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RESEARCH ARTICLE

OPTIMIZATION OF EAST FLOOD CANAL BOUNDARY AS URBAN PUBLIC GREEN OPEN SPACE (CASE STUDY: BANJIR KANAL TIMUR, EAST JAKARTA)

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ABSTRACT

East Flood Canal is a canal built to handle flooding in the city of Jakarta. In addition to the canal flow as the main element, there are also borders on the left and right of the canal as supporting elements of the Banjir Kanal Timur. The border area of the Banjir Kanal Timur has the potential to be used as a green open space or public open space that helps increase the functional, ecological and aesthetic value of the city. The objective of this study is to provide input to optimize the Banjir Kanal Timur border as a public open space while still prioritizing the hydrological and ecological functions

This research uses rationalistic and descriptive methods. Data was obtained through observation, interviews and theoretical data, established regulations. The research location was divided into several zones to facilitate analysis.

From the results of this study it was found that the boundaries of Banjir kanal Timur can be utilized as a shared public green open space. The existing condition of its land use is still not optimal, does not have adequate facilities and infrastructure as a public area with recreational activities.

Limitations of the study – From the results of this study it was found that the boundaries of the Banjir Kanal Timur can be mandated as a team or togetherness of public green spaces.

The definition of a community is a social group that shares an environment with each other. This research uses community theory in developing public green open spaces on the banks of the Banjir Kanal Timur through the concept of inclusive landscape design.

KEYWORDS

Aesthetic1; ecological2; hydrological; landcape design3

1. INTRODUCTION

Green Open Space in generally needed in order to maintain the balance and environment quality of an urban area. Jakarta as a city that has a variety of very complex problems including space problems due to population growth and the development of Jakarta's continuous development because development is also needed in an urban area then to maintain the quality of environmental balance and quality of life of a city. Referring Law NO.26 of 2007 concerning Spatial Planning. The definitions of Green Open Space (RTH) is an elongated / striped and / or grouped area whose use is more open, where plants grow, grow naturally or are deliberately planted. The function of green open space has a ecological function as a provider of oxygen, has of important function for the of the city and damper the noise of the city. The availability of urban Green Open Space based on the Spatial Planning Act that the area of green open space must reach 30% (thirty percent) of the total area of the city which is divided into 2 categories, namely private green open space as much as 10% which is available by the private sector and 20% for public green open space provided by the government, the availability of green open space currently only reaches 9.98% of the city area has not met the provisions. As one of the options to meet the needs of green open space in Jakarta by utilizing riverbanks in accordance with the provisions in the existing spatial law. Canal or river bank space can functioned as a space that is free of access by the public.

Jakarta is categorized as a waterfront city and has 13 rivers runing throught the capital. Thus, many potential waterfront areas such as rivers, canals, lakes, harbors and seas are very likely to be utilized as a public green open spaces.The linear and boudary elements of waterfront space can provide expansive views of the water and nature (Gong et al, 2019). Public open spaces on canal bank provide an alternative recreational space as well as an opportunity to improve environmental governance and add aesthetic value to the city (Ellin, 2010). Increasing waterfront public open space on canal bank will increase pedestrian-friendly activity areas (Ellin, 2009).

The current development of the city of Jakarta greatly affects the number of residents whoa are very densely concentrated in the downtown area, this makes the level of cofort of residents of the city environment changes. Thus the existences and optimization of the city's public green open space is needed with planned grening and a natural atmotsphere that suits the function and aesthetics of the city which greatly affects the realixation of a sustainable urban environment.

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The Banjir Kanal Timur was built as an efforts to reduce flood vulnerability to flooding in the Special Region of Jakarta caused by the overflow of the Ciliwung River. In 2021 Ciliwung sodetan project was continued, so based on the decision of the Ministry of Public Works and Public Housing (PUPR) to continue the construction of a tunnel or sodetan from the Ciliwung river to BKT along 549 meters, the length of the sodetan will be 1.26 kilometers, it will reduce the flow of water by 60 cubic meters per second to the Banjir Kanal Timur at a time when the Ciliwung River is no longer able to accommodate water discharge at the estimated of the 25-years flood water discharge of 508 meters per second, this will reduce the risk of flooding in several flood locations downstream of the Ciliwung River including Kampung Melayu and Manggarai.

The purpose of this research is to realize quality public green open space for city residents and the opportunity to imrove the city by optimizing the border of the Banjir Kanal Timur can be used as public open space while still prioritizing the hydrological and ecological functions of the canal.

2. Literature Review

Optimization of the edge space of canal border is based o the provisions stipulated by the Regulation of the Minister of Public Works and Public Housing no. 28/PRT/m/2015 that the Determination of River Boundary Lines and Lake Boundary Lines has strict and clear rules regarding the minimum distance of buildings from rivers and the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia. P.59/MENLHK/SETJEN/KUM.1/10/2019, contains Planting in the Context of Watershed Rehabilitation has provided clear direction on the utilization of river banks.

2.1 Riverbanks as Public Green Open Space

The utilization of river borders as Public Green Open Space (RTHP) is based on the policies issued by the Regulation of the Minister of Public Works and Public Housing no. 28/PRT/m/2015 that Determination of River Borders and Lake Borders Lines there are strict and clear rules that the minimum distance of building to the rivers. Strengthened by the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia. P.59/MENLHK/SETJEN/KUM.1/10/2019, contains Planting in the Context of Watershed Rehabilitation which explains the utilization of river borders or river banks. Thus, riverbanks can be utilized as public green open space with recreational functions while maintaining the hydrological ecosystem to remain sustainable. (Ririn Mutfianti and Slamet Budi Utoma 2021).

Canal banks are important ecological and hydraulic areas of the river. River banks cannot be separated from the river body (flow) because hydraulically and ecologically they are one unit. Hydraulically, the riverbanks are floodbank that functions to provide the possibility of flood water overflowing to the right and left sides of the river so that the speed of water can downstream can be reduce,water energy can be reduced along the river, cliff erosion and riverbed erosion can be reduced simultaneously (Maryono, 2005).

Green Open Space (RTH) can be interpreted as elongated or lane, the group of uses is more open. RTH can be optimized by adjusting to the land allotment that has been determined by the local government that the RTHP space) is adjusted to applicable provisions in terms of its utilization and optimization.

According to Carmona (2021) that public open space classified into 3 types based on access, has classified RTHP divided based on accessibility, namely. External public, internal public space and external "quast space". The definition of external public space as land that is between private ownership, such as squares, streets, parks and parking lots. Internal public space, defined as space in public facilities where citizens have free access, namely public libraries, museums, terminals / public transportation stations. While in Indonesia it is better known as internal public space with the designation of public facilities owned and managed by the government, whose utilazion is regulated and must be obeyed, Internal "quasi" public space is RTHP whose ownership is private where the manager has the right to control the access and behavior of its users, such as commercial facilities and campuses.

3. Research Method

The research approach consists of:

a. Rationalistic research with astudy of theories and sources, literature and referring to applicable documents. This type of research is descriptive qualitative in order to sharpen meaning and understanding and related insights.

The research variables are as in table 1.

b. Analysis of Public Green Open Space in the East Canal Flood

Primary and secondary data collection as supporting data uses delphi analysis, by combining opinions of stakeholders so that conclusions can be drawn. The results of questionnaire that have been distributed and returned by respondents so that it can be known what aspects are obtained, namely: Institutional aspects related to open the Public Green open space program, land use aspects, recreational aspects and social aspects.

c. Analyzing the influencing factors for the optimization of Public Green Open Space using the Delphi analysis method is a method that can be widely used in certain topic areas to achieve convergence of real-world knowledge. Hamer (2013).

d. The stage of formulating the optimization of green space, using triangulation analysis, carefully sort out the data , the theories we already have and the applicable regulations are equated with existing data will be able to provide significant results.

e. Analysis method the study site was divided into several segment to facilitate analysis, namely segments according to the characteristics of the site.

Table 1: Research Variables

Indicactor	Variable
Border Utilization Public Open Space (RTH)	Green Space Function Scale of green space
Border Function Public Open Space Required	Green Space Function Social Functions Aesthetic Function Recrafting Function Interaction Functions
Local Government / Private Aspect	Management and Supervision
	Relevant local government as the initiator of the program
Land Use Aspects	Lad Utilization. Border function for community use as social space
Accessibility	Provision of axes from all directions for easy achievement
Recreational Aspect	Provision of facilities and infrastructure and other supporting facilities. Variety of recreation types
Social Aspect	Public knowledge about Green Spaces User awareness of Public Green Space
Comfort Aspect Climate	Understanding Standardization Recreation room/facilities, Facilities and infrastructure. Air humidity / vegetation
Safety Aspect	Provision of space and infrastructure
Ecological Aspects	Management of existing vegetation, addition of
Hydrological Aspects	Maintenance/maintenance the main functions of the canal

Source: 2022 observations

4. Findings and Discussion

4.1 Overview

The Banjir Kanal Timur is located in Duren Sawit Urban Village. Duren Sawit sub-district has an area of ±383,520 Ha with a population of 557.58 ihabitants and total of 17 Rukun Warga (Neighborhood Associations) and 181 Rukun Tetangga (Central Buerou of Statistics, 2017). The location is around an area with hetrerogeneous land use, characterize as a desely populated urban area. The location of the river border adjacent to Jalan Kolonel Sugiono, the location is parallel to the Inspection road (on the right of the riverbank and Inspection road, Masjid Road on the left side of the

river) functioning as an inspection road.The study location as an catchment for the flow of Cipinang river, Sunter River, Buaran River, Jati Kramat River and Cakung River. The location of the study is shown in Figure 1.

Figure 1: Banjir Kanal Timur Location

Based on the results of survey of the existing condition of Duren Sawit Village primary, the location of the Banjir Kanal Timur administratively has physical boundaries : The length of the Banjir Kanal Timur is ± 23.5 kilometers, the research boundary is ±1.44 kilometers. Geographical location at 6°13'49.08" South Latitude 106°54'35.97" East Longitude to 6°13'41.37" South Latitude 106°55'22.64" East Longitude, the physical boundaries of the Banjir Kanal Timur Duren Sawit as follows North: bordered by residential shops and Jalan Kolonel Sugiono, East with fast food restaurants and Jalan Raden Inten II, South Bordered by Duren Sawit Village Office and residential areas with Duren Sawit hospital and schools.

Figure 2: Existing Conditions of Location

The condition of the existing location of RTHP in the planning area is dominated by land in the linear East Flood Canal, most of the Green Open Space and Acacia trees planted by the local government . Figure 2 of the existing vegetation condition is supported by the obervation data presented in table 2.

Table 2: Vegetation Characteristics

Types of plants		Plants / Trees
Utilization	Type of green space	Main function as green space BKT is functionally divided into 3; namely Ecological, social, Aesthetic
,	Scale	The scale of RTH needs a minimum area of 250 m2, medium 1250 m2 and maximum 3000m2
Vegetation	Kind	RTH BKT is the main priority as a shade area
	Function	Ornamental plants with very little aesthetic value Ground cover plants are absent

Source: Observation Results

Observations at the location of the Banjir Kanal Timur (KBT) stretch about 3 km on Jl. Kolonel Sugiono. There are 2 inspection roads that border the canal on the north and south banks. The northern part inspection road functions as a pedestrian and bicycle path. The amount of tree vegetation on the northern border is more numerous and diverse than on the southern banks. *Eucalyptus (Eucalyptus regnans), Bintaro (Cerbera manghas), Mahogany (Swietenia macrophylla), Angsana (Pterocarpus indicusis), and Ketapang Kencana (Terminalia mantaly).* Are the trees species preset on the KBT banks.

I. Optimization of Utilization and the Effects of Green Open Space on Borders Banjir Kanal Timur

Analysis related to optimization using Delphi Analysis, combining several opinions from stakeholders and then drawing conclusions, it is obtained from questionnaires from selected respondents which result in several related asects as follows : Aspects of Government / local government policies Owners and management related to Green Open Space (RTH) Aspects of Land Use Land Functions, Recreational Aspects.

II. Optimization Formulation

Green Open Space at the edge of the Banjir Kanal Timur if viewed from Ecological factors with ecological priorities this is the most needed, desired by user residents, because users really need an outdoor space area as a recreation besides home. And the as the lungs of the city. according to one of the ecological functions is to reduce air pollution and the Green Open Space System in Urban areas is very important to maintain and control the quality of environmental integrity (Ernawati, 2015). Based on the Development of Green Open Space System in Urban Areas, the existence of Green Open Space is important in controlling and maintaining the integrity of environmental quality to remain sustainable

III. Buffer Function.

The existing condition of the area for social functions, users / surrounding communities really hope for the existence of this public green open space as a place for recreational objects, education, learning nature, (Bramantya Wahyu Jatmiko, 2015).

Social Function citizens as users want Green Open Space that can be used for containers and objects of education, research and training in studying nature, then the user community also wants Green Open Space as a place of recreation. Meanwhile, according to the social function of the park as a place to carry out joint activities and social communication, a place to play, exercise and recreate and also a place of research and education (Bramantya Wahyu Jatmiko, 2015). Based on Permen of Public Works No.5 of 2008, socio-culturally the existence of RTH can provide functions as a space for social interaction, recreational facilities and containers and objects of education, research, and training in studying nature. The resulting strategies are: Adding social facilities as a forum for community communication, coordinating with related agencies to maximize the use of the land for containers and objects of education, research and training.

IV. Eaesthetic function in general

Based on the Public Works Guidelines on the Provision of Green Open Space in Urban Areas, the aesthetic functions will be useful to increase the productivity of city residents as a shaper of architectural beauty, to create a harmonious atmosphere between built and unbuilt spaces. In order to utilization of the canal border to be more optimal, it is necessary to arrange and add ornamental plants, shrubs, bushes and ground cover. Citizen as users of these public green open space can stimulate creativity and increase comfort, infusing the urban environment on a micro and macro scale.

V. Characteristic analysis

Location analysis is carried out by analyzing the zoning of the location using the Banjir Kanal Timur research analysis method by dividing the location into 4 (four) segments , namely figure 3:

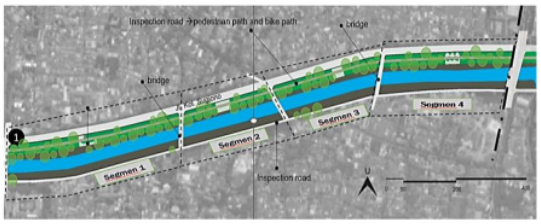

Figure 3: Location segmentation

Segment 1

In segment 1 there is a path shaded by trees on the left and right sides and there are benches and facing the canal, complemented by physical elements which are concrete chairs. The activities that occur in the public space in this segment are leisurely walking, jogging, cycling and sitting down.

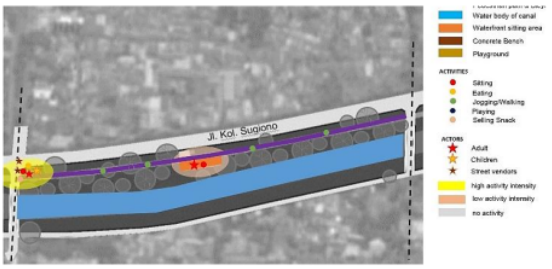

Figure 4: Segment 1

There is a park as a sitting area that has a view orientation towards the canal and circulation paths for pedestrians and bicycles

The physical element of the park is a chair made of concrete. Activities that occur in Public Open Space within the zone are walking, running/jogging, cycling, and leisurely sitting.

The pattern of space utilization formed in segment 1 is linear because the pattern tends to_follow the physical setting and the existing physical setting follows the existing circulation path.

Figure 5: Existing Conditions

Actyvities

leisurely walking, jogging, and cycling activities on the pedestrian and bicycle paths. Only a few of the visitors take advantage of the sitting area in the middle of this zone. The pattern of space utilization formed in segment 2 is linear.

Segment 2

Almost all visitors in segment 2 spend time walking, jogging and cycling on the pedestrian and bicycle paths. Only a few of the visitors make use of the sitting area in the middle, on the left and right are shaded by cycling pine trees. The pattern of space utilization formed in segment 1 is linear because the pattern tends to follow the physical setting and the existing physical setting follows the existing circulation path.

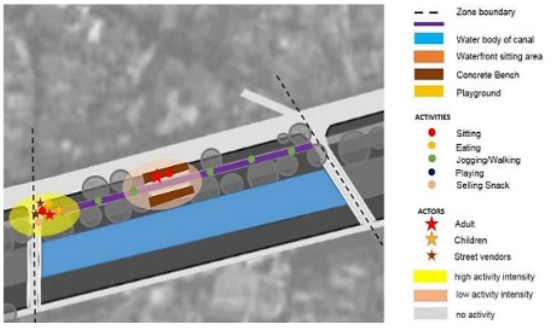

Figure 6: Segment 2

Actyvities

leisurely walking, jogging, and cycling activities on the pedestrian and bicycle paths. Only a few of the visitors take advantage of the sitting area in the middle of this zone. The pattern of space utilization formed in segment 2 is linear.

Segment 3

Segment 2 similar segment 2, segment 3 consists of a pedestrian path, bicycle path and simple seating areas. Activities in this zone are leisurely walking, jogging, and relaxing, figure 7.

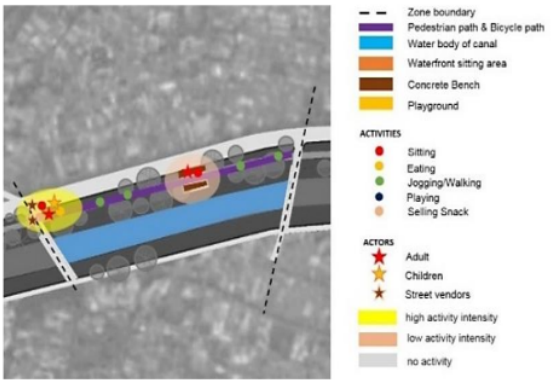

Figure 7: Segment 3

Similar to segment 2, segment 3 consists of walking paths, bicycle lanes, and simple sitting areas. The activities carried out in this zone are walking, jogging, and cycling. The pattern of space utilization formed in segment 3 is linear

Segment 4

Segment 4 is a zone that has a variety of activities, physical conditions in general are almost identical with segment 2. 3. Physical elements in this park are a number of children's play facilities such as swings, slides, seesaws, and wooden park benches.

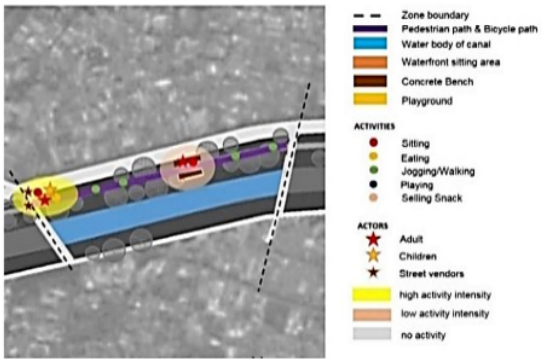

Figure 8: Segment 4.

Activities that occur in this segment are leisurely walking, jogging, cycling, playing in the playground, and sitting. There are activities of street vendors who utilize park benches to sell, Vegetation is generally on the left and right of the path,

I. Analysis of Public Green Open Space (RTH) needs

Based on the results of the survey that have been carried out, especially on inspection road, the needs for green space has been fulfilled, but the borderof the canal is still inadequate, so improvements need to be made in terms of providing additional vegetation figure 5.

From the questionnaire data distributed to 100 respondents with only 15% saying that the green space is good, 10%, for visual aesthetics, in the category not good, the remaining 55% said it was not enough and considered it important. So the BKT area canal border as a green space is

very important because the space can be utilized by users as a place to interact that can provide fresh and clean air free of air pollution, they need space for sports, interaction and refreshing. As for supporting facilities and infrastructure as much as 45% are needed in the area.

Figure 5: Existing Conditions

II. Public Green Open Space (RTHP) Needs in the East Canal Flood

Based on the existing literature, it states that local residents, government and private parties must be actively involved to achieve good quality of RTHP in a way, namely : local residents, government and private parties must be actively involved to achieve good quality of RTPH. Whereas based on existing literature, it states that local residents, government and the private sector must be actively involved to achieve good quality RTHP in a way is in : a. Creating a routine program regarding the socialization of the importance of RTHP to all parties involved. b. Community Participation Factors The level of community participation in the *kelurahan, Kecamatan,* is still be classified as quite low. While the existing literature states that the management of Public Green Open Space cannot only be done by the government alone, but also required the participation of the participation of the community and the private sector will directly result in namely: Appreciation for all users in particular and community in general.

Aspects related to the establishment of Public Green Open Space. Some aspects that affect RTHP are:

III. Aspect of Land Use Function

There is a lot of land conversion so that the existence of RTHP is not well organized. Meanwhile, the East Flood Canal is ready to be organized as a green open space managed by the local government and in cooperation with private parties, such as UNITED TRACTOR. The incompatibility of land use that has occurred so far is because there are still many green open spaces that have not been managed by the government (have not been granted). Meanwhile, in the existing policy, land acquisition for public interest is organized by the government to manage the Public Green Open Space in accordance with its function.

IV. Accessibility aspect, ease of achievement to location

Associated with Accessibility and circulation within the site is very accessible to all users so that they can enter into the existing location the site via the bridge that connects from Colonel Sugiono road to the inspection road.

This existing state makes the potential, because the entrance to the location is clear. The obstacle that occurs at this location is that users simply enters by breaking through the fence at the boundary with the park on the Colonel Sugiono street.

The primary circulation path is intended for users of four-wheeled vehicles, two-wheeled vehicles, and pedestrians who function to connect the main spaces, while the secondary circulation path can be accessed by two-wheeled vehicles, and pedestrians. Tertiary circulation paths can be accessed through exit and entry routes through the site and alternative roads. While circulation within the site there are only secondary and tertiary circulation paths in the form of pedestrians and paths for bicycles (secondary roads) along the linear edges of the canal, the designed path uses concrete material. For bicycle lanes that are separated using lines. The elongated path is parallel along BKT.

V. Recreational Aspects

Duren Sawit Sub-district, this Green Open Space also functions as a recreational function, in addition to the house yard as a whole as an recreation area, interaction, communication for residents in Duren Sawit urban village in general.

The site is equipped with adequate facilities and infrastructure facilities.

VI. Social Aspect, the results of existing social functions of users and communities around the location

environment want BKT to be used for containers and objects of education, training and research to get to know nature more closely and also want it as a Public Green Open Space for recreation. The social function of BKT is expected to be a space for joint activities, a place to exercise, play and recreated, as well as a place to learn. Bramantya Wahyu Jamiko (2015). Permen of Minister of Public Works No.5 of 2008 that socio-cultural existence of RTHP can provide functions as a space for social interaction, recreational facilities and objects of education, training, research. Policies to complete social facilities as a place to coordination, interact, communicate and recreate are expected by users and citizens in the neighborhood around the location.

VII. Comfort and Climate Aspects

Based on data from BMKG in 2016, the air temperature conditions in the Duren Sawit neighborhood are between 23,380C-33,090C. While the average temperature in this area is 28,530C, with the lowest temperature in February and the highest temperature in May.

The highest average rainfall in the month of February , which is 18.45 mm, and the lowest rainfall in December, high is 2.08 mm, the average daily rainfall is 8.05 mm. While for the air humidity ranges from 76.1-83.17% and has an average humidity everyday of 78.64% and wind speeds ranging from 1.16-1.67 knots and an average speed of 1.46 knots. The results of observations that occurred in the field the winds blew from west to east, with the highest wind speed in February 1.67 knots and the lowest in December 1.16 knots. BMKG Table

Based on observations, the wind blows from west to east. The highest wind speed in February was 1.67 knots and the lowest in December was 1.16 knots. Climate data of Duren Sawit region (BMKG 2016) Table 3.

Table 3: of Climate Data in the Palm Region (BMKG 2016)

Regional		Temperature (0C)	Humidity (%)		Wind Speed (Knots)
Region	Minimum	Maximum	Average	Humidity	Win Velecity
(1)	(2)	(3)	(4)	(5)	(6)
Duren Sawit District	25,38	13.09	28,53	78,64	1,42

BMKG , 2016.

VIII. Management Aspect

User concern for management is very influential on optimizing the use of public green open space, because management is very necessary considering that green open space management does not only refer to the government, but user concern and a sense of ownership are very influential on the existence of these open spaces. Because citizens need, they are also the ones who utilize public green open space directly.

Conducting environmental engineering to meet these needs is the most appropriate to present Public Green Open Space because its tone to improve the environmental arrangement of the eastern canal border. Jalan Kolonel Sugiono.

IX. Ecological Aspects

The utilization of vegetation for ecological aspects is very appropriate, so as is known vegetation on the current site is dominated by large trees that function as shade and shade along the side of the site. Whereas in the lower part which was originally overgrown by grass, currently the condition of the grass is no longer, only weeds.

Vegetation has a direct function on the site, namely providing a positive impactwhich is to have a positive impact in the surrounding environment, namely in the form of shade and blowing cool and fresh air for users visiting the location. The types of trees found on the site are presented in the table:4

Tabel 4: Types of trees

No	Local Name	Latin Name	Function
1	*Kepel*	*Stelechocarpus burahol*	Shading
2	*Kemang*	*Manggifera kemanga*	Shading
3	*Mindi*	*Murraya paniculata*	Shading
4	*Pulai*	*Alstonia scholaris*	Shading
5	*Ketapang kencana*	*Terminalia catappa*	Shading
6	*Nyampung*	*Collopphyllium inohpyllium*	Shading
7	*Flamboyant*	*Delonix directed*	Sahding Aesthetics
8	*Red shoots*	*Oleina syzgium*	Limiting
9	*Terembesi*	*Samanea saman*	Aesthetics
10	*Naming*	*Cynometra caulifloura*	Shading

Location Observation Results 2022

X. Hydrological Aspects

The existing condition of the soil in locations with water infiltration (Permeability) is included in the slow group, but the soil conditions at the soil site are classified with a good level of fertility and suitable for vegetation growth. But for this type of soil also needs to be processing so that the growth of vegetation of slow soil types in permeability, it is easily flooded, several solutions are carried out by planting grass which in generally very effective in absorbing water, can also be done by using water-absorbing materials, namely gravel and decorative stones.

5. CONCLUSION

The final result of this research is to optimize the East Flood Canal as an active Public Green Open Space as follows:

The Banjir Kanal Timur borde[55] a type of Public Green Open Space as an active area and functions as a Green Open Space in the Canal border area.

Flood Canal Boundary is functionally divided into a). As a sports recreation, b) social function as a medium of communication , d) as an arena for stage interaction, e) as an area of socialization of user and can be as an area of non-formal education area (research object), f) [7] an ecological function of oxygen producer, g) as an aesthetic function of the city.

The border of KBT is a Public Green Open Space whose vegetation is dominated by large trees as protective trees and directional trees, there are no ground cover plants, so that if the rain that falls on the ground surface will be carried by the flow of rain into the canal, as a result there will be siltation. For this reason, it takes ground cover plants such as grass, [5] and sweet potato leaves, ornamental plants are needed.

The results of the analysis of public green open space for the availability of such spaces are highly expected such as ecological functions as a result oxygen producers and city lungs.

Social function analysis as an object area for education, research and recreational activities as a medium for communication and interaction between residents, from various directions of arrival communicate with each other to add relationships. And the area of economic transactions by street vendors

Aesthetic Functions Analysis can be used as a place to stimulate creativity, can increase comfort, beautify urban areas on a micro city scale.

In general, the results of the analysis can be said that the most important functions are ecological functions, social functions and aesthetic functions.

The most influential factors on optimization of the Eastern Flood canal boundary by analyzing regulatory and institutional aspects, land use and recreational aspects and social aspects. Then formulate all related aspects and ultimately determine to carry out border improvement activities by arranging boundaries with landscapes for ecological functions, providing public green open spaces, utilizing abandoned canal borders into green land and adding facilities and infrastructure facilities as a forum for communication, interaction, coordinating, fantasizing, users and as a non-formal education area outside the classroom, reseach objects . By adding ornamental plants at certain spots to beautify the location environment.

Management is in the area of the local government of the village and Duren Sawit sub-district, while for the procurement of facilities and infrastructure facilities can cooperate with the private sector, currently the Tractor Unit is expected to be more private parties who are willing to become patners of the local government in managing. The participation of user and the community in maintaining is so that it can remain sustainable.

Limitation And Further Research Batasan And Penelitian Lebih Lanjut

Based on the research that the researchers have done, it is constrained due to time constraints, labor costs. Researchers hope this research can be continued again with more perfect results;

Existing findings have not been able to be followed up such as; about the minimum Green Open Space re[41]ements per/m2 and the carrying capacity of land for public space, based on the type of land for the smallest and largest areas, construction and materials required standardized Indonesia National Standards . In addition to this, there are also methodological limitations due to the advancement of technology and knowledge that continues to develop.

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