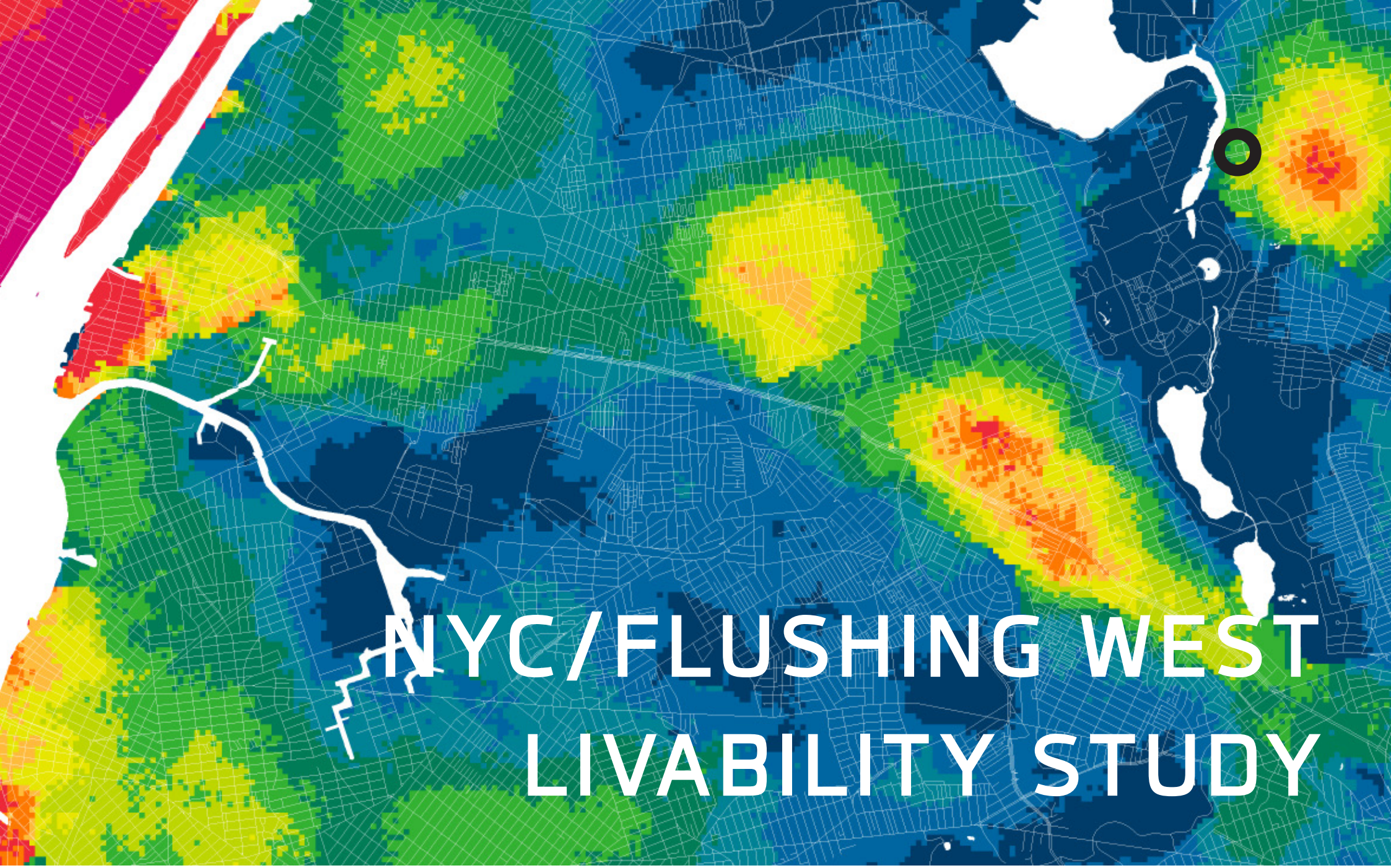


NYC/FLUSHING WEST LIVABILITY STUDY

SPACESCAPE

Measuring the spatial capital of New York City and one proposed development
Draft 160501

NEW YORK CITY
PLANNING DEPARTMENT

Ryan Jacobsson

Jeffrey Schumaker

SPACESCAPE

Alexander Ståhle (project manager)
alexander.stahle@spacescape.se

Eva Minoura
eva.minoura@spacescape.se

Staffan Swartz
staffan.swartz@spacescape.se

Lars Marcus

Joel Hernbäck

Moa Rydell

Spacescape / Östgötagatan 100 / Box 4700 / SE-116 92 Stockholm / Sweden

www.spacescape.se / +46 8 452 97 67

INTRODUCTION

LIVABILITY AND SPATIAL CAPITAL

Many things make cities and places thrive. Urban research repeatedly reaffirms that basic livability of cities depends upon nearness and accessibility - to people, to services and to jobs. There is ample evidence that great urban places are successful due to the basic urban elements such as density, land use mix, public open space and street connnectivity that reinforce walkability and sense of proximity. These urban forms produce affordances in the urban environment which gest at the concept of "spatial capital" (Marcus, 2010, Spatial Capital, Journal of Space Syntax, Vol 1 No 1). Simply put, the quantity and diversity of spaces in a specific location can be seen as a counterpart to the more well-known concepts *social* or *economic* capital. An example is the area around Bryant Park in Midtown Manhattan, whose density, street connectivity and public open space create opportunities for economic activity and social interaction. The success of the place is entirely dependent on its spatial capital, also summed-up by the classic real-estate catch-phrase: "Location Location Location".

Since spatial capital captures some of the basic conditions for livabilty in a place, the measures used are derived from research that has identified how people use city space, how people move and navigate, and how far people walk. This is the basis for how we measure everything in this study, from density and land use to open space and street connectivity.

AREA MEASURES

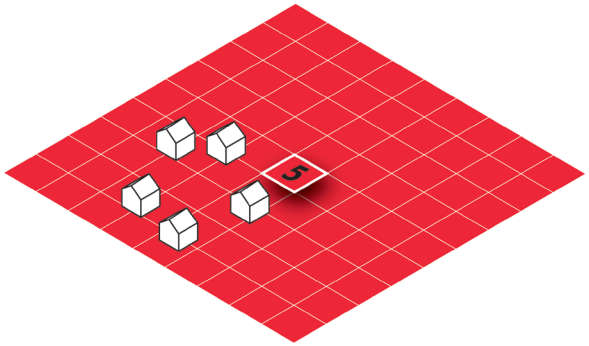
Area measures are used to describe the quantity of space within an area, plot or district. Floor Area Ratio or Open Space Ratio are commonly used in planning. Area measures do not capture accessiblity to spaces, hence quantities may change if the area limit is adjusted. This phenomenon is commonly referred to as the Modifiable Area Unit Problem (MAUP), in order to capture the problems which may emerge when attempting to compare data. Location measures are one method of addressing this.

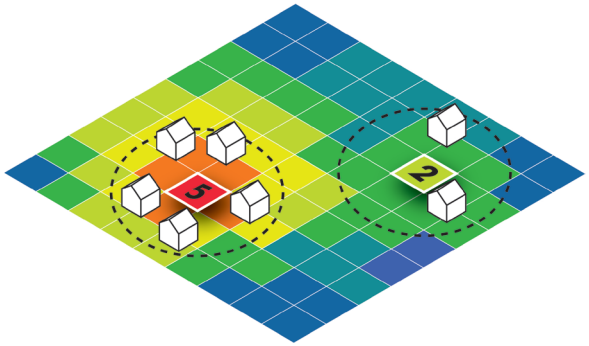
LOCATION MEASURES

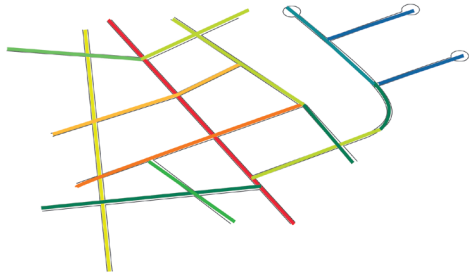
Location measures describe the quantity of space or things that may be reached from a specific location. This might be the number of services within walking distance from an address point, such as the "Walkscore". Location measures may also be used to describe the accessiblity to density or the amount of public open space within reach. We found correlations between our spatial location density measure and walkscore.

NETWORK MEASURES

Network measures are common in transportation planning. They capture how networks of streets, bicycles or pedestrians are connected, and anticipate potential movement. One measure used widely in urban studies is Space Syntax-analysis. It captures street connectivity base on wayfinding.







FLUSHING WEST DEVELOPMENT

The Flushing West Neighborhood Planning Study aims to examine key land use and zoning issues in the neighborhood, but also to take a broader and more comprehensive look at current and future needs of the community. The aim is to identify a wide range of strategies and investments integral to Flushing West's growth and vitality.

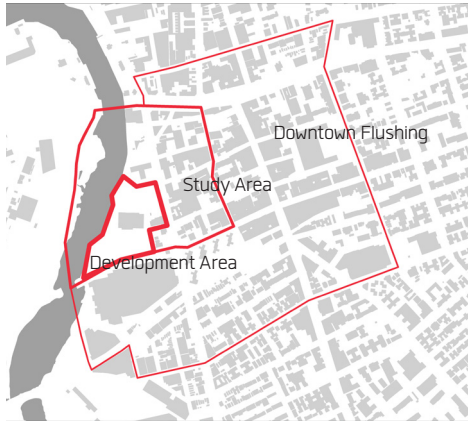
The NYC Planning Department has proposed the following goals and objectives for the area:

- Facilitate a community-based planning process to support policy changes that will shape a more livable neighborhood
- Encourage new housing with a required affordable component, and preserve existing affordable housing
- Encourage walkability by extending the vibrant downtown area to the waterfront, creating opportunities for new open space
- Support the existing and growing immigrant and small business culture by providing economic opportunities
- Align investments in infrastructure and services to support current demands and future growth.

Measuring spatial capital (density, public open space, street connectivity) of the proposed development will highlight basic conditions for the last three objectives in the list above.

This report is a livabiity study of the proposed plans for the Flushing West waterfront development as part of an Environmental Impact Statement. The study has been conducted by the international urban research and design studio Spacescape, based in Stockholm, Sweden in collaboration with the NYC City Planning Department.

FLUSHING WEST IN NEW YORK CITY



FLUSHING WEST DEVELOPMENT AREA, STUDY AREA AND DOWNTOWN FLUSHING

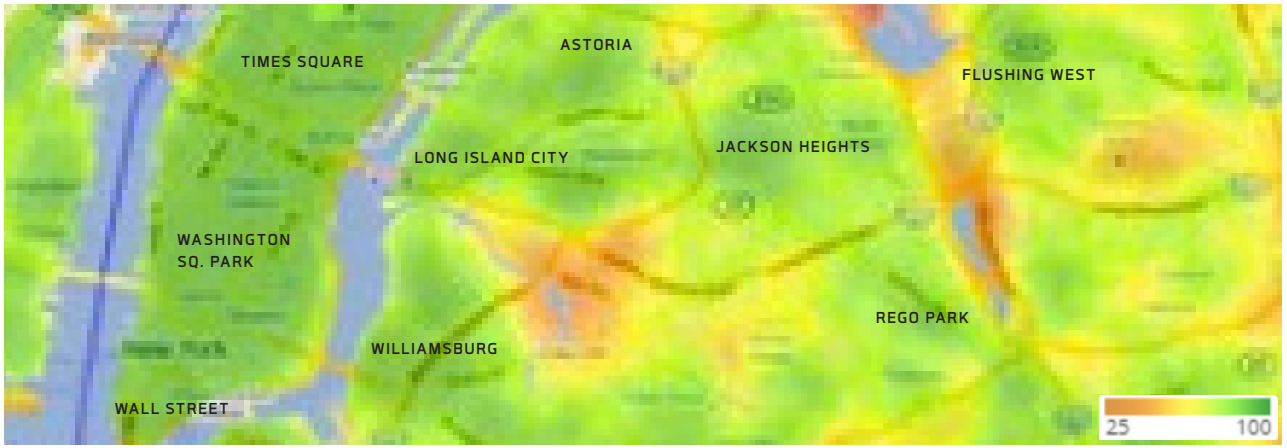
PROPOSED DEVELOPEMENT IN FLUSHING WEST

DENSITY AND WALKSCORE

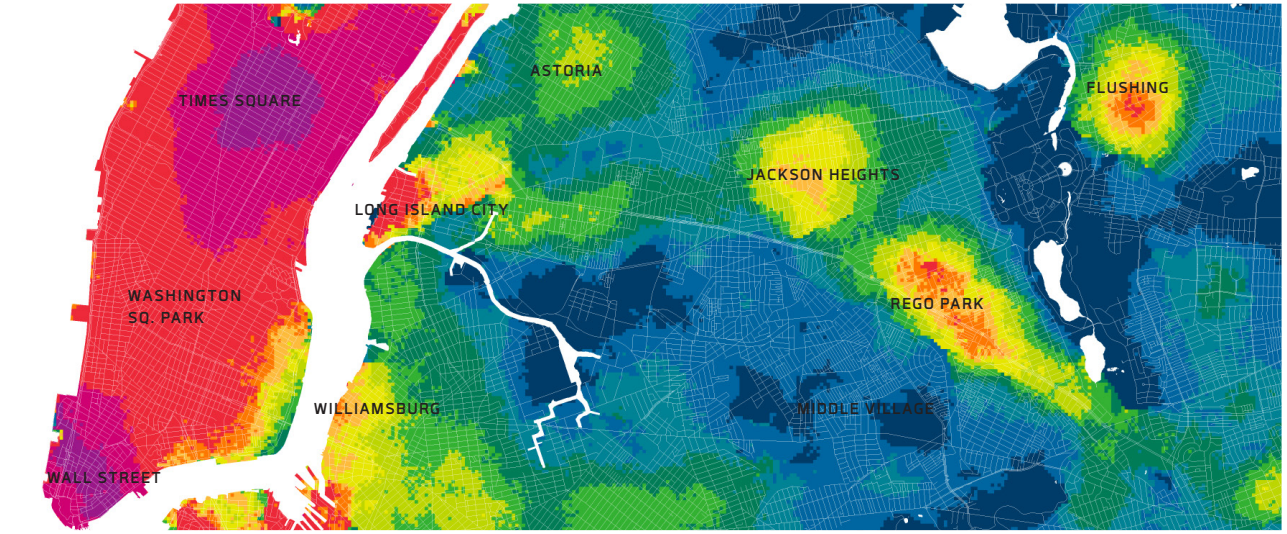
NEW YORK CITY

Urban density is commonly measured either as floor area, or in terms of population (e.g. residential and commercial). There tends to be a strong correlation between spatial density and population density. UN Habitat recommends 150 persons per hectare (375 pers per acre) as a minimum for walkable, sustainable places, which has been translated here as a location Floor Area Ratio (FAR) of approximately 0,8 (minimum). Measuring the location density from every plot captures how much floor space is able to be reached within half a mile. New York City exhibits some clear patterning, notably a very high density of Manhattan that tends to taper off in the boroughs Queens and parts of Brooklyn shown in the images here. Patches of higher density reveal important nodes in the urban landscape, for instance around Flushing's downtown, clearly visible in the density analysis. Flushing West is located just in the fringe of this dense center. We have also found correlations between spatial density and walkscore, that can be used to roughly estimate future walkscores.

	FAR	WALKSCORE
Times Square	*11.8*	*100*
Wall Street	*11.1*	*100*
Washington Sq. Park	*3.4*	*99*
Long Island City	*2.4*	*95*
Jackson Heights	*1.8*	*93*
Rego Park	*1.7*	*92*
Flushing	*1.7*	*88*
Middle Village	*0.5*	*62*



WALKSCORE 1–100 (WWW.WALKSCORE.COM)



LOCATION DENSITY (FLOOR AREA PER LAND AREA WITHIN 1/2 MILE)

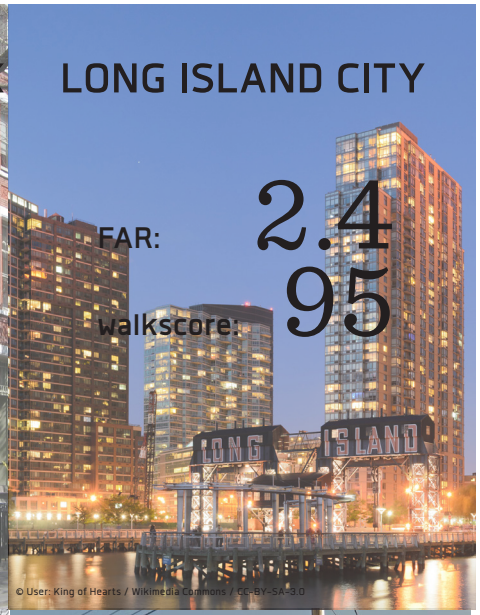
>10 | 5–10 | 2–5 | 2–1.8 | 1.6–1.8 | 1.4–1.6 | 1.2–1.4 | 1–1.2 | 0.8–1 | 0.6–0.8 | 0.4–0.6 | <0.4

UN Habitat min.: 0.8


WALL STREET
FAR: 11.1
walkscore: 100

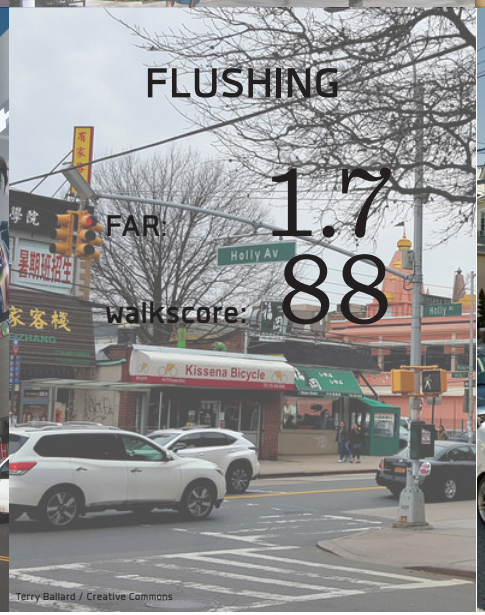

TIMES SQUARE
FAR: 11.8
walkscore: 100


WASHINGTON SQ. PARK
FAR: 3.4
walkscore: 99


LONG ISLAND CITY
FAR: 2.4
walkscore: 95
LONG ISLAND


JACKSON HEIGHTS
FAR: 1.8
walkscore: 93


REGO PARK
FAR: 1.7
walkscore: 93


FLUSHING
FAR: 1.7
walkscore: 88
Holly Av
Kissena Bicycle


MIDDLE VILLAGE
FAR: 0.5
walkscore: 62

FLUSHING WEST

The Floor Area Ratio of the Flushing West development area increases significantly in the proposed scheme. The density of the study area correspondingly increases 190% and the density of Downtown Flushing increases 19%. The density of the proposed development is high at all scales and measures, far higher than recommended by UN Habitat (0.8). Looking at Location Density, which roughly correlates with Walkscore, the new development shifts the center of Flushing 's most dense core somewhat to the northwest. Walkscore in the development areas is estimated to increase from 86 to 97. A walkscore of 95 means that the area will be "a walkers paradise" and in line with the measures from UN Habitat. Adjecent neighbourhoods will go from 95 to 97. According to the CEO for Cities (2009) *"One point increase in Walk Score was associated with between a $700 and $3,000 increase in home values."* This could mean that values for a typical home unit in adjacent neighborhoods can be expected to increase up to $6,000 only due to the density and service increase in the development area. This is only a rough estimate based on walkscore alone. Many other factors contribute to changes in home and land value.

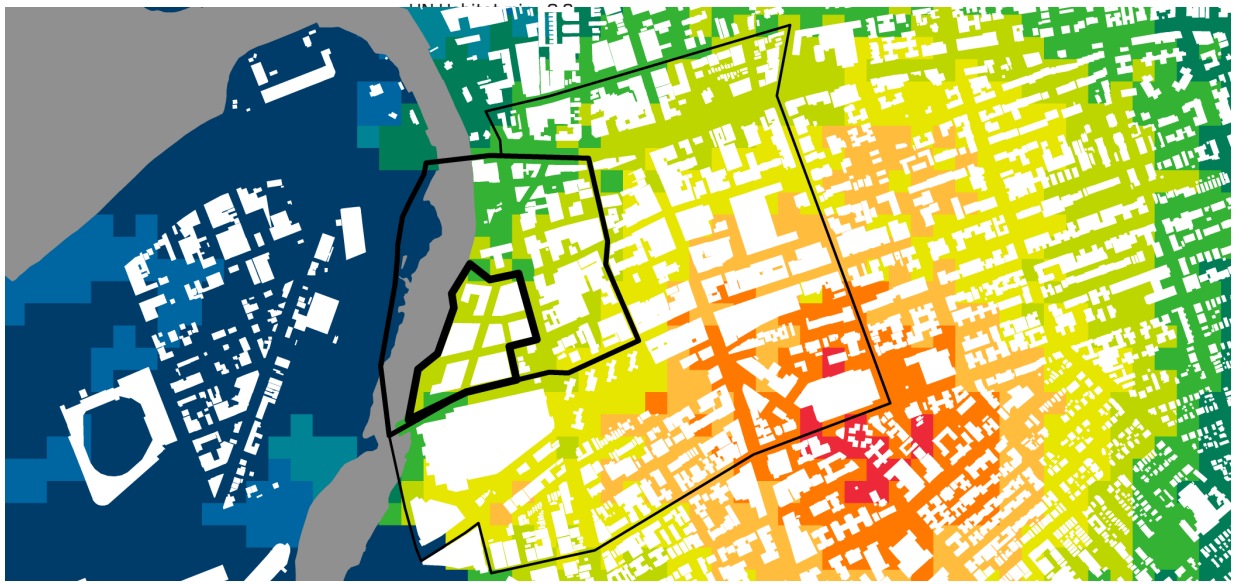
FLOOR AREA RATIO	2016	PROP	PROP*
Development area	*0.21*	*4.54*	*2.92*
Study area	*0.66*	*1.91*	*1.45*
Downtown Flushing	*1.35*	*1.61*	*1.51*

WALKSCORE (APPROX)		
Development area	*86*	*97*
Study area	*95*	*97*
Downtown Flushing	*99*	*99*

**Densities with existing zoning*

LOCATION DENSITY - EXISTING SITUATION 2016 (FLOOR AREA PER LAND AREA WITHIN 1/2 MILE)

>10 5–10 2–5 2–1.8 1.6–1.8 1.4–1.6 1.2–1.4 1–1.2 0.8–1 0.6–0.8 0.4–0.6 <0.4 Development area Study area Downtown Flushing



LOCATION DENSITY - PROPESED DEVELOPMENT 2016 (FLOOR AREA PER LAND AREA WITHIN 1/2 MILE)

>10 5–10 2–5 2–1.8 1.6–1.8 1.4–1.6 1.2–1.4 1–1.2 0.8–1 0.6–0.8 0.4–0.6 <0.4 Development area Study area Downtown Flushing

UN Habitat min.: 0.8

PUBLIC OPEN SPACE

NEW YORK CITY

Public open space includes publicly accessible parks, plazas, greenways, nature preserves and quaysides. There are two commonly used measures of public open space. Percent Public Open Space (POS) describes the percentage of total land that is public open space. UN Habitat recommends a POS of at least 15%. Public Open Space Ratio (OSR) captures the amount of public open space per inhabitant. NYC Environmental Quality Review identifies at least 2,5 acres per 1000 inhabitants as a minimum threshold.

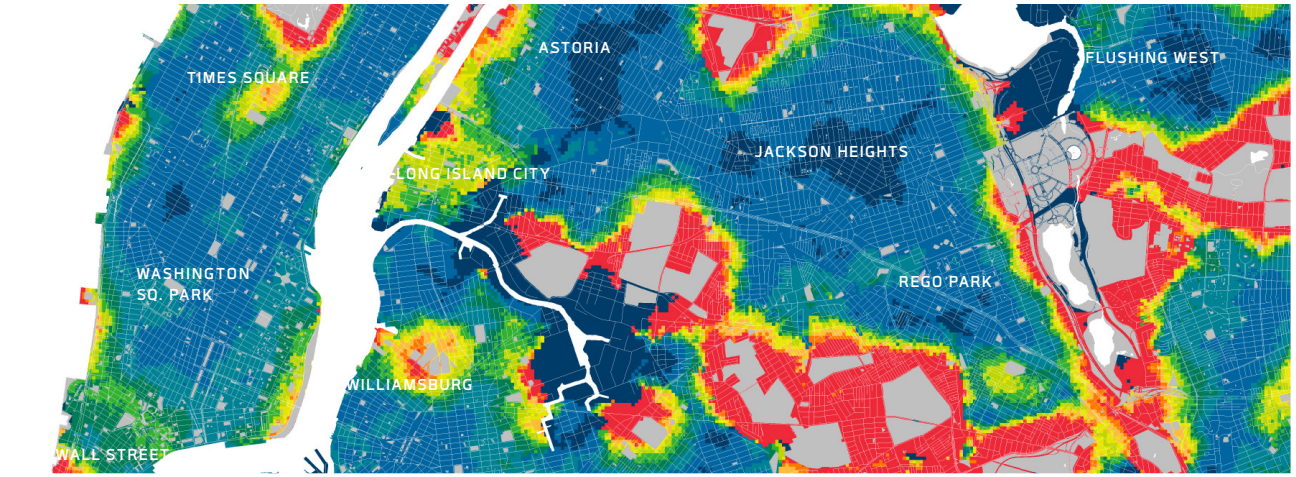
Not many areas reach the threshold in POS or OSR. The large parks are of great importance, but also areas with many smaller parks reach recommended thresholds, such as the southern tip of Manhattan, the Lower East Side, and Long Island City. Long Island City has a high OSR due to a low resident density.

	POS	OSR
Washington Sq. Park	*7 %*	*0.61*
Long Island City	*6 %*	*1.82*
Williamsburg	*3 %*	*0.43*
Rego Park	*2 %*	*0.23*
Flushing	*2 %*	*0.18*
Jackson Heights	*2 %*	*0.09*
Astoria	*1 %*	*0.08*

LOCATION POS (PERCENTAGE OF PUBLIC OPEN SPACE WITHIN 1/2 MILE)

>45 40–45 35–40 30–35 25–30 20–25 15–20 10–15 5–10 <5 Public openspace

UN Habitat min.: 15%



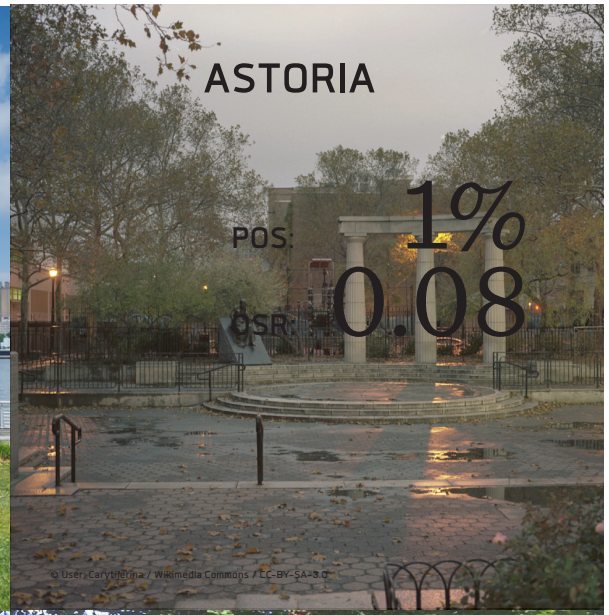
LOCATION OSR (ACRE PUBLIC OPEN SPACE RATIO PER 1000 INHABITANTS WITHIN 1/2 MILE)

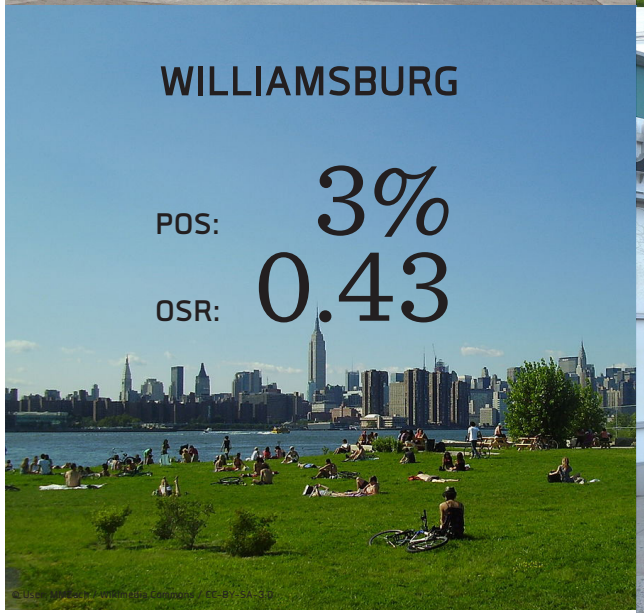
>3.3 2.9–3.3 2.5–2.9 2.1–2.5 1.7–2.1 1.3–1.7 0.9–1.3 0.5–0.9 0.1–0.5 <0.1 Public open space

NYC CEQR min.: 2.5


WASHINGTON SQ. PARK
POS: 7%
OSR: 0.61


LONG ISLAND CITY
POS: 6%
OSR: 1.82


ASTORIA
POS: 1%
OSR: 0.08


WILLIAMSBURG
POS: 3%
OSR: 0.43


REGO PARK
POS: 2%
OSR: 0.23


FLUSHING
POS: 2%
OSR: 0.09

FLUSHING WEST

Measuring the percentage of public open space, reveals that the large amount of new public open space in the waterfront development area translates to a substantial increase of public open space in the study area as well as in Downtown Flushing. As mentioned previously, 15% open space is recommended by UN Habitat.

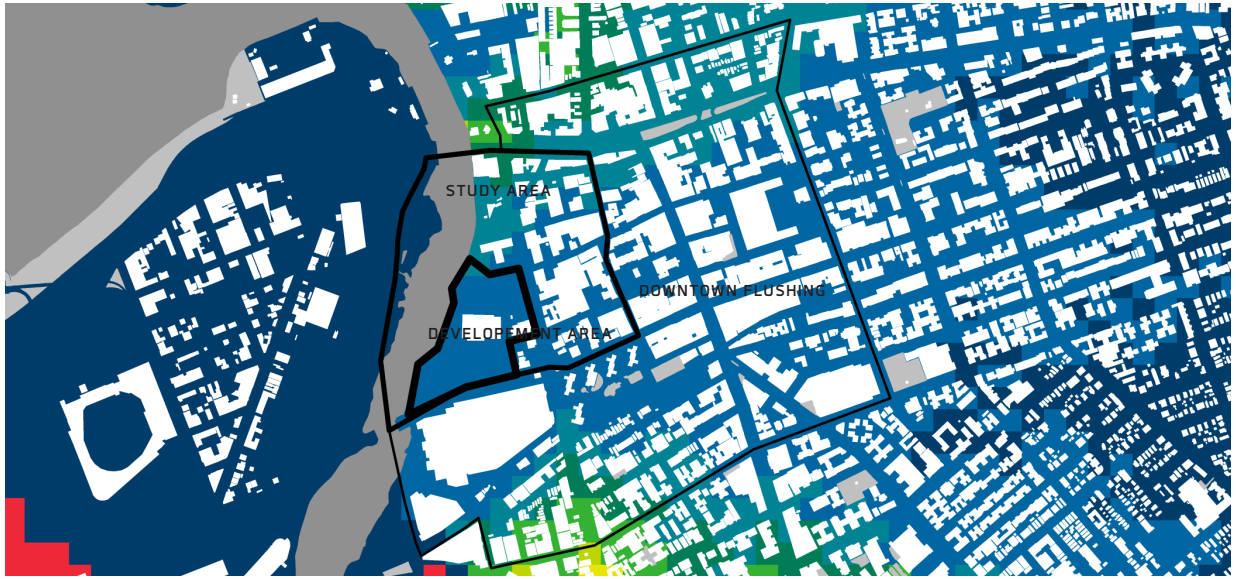
When looking at Public Open Space Ratio (acres per 1000 inhabitants) the quantities are still very low (0,4-0,7) according to NYC Environmental Quality Review standards (2,5). This will mean high pressure on public open space, in effect will lead a lot of residents to the open spaces that are available. Since there is so minimal high quality public open space in adjacent neighborhoods it is likely for an influx of visitors, that wil also increase fott traffic and improve ground floor viability for cafées and restaurants. Landscaping and functionality should take potential congestion and wear into account in the design of parks and plazas at the waterfront.

PERCENTAGE OF PUBLIC OPEN SPACE

	2016	PROP
Developement area	*0 %*	*27.0 %*
Study area	*0 %*	*7.9 %*
Downtown Flushing	*1.2 %*	*2.8 %*

PUBLIC OPEN SPACE RATIO

	2016	PROP
Developement area	*0.0*	*0.7*
Study area	*0.0*	*0.6*
Downtown Flushing	0.3	0.4



LOCATION OPEN SPACE RATIO – EXISTING SITUATION 2016 (ACRE PUBLIC OPEN SPACE RATIO PER 1000 INHABITANTS WITHIN 1/2 MILE)

>3.3 2.9–3.3 2.5–2.9 2.1–2.5 1.7–2.1 1.3–1.7 0.9–1.3 0.5–0.9 0.1–0.5 <0.1 Public open space Development area Study area Downtown Flushing

NYC CEQR min.: 2.5

LOCATION OPEN SPACE RATIO – PROPOSED DEVELOPMENT (ACRE PUBLIC OPEN SPACE RATIO PER 1000 INHABITANTS WITHIN 1/2 MILE)

>3.3 2.9–3.3 2.5–2.9 2.1–2.5 1.7–2.1 1.3–1.7 0.9–1.3 0.5–0.9 0.1–0.5 <0.1 Public open space Development area Study area Downtown Flushing

NYC CEQR min.: 2.5

STREET CONNECTIVITY

NEW YORK CITY

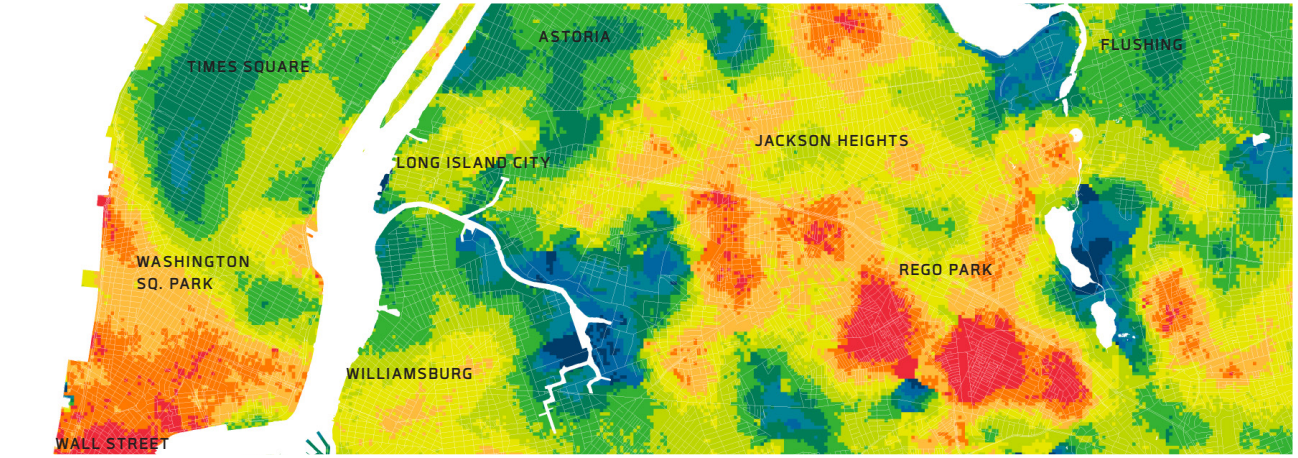
Streets analyzed are all the routes and networks accessible to pedestrians. Roads exclusively for cars are not included in the analysis.

UN Habitat and LEED recommend at least 150 intersections per square mile. New York City as a whole, has a high level of street connectivity.. Intersection density (above right) shows variation, for instance in the south and west of Manhattan. Most areas have far higher than recommended intersections per square mile, ensuring a generally high accessibility.

Street accessiblity (lower right), is here measured as spatial connectivity from all street segments using standard space syntax methodology. This has been proven to capture pedestrian movement potential. Put simply, long continuous streets which intersect many other streets show highest connectivity. This can clearly be seen in the avenues of Manhattan, as well as Astoria Boulevard and Queens Boulevard.

INTERSECTION DENSITY

Wall Street	*520*
Washington Sq. Park	*360*
Williamsburg	*310*
Long Island City	*290*
Times Square	*210*
Flushing	*180*



INTERSECTION DENSITY (150 INTERSECTIONS PER SQUARE MILE WITHIN 1/2 MILE)

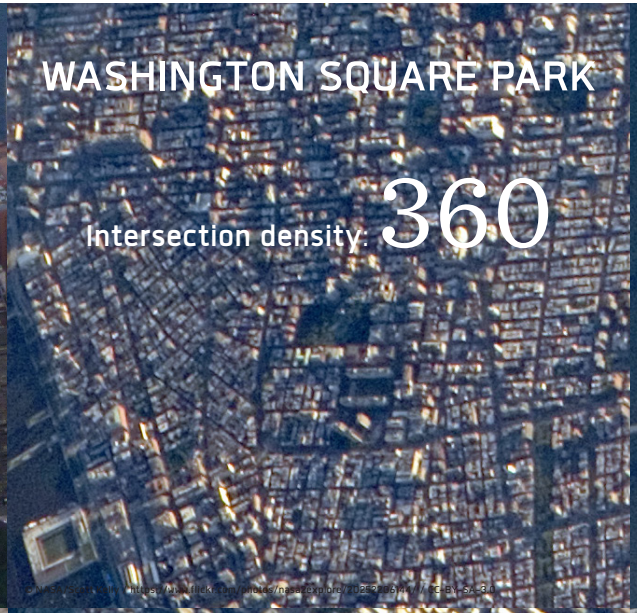
>450 | 400–450 | 350–400 | 300–350 | 250–300 | 200–250 | 150–200 | 100–150 | 50–100 | <50

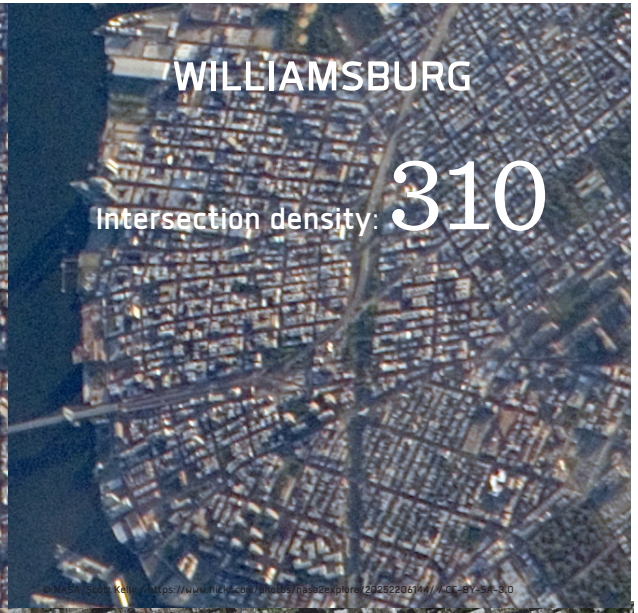
UN Habitat min.: 150

STREET ACCESSIBLITY (SPACE SYNTAX NETWORK SEQUENTIAL CHOICE R1500)

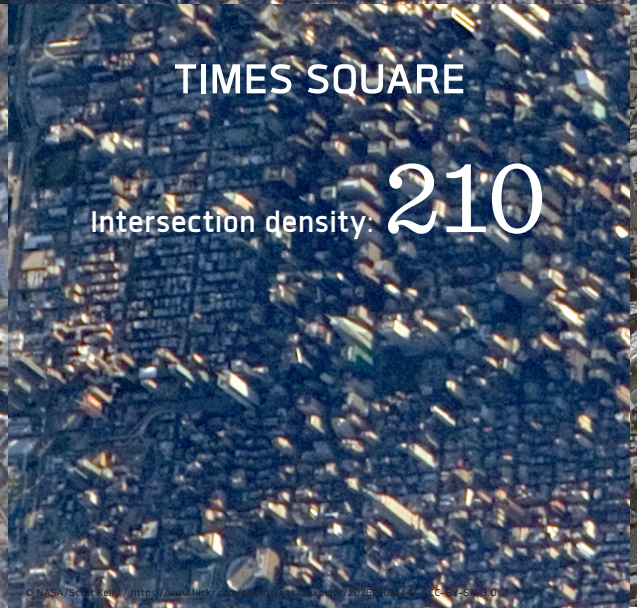
High Connectivity — Low Connectivity


WALL STREET
Intersection density: 520


WASHINGTON SQUARE PARK
Intersection density: 360


WILLIAMSBURG
Intersection density: 310


LONG ISLAND CITY
Intersection density: 290


TIMES SQUARE
Intersection density: 210


FLUSHING
Intersection density: 180

FLUSHING WEST

The new intersection density in the development area increases the total intersection density in the study area by 95% and in Downtown Flushing by 22%. This is an important contribution to the livability of adjacent neighborhoods. The street connectivity is up to both UN Habitat and LEED standards.

Looking at the spatial accessiblity of street segments the new grid in the development area seems not to be part of the most accessible routes in the overall grid. Pedestrian movement on College Point Blvd and Roosevelt Ave will not naturally go through the new development and the waterfront park. In this sense streets and public spaces within the area will be more local and out of the way weekdays unless there are other reasons to visit the area, like retail, restaurants or cafes.

INTERSECTION DENSITY (PER SQR MILE)

	2016	PROP
Developement area	*0*	*710*
Study area	*220*	*430*
Downtown Flushing	*180*	*220*

STREET ACCESSIBLITY – EXISTING SITUATION 2016 (NETWORK SEQUENTIAL CHOICE R1500)

High Accessiblity Low Accessiblity Development area Study area Downtown Flushing

STREET ACCESSIBLITY – PROPOSED DEVELOPMENT (NETWORK SEQUENTIAL CHOICE R1500)

High Accessiblity Low Accessiblity Development area Study area Downtown Flushing

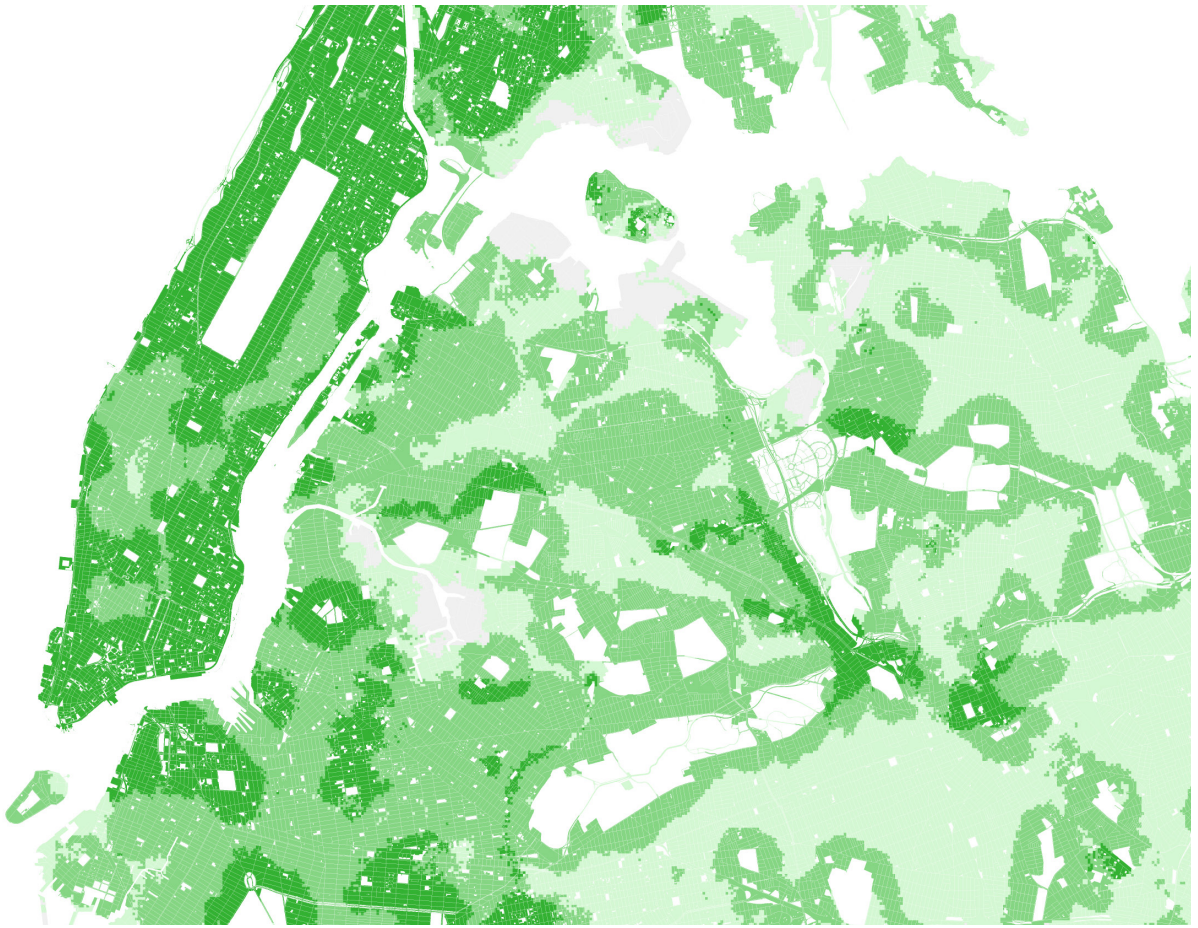
CONCLUSIONS

NEW YORK CITY

As outlined in the introduction, spatial capital is a precondition for social oand economic capital, for place livablility and place making. Spatial capital can be measured in many ways. Some basic measures of density, public open space and street connectivity have been used in this study to highlight differences between places in New York City and the effects of the proposed development in Flushing West.

UN Habitat has proposed minimum standards for these three basic spatial measures to support livabilty and sustainable urban developemt. That is, a density of at least 150 persons per hectare (375 pers per acre, FAR=0,8), at least 15% Public Open Space (The standard for public open space has here been adjusted to 5%, 1/3 of the UN Habitat standard 15% that would have eliminated most of New York City neighborhoods, many of which are considered highly livable), and a street connectivity of at least 150 intersections per square mile. These three measures have been overlayed in the image to the right to identify areas that fullfill all three standards simultaneously. In theory, these areas, as for example South Flushing, have basic long term spatial capital for developing urban livability and a sustainable urban development.

The areas in the map on the right would be interesting to study further as possible examples of good urban design and role models for future urban developments in New York.



AREAS OF HIGH SPATIAL CAPITAL = HIGH DENSITY + HIGH PUBLIC OPEN SPACE + HIGH STREET CONNECTIVITY

All 3 standards met 2 standards met 1 standard met (modification of UN Habitat recommendations)

FLUSHING WEST DEVELOPMENT

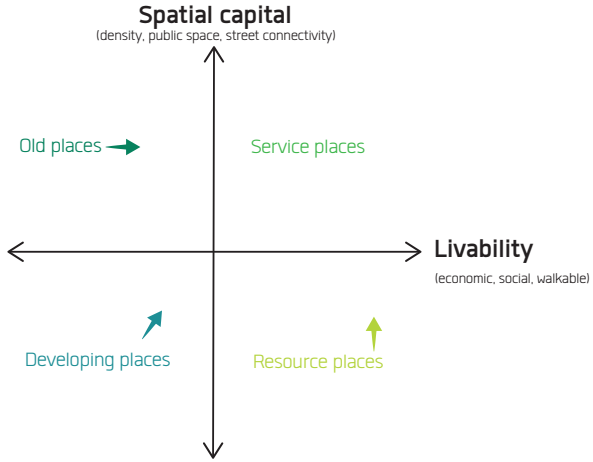
SPATIAL CAPITAL AND LIVABILTY

The study presented here captures the locational affordances of Flushing West within it's context in greater NYC. It has been proposed that this can be summarized in terms of the area's spatial capital.

The development in Flushing West creates high density and high street connectivity, which ensures a resilient base for local service supply and high walkablity in the development area as well as in Downtown Flushing. The develeopment area is estimated to have a walkscore of 97, considered as "walkers paradise" where "no daily errands require a car". Accoring to Walkscore.com, the Transit score is very high at 99. In combination, we can expect high livablity.

Although intersection density is high, the street accessibility within the development area is quite low since it is located beyond the main pedestrain routes in Flushing. This means daily pedestrian flows on weekdays will not naturally pass the waterfront. Only if there area has strong destinations in the form of retail, restaurants or park amenities, will pedestrian flow be high, peaking on weekends and evenings. The quality of the public open spaces at the waterfront will be crucial to ensure attractivity.

The provision of public open space is a harder challange and even if the quantity of public open space increases dramatically in the area, public open space per 1000 inhabitants is still quite low compared to NYC standards and to other New York neighborhoods. The high pressure on public open space willbe a challenge for landscaping and placemaking.



SPATIAL CAPITAL, LIVABILITY AND TYPES OF PLACES
(Un Habitat & Spacescape 2016)

PLACE QUALITY

Not only location, but also place itself has a role to play in producing the affordances that will encourage people to stay here. Studies show that people spend more time in streets which are attractive to be in. Factors such as sunlight, traffic, street trees and microclimate all contribute to how attractive the local environment of streets and other open space will be. A diagram of these place qualities have been summarized by Project for Public Spaces (www.pps.org). To some extent these are given by location and other parameters beyond the scope of the urban design to influence; other factors may be impacted by design decisions at the micro-scale.

A design challenge is how to make a place appealing in order to encourage people to spend time there. A number of micro-scale factors come into play, relating to how spaces are framed, how the interface is materialized, etcetera. In the proposed scheme, the waterfront access is envisioned as the main attraction with cafés and places to stop and enjoy the views. Recreational open space is consolidated near the waterfront, making use of the "safe-fail" riverbank/marsh which may periodically flood. Given the overall lack of public open space in Downtown Flushing, the proposed waterfront recreational area is likely to be well-utilized.

The analyses conducted as part of the study of Flushing West indicate that public open space is not adequately served by the proposed development. However, this is an a priori condition of this location also shared by most neighborhoods in the vicinity. Remedying the shortage of open space is simply not feasible and the proposed scheme instead aims to promote walkability through it's system of streets and enhance visual corridors to the water. As a strategy, improving access to the waterfront promenade ensures that the spatial affordances available in the area are maximized and benefit more than the very local neighborhood. This is achieved through a finergrained street network than earlier proposals exhibited as well as a stated effort to maintain visual access. Sight-lines offer up visual cues which aid wayfinding and may help to make mental distances seem shorter. Hence wayfinding and walkability go hand-in-hand. It is our assessment that moving th-

rough space, e.g. accessibility is facilitated by the proposed the scheme.

The scale of the proposed development presents challenges in terms of producing livable streets and private open space, such as yards. A palette of options including storefronts will activate the street and break up the scale at street-level at least. Setting towers back from the street-face is proposed and likely needed to support a better microclimate at the street. Using high-quality materials in the plinths (ground floors) and paving are options that help bring the scale down and produce more tactile and visually interesting interfaces. Supporting a diversity of actors, including smaller-scale start-ups and small businesses is enhanced by providing smaller shops and offices for rent.

The rooftop terraces are likely to have limited utility for residents but are important nonetheless as privvate open space, offering a domain in which residents, either individually or collectively, may have influence over their living environment. Rooftop community gardens, have been tested in London and other cities with some success. Research suggests that benefiits in terms of community-building and civic pride stem from providing people with places which invite their engagement and vested interest..

For local residents who experience (and contend with) the built environment daily, addressing factors which promote social sustainability is key. Research shows that the very local realm, nearest the individual, is what most people expect to have some degree of influence over and that being involved in the local context promotes well-being and health. The challenge for the urban design is to encourage and invite resident initiative, while balancing this with the greater good and allowing affordances to be more than only local.

Active frontagaes along the streets creates a safe and lively athmosphere. The major routes into the area are 39th Ave, 37thAve and Roosevelt Ave commercially viable.

39TH AVE STREET ILLUSTRATION OF PROPOSED DEVELOPMENT (NEW ZONING)

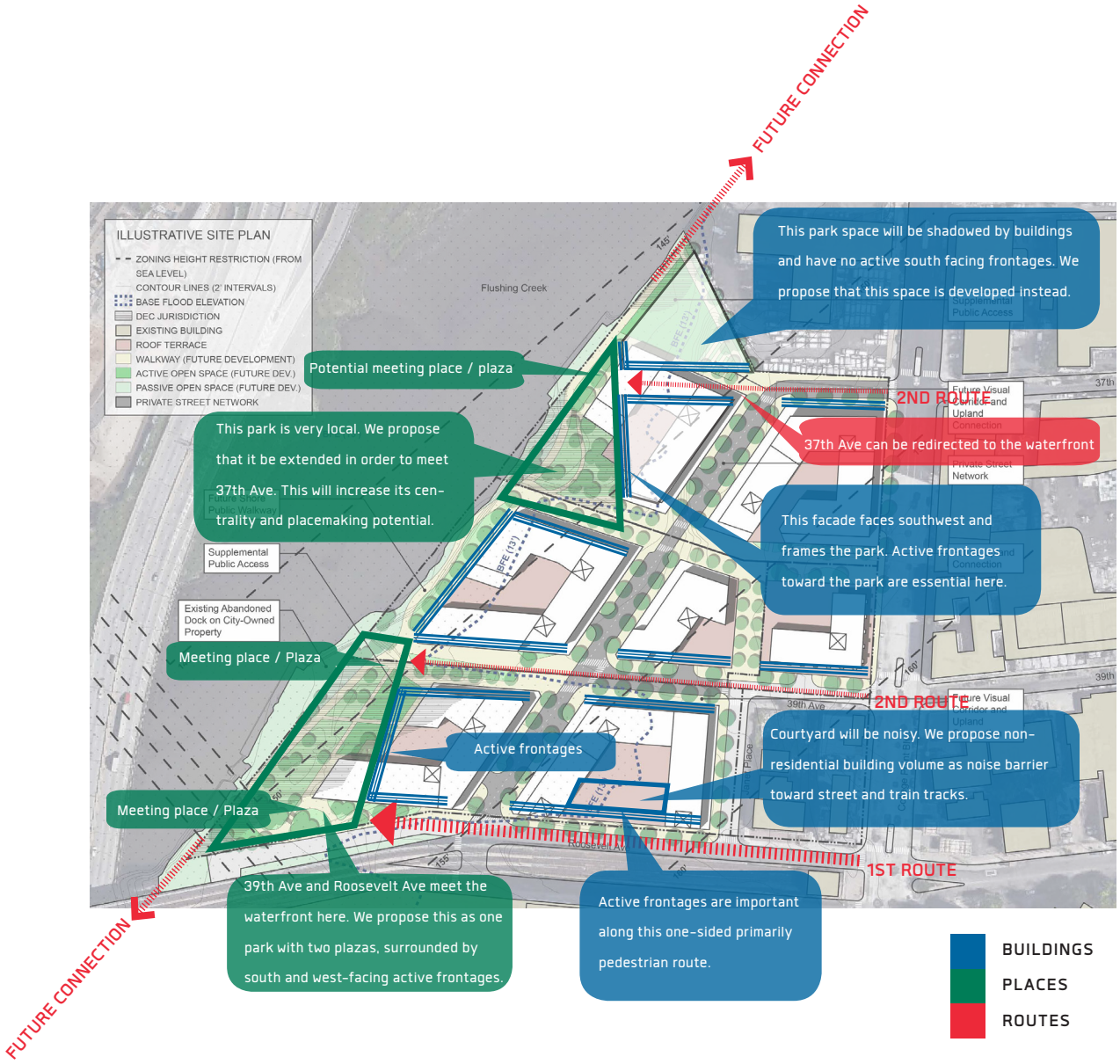
Small plazas can meet major routes, 39th Ave, 37thAve and Roosevelt Ave, that lead people into the area .

Active frontagaes along the waterfront open spaces creates a safe and lively athmosphere. Connecting streets as well as attractive places and promenades create people movement.

WATERFRONT PARK ILLUSTRATION OF PROPOSED DEVELOPMENT (NEW ZONING)

PROPOSALS

We propose that the park spaces at the waterfront are combined into two defined public open spaces that connect directly to the main pedestrian routes leading into the area, 37th Ave, 39th Ave and Roosevelt Ave. These open spaces will have the best preconditions for being meeting places. Small plazas should be located in the intersections between these main routes and the waterfront. These parks and plazas can and should also be framed by active frontages as well as the main pedestrian street routes.



PLACE QUALITY ASSESSMENT AND REDESIGN PROPOSALS

IMAGE: WIKIPEDIA COMMONS

SPACESCAPE Spacescape AB / Östgötagatan 100 / Box 4700 / SE-116 92 Stockholm / Sweden
Tel +46 8 452 97 67 / www.spacescape.se / info@spacescape.se