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Public Open Space Arrangement Model In Summarecon Bekasi Residential Area for Covid-19 Pandemic Mitigation

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Abstract – The coronavirus disease in 2019 (Covid-19), a highly contagious respiratory virus, has spread to more than 200 countries and regions. The high number of Covid-19 cases has led to various regulations regarding social restrictions. Some of the changes that occurred due to the Covid-19 pandemic changed the socio-spatial structure and affected physical and psychological well-being and overall quality of life. The impact of Covid-19 has also occurred in the Summarecon Bekasi settlement, which provides facilities, a commercial center, and various public open spaces that the people of Bekasi City widely use to become more restricted. Researchers used a qualitative approach and descriptive qualitative analysis techniques with interview observations and documentation as the data sources. Research on public open spaces in Summarecon Bekasi, including downtown walk, waterfront, pedestrian paths, and bus stop shuttle bus, shows that these public spaces cannot fulfill all variable indicators of public open space readiness in dealing with post-pandemic conditions Covid-19. The results obtained are based on the weighting of values from the results of observational studies and interviews on each variable indicator of public open spaces. The empirical mean value of public open spaces in Summarecon Bekasi is 89, which is still below the hypothetical mean value of 110 and is at the lower limit of the category 'Not Enough .'Thus, to overcome the condition of public open spaces that are not yet adaptive to Covid-19, a structuring model is designed for public open spaces in Summarecon Bekasi. This structuring model is expected to reduce the percentage probability of social disasters such as the Covid-19 pandemic or other similar things.

Keywords: public open space, structuring model, Covid-19 mitigation

Introduction

The coronavirus disease in 2019 (Covid-19), a highly contagious respiratory virus, has spread to more than 200 countries and regions (Chen et al., 2020). Since May 24, 2020, there have been more than 5.41 million confirmed cases of Covid-19 and 340,000 deaths of Covid-19 worldwide (Dong et al., 2020). As a result of the high number of cases, there is importance in investigating the factors that play a critical role in controlling the speed and severity of Covid-19 transmission and optimizing decisions to address future public health emergencies. The Covid-19 pandemic was first confirmed in Indonesia on March 2, 2020. The Bekasi City Health Office reported 100 confirmed positive cases of Covid-19. With these additions, the cumulative number of Covid-19 cases in Bekasi City has reached 178,895 cases in 2020. The high number of Covid-19 cases in Indonesia has led to strict Covid-19 regulations, stated in Government Number 21 of 2020 concerning the Policy on Large-Scale Social Restrictions (PSBB).

These large-scale social restrictions are in the form of strict written rules requiring people to survive and carry out all activities at home. This can affect the shift in space function by individuals and groups in public open spaces. In its development, there have been many changes caused by the Covid-19 pandemic. This pandemic has resulted in changes in the social-spatial structure and rendered urban spaces unusable, so they have had a major impact on meeting community needs.

The existence of public open spaces in residential areas is very important to maintain the resilience of settlements and settlements determined by the principles of spatial planning, culture, and tradition (Juwono, 2009). During the Covid-19 pandemic, the activity level in public open spaces affected the quality of life by significantly reducing physical and psychological well-being. This situation significantly regresses the lack of

direct social interaction and can only be minimized by long-distance social interaction (Szczepańska & Pietrzyka, 2021). The proper use of public open space is associated with transition and the capability to adapt to changing societal needs, disasters, emergencies, and pandemics. This situation provides an opportunity to review the places and spaces that require a city to become a more livable place for all people and expand its functions through healthier methods (Sepe, 2021).

Bekasi City is a metropolitan city with a large population and economic growth dynamics. Bekasi is one of the cities facing challenges to improve the quality of settlements that are inclusive, safe, resilient, and sustainable (Astuti et al., 2015). The impact of Covid-19 restriction has also occurred in the Summarecon Bekasi settlement, which is a settlement that provides quality housing and also has supporting facilities such as the Summarecon Bekasi Mall, well-known schools such as Al-Azhar and BPK Penabur, hotels, offices, trade centers, commercial centers, and various spaces. The people of Bekasi City including in the Summarecon Bekasi use other public open spaces for their daily living. However, during the Covid-19 pandemic, public open spaces such as downtown streets, seaside, and pedestrian paths become more restricted. This can affect the existence of public open spaces usually used by the community as a place for functional public activities and other side activities, which were limited due to the Covid-19 pandemic.

This research is very important to determine to what extent public open spaces in the Summarecon Bekasi settlement are adaptive to the Covid-19 pandemic. Efforts to model physical public open space planning in line with changes in space use with adjustments to spatial design during the Covid-19 pandemic are the right solution to create community needs and as a form of urban space response that is more resilient to social disasters or similar pandemics.

Materials and Methods

This study focuses on changes in the use of space that occur in public open spaces in the Summarecon Bekasi settlement. Summarecon Bekasi has much open space on a large or small scale spread throughout the area. This open space can be enjoyed by people who are not residents. The main function of this open space is to unite and involve local communities. Public open space, which is the scope of research, among others, waterfront, downtown walk, pedestrian paths, and bus stop shuttle, can be seen in Figure 1.

The type of the present research used is qualitative research. The choice of using qualitative methods in terms of the purpose of the research is to understand how a community or individuals accept certain issues (McCusker & Gunaydin, 2015). This research approach uses a descriptive research type. The source of this research data is in the form of primary data and secondary data. Primary data sources in this study are the results of observations and interviews.

Moreover, secondary data in this study are in the form of Regional Maps, Literature Studies, and Online Media. The observations in this study refer to the availability of variable research indicators as a reference so that the data taken is more measurable. At the same time, the interview was conducted within an in-depth interview for users of public open space settlements in Summarecon Bekasi. An interview (in-depth-interview) is carried out to obtain information that cannot be obtained through observation (Raco, 2010). Documentation is needed to support the data. The technique used to analyze the data in this study used a qualitative descriptive analysis with two stages.

Identifying the Adaptability of Public Open Spaces to the Covid-19 Pandemic

To answer the first formulation of the problem regarding the extent to which public open spaces in the Summarecon Bekasi settlement are currently adaptive to the Covid-19 pandemic, the researchers analyzed based on each data collection stage. In the observation data analysis process, the researcher begins by describing the findings of the survey data as they are. Then explain the results of the description found by linking the theory used. Indicators refer to the theory of Sebastian et al. (2020) regarding the characteristics of street features after the Covid-19 pandemic readiness, which can be described in Table 1.

Moreover, the last one validates the truth and accuracy of the findings. To support research credibility, researchers also use descriptive statistics. These descriptive statistics transform raw data into a form that will make it easier for readers to understand and interpret the meaning of the data or numbers displayed. Researchers do weighting (scoring) on each indicator reviewed. Where is this weighting given a score of 1 to 4 to assess the extent to which the public open spaces of the Summarecon Bekasi settlement are adequate (adaptive) to the Covid-19 pandemic? The method of scoring public open spaces can be seen in Table 2. After that, the researchers made a scale categorizing the adaptability of public open spaces to the COVID-19 pandemic.

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Figure 1. Distribution of public open spaces in the Summarecon Bekasi hall, (a) La Spezia waterfront; (b) Summarecon Bekasi city center road; (c) Pedestrian paths; (d) Shuttle Bus Stop

Developing a Public Open Space Arrangement Model Based on Covid-19 Pandemic Mitigation

The researchers analyzed based on observations at the research location, where the stages start from describing the findings of the survey data and explaining the results of the description by linking the theory. Furthermore, finally, the researcher formulates and creates a structuring model from the results of the description based on the theory and studies the conclusions of the first problem formulation.

Table 1. Public Open Space Adaptivity Indicator adapted from Sebastian et al. (2020)

Indicator	Descriptor
Design Quality	Control tool / check the use of masks
	Adequate handwashing facilities
	Availability of banners/signages calling for the implementation of health protocols
	The size or width of the pedestrian walkway allows for social distancing protocols.
	The design and size of the benches/seats allow for social distancing protocols.
	Medical waste facility (disposal of masks)
Public space to improve the quality of public health(Wellness)	It can be used as sports facilities (jogging, cycling, morning exercises, and others).
	It can be used as a recreational facility (relaxing family, socializing, activities outdoor)
	There is sufficient green space and vegetation to improve air quality.
	A flexible area can be changed/converted into an emergency health facility.
The quality of public space in accommodating work patterns with the application of social distance	An area can be used to study/work online in a public open space.
	There are electricity facilities to charge study or work equipment online.
Personal space or proxemic	There is a limit on the number of visitors to maintain the density of public open spaces by reminding and providing signs so that visitors are always alert.
Government Regulation	There are Government regulations regulating the use of public open spaces to prevent the spread of Covid-19.

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Table 2. Method of scoring adaptivity of public open spaces

Score	Description
4	If there are facilities and activities that are suitable and very adequate in terms of utilization of facilities and capacity based on indicators of adaptability of public open spaces
3	If there are appropriate and sufficient facilities and activities based on indicators of adaptability of public open spaces
2	If there are facilities or activities not in accordance with the indicators of adaptive public open space
1	If there are no facilities or activities at all based on indicators of adaptive public open space

Results

The Adaptability of Public Open Spaces to the Covid-19 Pandemic

The Covid-19 pandemic has drastically changed human relationships with roads, public spaces, and public facilities. The impact of this pandemic has highlighted several gaps in the public space that need to be addressed in the short, medium, and long term. Therefore it is necessary to identify the adaptability of public open spaces in the current Summarecon Bekasi settlement to the Covid-19 pandemic, as seen in Table 3.

Table 3. The Adaptability of Public Open Spaces to the Covid-19 Pandemic

Public Open Space	Descriptor	There is	There are not any	Score
Design Quality				**29**
Downtown walk	Temperature control facility at downtown walk entrance	(√)		4
	Checking the use of masks at the downtown walk entrance	(√)		3
	Adequate hand washing facilities in the downtown walk area	(√)		2
	Banner/signage calling for health protocols on the downtown walk		(√)	1
	The design and size of the seats/chairs on the downtown walk allow social distancing.	(√)		2
	Medical waste facilities (disposal of masks) in the downtown walk area		(√)	1
Waterfront	Adequate hand washing facilities in the La Spezia waterfront area		(√)	1
	Banners/signage calling for health protocols on the La Spezia waterfront		(√)	1
	The design and size of the seats/chairs on the La Spezia waterfront allow for a social distancing protocol.		(√)	1
	Medical waste facility (disposal of masks) in the La Spezia waterfront area		(√)	1
Pedestrian Ways	Adequate hand washing facilities in the pedestrian ways area		(√)	1
	Banners/signage calling for health protocols on pedestrian ways		(√)	1
	The design and size of the seats/chairs on the pedestrian ways allow for a social distancing protocol.		(√)	1
	Medical waste facilities (disposal of masks) in pedestrian ways areas		(√)	1
Shuttle Bus Stop	Adequate hand washing facilities at the shuttle bus stop		(√)	1
	Banners/signs calling for health protocols at the shuttle bus stop		(√)	1
	The design and size of the seats/chairs at shuttle bus stops allow for a social distancing protocol.	(√)		3
	Medical waste facilities (disposal of masks) at shuttle bus stops.	(√)		3
Public Health Quality Improvement				**29**
Downtown walk	*Downtown walk*s can be used for sports activities		(√)	1
	*Downtown walk*s can be used for recreational activities.	(√)		4
	Sufficient green area and vegetation on a downtown walk to improve air quality	(√)		4
	Flexible area to be used as an emergency health facility		(√)	1
Waterfront	*Waterfront La Spezia* can be used for sports activities	(√)		4
	Waterfront La Spezia can be used for recreational activities.	(√)		4
	Sufficient green area and vegetation on the La Spezia Waterfront to improve air quality	(√)		3

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Public Open Space	Descriptor	There is	There are not any	Score
	Flexible area to be used as an emergency health facility		(√)	1
	Pedestrian ways can be used for sports activities	(√)		3
	Pedestrian ways can be used for recreational activities.		(√)	1
Pedestrian Ways	Sufficient green area and vegetation on pedestrian ways to improve air quality		(√)	2
	Flexible area to be used as an emergency health facility		(√)	1
The Quality of Public Space in Facilitating Work Patterns with the Implementation of Social Distancing				**29**
	The quality of the downtown walk in accommodating work patterns with the application of social distancing		(√)	2
	An area can be used to study/work online in public open spaces.	(√)		3
Downtown walk	Free electricity and internet connection facilities support online study/work activities.		(√)	1
	Non-cash payments (digital transactions, digital parking) are applied in the downtown walk area.	(√)		3
	The quality of the waterfront in accommodating work patterns with the application of social distancing	(√)		3
	An area can be used to study/work online in public open spaces.	(√)		2
Waterfront	Free electricity and internet connection facilities support online study/work activities.		(√)	1
	Non-cash payments (digital transactions, digital parking) are applied in the waterfront area.	(√)		3
***Personal space /*Proxemic**				18
Downtown walk	There is a limit on the number of visitors to maintain the density level in the downtown walk area.	(√)		3
Waterfront	There is a limit on the number of visitors to maintain the density level in the waterfront area.		(√)	1
Government Regulation				4
Downtown walk	*Downtown walk* follow government regulations in regulating the use of public open spaces to avoid Covid-19	(√)		3
Waterfront	*Waterfront*follow government regulations in regulating the use of public open spaces to avoid Covid-19	(√)		2
Pedestrian Ways	*Pedestrians ways* follow government regulations in regulating the use of public open spaces to avoid Covid-19		(√)	1
Shuttle Bus Stop	Shuttle Bus Stops follow government regulations in regulating the use of public open spaces to avoid Covid-19.	(√)		3
	TOTAL SCORE			**89**

The number of items on the Covid-19 adaptive public open space scale is 44 (descriptors), with assessment criteria from 1 to 4, with the smallest value being one and the largest being 4. The minimum range is 44. Then the maximum range is 176, so it can be an obtained distance range of 132. The standard deviation can be obtained by dividing the distribution distance by the scale range, namely, 22. The value of 6 is obtained from the normal distribution curve, consisting of 6 distribution areas with three positive and three negative areas. After getting the standard deviation, the next step is to find the hypothetical mean value by multiplying the middle value of the scale by the number of items (descriptors). Therefore, the hypothetical mean of the public open space scale is 110. From the results above, the categorization of public open spaces adaptivity scale can be seen in Table 4.

1) Empirical Mean (ME)

$$\mu e = \text{Total item score (descriptor)} \quad (1)$$

$$\mu e = 89$$

2) Hypothetical Standard Deviation (SD)

$$\sigma = 1/6\ (Xmax - Xmin) \quad (2)$$

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$$\sigma = 22$$

3) Hypothetical Mean (MH)

$$\mu h = ½ (imax + imin) \times (total\ item) \quad (3)$$

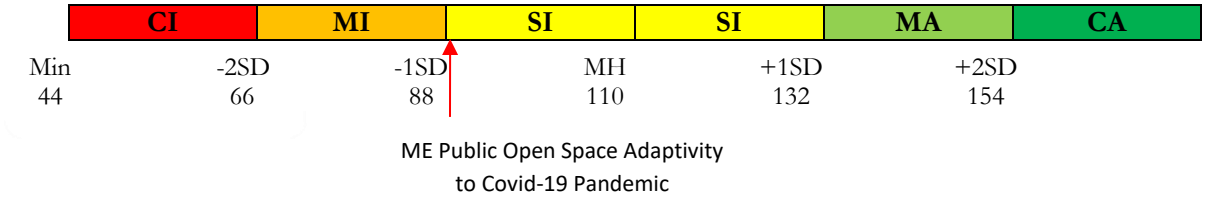
$$\mu h = 110$$

Table 4. The Categorization of The Adaptivity Scale of Public Open Spaces

Scale	Category
<66	Completely Inadequate (CI)
66 - 88	Mostly Inadequate (MI)
88 - 132	Slightly Inadequate (SI)
132 - 154	Moderately Adequate (MA)
>154	Completely Adequate (CA)

The fact that the empirical value of public open space in Summarecon Bekasi is 89, which is at the lower limit, is not sufficient. Therefore, public open spaces in Summarecon Bekasi are 'Slightly Inadequate' to Covid-19 can be seen in Table 5.

Table 5. The Scale of Public Open Space Adaptivity to the Covid-19 Pandemic



Model for Structuring Public Open Space for Settlement of Summarecon Bekasi Based on Mitigation of the Covid-19 Pandemic

As a result of the emergence of the Covid-19 pandemic, it is necessary to provide more public space for the community so that they can move in a safer way (walking, cycling, using micro-mobility facilities) (Kyriakidis et al., 2023). The arrangement of public open spaces based on the mitigation of the Covid-19 pandemic was made as a guideline for the shortage of public open spaces that still need to be adaptive to social disasters such as the Covid-19 pandemic based on the quality of design and user comfort. The arrangement to be reviewed includes pedestrian ways, vegetation, signage, seats, hand washing areas, and trash cans.

Pedestrian Ways

Pedestrian ways have a social function where this space is a place for city residents to go to a place or move from one place to another on foot. Patterns of human movement and interaction and the use of public space have changed after the emergence of the Covid-19 pandemic. It also guides planning and designing spatial systems to achieve more pedestrian-friendly urban areas by simulating clarity, connectivity, synergy, and attractiveness to obtain optimal results in dense urban areas by paying attention to conditions and pedestrian convenience and comfort (Kumari, 2021).

Pedestrian ways are a place for movement, sports, and recreation. Therefore, adaptive arrangements for the Covid-19 pandemic on pedestrian ways are also needed Sebastian et al. (2020), as seen in Table 6. The pedestrian ways arrangement model is illustrated in Figure 2.

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Table 6. Arrangement of Pedestrian Ways

Existing Conditions	Recommendation
Circulation of the Summarecon Bekasi pedestrian path only has one circulation.	Road arrangement as a public open space is made with a width of 3-4 meters.
Circulation of the Summarecon Bekasi pedestrian path only has one circulation.	The circulation of the Summarecon Bekasi pedestrian path is made in two directions
The Summarecon Bekasi pedestrian path has lights that are ± 10 meters apart between the lights.	Lighting on pedestrian paths is maintained.
The pedestrian path for the Summarecon Bekasi settlement does not provide seats.	Pedestrian paths are provided with seats using the concept of 'single user.'

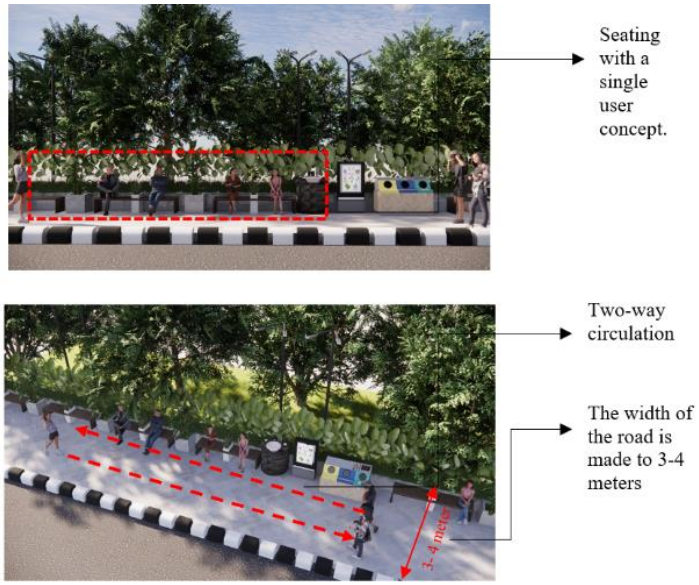

Figure 2. Pedestrian Ways Arrangement Model

Vegetation

Urban vegetation can slow the spread of Covid-19, and for every 1% increase in the percentage of urban vegetation, it will result in a cumulative decrease in Covid-19 cases by 2.6% (You & Pan, 2020). Vegetation arrangement during the Covid-19 pandemic, preferably using trees with crowns that still allow sunlight to touch the ground. This supports the government's recommendation to sunbathe for a certain time in the open air. On the other hand, this pandemic can make people feel more connected to nature and green areas compared to closed areas. Vegetation arrangement can be seen in the table can be seen in Table 6.

Table 6. Vegetation Arrangement

Open Space Type	Existing Conditions	Recommendation
Downtown walk	Downtown walking tree vegetation with a canopy still allows sunlight to touch the ground. Vegetation uses Angsana, Tanjung, Trembesi, Fan Palm, and Neem trees	Maintain existing designs.
	The height of the shade trees on the downtown walk measures 5 – 7 meters. Moreover, there is a vertical garden.	Maintain existing designs.
	Shurbsand the ground cover is sufficient to function as a space barrier for the distance of Vegetation interactions using ajuga, elephant grass, and mini kuai.	Maintain existing designs.

Waterfront	Waterfront uses tree vegetation with a canopy that allows sunlight to touch the ground. The existing trees do not block the view of the lake Vegetation uses the Ang-sana tree, ketapang	Maintain existing designs.
	The height of the shade trees on the waterfront measures 2 - 4 meters	Maintain existing designs.
	Shurbsand the ground cover is enough to function as a space divider for the distance of interaction. Vegetation uses lily plants, ligustrum	Maintain existing designs.
Pedestrian ways	The distance between the trees is too far. The area of the tree canopy on the pedestrian way cannot be used as shade.	On environmental roads, it is directed to utilize roadside yards as a medium for trees. It creates a green road character and is visually cooler and attractive, allowing sunlight to enter.
	There are no shrubs and ground cover	Shrubs and ground cover in the pedestrian way area as a space-delimiting aesthetic
	The height of the shade trees on the pedestrianways is 1 – 2 meters	Maintain existing designs.
Shuttle bus stop	Shuttle bus stops use vegetation with a canopy that allows sunlight to enter. Vegetation uses trembles trees.	Maintain existing designs.
	The shuttle bus stop area does not have shrubs and ground cover.	Not required

A model for structuring vegetation in public open spaces that is adaptive to the Covid-19 pandemic can be illustrated in Figure 3

Signage

Signage is a series of visual representations symbolically and graphically, which aims to be a medium of interaction between humans and public spaces (Andrijanto, 2018). Signage functions include providing information about an area or area, controlling visitor circulation, forming identity, and serving as a warning sign. During the Covid-19 pandemic, signage became one of the street furniture that played an important role in public open spaces. Because signage functions to provide information and remind visitors about physical distancing protocols. In addition, signage can also remind visitors about health protocols, and symptoms of Covid-19 and encourage them to evaluate the health situation and not enter public space areas if they experience any or all of the symptoms. The signage arrangement can be seen in the table can be seen in Table 7.

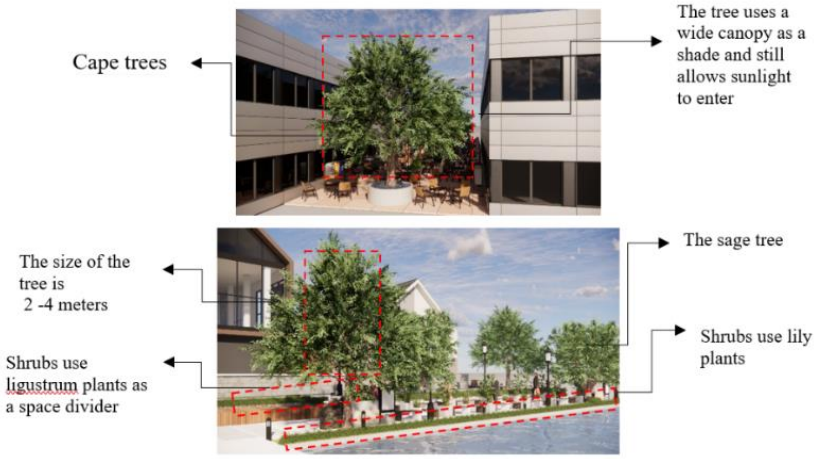

Figure 3. Vegetation Arrangement Model

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Table 7. Signage Arrangement

Existing Conditions	Recommendation
Signs only in the Summarecon Bekasi settlement cluster. Signage took much work to see by visitors to public open spaces.	Signage placed at a point that is easy to read by visitors with the placement and determination of size must be precise and follow the distance and viewing angle. So that visitors can see and read, even if only briefly. Public open spaces can use flag banners, free-standing banners, murals, and billboards.
Signage in the Summarecon Bekasi settlement still has yet to attract visitors' attention to read.	The background should be contrasted with the text color so as not to obscure the main message. Using text and background colors that lack contrast will reduce readability. Bold, simple, and easy-to-read typefaces. Added images and graphics, as well as unique shapes and materials.
Signage in the Summarecon Bekasi settlement using banners/vinyl banners.	Aluminum composite material.

The model for arranging public open space signage that is adaptive to the Covid-19 pandemic can be illustrated in Figure 4.

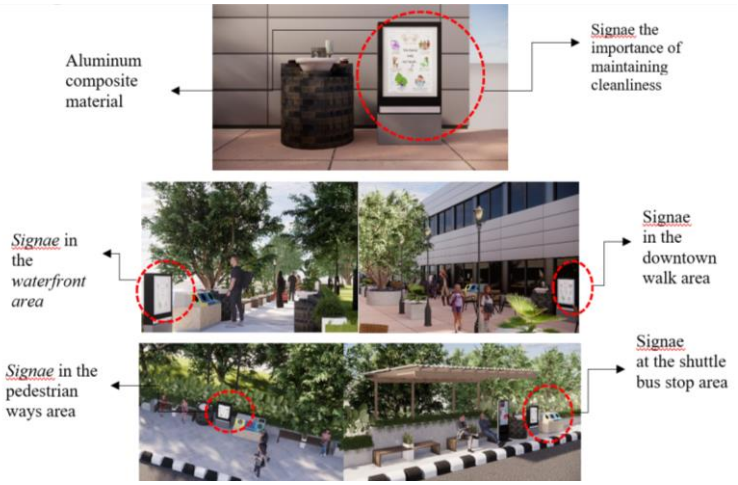

Figure 4. Public Open Space Signage Arrangement Model

Seating Facilities

During the Covid-19 pandemic, benches were necessary as a form of post-pandemic new habits. Arrangement of seating facilities in open spaces can be started from the concept of a safe distance of 2 meters/individual. Therefore, the single-user concept effectively creates a new normal adaptation in public open spaces based on research indicators. Furthermore, the seating arrangement must also consider comfort with a simple shape and high resilience, besides being easy to maintain. This seating arrangement also adjusts visitors' capacity requirements in each public open space area. The seating arrangement can be seen in the table can be seen in Table 8.

Table 8. Seating Arrangement

Open Space Type	Existing Conditions	Recommendation
Downtown walk	Has implemented a single user, but the distance between benches is still very close. The distance between benches is still less than 2 meters.	The concept of a single user on the downtown walk bench is maintained, but the distance is set according to the protocol. The distance between benches is set at least 2 meters.

Waterfront	Still need to implement the single-user concept. The seat design on the La Spezia waterfront is in the form of the letter L, with a length of 320 cm and a height of 70 cm.	Created a single-user concept with a 50 x 50 cm2/bench size.
	The distance between benches is 4 meters.	Defended.
Pedestrian ways	Not equipped with a seat	Placing seats on pedestrian ways. Pedestrian distance is set at 3-5 meters/bench. Using wood and cast iron picnic table (picnic chair with iron frame with wooden seating surface and table), wood and cast iron classic park bench (park chair with iron frame with base and back made of wood), iron classic park bench (garden chairs with the overall material being iron), cube concrete outdoor (concrete in the form of cubes and blocks
Shuttle Bus Stop	Using wood and cast iron picnic table (picnic chair with iron frame with wooden seating surface and table), wood and cast iron classic park bench (park chair with iron frame with base and back made of wood), iron classic park bench (garden chairs with the overall material being iron), cube concrete outdoor (concrete in the form of cubes and blocks	Maintain existing designs.
	The bench frame uses iron, and the bench base uses wood material	Maintain existing designs.

A model for seating arrangements in public open spaces that are adaptive to the Covid-19 pandemic can be illustrated in Figure 5.

Hand Washing Facilities

For the prevention of Covid-19, it is recommended that it is important to wash your hands after sneezing and coughing, before touching your eyes, nose, and mouth, after touching a surface such as a door lever or table, before and after contact with a sick person, before and after helping someone who is sick. have wounds, after touching animals, after touching trash, and if someone feels their hands are dirty.

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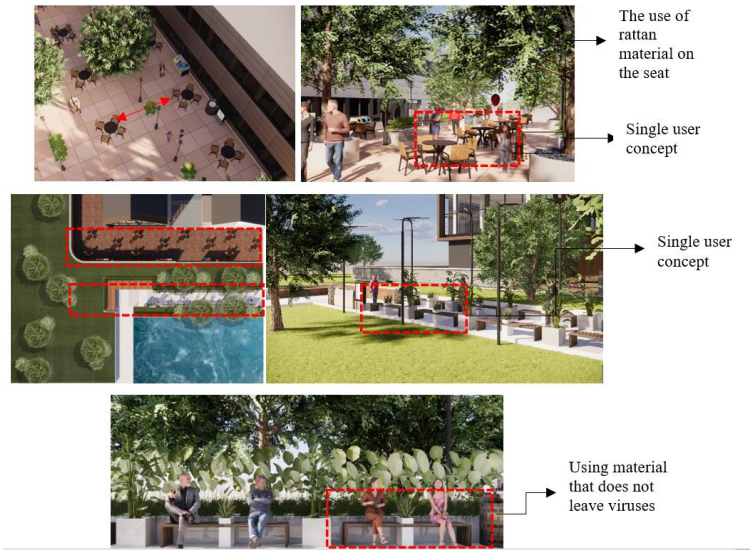

Figure 5. Seating Arrangement Model

Table 9. Arrangement of Handwashing Spot

Open Space Type	Existing Conditions	Recommendation
Downtown walk	Have not used the automatic sensor yet	Using automatic sensors
	The distance between hand washing places is less than 1.5 meters.	The distance between hand washing places is at least 1.5 meters, or a partition is made for each sink.
Waterfront	Does not provide a place to wash hands	A hand washing station with automatic sensors is provided The distance between hand washing places is at least 1.5 meters, or a partition is made for each sink.
Pedestrian ways	Does not provide a place to wash hands	A hand washing station with automatic sensors is provided The distance between hand washing places is at least 1.5 meters, or a partition is made for each sink.
Shuttle Bus Stop	Does not provide a place to wash hands	A hand washing station with automatic sensors is provided It is enough to provide one place to wash hands.

A model for arranging handwashing spots in public open spaces that are adaptive to the Covid-19 pandemic can be illustrated in Figure 6.

Trash Bin

In public open spaces, cleaning facilities are needed to support functional and attractive cleanliness from an aesthetic point of view so that it can be utilized as much as possible. Apart from maintaining the cleanliness of public open spaces, this cleaning facility is also expected to make it easier for officers to mobilize in large open space areas. This cleaning facility is in the form of a trash can placed at a point that is easily accessible to visitors, and there is the separation of inorganic, organic, and B3 waste. B3 waste characteristics based on PP No. 101 of 2014 concerning Hazardous and Toxic Waste Management Article 5 is explosive, flammable, reactive, infectious, corrosive and toxic. Some examples of B3 waste produced by domestic households are used air fresheners, bleach, laundry detergent, bathroom cleaners, glass or window cleaners, floor cleaners, and so on.

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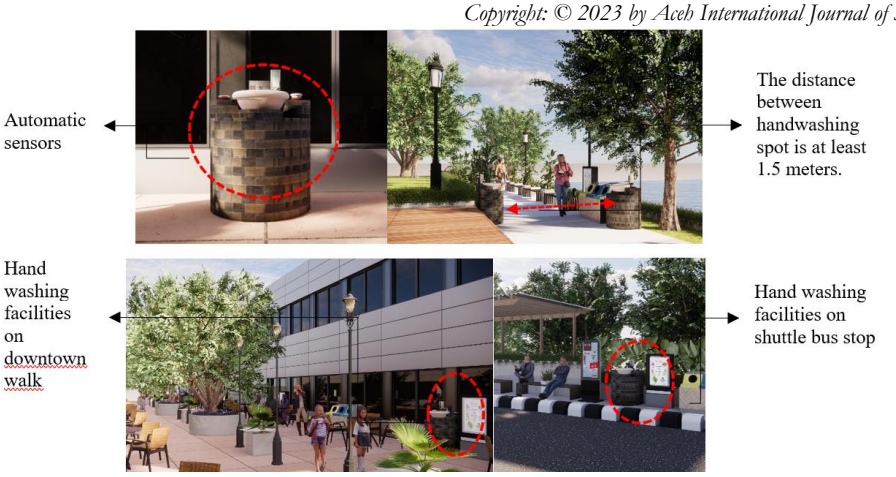

Figure 6. Handwashing Spot Arrangement Model

Table 10. Trash Arrangement

Open Space Type	Existing Conditions	Recommendation
Downtown walk	Easy to access	The placement of trash bins is maintained, but the number is added five pieces
	There is no separation of inorganic, organic, and B3 waste	Separation of inorganic, organic, and B3 waste is made
Waterfront	Easy to access	Trash bins are maintained.
	There is no separation of inorganic, organic, and B3 waste.	Separation of inorganic, organic, and B3 waste is made
Pedestrian ways	Does not provide a trash can	Added some trash bins. Separation of inorganic, organic, and B3 waste is made
Shuttle Bus Stop	Easy to access	Trash bins are maintained.

The model for arranging trash cans in public open spaces that are adaptive to the Covid-19 pandemic can be illustrated in Figure 7.

Figure 7. Trash Bin Arrangement Model

Discussion

This study explains that the adaptive level of public open space in the Summarecon Bekasi settlement is not sufficiently adaptive to Covid-19. This is because there are several facilities that are not provided in theory to support design quality that is responsive to the Covid-19 health protocol. Therefore it is necessary to pay attention to the quality of the design of public open spaces in the Summarecon Bekasi settlement because it is

important in creating a 'container' to support the activities of the settlement community. The success of public open spaces is seen in how they can provide comfort and safety for visitors in carrying out their activities (Putu et al., 2020). In this case, the quality of design that is emphasized to be adaptive to the Covid-19 pandemic is to fulfill the facilities needed by the community as stated in the indicators in the theory of public space readiness to face the new normal conditions after Covid-19 (Bayu & Kurniadi, 2021). Adequate design quality is needed because, as a form of anticipation, it maintains cleanliness and effectively prevents the spread of diseases and viruses. Public open space can be optimized to accommodate the needs of visitors.

The impact of the Covid-19 pandemic has affected the behavior of urban communities in adapting to their environment due to negative stimuli from urban conditions. This will create environmental pressure that has a psychological impact. To minimize this stress, urban communities choose various activities in public open spaces related to nature to improve the quality of health. There is a positive correlation between public open spaces and the quality of life of people, both mentally and physically (Irfandi et al., 2017). During the Covid-19 pandemic, public open spaces were used as the place of choice for sports and recreation because many people need activities to increase immunity during a pandemic. That way, the chances of getting sick are reduced. The benefits of green areas are thought to affect mental health by increasing physical activity, providing a place for people to meet, facilitating social bonds, and minimizing stress (Cohen-Cline et al., 2015). The existence of green areas in a city can also help overcome the effects of climate change, especially during hot periods, and positively impact human health and well-being (Reinwald et al., 2021). Therefore, the need to maximize open space that is adaptive to the Covid-19 pandemic can achieve health values, where visitors can reduce stress, improve cognitive function, and improve mood, health, and well-being.

The social distancing policy was taken in the context of efforts to prevent and control the spread so that the disease does not spread and have an impact on many things in people's lives, and this is in line with the concept of social distancing which is the basis for reducing efforts to spread disease in one place due to restrictions. Citizens' activities with the consequences of the government's obligation to develop policy instruments that determine the pattern and extent of each citizen's activities. In the new normal situation, it was found that road users used the redesign effectively and increased compliance with physical distancing without compromising traffic safety.

The Summarecon Bekasi public open space applies a limit on the number of visitors to maintain the level of visitor density. Personal space/proximity is the distance that people tend to maintain from others during everyday life, mostly subconsciously. For humans, personal space is related to behavior, a form of non-verbal social communication. With the Covid-19 pandemic, "social distancing" may have changed personal space preferences. Based on the findings, during the Covid-19 pandemic, personal space was expanded regardless of the level of risk of infection (Holt et al., 2022). Personal space preferences can provide an index of recovery from the psychological effects of the pandemic crisis. During the Covid-19 pandemic, Summarecon Bekasi's public open space made enough efforts to comply with government regulations to support health protocols. However, several indicators must be fulfilled optimally, especially in the pedestrian way area.

Conclusion

The Covid-19 pandemic has drastically changed human relationships with roads, public spaces, and public facilities. Restrictions due to the Covid-19 pandemic have affected quality of life, as there has been a significant reduction in physical and psychological well-being, as well as overall quality of life. Public open spaces in Summarecon Bekasi, including the downtown walk, waterfront, pedestrian paths, and shuttle bus stops, show that these public spaces cannot fulfill all variable indicators of readiness for public open spaces in dealing with post-pandemic conditions Covid-19. The results obtained are based on the weighting of the values for each variable indicator of public open spaces. The empirical mean value for public open spaces in Summarecon Bekasi is 89, which is still below the hypothetical mean value of 110 and is at the lower limit in the 'Slightly Inadequate' category. Therefore, public open spaces in Summarecon Bekasi are less adaptive to Covid-19. Therefore, the recommended spatial model refers to the use of street furniture starting from pedestrian paths, vegetation, signage, seats, hand washing areas, and trash cans that have been adapted to the needs of the pandemic. This structuring model is expected to reduce the percentage of the possibility of a social disaster such as the Covid-19 pandemic or the like. This structuring model can be used as input for urban planners and designers to improve public open spaces in the future.

Based on research results, public open spaces must be prepared and managed in a disaster response manner, including social disasters such as the Covid-19 pandemic. There needs to be further research that specifically addresses accessibility and movement of people to see the possibility of the rapid spread of the disease. The existence of environmental simulations, community movements, vehicle movements, and regional planning in an area will provide a better picture so that regional developers can better deal with pandemic problems.

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