site



Shaped into 3 public squares and a public park



Iconic landmarks for a sense of place

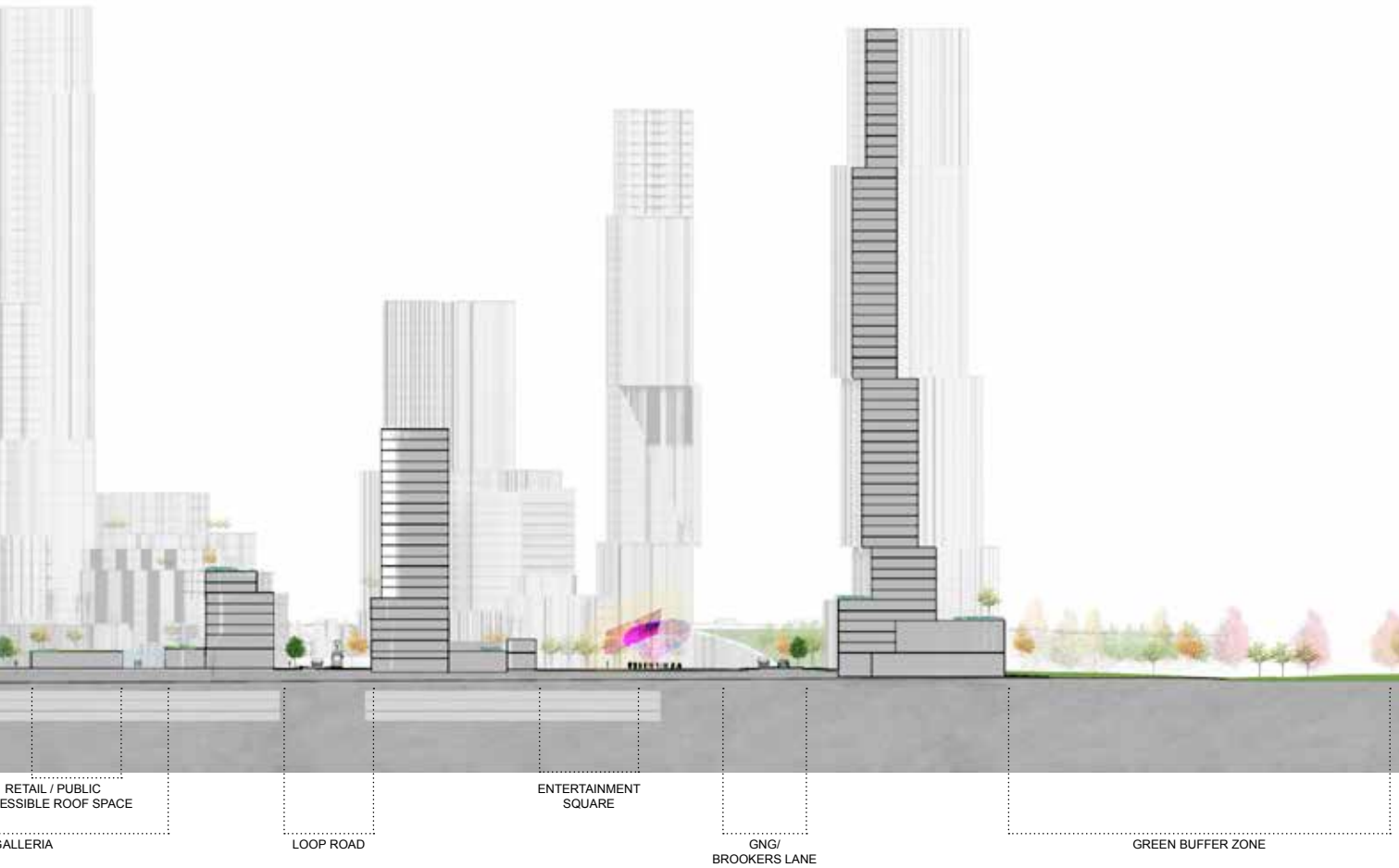


Movement and connectivity



Roof terraces extend the woodland and park into the urban complex





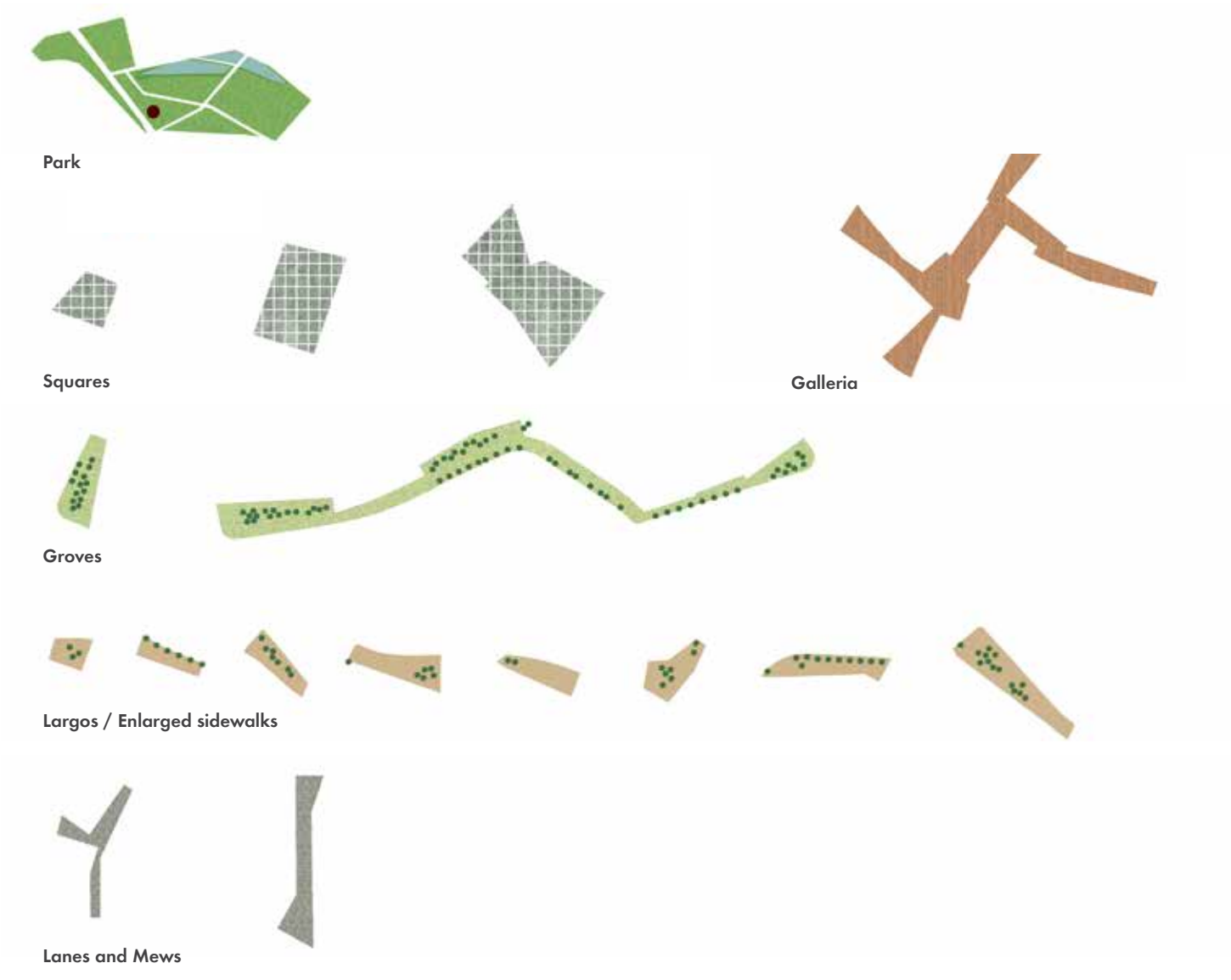




A DIVERSITY OF SPACES

Mature cities are animated by a large variety of buildings and uses. Likewise, a large variety of spaces bring richness to the experience of the public realm. 2150 Lake Shore will deliver a diverse collection of spaces:

- Three Squares
- The Park
- The Galleria
- Groves
- Largos (enlarged sidewalks)
- Lanes and Mews





The Site



The proposed landscape structure stitching together the existing condition

1.1.3

LANDSCAPE TYPOLOGIES

The master plan for 2150 Lake Shore envisages a diversity of open spaces linked by pedestrian routes. The urban fabric frames and articulates the public realm to provide a sense of place and facilitate orientation. Attractive urban spaces provide places for people to enjoy whilst the park provides opportunities for exercise, physical activities and relaxation. Each of the public spaces and routes will be carefully considered in respect to micro-climate adaption and environmental mitigation. Emphasis will be placed to create a pleasant, user-friendly environment that creates a sense of community and facilitates informal meetings and encounters. The various spaces will help foster creativity and interaction and provide for recreation and relaxation whilst inviting residents, workers and visitors to linger and enjoy the beautiful setting. They are places for staying, meeting and gathering, and although they are connected to the movement network of streets their configuration, orientation and materiality encourage people to slow down and participate in urban life. Most importantly, the public realm will enhance the quality of life and promote aspects of health and well-being. Actively programming the open space with events, performances, and food will encourage a lively atmosphere.

Three urban squares and a public park are proposed, each with a different character:

Boulevard Square

It will provide a contemporary vibrant square which will 'anchor' the new neighbourhood firmly along Lake Shore Boulevard. The square will be designed as an all-season flexible event space allowing for a multitude of configurations and performances, whilst allowing pedestrian movement and flow. Large canopy trees frame the central open space. Activated edges with provision for outdoor café terraces will benefit from Boulevard Square's southerly aspect.

Station Square

It will be designed to contribute to an innovative smart city transport hub. The public space facilitates the departure and arrival of the daily commuters through a carefully choreographed ensemble of landscape, street furniture, wayfinding and architecture; a meeting space characterized by fluidity. It will provide special consideration to address the movement of pedestrians and cyclists to and from the station with clear sightlines along diagonal axis that connects the station and the galleria and assist optimal connections with its urban surroundings.

Entertainment Square

It will create a new locus for entertainment and leisure. It is envisaged as an attractive and pedestrian-friendly public space; an urban landscape for encounter, interaction and performance.



1. Boulevard Square
2. Station Square
3. Entertainment Square



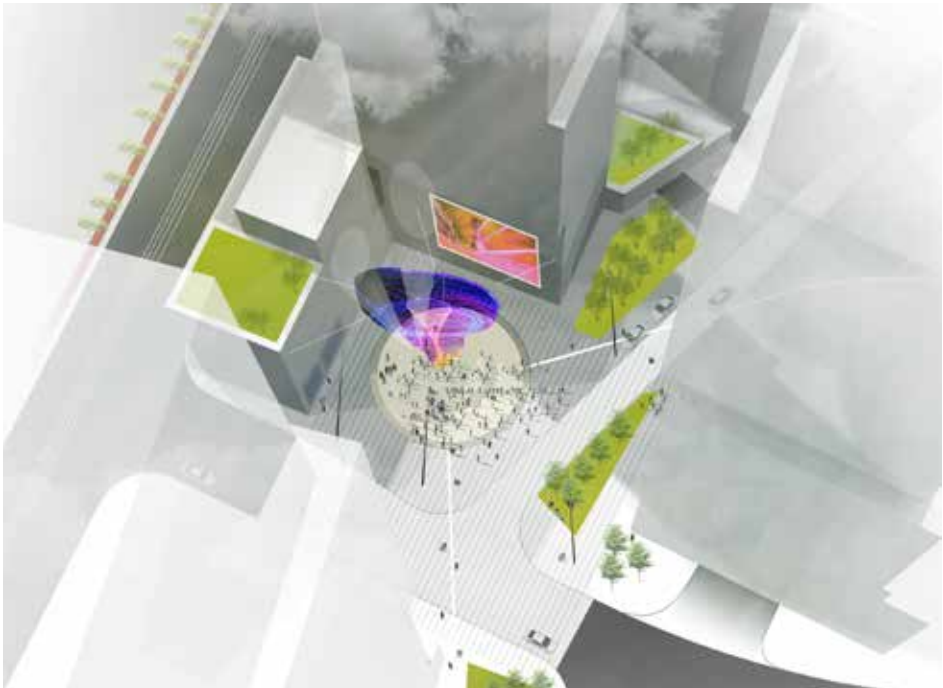
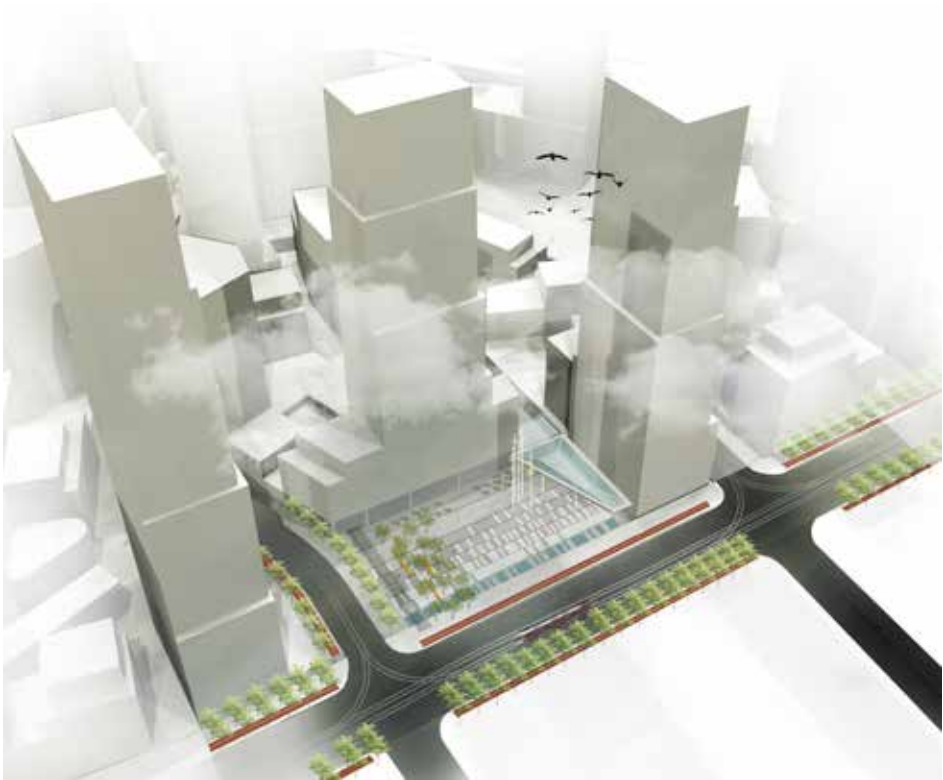
The 2150 Lake Shore Park



Connected by pedestrian streets and interior connections



The public realm facilitates the creation of an urban centre



From top: Boulevard Square, Station Square, and Entertainment Square

A New Public Park

A strategically positioned contemporary urban park will provide space for relaxation, recreation and the experience of nature. A variety of planting will stimulate bio-diversity and combined with variations in topography will create areas of different character, interest and interaction.

Extensive provision of lawn allows for flexible events space and active outdoor programming as well as passive recreational use for the residents.
The former water tower is retained as an iconic heritage landmark and re-positioned as central landmark.

The park provides opportunities opportunity for an ornamental water feature, community garden with food growing and educational features as well a designated off dog park.



Cultuurpark Westergasfabriek, Amsterdam



Water for play and also hydrological feature



A public park integrating buildings to provide dramatic views



A public park for all seasons

THE PARK

A Neighbourhood Park

The neighbourhood park will provide the experience of nature and public play grounds. The gradation of planting allows various and diverse plant communities to co-exist: formal, semi-formal and wild. The complexity of this vegetation, coupled with topographic variation will create areas of different interest and character, access and interaction. A significant lawn area will be useful as a flexible event space for active outdoor programming, as well as passive recreational use for the residents of the community. Provisions will be made for casual sitting, picnicking, and other community programming. A park pavilion will be embedded within the topography of the park. Plantations will be carefully designed to accommodate storm water retention, and may also incorporate opportunities for community gardening, urban

farming, and educational features. Suitable topography may also provide a neighbourhood sled run in the winter.

Water Tower

The former water tower will be retained as an iconic heritage landmark. A key consideration will be its re-activation, making it a working asset rather than a simple billboard. In its new life, it could serve as a water reservoir, an observation deck, a helter-skelter, or possible a combination of all three.

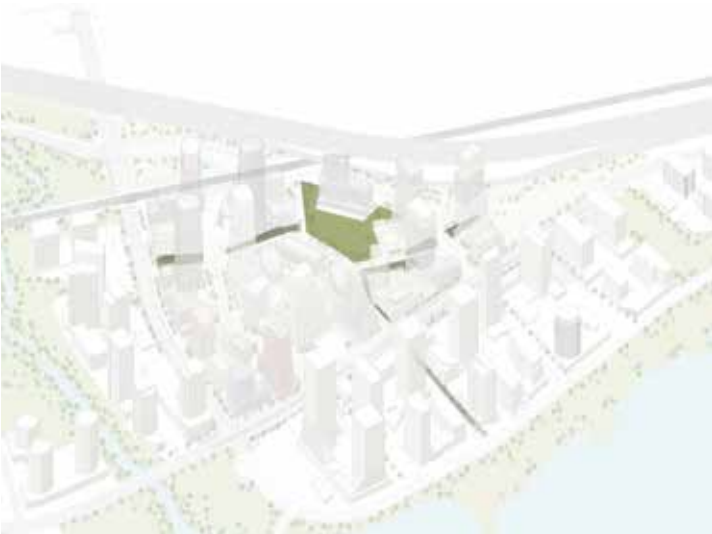
A series of inter linked water elements such as rills, ditches, cascades, retention pools and tidal gardens can animate the park, modify micro climate and form part of an integral system of water run – off and irrigation. Combined with the manipulation of ground form, this will create a dynamic new landscape with many spatial and programmatic possibilities.



A neighborhood park



The green heart of the scheme



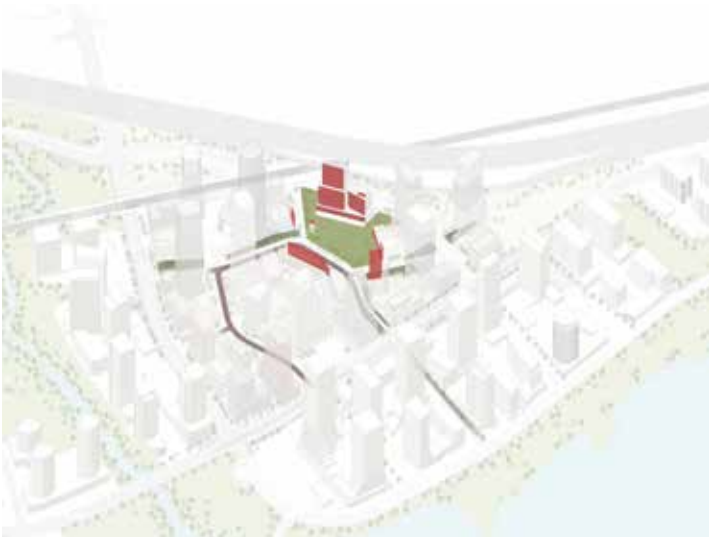
Linked to largos / lanes



Streetcar / loop street



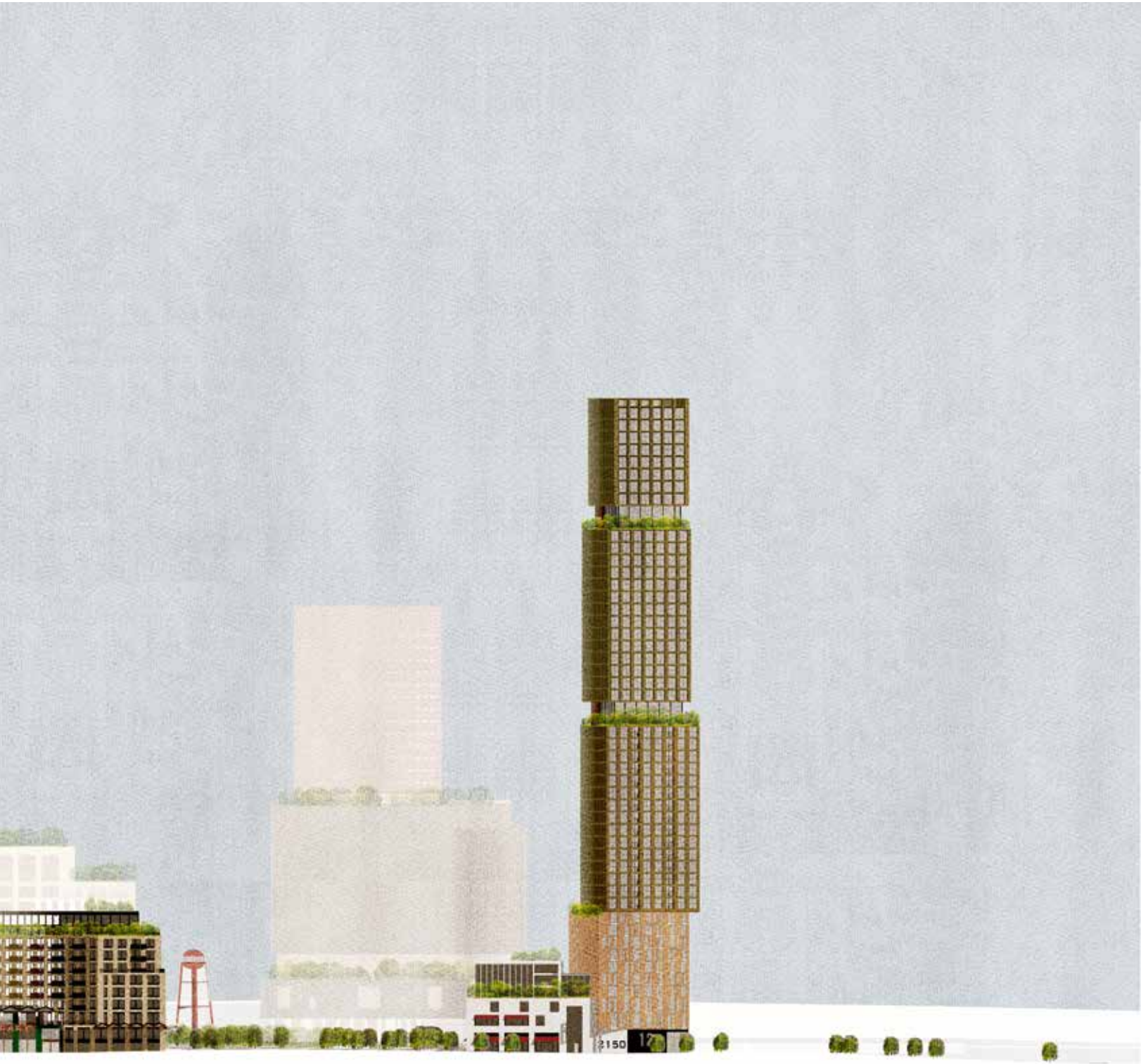
Framed by buildings



With the water tower



Section looking towards the Park



1.1.4 **LANDSCAPE WITHIN DEVELOPMENT BLOCKS**

The landscape within the development blocks will support a combination of residential, office and retail uses. Within the city blocks the landscape will contribute towards creating sustainable, vibrant and resilient communities.

The Toronto Green Standard for Mid to High-Rise Residential applies to residential apartment buildings 4 storeys and higher, as well as all Industrial, Commercial and Institutional (ICI) developments.

The development contains a variety of landscaped roofs, ranging from extensive green roofs to exterior garden decks and intensive green communal podium roof gardens.

Green roofs will be designed with a multi-purpose function, including bio-diversity, amelioration of climate, storage and management of rain.

Instead of applying the traditional sedum roof, a variety of grasses and meadow species -all wild native plants- will be promoted.

The extensive green roof gardens will incorporate local habitat creation especially in respect to resting places for migrating birds along Lake Ontario's coastline.

The design, function, and cost of a green roof varies largely depending on the depth of the growing medium. Green roofs can be classified into three types: extensive, semi-intensive, and intensive green roofs.



Towers to have both private and public gardens



Landscaped roofs include extensive green roofs, exterior garden decks and intensive green communal podium roof gardens



Green roofs for 2150 Lake Shore development to have urban farming

1.1.5 **STREETSCAPE**

The streets of 2150 Lake Shore should provide the infrastructure for all users of the public realm in a setting in which pedestrians have priority and share space with cyclists and vehicles.

A hierarchy of streets are formed serving the development and the street width, tree planting and surface material will define the significance of each route. Typical cross-sections of the routes establish the key principles of the streets and access provision.

The network of streets is envisioned to provide permeability and connectivity to main destinations and a choice of routes. Attractive and well-connected permeable street networks encourage more people to walk and cycle to local destinations.

The pedestrian and cycle network will connect to the wider surroundings and will link across Lake Shore Boulevard directly to the existing route along the entire waterfront. The masterplan promotes pedestrian-friendly, human-scale streetscapes and safe crossings.

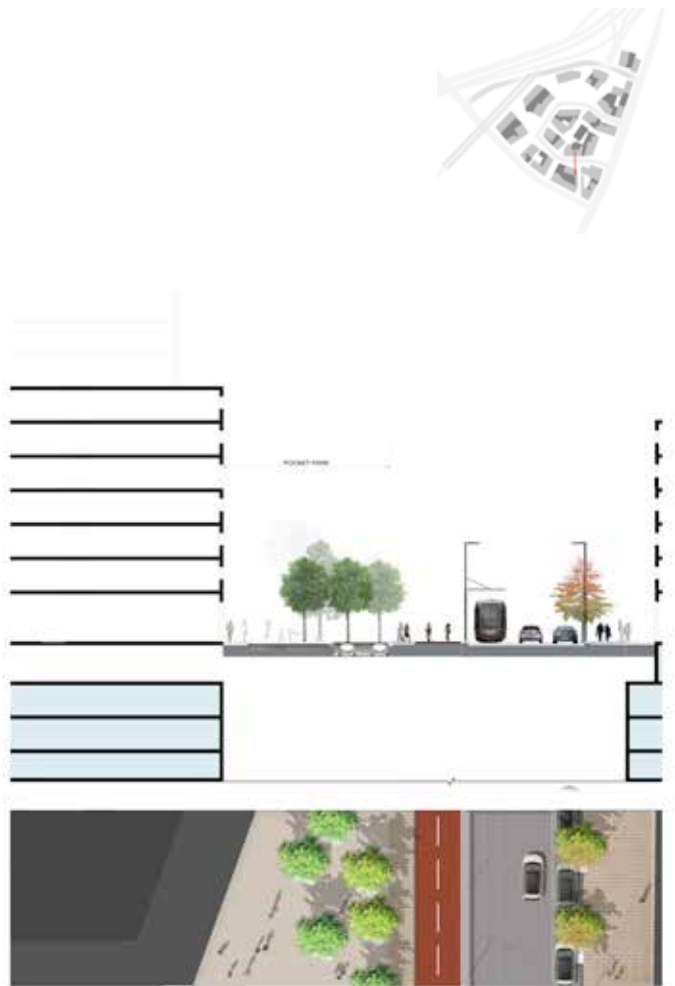
Street design at 2150 Lake Shore will incorporate features which will distinguish the public realm as being different from surrounding road networks. It will convey a more intimate feel of neighbourhood streets and will be based upon the concept of so-called ‘Living Street’ design. It will enable pedestrian priority and carefully incorporate traffic calming. Residential lanes may incorporate shared surfaces with no physical separation of the road space,

relying on human interaction to negotiate usage. Publicly accessible private open space will seamlessly extend into the sidewalk with planting and benches. Groves of trees will provide ‘parkettes’ where people gather and stay, sitting, chatting, eating and drinking, watching and enjoying the presence of others.

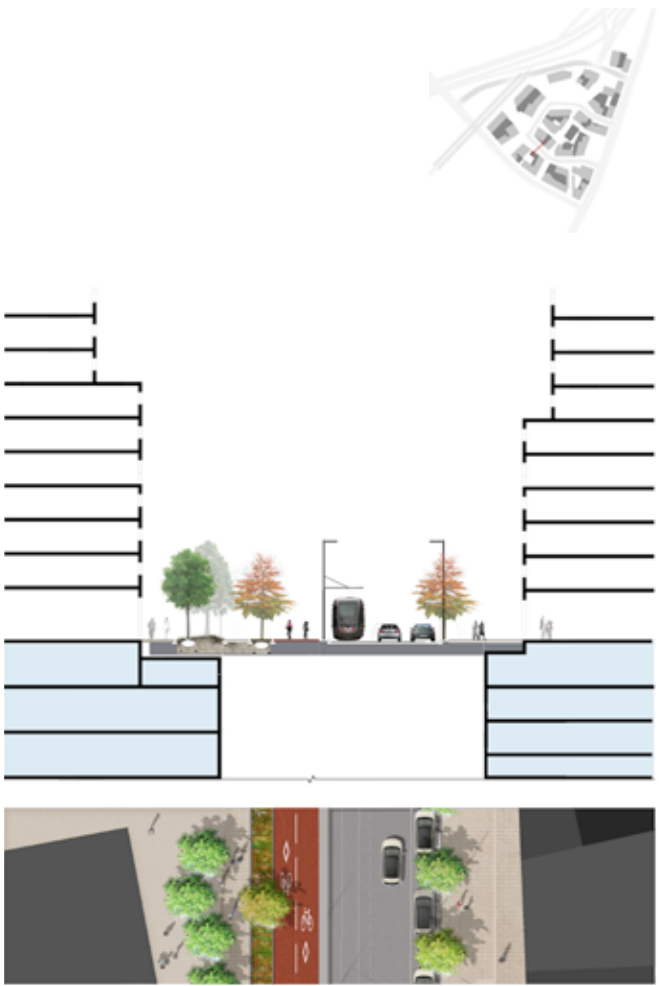
A specific consideration will be to design the streetcar loop as an integral part of the overall streetscape.

There will be an attractive pedestrian spine route. The Loop Road, linking Boulevard Square, Galleria to the transport hub of Station Square.

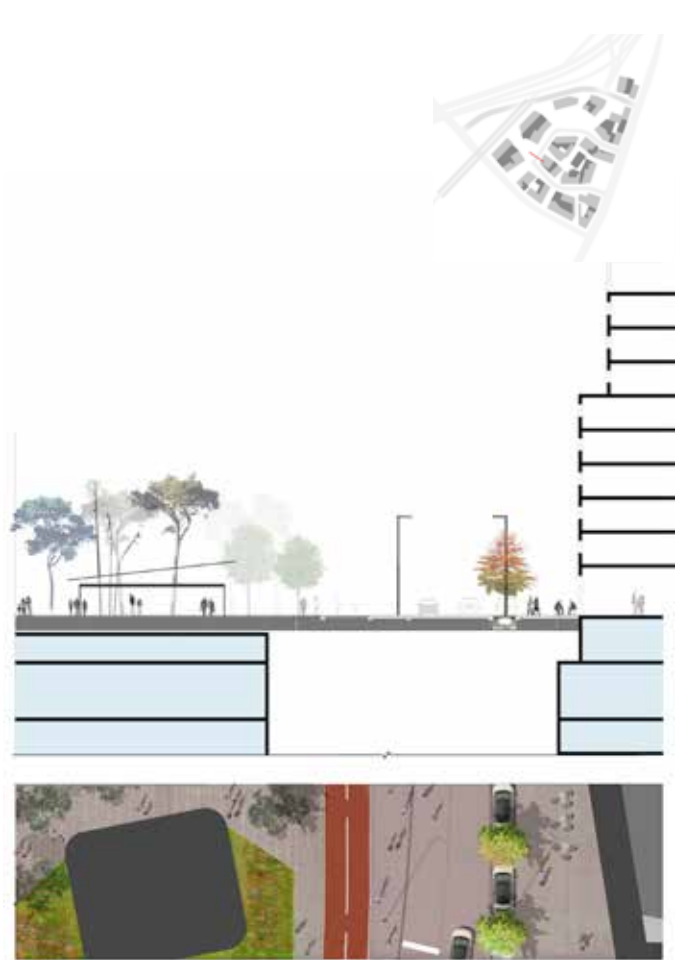
Dedicated cycle routes are incorporated along and across Lake Shore Boulevard and Park Lawn Road connecting to the wider cycle network and key destinations.



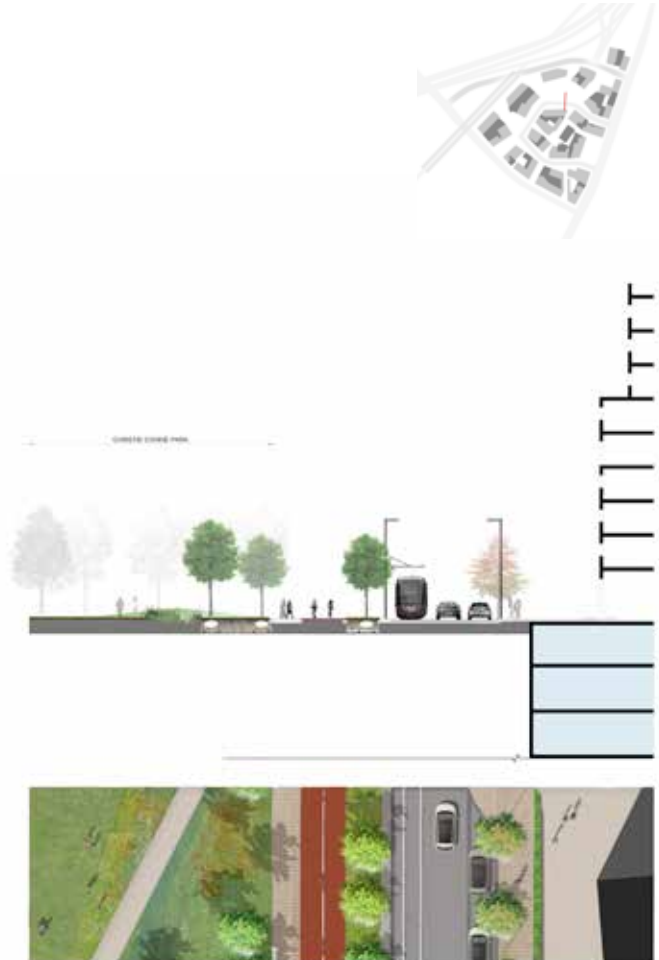
Loop Road section 01



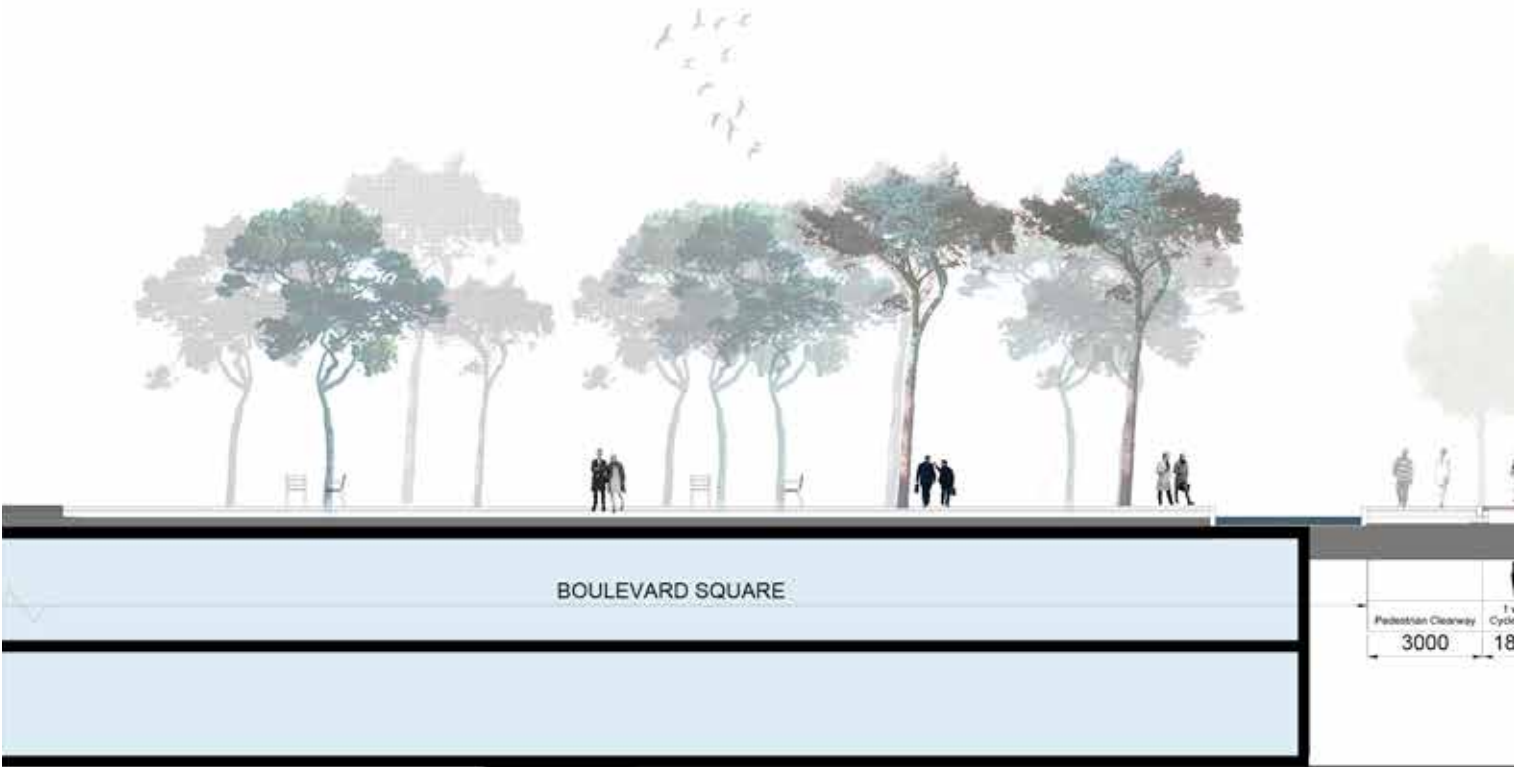
Loop Road section 02



Loop Road section 03



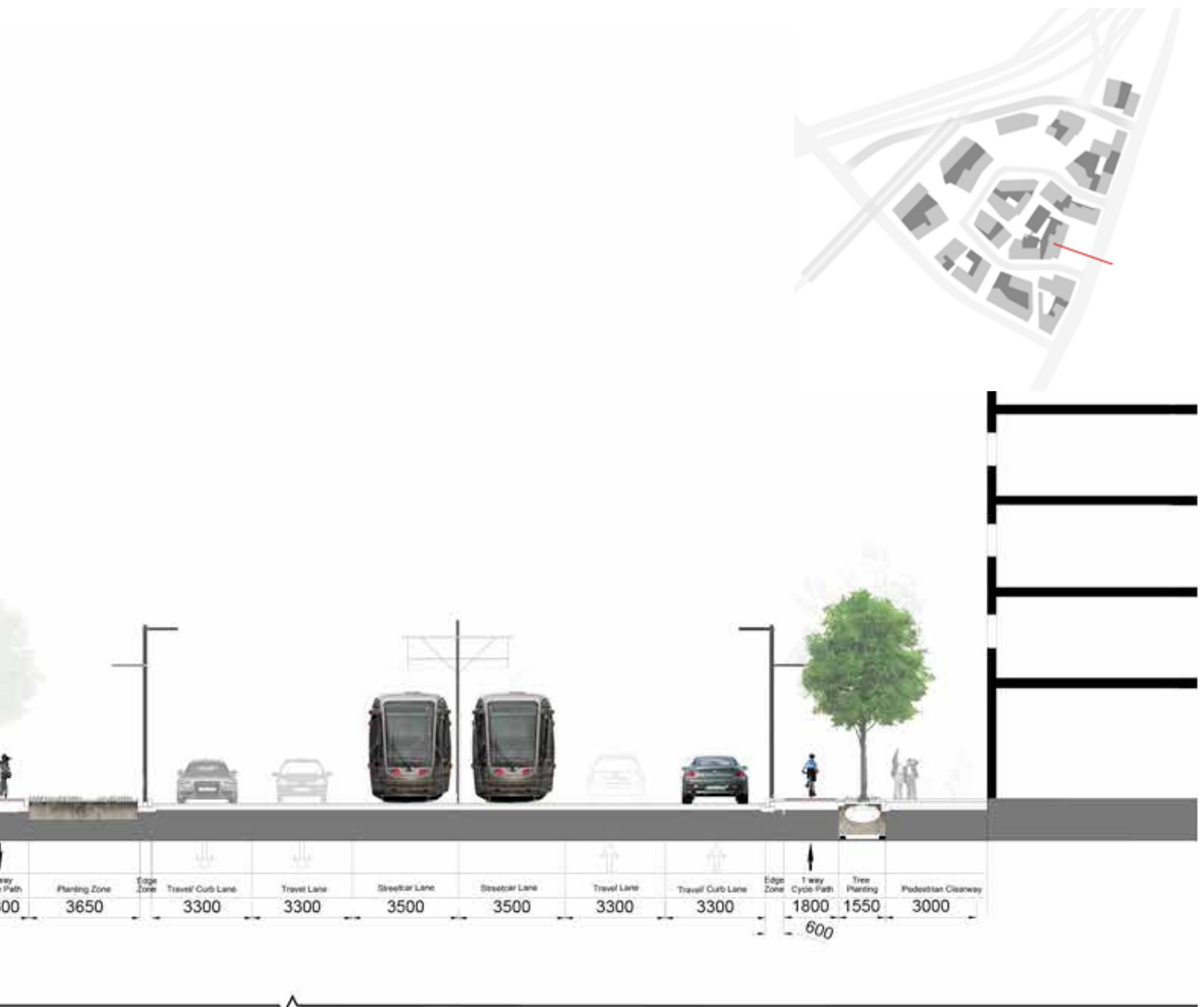
Loop Road section 04



Pedestrian Clearway	3000
Cycleway	18



Lake Shore Boulevard



1.1.6 **DRAINAGE STRATEGY**

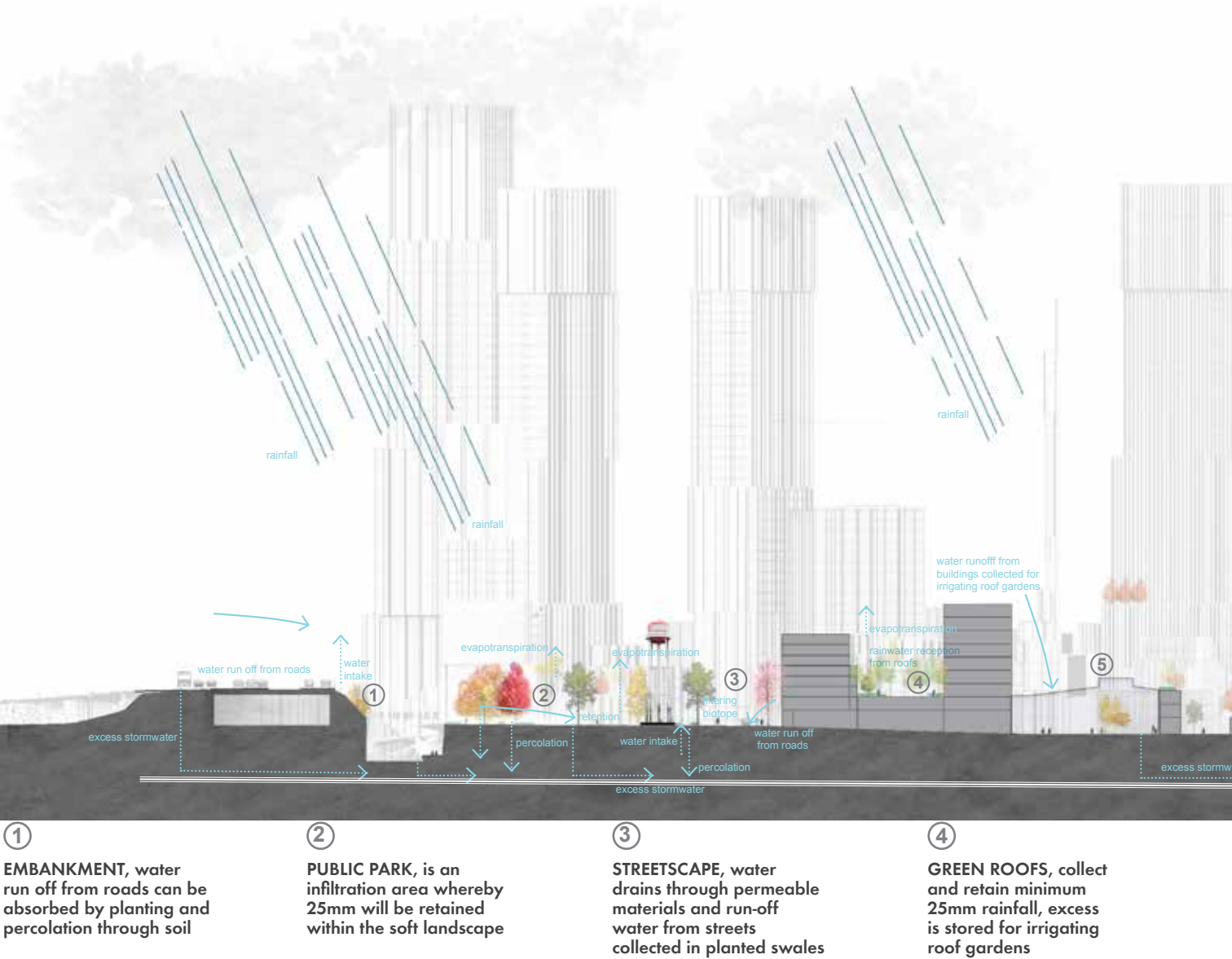
Across the master plan, sustainable urban drainage systems (SUDS) will be developed, creating important water run-off attenuation and storage for the site. This strategy has created opportunities for water to be incorporated as a significant landscape element across the site. The water thus will be a visible feature in the cityscape while contributing to irrigation and improving the local microclimate during the hot summers.

Specific landscape components of the hydrological circuit include green roofs, permeable paving, storm water management ponds, bio-swales, Infiltration trenches, rain gardens and other absorbent landscaping.

The water will be purified biologically by the specifically designed wetland biotopes. Parts of the new public park may be allowed to flood and designed to hold water in times of heavy rainfall. The park's topography and plantations are to be carefully designed to handle 100-year floods without directing water into sewers.

Other attenuation areas will be integrated into public open space to allow flooding towards the woodland belts at times of extreme rainfall.

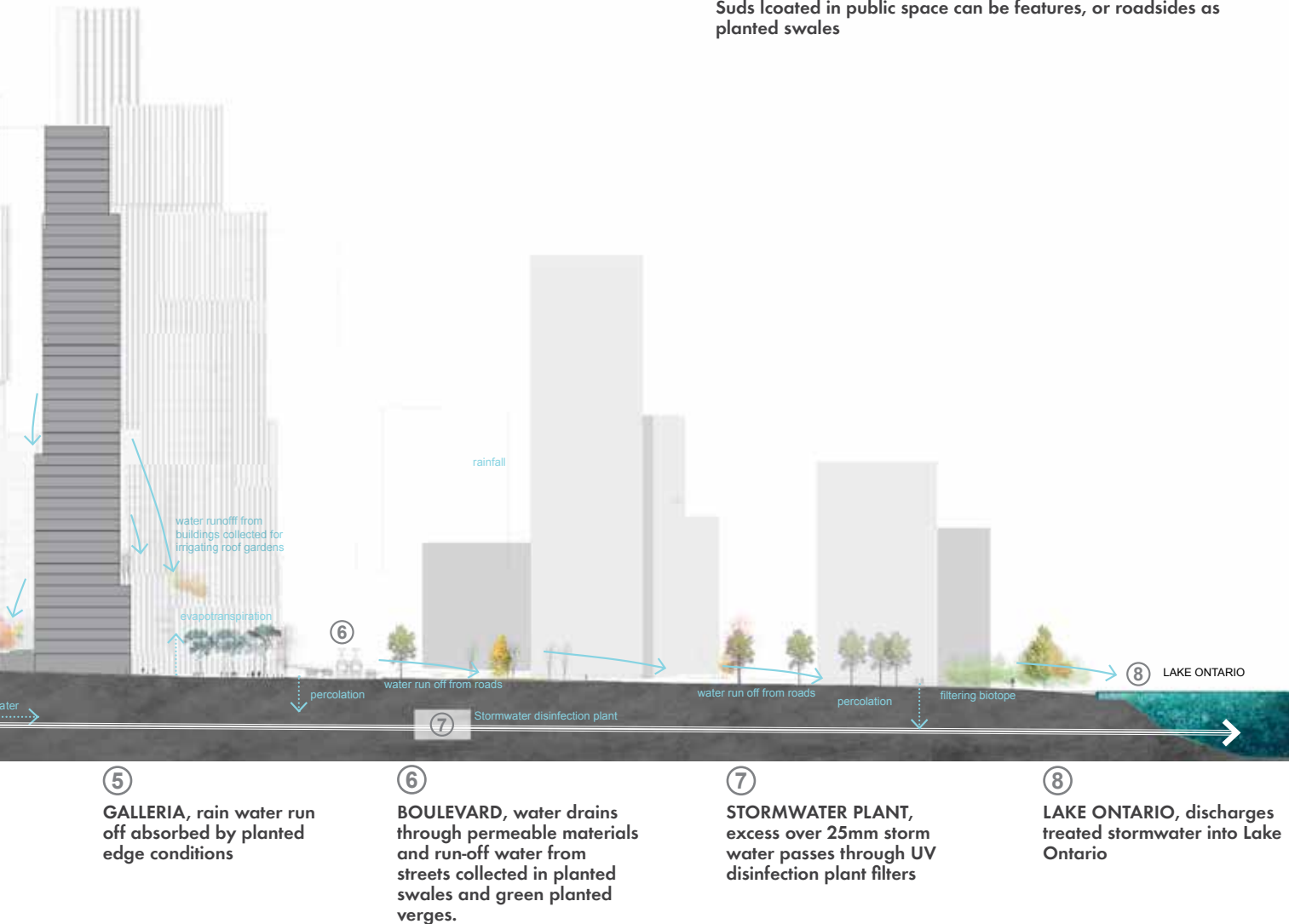
Elsewhere smaller rills, runnels and swales will be incorporated into the streets and shared surfaces, connecting into the main drainage features.



Permeable paved surfaces for roads and footpaths will be used where possible to further reduce rainwater run-off. Rainwater from pavement and roofs may be collected in underground water tanks and could be utilised for irrigation. The excess rainwater will be led via north-south swales out into Lake Ontario.



Suds located in public space can be features, or roadsides as planted swales



1.1.7 **PLANTING AND ECOLOGY**

TREE PLANTING

Extensive planting throughout the master plan will provide a wide range of environmental, ecological, social, cultural and economic benefits.

Trees are a big part of what makes Toronto a liveable city; often described as a ‘city within a park’. Toronto has over 25% of tree cover; and City Council has adopted the goal of increasing the tree canopy.

Trees will be selected to give spatial structure, ameliorate the micro-climate, improve air quality and mediate between the scale of the towers and the on-ground experience of the site. Emphasis will be placed on native species to support habitat and bio-diversity. Careful attention will be given to select trees that are likely to perform well due to changing conditions of climate and contribute to the experience of the seasons creating interest and variety throughout the year.

Groves of trees will provide individual identity and character to each of the public squares and contribute to varied streetscapes. As such, tree planting will contribute to the orientation and legibility of the public realm. Trees will be categorized according to their attributes such as size and habitus. Trees of the first order are to be utilised for avenues and boulevards while trees of the second or third order will be utilised for smaller streets and podium gardens.

An important aspect of trees will be to contribute to the reduction of air pollution, such as carbon reduction and the capacity of absorbing fine particles and producing oxygen. Planting will also be utilized to create a green buffer zone along the Gardiner Expressway and adjacent railway corridor.

Trees, where possible, will be planted in open ground with adequate soil volume and space for canopy development. Tree locations will be coordinated to avoid conflict with underground services. To support the growth of a large canopied tree, 30 cubic meters of soil will be required. Trees will be planted at an appropriate distance from façade and kerb lines.

Trees along Lake Shore Boulevard and Park Lawn Road will be planted in grass verges of 3m width. Trees planted in streetscapes need tree surrounds of 2m diameter tree grating with facility for drainage, aeration and watering.

Throughout the public realm, semi -private podium gardens and private roof gardens mixed ground plantings of herbaceous, marginal and groundcover plants and wildflower meadows will be utilised to create atmospheric and aesthetic affects while forming strong bio-diverse and ecological zones across the entire master plan.



ROOF TERRACE/ PODIUM TREES



Yellow wood
Cladrastis kentukea



Shadbush
Amelanchier arborea



Sugar Maple
Acer saccharum



Red Maple
Acer rubrum



Turkish hazel
Corylus colurna



River Birch
Betula nigra



Himalyan Birch
Betula Utilis var Jacquemontii

THE EMBANKMENT TREES



White Spruce
Picea glauca



White Pine
Pinus strobus



Sugar Maple
Acer saccharum



Red Maple
Acer rubrum



Black Oak
Quercus velutina



Silver Maple
Acer saccharinum

PARK ROUTE TREES



Red Maple
Acer rubrum



Little leaf linden
Tilia cordata



Red Oak
Quercus rubra

SQUARES



Freeman Maple, Autumn Blaze
Acer x freemanii Autumn Blaze



Skyline Honey Locust
Gleditsia triacanthos 'Skyline'



Ginkgo
Ginkgo biloba

STREET TREES



Hackberry
Celtis occidentalis



Red Oak
Quercus rubra



Kentucky coffe tree
Magnolia acuminate



Red Maple
Acer rubrum

BOULEVARD TREES



Little leaf linden
Tilia cordata

PARK



Dawn redwood
Metasequoia glyptostroboides



Red Oak
Quercus rubra



Sweet Gum
Liquidambar styraciflua



Japanese katsura
Cercidiphyllum japonicum



Sugar Maple
Acer saccharum



Red Maple
Acer rubrum

1.1.8 **SPORT AND PLAY**

An important function of the public realm at 2150 Lake Shore is the provision of places for play. These can be conventional playgrounds, but just as importantly these should be informal places which stimulate informal play, for adults as well as children. Playfulness is closely related to invention; the process of playing is about enjoyment, imagination, exploring and testing boundaries.



The development will seek to enhance open space by the provision of appropriate sport and play facilities for people of all ages and abilities. The network of open space will create linkages for walking, cycling and jogging and should consider innovative elements such as climbing walls, outdoor gym equipment, Skate Park etc.

The 2150 Lake Shore development underwrites the aspiration of ‘Play by Nature’ and will be working to put freely chosen self-directed play back into the lives of children, aged 3 - 15. Good quality play provision requires a web of inter-connected social and environmental supports. For implementation the development will seek collaboration with parents, caregivers, day-cares, local agencies, and City staff to introduce changes that will enhance children’s play opportunities in parks, playgrounds, green space and outdoor neighbourhood settings. The aim is to create public spaces for childrens play and recreation which will have a positive impact on the whole community - making 2150 Lake Shore a child-friendly neighbourhood.

The public realm of 2150 Lake Shore can become a setting which stimulates playfulness, exploration, game-playing and innovation for all age groups and abilities. Besides dedicated play grounds for various age groups the landscape proposals for play will consider the notion of ‘informal’ play. This encourages children to use their imagination and to interact with their parents, carers or other children whilst integrated with other amenity spaces. For example; sloped lawns, low retaining walls and steps may create a playful atmosphere and facilitate informal seating and intimate place making.

The scope for sport & play should be considered in relation to the provision in close vicinity to the site such as Lake Ontario waterfront and ravines, where the network of open spaces are already used for recreational activities. The proposed linear park provides an opportunity to connect playful activities in a linear trail.



PLAY SPACE / AGE CATEGORY TYPOLOGIES :	
<div><div></div><div>DOORSTEP PLAYABLE SPACE</div></div> <div>Max. walking distance from residential unit = 100m</div> <div><div>- A landscaped space including engaging play features for young children, and places for carers to sit and talk.</div><div>- Parental / guardian supervision</div></div>	<div>UNDER 5's</div> <div></div>
<div><div></div><div>LOCAL PLAYABLE SPACE</div></div> <div>Max. walking distance from residential unit = 400m</div> <div><div>- A landscaped space with landscaping and equipment so that children aged from birth to 11 can play and be physically active and they and their carers can sit and talk.</div><div><div>- Flexible use</div><div>- No formal supervision</div></div></div>	<div>UNDER 5's</div> <div>5 - 11's</div> <div>OVER 12's</div> <div></div>
<div><div></div><div>NEIGHBOURHOOD PLAYABLE SPACE</div></div> <div>Max. walking distance from residential unit = 800m</div> <div><div>- A varied natural space with secluded and open areas, landscaping and equipment so that children aged from birth to 11 can play and be physically active and they and their carers can sit and talk, with some youth facilities.</div><div><div>- Flexible use</div><div>- May include youth space</div><div>- May be supervised</div></div></div>	<div>UNDER 5's</div> <div>5 - 11's</div> <div>OVER 12's</div> <div></div>



1.1.9 MICROCLIMATE STUDIES

PEDESTRIAN WIND COMFORT

Existing site

The results in this section show the pedestrian wind comfort grades at ground level, first looking at the wind conditions on the existing site in plan view (summer season and winter season). For this scenario the current situation on site has been considered, with the Christie Cookie factory already demolished.

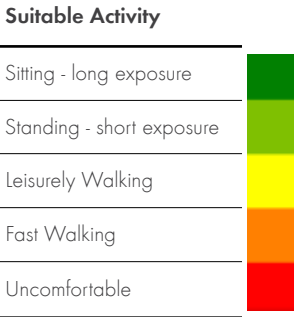
As the site is very open and exposed to the elements, it shows as quite windy. Most of the site during the summer season falls within the Leisurely Walking category, with significant patches to the south west falling in the Fast Walking category.

In addition, it is clear that the neighbouring grid-like streets on the north east of the site, such as Brooker Lane and the next street to the south, are creating wind canyons, with strong winds shooting perpendicular over Lake Shore Boulevard, with uncomfortable conditions coming into the site.

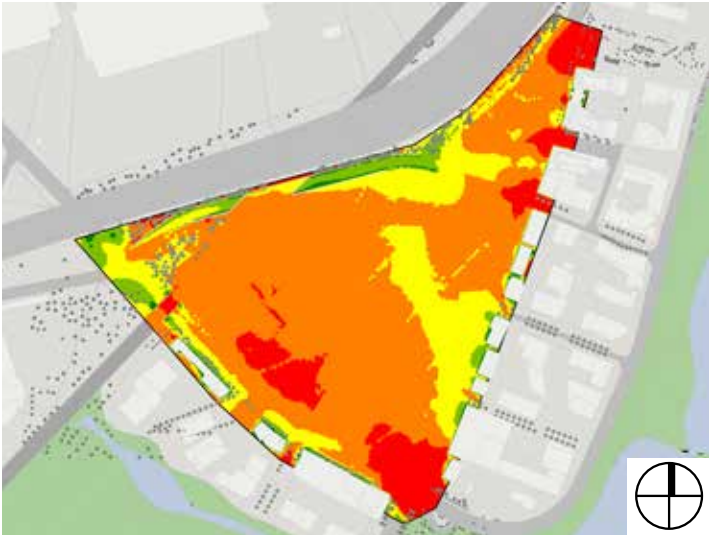
During the winter season, which naturally gives worse conditions as the wind speeds are higher, these effects are pronounced even further. Now large areas of the site fall into the Fast Walking category, with some significant areas highlighted as Uncomfortable. These conditions do not take account of any temperature effects, and will

therefore be pronounced even further when the effects of wind chill are considered.

The effect of the grid-like street on the north east of the site are clearly visible, as well as an area to the south west which is directly caused by the collection of tall condominiums to the south side of Park Lawn Road. The south corner of the site, where Park Lawn Road meets Lake Shore Boulevard West, is particularly windy. As the wind currently gets funnelled between the opening on this corner, approaching over Lake Ontario and Humber Bay Park West, it shoots freely into the 2150 Lake Shore site, with a large area during the winter showing uncomfortable conditions.



Pedestrian wind comfort - Summer Season - Existing site



Pedestrian wind comfort - Winter Season - Existing site

Proposed Master Plan

The results in this section show the pedestrian wind comfort grades at ground level for the final Master Plan layout in plan view (summer season and winter season). The Galleria and station canopies are included within the simulation models, but shown transparent here for clarity. During the summer season, large areas of the site fall within the most comfortable category which make these areas suitable for all activities including long-term sitting. These areas would be an ideal location for restaurant and cafe terraces, parks and picnic places and other activities for which people will spend a longer period of time in the outdoor space. Notable areas where this would be possible are most of the Galleria space, which is very well sheltered by the surrounding clusters of tall and mid-rise buildings, most of the park area, large areas on Boulevard Square and significant areas of the green spine routes. As expected, during the winter season conditions on the Site are less comfortable since this is the coldest and windiest season of the year. Therefore the outdoor space will be used less frequently and for shorter time intervals. The presented results do not take account of any temperature effects, and will therefore be pronounced even further when the effects of wind chill are considered. The areas of stronger wind speed are mostly visible around the corners of the tallest buildings. Large areas of the

galleria and park area still fall within the most comfortable grade and prove to be suitable for long-term activities. Some areas show uncomfortable conditions, most notable in Entertainment Square, Station Square, the north east edge of the park and areas along Park Lawn Road and across Lake Shore Boulevard West. These areas will need further attention during the detailed design phase of the Master Plan. Although some of these are visible along Park Lawn Road and Lake Shore Boulevard West, these are a significant improvement compared to the conditions found in the existing situation (see previous spread). The clusters of tall towers actually provide good shelter against the strongest wind conditions, creating calmer conditions in the areas between them. Investigations are ongoing as to how any areas of uncomfortable conditions within the Master Plan can be mitigated.

Suitable Activity

Sitting - long exposure	
Standing - short exposure	
Leisurely Walking	
Fast Walking	
Uncomfortable	



Pedestrian wind comfort - Summer Season

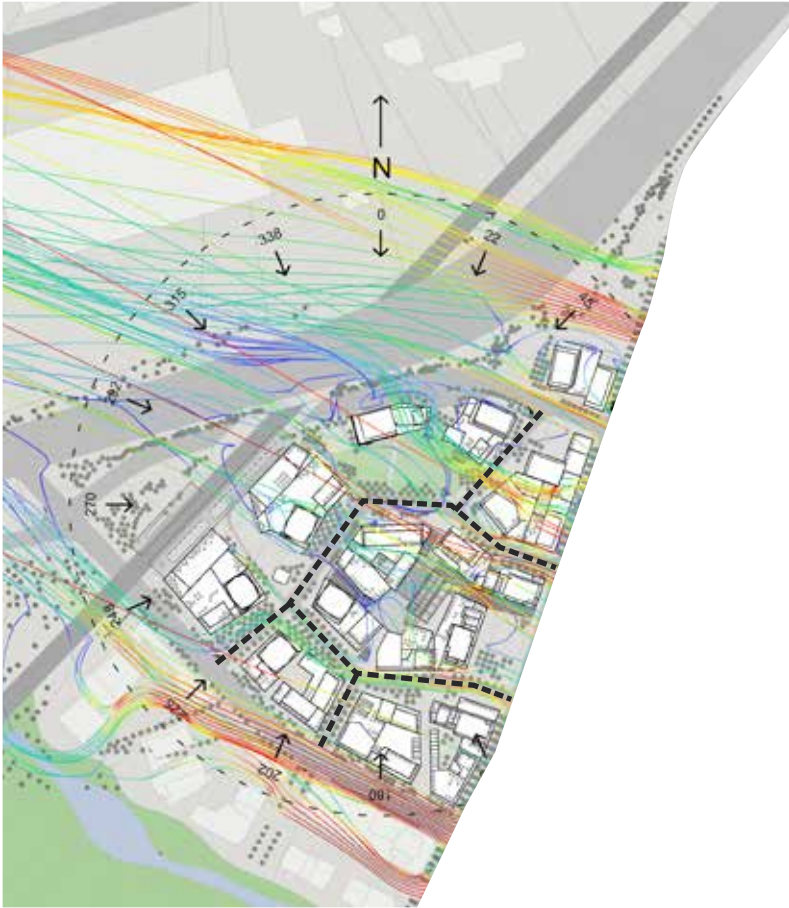


Pedestrian wind comfort - Winter Season

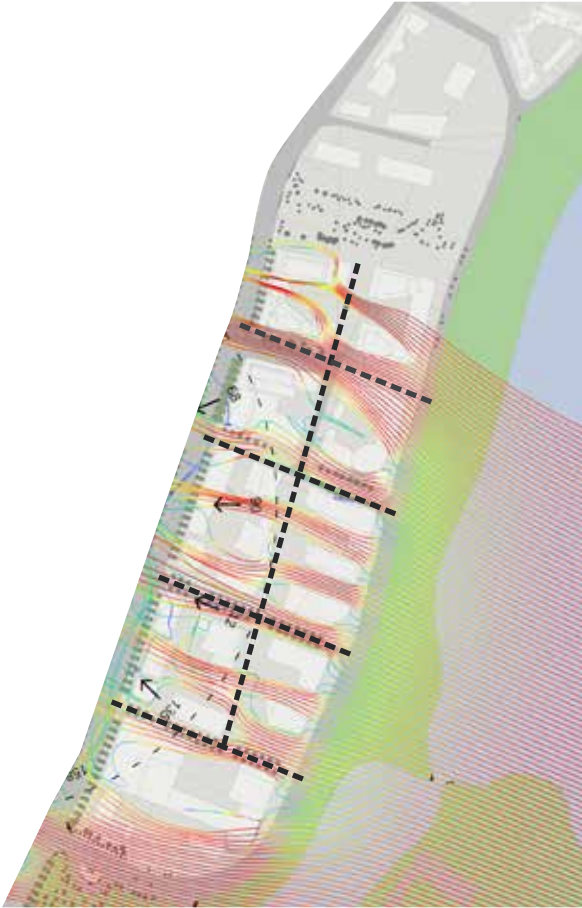
Non Gridded street pattern

Gridded street patterns are typically a legacy of speculative land division, utilized for their geometric rationality and the ease of their legal description. An unintended by-product of this process are the wind channels produced by unobstructed, parallel streetwalls.

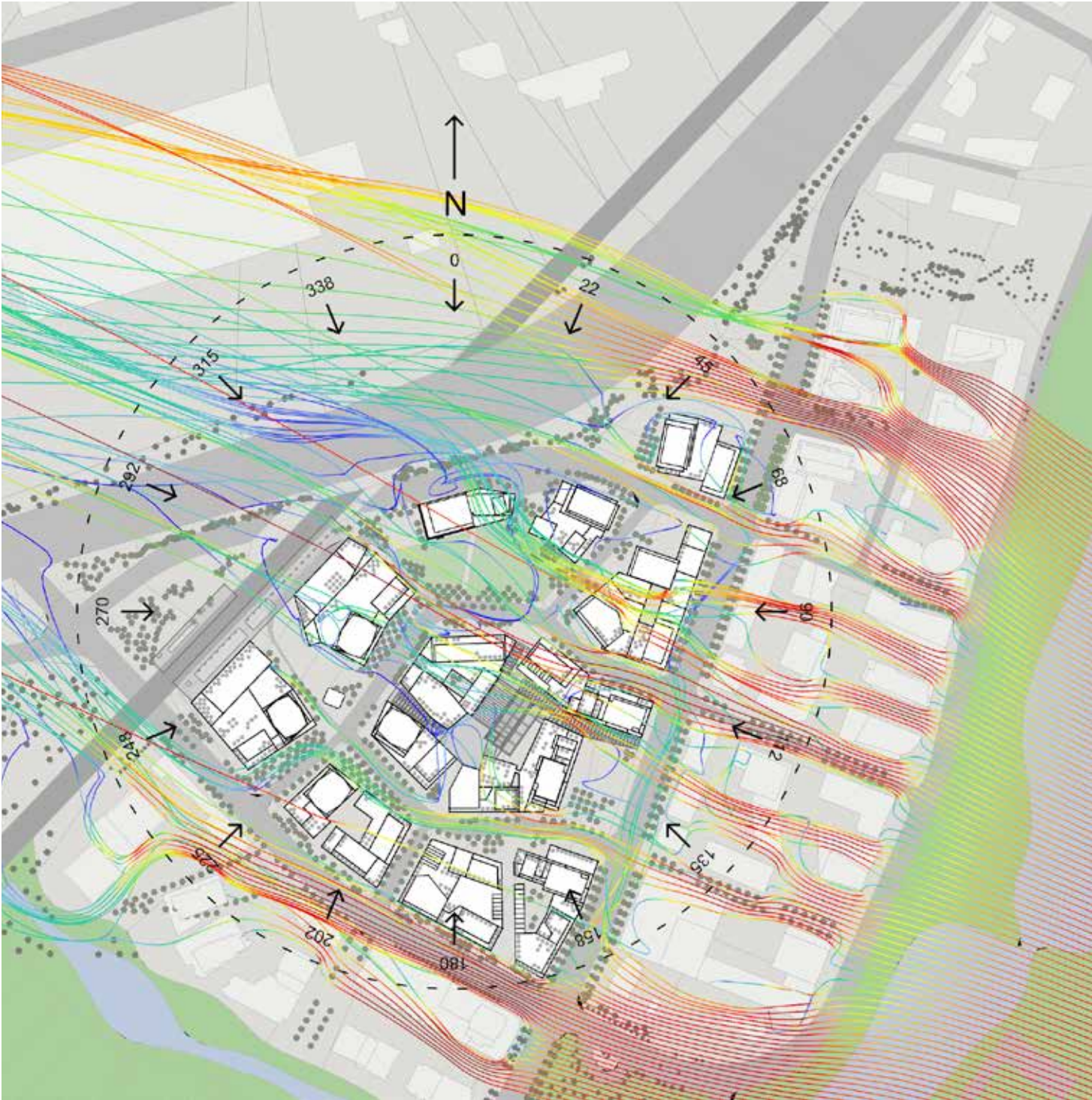
The Master Plan takes the irregular shape of the site to explore a more informal street layout, not only for a picturesque townscape, but for the shielding effect and the wind speed reduction that oblique building blocks can provide.



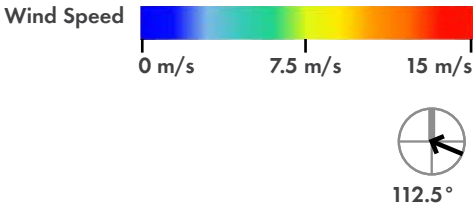
Non-gridded street pattern dissipates wind speed



Gridded street pattern accelerates wind speed



Streamlines 112.5°



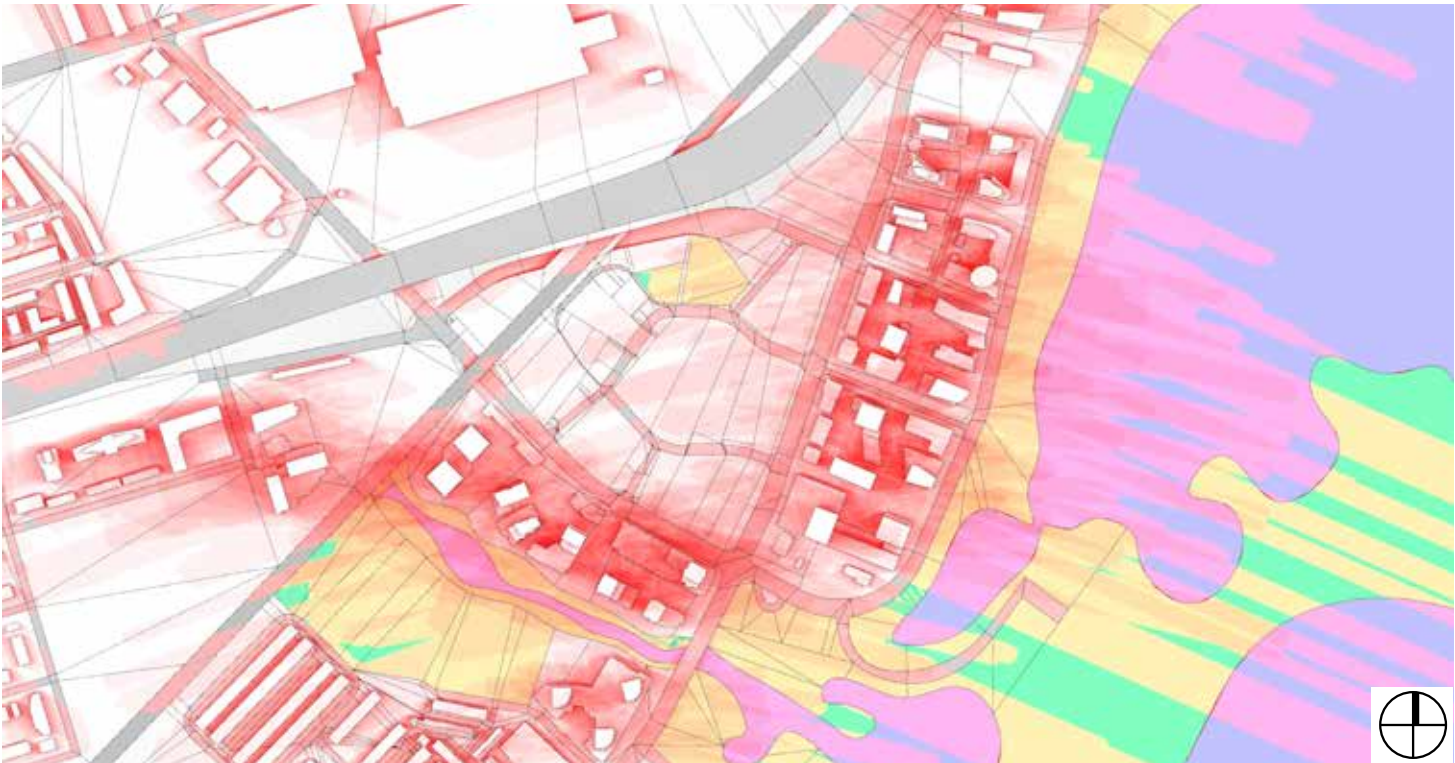
SHADOW STUDIES

In order to design a successful outdoor public spaces it is essential to design with the sun and the shadow it casts in mind, generated by the geometry of the proposed development. During the concept design stage a number of design iterations were tested, optimising the geometry and location of the towers for a better sun penetration into proposed public spaces

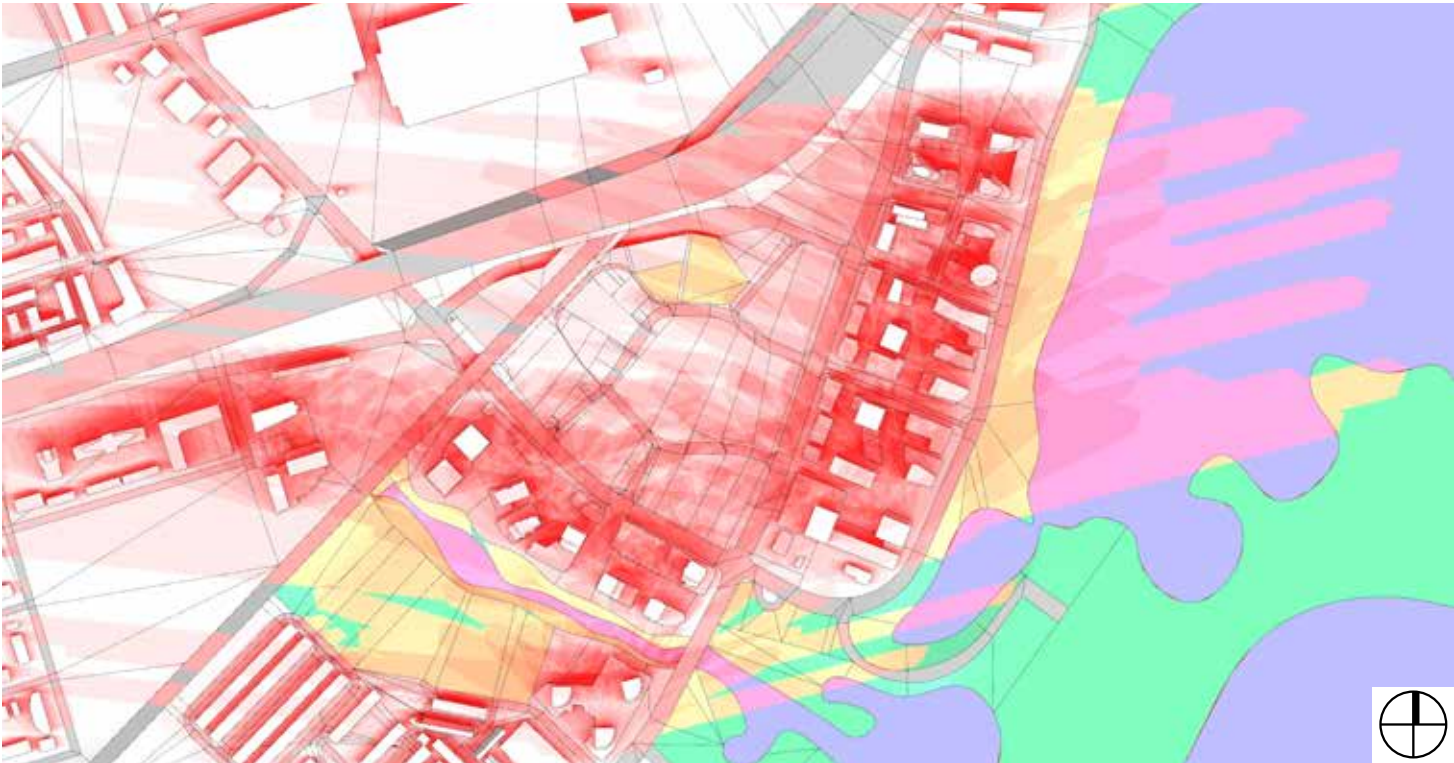
The images on this spread show the shadows generated at specific dates (21 March, 21 June, 21 September, 21 December), which shows the effect of the existing surrounding buildings in a 24h 'butterfly' diagram.

These diagrams are called butterfly diagrams as they visualise all of the individual hourly shadow plots, all overlaid on top of each other. This shows the variation of existing shadows during the day, which informed the location of the proposed public park and overall public realm design.

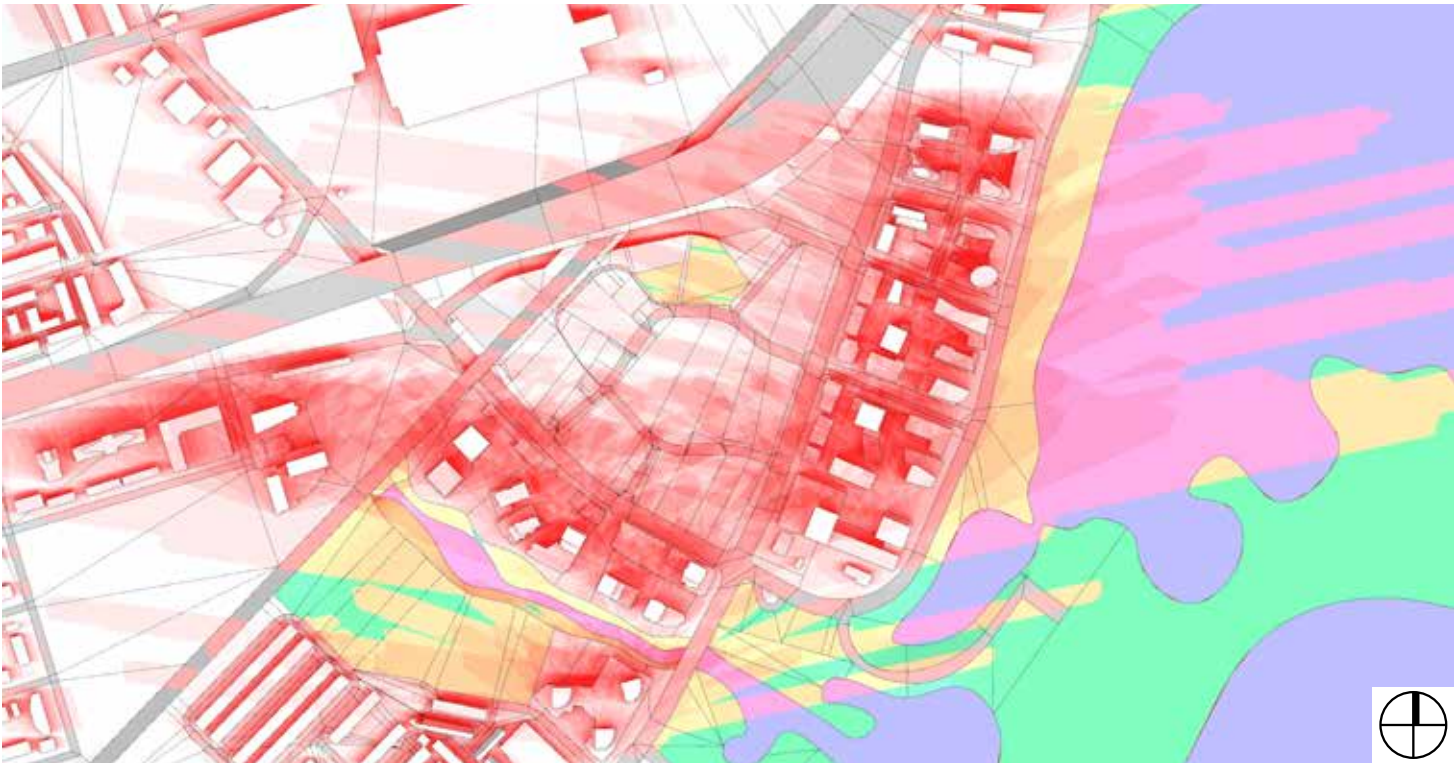
Detailed shadow analysis of the Master Plan is provided in the Master Plan and Planning Rationale document, and the Shadow Study submitted with this application.



Shadow patterns - Existing shadows (red) - 21 June



Shadow patterns - Existing shadows (red) - 21 March



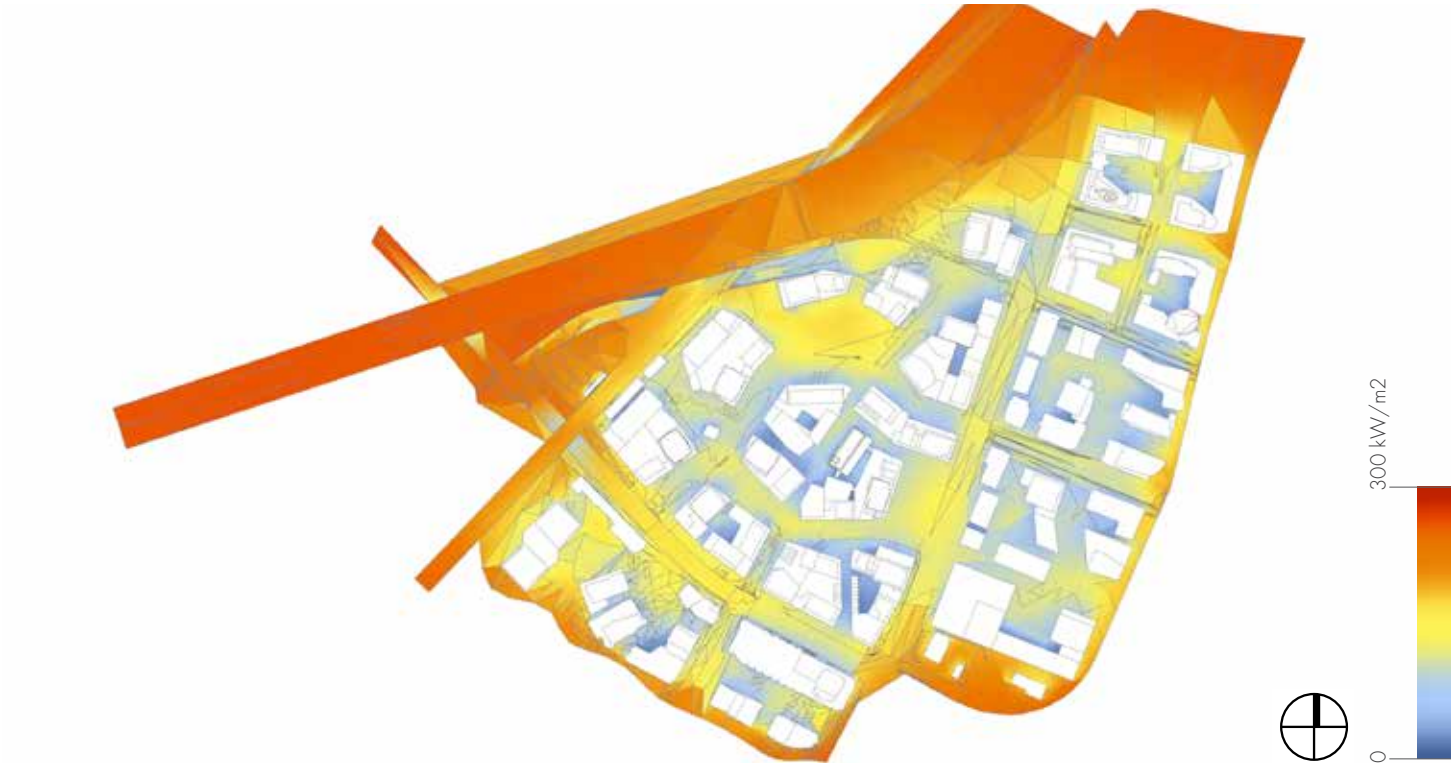
Shadow patterns - Existing shadows (red) - 21 September

SOLAR RADIATION

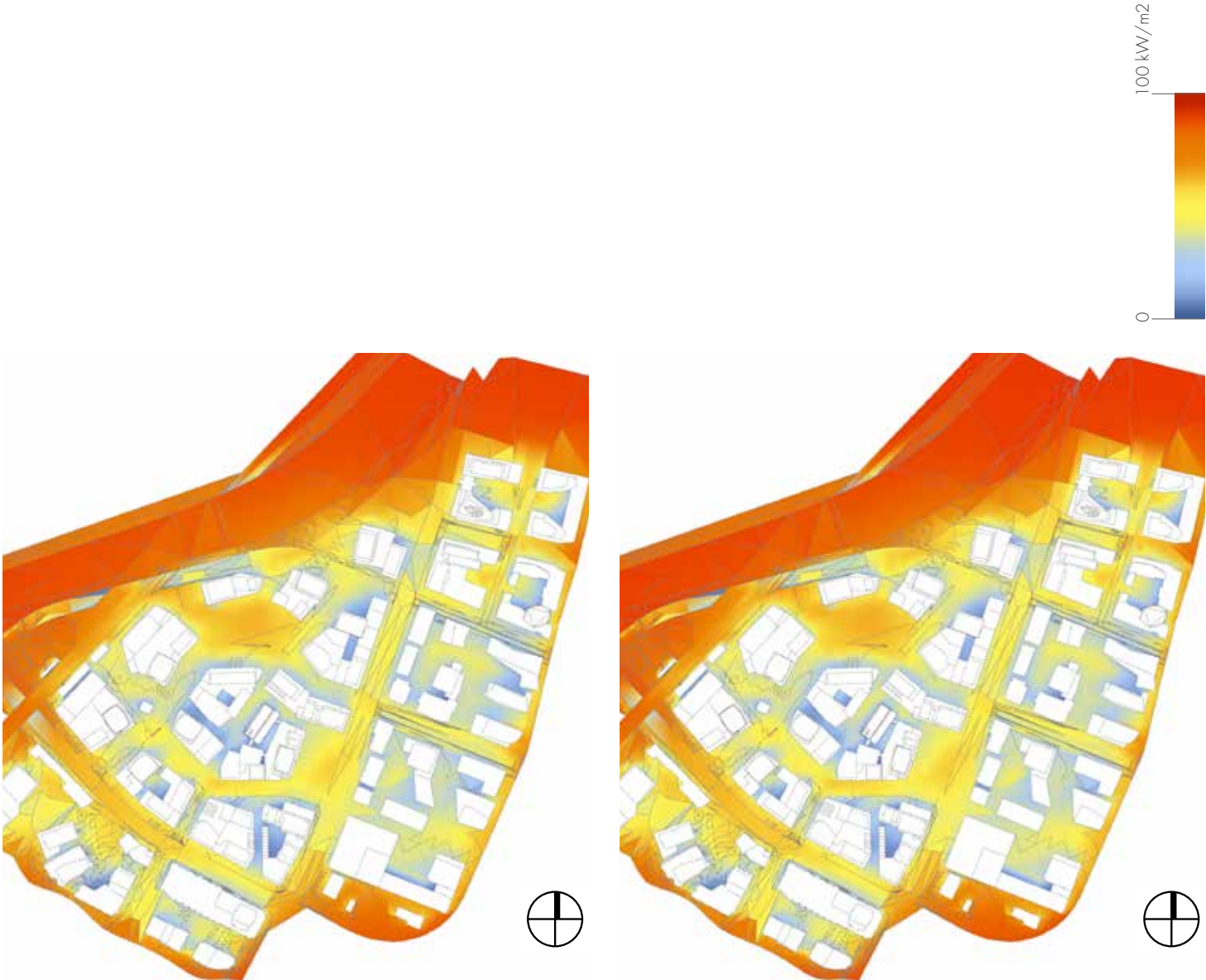
It is important to look at the total solar radiation received by the ground, façades and roof top areas. This will inform about the intensity of radiation that falls into specific areas throughout the Master Plan. This informs many aspects of the further design, such as the electrical potential of surfaces to determine where to locate photo voltaic panels, what is the ideal apartment layout and where to put living rooms, bed rooms, etc, but also for the further outdoor thermal comfort analysis. The more solar radiation on a surface, the more it will warm up.

The image below shows the total annual direct solar radiation received from the sun on the ground plane, whereas the images on the opposite page are split in the

different seasons. These seasonal images clearly show that most of the radiation is received during the spring and summer season, with lower light levels (light blue) during the winter and autumn season. We can also see the large variation in colours during spring and summer, which shows the effect of the direct sun light. In winter and autumn the contribution to the overall light levels due to the indirect solar radiation (reflections of visible light from the sky) is much greater, compared to a much greater effect of the direct solar radiation (direct sun light coming in) during spring and summer. For that reason the geometry of the towers has a much greater effect on the light levels in summer and spring.



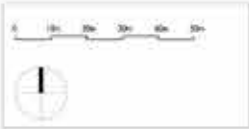
Total direct solar radiation - annual cumulative





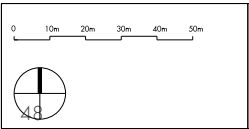
View of the Park








Illustrative Roof Plan



KEY

	New Public Park Full unencumbered parkland dedication 5,175 Sqm		Squares 8,595 Sqm
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Open Space
15,800 Sqm

Site Area subtracting conveyed
roads measured to ROW:
91,452 Sqm

Park and Open Space Plan

