

Monika TROJANOWSKA¹

IMPORTANCE OF ARCHITECTURAL DESIGN OF HEALTH-AFFIRMING URBAN PLACES. ASSESSMENT OF THERAPEUTIC QUALITIES OF ZAC CLICHY-BATIGNOLLES IN PARIS

The presence of health – affirming everyday urban places is an invaluable asset for every neighborhood. The study presented encompassed the Post-Occupancy Evaluation of the therapeutic qualities of the urban tissue of certified eco-neighborhood in France. To perform this assessment the ready-to-use tool developed by the author, the universal pattern of design for health-affirming urban places was used. This study included the evaluation of the therapeutic qualities of Martin Luther public park located in the center of this neighborhood together with assessment of streets and paths leading to the park. The results were estimated as satisfactory. The architectural design of modern, human-oriented eco-neighborhood with centrally located public park lead to the creation of health-affirming urban place.

Keywords: therapeutic landscape, sustainable city, health and well-being, Universal Pattern of Design

1. Introduction

Numerous researchers from various fields, e.g. environmental psychology, medicine, sociology, architecture, and urban planning, have described the main qualities of therapeutic landscapes, which promote physical and mental restoration, encourage physical activity and social contacts [1,2,3]. The *Urban health-affirming landscapes* are everyday places that unite the qualities of *therapeutic landscapes* to influence people's physical, mental and spiritual healing [4]. Gesler [5,6] defined therapeutic landscapes as places where “*physical and built environments, social conditions and human perceptions combine to produce an atmosphere which is conducive to healing*”. The ordinary urban spaces can promote the health and well-being of inhabitants. The presence

¹ Monika Trojanowska, Uniwersytet Technologiczno-Przyrodniczy w Bydgoszczy, Zakład Architektury i Urbanistyki, al. prof. S. Kaliskiego 7, 85-796 Bydgoszcz, monika.trojanowska@utp.edu.pl / Faculty of Civil and Environmental Engineering and Architecture, UTP University of Science and Technology, al. prof. S. Kaliskiego 7, 85-796 Bydgoszcz, E-mail address: monika.trojanowska@utp.edu.pl

of such spaces within city limits proved to be an invaluable asset. The research conducted by a team of Dutch researchers stresses the importance of green space close to home for children and lower socioeconomic groups as it is associated with lower disease and morbidity incidences [7,8]. The elderly citizens who enjoyed walking to green spaces were found to live longer [9].

The therapeutic landscapes are places that offer direct contact with nature. This phenomenon was explained by the biophilia hypothesis [10]. The design of health-affirming urban places is based on multiples theories developed by architects, physicians, psychologists and representatives of other Scientific fields. The purpose of this paper was to demonstrate how to evaluate the health-affirming potential of urban places. To perform the assessment a ready-to-use tool can be employed.

1.1. Methods

The universal pattern of design for health-affirming urban places is based on literature and field research which led to the development of the universal pattern for therapeutic parks [11, 12]. This pattern was expanded with the “access to park” category based on evidence which demonstrated that pleasant walkways to public parks are directly connected to increased frequency of visits to parks [13, 14].

In this study, it was used for the assessment of Martin Luther King Park and adjacent streets which are forming the core of the ZAC Clichy Batignolles neighborhood in Paris (fig. 1 and 2). This Park was chosen because it was developed on a brownfield, is relatively small – approx. 10 ha and surrounded by dense urban fabric. This study was undertaken also to verify whether it was possible to create health-affirming urban places in such a difficult urban location.



Fig. 1. Marked location of the EcoQuartier ZAC Clichy Batignolles in Paris cityscape. Source of satellite map:

<https://www.geoportail.gouv.fr/donnees/paris-haute-resolution>, access: 30.11.2019



Fig. 2. Marked location of the park and EcoQuartier ZAC Clichy Batignolles. Source of satellite map:

<https://www.geoportail.gouv.fr/donnees/paris-haute-resolution>, access: 30.11.2019

2. Assessment of therapeutic qualities of Martin Luther King Park and EcoQuartier Clichy-Batignolles in Paris

That neighborhood was designed by a team of François Grether - town planner, Jacqueline Osty - landscape architect and OGI engineers firm. This park spans over 10 ha. The Martin Luther King public park was designed to be a central point of a new district. The buildings were planned around it. This design scheme followed the Paris development strategy, which requires nature to become the city's structure element. An important task for the creators of the park was to create ecological corridors and develop the grid of green infrastructure. This park has no clear boundaries. It offers many different topics: - sport, water, etc. The planting was designed to remind people of the passing of seasons. [4, 15, 16, 17].

The evaluation of park therapeutic qualities was conducted using the universal pattern of design for health-affirming urban places (Table 1). Five visits to the park were necessary to verify the presence of the attributes, two of the visits were accomplished during events organized at the park. The assessment was performed for each of the attributes separately. The results of the rough binary assessment are presented in table 2. The results of the detailed evaluation are described below.

Additionally, a study of six streets leading to the park was performed. The results are presented in Table 3.

1. UNIVERSAL DESIGN

1.1. Place

The new neighborhood located in the center of Paris, France.

Area

The new Clichy-Batignolles neighborhood spans over 45 hectares and the Park covers 10 hectares.

The park has no clear boundaries. Park greenery sprawls into adjacent streets. Therefore, up to 10 ha of the park, you can add an additional 0.65 ha of green private areas inside the courtyards and 1.6 ha of green roofs of the eco-housing estate.

Location

This park is located in the center of a new eco-neighborhood - Clichy Batignolles in Paris.

Surrounding urban pattern

Dense urban tissue with mixed-use blocks (lots).

1.2. Environmental characteristics

Soil quality

Park was developed on a brownfield – land formerly used as railroads, warehouses, and stockyards. The soil needed remediation.

Water quality

Various methods of water and soil remediation were used.

Air quality

Park is located in Central Paris, therefore the air quality is typical for large urbanized areas. The presence of wetlands and open water reservoirs helps in lowering the temperature of the ground in hot weather (reduction of heat islands in the city, where most of the surface is hardened and quickly heats up).

Biodiversity

Almost 500 species of plants were planted in the park. Many wetlands and swamps were created, important from the point of view of protection against air, water and soil pollution, and promotion of biodiversity.

Forms of nature protection

Park was developed on a brownfield. There were no forms of nature protection applied to this site.

1.3. Universal accessibility

Park areas needed to be developed to promote universal accessibility. There were obstacles to be negotiated e.g. crossing the traffic corridor.

*1.4. ACCESS TO PARK**Distance to potential users*

This park is located in the center of a new district. The new neighborhood was constructed around the park, which makes the park accessible within short walking distance from new apartments.

Public transport stops

The new metro line was built and one of the new stops was located next to the park. Regular bus lines also had stops in front of the main entrances to park.

Walkways to park

The streets leading to the park are extended by pedestrian paths inside the park. People are encouraged to cross the park while doing their daily duties. This park has no clear limits, instead, it is expanding with green corridors along all adjacent streets.



Fig. 4. Martin Luther King Park in Paris. Play areas for children. Photo: Monika Trojanowska



Fig. 5. Martin Luther King Park in Paris. Pavilion and platform built over highway crossing. Photo: Monika Trojanowska

2. PARK'S FUNCTIONAL PROGRAM

2.1. Psychological and physical regeneration

Natural Landscapes

Plants, especially planted at the perimeter of garden rooms succeed at times in hiding some of the surrounding high-rises, thus engendering a feel of the natural landscape. A part of the Park was planned to resemble a natural forest.

Green open space

There are multiple green open spaces of various sizes in the park. The largest is located in the center, smaller closer to the perimeter.

The place to rest in the sun and in the shade

Sitting benches are placed along the pathways in such manner that on a sunny day, it is always possible to find a place in the sun or in the shade. There are benches located next to trees which cast a shadow.

The place to rest in silence and solitude

The design encompasses smaller garden rooms, where users can sit in silence and solitude.

Possibility to observe other people

The elevated passage above the motorway creates a viewing platform, which makes it possible to observe the entire park area and adjacent streets. (fig. 5)

Possibility to observe animals

Carefully selected plants attract a variety of birds and colorful insects e.g. dragonflies.

2.2. Social Contacts Enhancement

Organization of events inside the park

Numerous events are organized in the park. The open green areas and wide pathways can accommodate stages, stands, and place for the participants.

The plaza next to the water reservoir serves as a natural gathering space for groups of people.

Gathering place for groups

Park is divided into smaller garden rooms, which can serve as places of gathering for groups. Some areas were designed for specific groups like children and teenagers, but there are also areas, which can be used by a variety of users. The park was designed to welcome people with disabilities.

2.3. Physical Activity Promotion

There are play areas for different age groups from very small children to older kids and teenagers who can enjoy activities like roller-blading or basketball.

Sports grounds were designed for various disciplines. (fig. 4)

Sports and recreational infrastructure

Park offers a variety of sports infrastructure, creative play areas for various age groups.

Community gardens

Community gardens are located on parcels adjacent to the Park. They are open to visitors. There were plans for hortitherapy sessions for pensioners of EPHAD (Assisted Living Home) located next to the park.

2.4. Catering for basic needs

Safety and security

Park design is clear and legible. The entire area is cleaned regularly and well maintained.

Places to sit and rest

There are plenty of places to sit and rest located along the pathways and next to playgrounds.

Shelter

Park is located in the center of densely build neighborhood with numerous cafes, restaurants and shops, which can serve as shelter during adverse weather conditions. Inside the park Users can find shelter under the trees canopies or under the viewing platform. (fig. 5)

Restrooms

One of existing historic buildings was converted into public restrooms.

Drinking water

There is a pavilion with free drinking water – plain, sparkling or cooled. Water is pumped from artesian sources. (fig. 6)

Food

Food is easily available in stores, restaurants and cafes located inside the buildings which surround park.



Fig. 6. Martin Luther King Park in Paris.
Pavilion with drinking water fountains.
Photo: Monika Trojanowska



Fig. 7. Martin Luther King Park in Paris.
Centrally located water pond. Photo: Monika
Trojanowska

3. ORGANISATION OF SPACE AND FUNCTIONS

3.1. The park spatial composition follows the surrounding urban pattern

The urban streets in both directions north-south and east-west extend into the park in the form of planted promenades. The organization of the park creates legible and easy to understand pattern. The Park was built on a former railway site and the park maintains the overall initial horizontal topography. The Park stretches on both sides of a water tank – biotope basin located in the center. (fig. 7)

3.2. Architectural variety of urban environment

The architectural environment of the park is interesting and diversified. Buildings in the neighborhood were designed by different architects. General guidelines were created in the masterplan.

Focal points and landmarks

The overhead viewing platform is a focal point in the center of the Park. Additionally, the small wind turbine is a focal point in the part closer to Cabinet street.

Structure of interiors and connections

The park structure is clear and legible. The interiors are well connected

Long vistas (Extent)

The planted promenades extend into existing roads. This design offers long vistas.

Pathways with views

Walkways align with attractive ponds and garden interiors dedicated to themes of changing seasons. (fig. 8 and 9)

Invisible fragments of the scene (Vista engaging the imagination)

Park contains small secluded garden rooms.

Mystery, Fascination

The original design of - Jardin du rail – railroad garden containing reused original elements from the site (railroad tracks, etc.) can raise interest in the history of that place. Parts of the park designed to illustrate the theme of changing seasons offer interesting views and details.

Framed views

The design offers long vistas and views framed by plants.

Human scale

The distances between garden elements relate to the human scale and make this park comfortable and cozy.

3.3. Optimal level of complexity

The level of complexity of the design of garden rooms and features was subjectively assessed as optimal.

3.4. Natural surfaces

Natural permeable surfaces were used in the park. Majority of park surface is covered by plants.

3.5. Engaging features

There are numerous engaging features, for example, a variety of plants rich in color and textures as well as a variety of play equipment. Water basin and water jets are also amusing features.

Risk/Peril

The observation deck above the motorway could offer the “thrill of risk and peril”, which can stimulate mental restoration. Observation from the distance of movement of people, water and even traffic can provide restoring experience [18].

Movement

Users can observe the calm and slow movement of water in the biotope basin and the invigorating movement of water jets.

3.6. Presence of Water

There is a biotope basin in the center of the Park. Along the promenade, a system of rain gardens harvests the rainwater. Water in the park Martin Luther King plays not only an aesthetic role but also an ecological role. In the park there are rain gardens which are filtering and purifying rainwater, underground retention reservoir located under a paved square, and an open pond (fig. 7). Rainwater from paved surfaces in the park flows into the so-called "Moist rain garden", where it is used for irrigation of moisture-loving plants. In the event of sudden precipitation, excess water flows from the rain gardens through overflows into the underground reservoir, from where it can be used to water the park during periods of drought. Biotope pool filters water from the Seine, which is transferred to the second pool, and then it is transported to an underground tank. The filtered water is mixed with water, which has been shed from a moist moat, stored and used for watering and cleaning of sidewalks during drought. The idea of the installation was to create an autonomous park when it comes to irrigation. If necessary, in dry months untreated water from the Seine river could be used. (About 40% of the park's needs for water for irrigation are met by rainwater, 60% of water for irrigation comes from the Seine). The water cycle supports energy from the mini-windmill in the park.

3.7. Sensory stimuli design

Sensory stimuli: Sight, Hearing, Touch

The sensory stimuli are provided by colorful planting, rich in textures. Hearing can be stimulated by shimmering plants and the sound of children at play.

Sensory stimuli: Smell

Numerous plants during spring and summer: e.g. magnolias, cherry trees, apple trees, dogwoods, and Judas trees spread their unique scents.



Fig. 8. Martin Luther King Park in Paris.
Crossing the bridge over the ponds.
Photo: Monika Trojanowska



Fig. 9. Martin Luther King Park in Paris.
Elevated platform with shelter build over
highway crossing. Photo: Monika
Trojanowska

4. PLACEMAKING

4.1-2. Works of Art, Monuments in the park

One of the historic buildings – the forge inside the park was revitalized.

4.3. Historic places

Culture and connection to the past

The materials used inside the park – paving and railroad tracks provide a connection to the former use of this site -railroads, warehouses, and stockyards. (fig. 10)

4.4. Thematic gardens

There are various thematic gardens in this park, for example, *Jardin du rail* – railroad garden, or another garden illustrating changes of seasons.

4.5. Personalization

Personalization means allowing individual users to design and decorate fragments of public space. The community gardens with individual lots offer a possibility of personalization in this park. (fig. 11)



Fig. 10. Martin Luther King Park in Paris.
Historic pavilions turned into restrooms.
Photo: Monika Trojanowska



Fig. 11. Martin Luther King Park in Paris.
Collective gardens. Photo: Monika Trojanowska

4.6. Animation of place

Many organized events animate the park space.

5. PURSUIT OF – SUSTAINABLE DEVELOPMENT

Various sustainable development principles were applied in the design of this Park: low maintenance, native plants, solar panels and wind turbines, reused materials for walkways, rainwater harvesting, energy and water resource management.

5.1. Green Infrastructure

Park promenades extend into adjacent streets creating green corridors of green infrastructure.

5.2. Parks of Second (New) Generation

Park can be described as the park of a second (new) generation because it was developed on a brownfield and multiple sustainable development principles were applied.

5.3. Biodiversity protection.

Native animals

Multiple solutions related to biodiversity protection were observed, for example, secluded fenced gardens for local animals and hotels for insects.

Native plants

Low-maintenance regional plants and shrubs were planted.

Natural maintenance methods

Applied solutions include low-maintenance regional plants and shrubs, solar panels, wind turbines, rainwater recycling, waste management, etc.

5.4. Sustainable water management

Rainwater infiltration

Rain gardens and sustainable drainage solutions were created inside the park.

Irrigation with non-potable water

Rainwater is harvested, stored in underground tanks, and used for irrigation. Rainwater usually fulfills all watering needs within the park for 11 months during the year. Sustainable principles of watering - minimum discharge to the sewer (unless exceptional rains), collection of rainwater, and recycling of water are applied.

Park in a Flood risk zone

Not applicable.

5.5. Urban metabolism

Old materials from the site were reused. All waste is segregated inside the park. Pneumatic waste collection is used in the neighborhood.

5.6. Ecological energy sources

The solar panels are placed on the roof of the forge building to produce energy. Low power equipment is used for park lighting.

The pumps for the recirculation of water in the irrigation system use the energy produced by a small wind turbine located inside the park.

3. Discussion of results

During the study, this park was assessed to have all the attributes and features listed in the Universal Pattern of Design for Therapeutic Parks. It was also observed that it was always full of users, although there were other parks available within short walking distance in the adjacent neighborhood. The overall results of this park design and functioning were estimated as satisfactory in all categories. This tool was used for the assessment of ten popular public parks in Bydgoszcz [12]. Their results were satisfactory and ranged from 41 to 48 for Leśny Park Kultury u Wypoczynku w Myślęcinku, a vast forest park with numerous recreational infrastructure facilities which cover over 830 ha. The fact that a similar number of therapeutic attributes was reunited in smaller space does not mean that smaller parks can replace large scale open green areas. However, the same results can be interpreted as a possibility to provide a satisfactory and health-affirming place to individuals in a situation of a limited number of users. The capacity to accommodate a larger number of people and guarantee satisfactory use of therapeutic qualities requires larger areas.

4. Conclusions

The health-affirming urban places are an invaluable asset and therefore should be designed and implemented wherever possible. The therapeutic parks, which reunite all the qualities relying on therapeutic landscapes and health affirming places should be created in every neighborhood in order to promote human health.

The Universal Pattern of Design for Therapeutic Parks is a ready-to-use tool for evaluating the therapeutic potential of existing public parks. It can be used to assess the therapeutic qualities of parks and identify attributes that are missing. The identified limitation of the Universal Pattern derives from the subjectivity of individual perception. The subjectivism of assessment could be mitigated with a more detailed description of a given attribute. Another option is to employ various researchers to perform the assessment, compare and discuss the results.

This tool is relatively easy to use and therefore can be recommended to professional designers but also social activists who feel responsible for their neighborhood and promotion of human health

Table 1. Universal pattern of design for health affirming urban places

UNIVERSAL PATTERN OF DESIGN FOR HEALTH-AFFIRMING URBAN PLACES					
UNIVERSAL PATTERN OF DESIGN FOR THERAPEUTIC PARKS					
1. UNIVERSAL DESIGN	2. PARK'S FUNCTIONAL PROGRAM	3. ORGANIZATION OF SPACE AND FUNCTIONS	4. PLACEMAKING	5. SUSTAINABILITY	6. ACCESS TO PARK
<p>1.1. Place Area Location Surrounding urban pattern</p> <p>1.2. Environmental characteristics Soil quality Water quality Air quality Biodiversity Forms of nature protection</p> <p>1.3. Universal accessibility (addressing need of people with disabilities)</p> <p>1.4. Access to park Distance to potential users Public transport stops Walkways to park</p>	<p>2.1. Psychological and physical regeneration Natural Landscapes Green open space Place to rest in the sun and in the shade Place to rest in silence and solitude Possibility to observe other people Possibility to observe animals</p> <p>2.2. Social Contacts Enhancement Organization of events inside the park Gathering place for groups</p> <p>2.3. Physical Activity Promotion Sports and recreational infrastructure Community gardens</p> <p>2.4. Catering for basic needs Safety and security (presence of guards, cleanliness, maintenance, etc.) Places to sit and rest Shelter Restrooms Drinking water Food (possibility to buy food in the park or close vicinities)</p>	<p>3.1. The park spatial composition follows the surrounding urban pattern</p> <p>3.2. Architectural variety of urban environment Focal points and landmarks Structure of interiors and connections Long vistas (Extent) Pathways with views Invisible fragments of the scene (Vista engaging the imagination) Mystery, Fascination Framed views Human scale</p> <p>3.3. Optimal level of complexity</p> <p>3.4. Natural surfaces</p> <p>3.5. Engaging features Risk/Peril Movement</p> <p>3.6. Presence of Water</p> <p>3.7. Sensory stimuli design Sensory stimuli: Sight Sensory stimuli: Hearing Sensory stimuli: Smell Sensory stimuli: Touch Sensory stimuli: Taste Sensory path</p>	<p>4.1. Works of Art</p> <p>4.2. Monuments in the park</p> <p>4.3. Historic places Culture and connection to the past</p> <p>4.4. Thematic gardens</p> <p>4.5. Personalization</p> <p>4.6. Animation of place</p>	<p>5.1. Green Infrastructure</p> <p>5.2. Parks of Second Generation</p> <p>5.3. Biodiversity protection Part of park not available to visitors Native plants Native animals Natural maintenance methods</p> <p>5.4. Sustainable water management Rainwater infiltration Irrigation with non-potable water Park in a flood risk zone</p> <p>5.5. Urban metabolism</p> <p>5.6. Ecological energy sources</p>	<p>6.1. Sidewalk Infrastructure- Width of sidewalk Evenness of surface Lack of obstructions Slope Sufficient drainage</p> <p>6.2. General conditions: Maintenance Overall aesthetics Street art Sufficient seating Perceived safety Buffering from traffic Street activities Vacant lots</p> <p>6.3. Traffic Speed Volume Number and safety of crossings Stop signs On-street parking</p> <p>6.4. User Experience Air quality Noise level Sufficient lighting Sunshine and shade Transparency of ground floors of building</p>

Table 2. *Assessment of health-affirming urban place – ZAC Clichy Batignolles* The rough binary assessment of therapeutic qualities of Martin Luther King Park

1. UNIVERSAL DESIGN		3.3. Optimal level of complexity	1
1.1. Place		3.4. Natural surfaces	1
Area, approximately	10 ha	3.5. Engaging features	
Location	city centre	Risk/Peril	1
Surrounding urban pattern	dense urban tissue	Movement	1
1.2. Environmental characteristics		3.6. Presence of Water	1
Soil quality	brownfield	3.7. Sensory stimuli design	
Water quality		Sensory stimuli: Sight	1
Air quality		Sensory stimuli: Hearing	1
Biodiversity	rich in species	Sensory stimuli: Smell	1
Forms of nature protection	no	Sensory stimuli: Touch	1
1.3. Universal accessibility	accessible	Sensory stimuli: Taste	0
1.4. Access to park		Sensory path	0
Distance to potential users	less than 500m	4. PLACEMAKING	
Public transport stops	yes	4.1. Works of Art	0
Walkways to park	multiples	4.2. Monuments in the park	0
2. PARK'S FUNCTIONAL PROGRAM		4.3. Historic places	
2.1. Psychological and physical regeneration		Culture and connection to the past	1
Natural Landscapes	1	4.4. Thematic gardens	1
Green open space	1	4.5. Personalization	1
Place to rest in the sun and in the shade	1	4.6. Animation of place	1
Place to rest in silence and solitude	1	5. PURSUIT OF -SUSTAINABLE DEVELOPMENT	
Possibility to observe other people	1	5.1. Green Infrastructure	1
Possibility to observe animals	1	5.2. Parks of Second (New) Generation	1
2.2. Social Contacts Enhancement		5.3. Biodiversity protection	
Organization of events inside the park	1	Part of park not-available to visitors	1
Gathering place for groups	1	Native plants	1
2.3. Physical Activity Promotion		Native animals	1
Sports and recreational infrastructure	1	Natural maintenance methods	1
Community gardens	1	5.4. Sustainable water management	
2.4. Catering for basic needs		Rainwater infiltration	1
Safety and security	1	Irrigation with non-potable water	1
Places to sit and rest	1	Park in a flood risk zone	no
Shelter	1	5.5. Urban metabolism	1
Restrooms	1	5.6. Ecological energy sources	1
Drinking water	1	TOTAL	48
Food	0		
3. ORGANISATION OF SPACE AND FUNCTIONS			
3.1. The park spatial composition follows the surrounding urban pattern	1		
3.2. Architectural variety of urban environment	1		
Focal points and landmarks	1		
Structure of interiors and connections	1		
Long vistas (Extent)	1		
Pathways with views	1		
Invisible fragments of the scene (Vista engaging the imagination)	1		
Mystery, Fascination	1		
Framed views	1		
Human scale	1		

Table 3. Assessment of health-affirming urban place – ZAC Clichy Batignolles Assessment of ACCESS TO PARK category

STREETS	Rue Cardinet	Rue Bernard Buffet	Rue Gillbrt Ceshron	Rue Msislav Rostopovitch	Boulevard Berthier	Allee Colette Heilbronner
6.1. Sidewalk Infrastructure						
Width of sidewalk	good	good	good	good	good	good
Evenness of surface	good	good	good	good	good	good
Lack of obstructions	lack of obstructions	lack of obstructions	lack of obstructions	lack of obstructions	lack of obstructions	lack of obstructions
Slope	not important	partially sloped	not important	not important	not important	important, accessible to wheelchairs
Sufficient drainage	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
6.2. General conditions						
Maintenance	good	good	good	good	good	good
Overall aesthetics	good	good	good	good	good	good
Street art	no	no	no	no	no	no
Sufficient seating	yes	no	yes – private cafes	no	no	no
Perceived safety	good	good	good	good	good	good
Road noise	moderate	moderate, one way traffic	moderate, one way traffic	moderate	moderate	moderate
Buffering from traffic	buffering with greenery on one side	partially with greenery	buffering with greenery	buffering with greenery	buffering with greenery	
Street activities	no	no	no	no	no	
Vacant lots	no	no	no	no	yes	
6.3. Traffic						
Speed	moderate	slow	slow	slow	slow	
Volume	important, main road	one way	one way	moderate	important, main road	little
Number and safety of crossings	street lights, safe	safe crossings	safe crossings	safe crossings	safe crossings	safe crossings
Stop signs	no	no	no	no	no	no
On-street parking	yes	prohibited	yes	yes	yes	no
6.4. User Experience						
Air quality	average	average	average	average	average	average
Noise level	moderate	moderate	moderate	moderate	moderate	moderate
Sufficient lighting	yes	yes	yes	yes	yes	yes
Sunshine and shade	trees on one side	trees provide shade on one side, transparent	trees provide shade on both sides	trees provide shade partially on both sides	trees provide shade on both sides	trees provide shade
Transparency of ground floors of building	on one side	fencing on other side	on both sides	on both sides	on both sides	park on one side, blvrd Berthier on other side

References

- [1] Hartig T., Bringslimark T., Patil G. G: Restorative Environmental Design: What, When, Where, and for Whom? w: Kellert S., Heerwagen J., Mador M. (Ed.), 2008 Biophilic design: the theory, science, and practice of bringing buildings to life John Wiley & Sons, Inc, Hoboken, New Jersey 2008.
- [2] Largo-Wight E.: Cultivating healthy places and communities: evidenced-based nature contact recommendations in: International Journal of Environmental Health Research, Vol. 21, No. 1, February 2011, 41–61.
- [3] Frumkin H. et al.: Nature Contact and Human Health: A Research Agenda, in: Environmental Health Perspectives 2017 Jul 31; 125(7):075001. DOI: 10.1289/EHP1663.
- [4] Trojanowska M., Sas-Bojarska A.: Health-affirming everyday landscapes in sustainable city. Theories and tools. ACEE, nr 3/2018, <http://www.acee-journal.pl/1,7,Issues.html>.
- [5] Gesler W.: Lourdes: healing in a place of pilgrimage Health& Place 2 (2) (pp. 95–105), 1996.
- [6] Gesler W.: Therapeutic Landscapes: An evolving theme Health& Place 11 (pp. 295–297), 2005.
- [7] Maas J, Verheij R. A.: Morbidity is related to a Green living environment. J Epidemiol Community Health 2009;63:967–973.
- [8] Maas J.: Vitamin G: Green Environments – healthy environments. Utrecht: Nivel, 2008.
- [9] Takano T, Nakamura K., Watanabe M.: Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. Journal of Epidemiology Community Health; 56:913–918, 2002.
- [10] Wilson Edward O. : Biophilia, Harvard University Press, 1984.
- [11] Trojanowska M.: Parki i ogrody terapeutyczne Wydawnictwo Naukowe PWN, 2017.
- [12] Trojanowska, M. (2019) "Assessment of therapeutic qualities of ten public parks in Bydgoszcz", Budownictwo i Architektura, 18(2), pp. 121–143. doi: 10.35784/bud-arch.559.
- [13] Van Herzele A. and Wiedemann T.: A Monitoring Tool for the Provision of Accessible and Attractive Urban Green Spaces Landscape and Urban Planning, vol. 63, no. 2, pp. 109–126, 2003.
- [14] Dannenberg, A. L., Cramer, T. W., & Gibson, C. J.: Assessing the Walkability of the Workplace: A New Audit Tool. American Journal of Health Promotion, 20 (1): 39–44, 2005.
- [15] Trojanowska M.: Ekoosiedla. Kształtowanie zrównoważonych osiedli miejskich na przykładzie doświadczeń francuskich. Wydawnictwa Uczelniane UTP w Bydgoszczy, 2019.
- [16] <http://www.clichy-batignolles.fr>, access: november 2018.
- [17] <https://www.cronos-conseil.fr/project/zac-clichy-batignolles/>, access: november 2018.
- [18] Hildebrand G.: Biophilic Architectural Space in: Keller S. R. Heerwagen J. and Mador M. (red.) Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life, Wiley, 2008.

Przesłano do redakcji: 6.02.2019 r.