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A Research on the Recreational Land Use of Kocabas Stream and Environs

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Abstract: Streams and rivers are among the most fascinating and complex ecosystems on Earth. Touching all parts of the natural environment and nearly all aspects of human culture, they act as integrators and centers of organization within the landscape. Their roles in providing natural resources, such as fish and clean water, are well known, as are their roles in providing transportation, energy, diffusion of wastes, and recreation. The study was carried out in two stages by collecting and analyzing data. In this research, the factors that affect planning in Kocabas Stream and environs (climate, demographic structure of the population, socio-economic structure) have been inspected. Current land uses in Kocabas Stream and environs have been analyzed. Also, to determine Biga Town's city peoples request and inclination towards the recreational structure of the research area, questionnaire is made. Percent (%), mean (df) and cross tabs from statistical techniques were used in data analyzing and chi-square (X^2) analysis was used in hypothesis test. At the end of research, the datum taken from the questionnaire shows that, Biga Town people are sensitive towards recreational activities. To meet the needs of the town people whom are seen to be sensitive towards recreational activities at the Kocabas Stream and environs, various planning decisions should be applied urgently.

Key Words: Biga, Planning, Recreation, Stream, Water Sources

Introduction

The technologic, social and economic variation developments in the world with modernism caused the most to live in cities. Today in cities, the increasing demand pressure of population and sectoral usages, changes the qualitative value of the water, which is the element of natural landscape and because of this, decreases the quantities usable water amount. But water is a scarce resource.

In history it has been seen that people give importance to water surfaces. According to Uzun (1997), in water usages, which began with human life and environment relation, water, form a part of the indivisible whole. Whether in biologic or physical or physiologic way, it is living environments basic element. Coasts, from the periods which urbanization started to today, are intersection points of water and land, which play an important role on the development and shape of cities. Also, coasts are places, which are born from the cities land and water relation and where different functions based on both land and water shape and which affect its social and economic environs with cities physical environ (Gül and Kilic, 2002).

Coasts, in all the periods of history has formed the focus point of civilization, has gained importance in a meaning of urbanization-residence, industry, commerce, tourism, transportation, recreation, rubbish dump, nutrition. In our days water resources are under threat of pollution formed from the activities of various fields such as agriculture, city life, industry and from the other whole negative affects.

In landscape, moving waters gain the area activity with their sound. Water sound has a resting, cooling and healing affect. Foaming-boiling waters are their important interest areas. Also, they are proper for recreational activities such as picnic, sailboat sport, fishing, bird hunting and swimming (Koc and Sahin, 1999).

In this research, the water and its close environs' importance, which is the most important natural resource, has been stated within the Kocabas Stream sample. The current area usage of the Kocabas Stream and environs has been inspected. Also, to determine the request and inclination of Biga Town's city people towards recreational structure of the research area, questionnaires have been made. At the end of the research, suggestions about the recreational use among Kocabas Stream have been made.

Materials and Methods

The research has been run in Biga which is an important settling with its rich history past under many civilizations affect and with its natural and cultural potential. Biga is a town in Canakkale Province and is located on the Biga Peninsula, which is named after it. The town center is at the intersection of Canakkale-Bursa Provinces and Can Town's highways.

The 1,5 km part of Kocabas Stream in the town center forms the research material, which is Canakkale Province's biggest and old flowing stream and divides Biga town center into two sections (Fig.1). The elements, which are the subject to the research; water and water based recreation areas, the demographic structure of the town population and local and foreign literature about the subject.

To evaluate the climate datum Gürsu (2001), for information about the population the datum of Government Institute's 2000 General Census and Anonymous (2000) was used.

The maps, which contain information about the current area usage of Karabas Stream and close environs, have been taken from the Biga Municipal.

The study was carried out in two stages by collecting and analyzing data.

Data Collection: The factors which affect planning in Kocabas Stream and environs (climate, demographic structure of the population, socio-economic structure) has been inspected. Current land uses in Kocabas Stream and environs have been analyzed. Also, to determine Biga Town's city peoples request and inclination towards the recreational structure of the research area, questionnaire is made. Pincombe (1969), Kelkit (1996) were inspected and information taken from these inspections were used to make the questionnaire forms. The questionnaire was made to 100 people in Biga Town at December 2002.

Fig. 1: Kocabas Stream and Environs

Data Analysis: The data collected from questionnaire firstly grouped by using excel software. The groups were:

Age	Usage reason
Sex	Usage density
Education	Pleasurable possibilities
Job (occupation)	Deficiencies in possibilities
Monthly income	Desire for reconstruction
Transportation	

Statistical analysis among parameters (mention above) was performed by using SPSS software (SPSS, 1988). Percent (%), mean (df) and cross tabs from statistical techniques were used in data analyzing and chi-square (X^2) analysis was used in hypothesis test.
Correlation coefficient was also performed to understand the relationships between age groups and usage reason; job (occupation) status and usage density; sex status and usage reason; sex status and pleasurable possibilities; monthly income and usage reason; (Davis, 1986).

Results and Discussion

The Factors Affecting Planning in Biga Town: Natural and cultural features are the main affecting factors in planning of recreational land use. Natural factors are under affect of climate factors. Temperature, rainfalls, moisture and wind are the important climate elements. In cultural factors city's demographic structure comes into the front plan. Especially the young number whom might join active recreation is the most important factor, which affects planning.
Although the town has a transition climate between Mediterranean and Black Sea climates, in the inner parts with the rise of the land it is affected by the terrestrial climate. Annual rain average is between 650-850 mm. summer months are generally arid. In the winters snowy days are between 15-20 days. The coldest days are seen between January and February. The average temperature in winter is 5ºC and sometimes it falls to -9ºC. The average temperature in the summer is 25ºC. The relative humidity rate is 71%. Days without wind are very few. The dominant wind direction is from Northeast (Gürsu, 2001).
According to the results of 2000 General Census, the population of Biga Town center is 27.549, with 13.740 men (49.8 %) and 13.809 women (50.2 %). In the total population of the 0-17 age group there are 7.922 people of 4.075 men and 3.847 women, at the 18-30 age group there are 6.489 people of 2.877 men and 3.612 women, at the 31-50 age group there are total of 8.457 people of 4.294 men and 4.163 women and above the age 50 there are total 4.681 people of 2.212 men and 2.469 women. The rate of the people who literate in the Biga Town center is 94 % (Anonymous, 2000). The number of schools in the town centers 19 with 10 primary schools and 9 high schools and the total student number are 11.254 (Gürsu, 2001).
In Biga, where agricultural production, commerce and industry come to front plan, social life style is shaped according to these. Especially as a result of investment on education field (the rise of school number and establishment of university units) their traditional life style has changed.
Proper climate, large and productive soil heads the economic life towards agriculture. Especially, the dispatch of meat and milk product in stockbreeding to big centers, furniture, canned vegetable, tomato sauce production; small industry, mining and leathering are the town's most important living sources.
Current Land Uses in Kocabas Stream and Environs: Turkey has gone into an urbanization process parallel with industrialization at the recent

30-40 years. This process shows itself more at sea, lake, river and streams. Because Biga Town which contains Kocabas Stream and which is a subject to the research is a transition between Asia and Europe, it has been affected of many civilizations in history and because of this different cultures have shown itself in the town's urbanization. Especially the rising investment on agricultural production, commerce and industry in recent years, increased immigration to the town from outside, and unplanned and crooked urbanization fact has shown itself in the town center.

The town center has been divided into two by the Kocabas Stream. While management, commercial, settlement and industrial areas are dense at the west of the stream, at the east agricultural, industrial, settlement, educational, health, sportive and recreational areas are widespread (Fig. 2).

When looked at the town's urban development process, at the beginning the urbanization fact seen at the west of the stream has continued by time at the east where agricultural quality is high. Today, the agricultural lands have been occupied by uses such as settlement, industry and education, at these areas crooked urbanization samples are seen a lot.

The same negative signs continue by the Kocabas stream. At the east and west of the stream, crooked construction, garbage dump, disorderly parking, activities such as very ugly and unplanned open and covered entertainment areas, bore results which affect negatively both to the ecosystem and visual pollution at the stream and by its environs.

The Determination of the Recreational Land Use of Kocabas Stream and Environs: Using SPSS software performed statistical analysis among parameters from the questionnaires and the results were evaluated to determine the recreational land use of Biga town people towards Kocabas Stream and environment.

According to age groups, 16% below 18, 34% 18 to 30, 37% to 50 and 13% 50 year and above age groups. According to sex, of the people in the questionnaire, 35% male, 65% female. According to educational status, 42% primary school, 38% high school and 20% university graduate. According to job (occupation) status, 21% student, 14% staff, 18% worker, 15% self-employed, 16% housewife and 12% retired and 4% unemployed.

According to monthly income, 24% less than 200 million, 39% between 201-400 million, 22% between 401-600 million, 14% between 601-800 million and 1% 800 million above.

Regarding the question "How do you reach the land?", of the participants, 39% said by foot, 17% by private automobile, 31% by minibus, 6% by bus, 7% by bicycle-motorcycle. To the question "For which reason do you use the land?" 44% said for getting across, 4% for walk, 5% for sports, 0% for picnic, 7% for parking, 34% for shopping and 6% to occupy time in an open area.

Regarding the question "How often do you use the land?" , of the participants, 39% said everyday, 16% once a week, 45% few times a week, 0% once a month. Regarding the question "What are the possibilities you like in the land?", of the participants 26% said resting garden, 28% walking track, 20% environmental beauty, 15% sport facilities, 11% environmental cleanliness.

To the question "What are the possibilities that you feel absent in the land?", 11% said covered entertainment area, 6% open entertainment area, 18% sport areas, 11% picnic areas, 10 % walking areas, 8% children playground, 16% sitting area, 1% equipment element, 5% parking, 14% safety. Regarding the question "Would you like the land to be reconstructed as a recreation area?" 95% said yes, 5% no.

Age groups based distribution of usage reason as provided the questionnaire participant was given in Table 1.

Table 1: Age Groups Based Distribution of Usage Reason

Age Groups/ Usage Reason	Getting Across	Walking	Sports	Picnic	Parking	Shopping	To Occupy Time in an Open Area
18>	10	-	3	-	-	1	2
%	62,5	-	18,8	-	-	6,3	12,5
18-30	18	-	2	-	2	12	-
%	52,9	-	5,9	-	5,9	35,3	-
31-50	12	2	-	-	5	18	-
%	32,4	5,4	-	-	13,5	48,6	-
50<	3	1	-	-	-	5	4
%	23,1	7,7	-	-	-	38,5	30,8
Total	43	3	5	-	7	36	6
%	43,0	3,0	5,0	-	7,0	36,0	6,0

X^2= 44,745 df = 15 α = 0,05 P =, 000

Table 2: Job (Occupation) Status Based Distribution of Usage Density

Job Status/ Usage Density	Everyday	Once a Week	Few Times a Week	Once a Month
Student	8	2	11	-
%	38,1	9,5	52,4	-
Staff	6	-	8	-
%	42,9	-	57,1	-
Worker	8	7	3	-
%	44,4	38,9	16,7	-
Self-Employment	10	-	5	-
%	66,7	-	33,3	-
Housewife	2	5	9	-
%	12,5	31,3	56,3	-
Retired	4	2	6	-
%	33,3	16,7	50,0	-
Unemployed	1	-	3	-
%	25,0	-	75,0	-
Total	39	16	45	-
%	39,0	16,0	45,0	-

X^2= 26,067 df = 12 α = 0,05 P = ,011

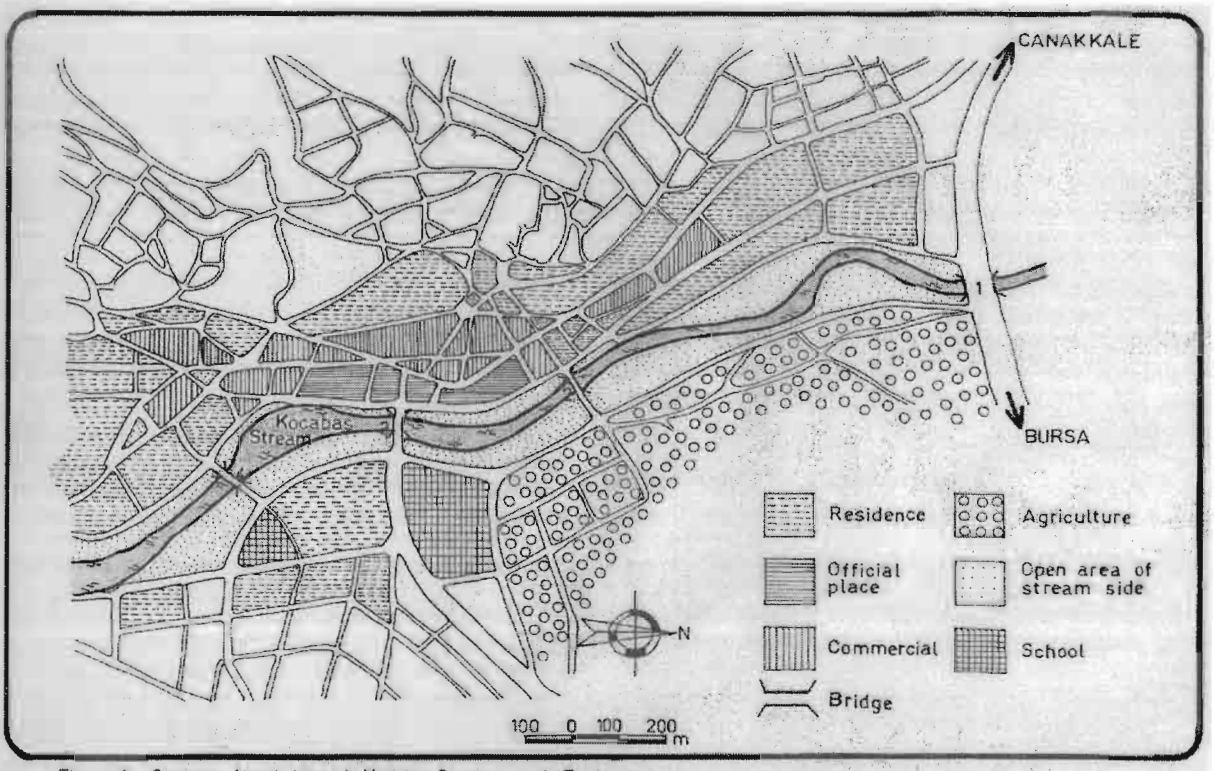

Figure 2. Current Land Uses in Kocabas Stream and Environs

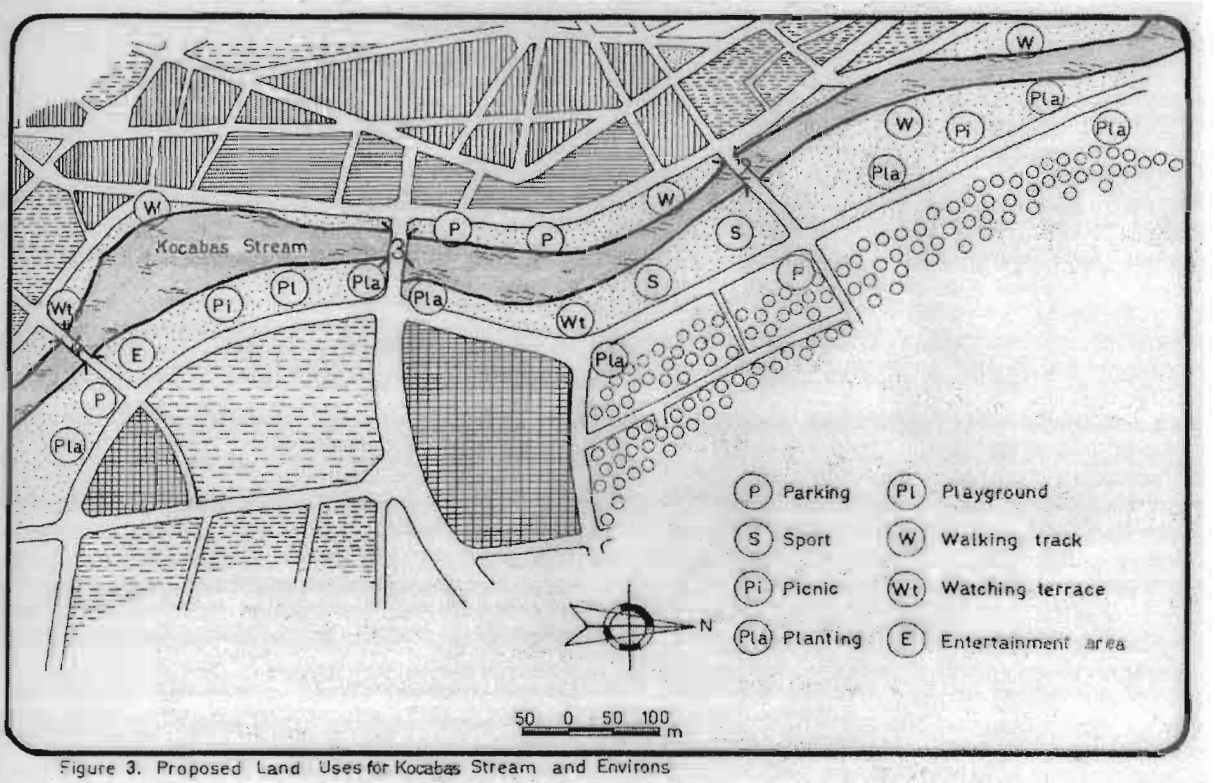

Figure 3. Proposed Land Uses for Kocabas Stream and Environs

Table 3: Sex Status Based Distribution of Usage Reason

Sex Status/ Usage Reason	Getting Across	Walking	Sport	Picnic	Parking	Shopping	To Occupy Time in an Open Area
Men	15	1	5	-	5	4	5
%	42,9	2,9	14,3	-	14,3	11,4	14,3
Women	28	2	-	-	2	32	1
%	43,1	3,1	-	-	3,1	49,2	1,5
Total	43	3	5	-	7	36	6
%	43,0	3,0	5,0	-	7,0	36,0	6,0

X^2 = 28,565 df = 5 α = 0,05 P = ,000

Table 4: Sex Status Based Distribution of Pleasurable Possibilities

Sex Status/ Pleasurable Possibilities	Low Capacity	Poor Quality Equipment	Easily Utilizable	Transportation	Social Foundation
Male	7	10	2	15	1
%	20,0	28,6	5,7	42,9	2,9
Female	19	18	18	-	10
%	29,2	27,7	27,7	-	15,4
Total	26	28	20	15	11
%	26,0	28,0	20,0	15,0	11,0

X^2 = 37,349 df = 4 α = 0,05 P = ,000

Table 5: Monthly Income Based Distribution of Usage Reason

Monthly Income/ Usage Reason	Getting Across	Walking	Sport	Picnic	Parking	Shopping	To Occupy Time in an Open Area
200 Million >	15	1	2	-	-	4	2
%	62,5	4,2	8,3	-	-	16,7	8,3
201-400 Million	14	1	2		2	17	3
%	35,9	2,6	5,1	-	5,1	43,6	7,7
401-600 Million	7	1	1	-	-	12	1
%	31,8	4,5	4,5	-	-	54,5	4,5
601-800 Million	7	-	-	-	4	3	-
%	50,0	-	-	-	28,6	21,4	-
800 Million <	-	-	-	-	1	-	-
%	-	-	-	-	100,0	-	-
Total	43	3	5	-	7	36	6
%	43,0	3,0	5,0	-	7,0	36,0	6,0

X^2 = 38,724 df = 20 α = 0,05 P = ,007

According to the results of statistical analysis related with the data in Table 1, the relation between age groups and usage reason were found statistically very significant (P<0.01).

Job (occupation) status based distribution of usage density as provided the questionnaire participant was given in Table 2.

According to the results of statistical analysis related with the data in Table 2, the relation between job(occupation) and usage density were found statistically significant (P<0.05).

Sex status based distribution of usage reason as provided the questionnaire participant was given in Table 3.

According to the results of statistical analysis related with the data in Table 3, the relation between job (occupation) status and usage reason were found statistically very significant (P<0.01).

Sex status based distribution of pleasurable possibilities as provided the questionnaire participant was given in Table 4.

According to the results of statistical analysis related with the data in Table 4, the relation between sex status and pleasurable possibilities were found statistically very significant (P<0.01).

Monthly income based distribution of usage reason as provided the questionnaire participant was given in Table 5.

According to the results of statistical analysis related with the data in Table 5, the relation between monthly income and usage reason were found statistically very significant (P<0.01).

Conclusion

Sometime around the year 2025, 8 billion people will be living on the planet. These people will require land, energy, water and food, regardless of whether they live in cities or in rural villages. Within the next decade, more than half of the world's population, an estimated 3.3 billion will be living in urban areas-a change with vast implications both for human well being and for the environment (UNPD, 1995). Urbanization is one of the most significant demographic, social, economic and environmental transformations affecting the world's populations and environments (Cocklin and Keen, 2000). Urban areas affect the environment through three major routes: the conversion of land to urban uses, the extraction and depletion of natural resources, and the disposal of urban wastes. As cities expand, prime agricultural land and habitats such as wetlands and forests are transformed into land for housing, roads and industry.

Streams and rivers are among the most fascinating and complex ecosystems on Earth. Touching all parts of the natural environment and nearly all aspects of human culture, they act as integrators and centers of organization within the landscape. Their roles in providing natural resources, such as fish and clean water, are well known, as are their roles in providing transportation, energy, diffusion of wastes and recreation (Naiman and Bilby, 1998).

Local Governments play a central role in managing the urban environment. They usually bear primary responsibility for urban infrastructure and land use planning and are often directly involved in the provision of basic water, sanitation and garbage disposal services (Bartone, 1994).

Especially, at the process of taking decisions on urban land use, to determine the natural resources which are natural and cultural heritage and to open these to use by protecting them, at the planning approaches with different occupation disciplines and civil community organizations participation and control the subject should be claimed urgently.

Today, the rapid population increase and immigration from rural areas to cities which brought up unplanned urbanization within it, especially caused current open areas in the cities with dense population to turn into a concrete mass and caused big distances between nature and human. This situation caused people living in the cities to escape to natural areas and look for green.

At the Kocabas stream and environs negative developments such as crook urbanization and the damage of natural resources (water, flora, agricultural lands etc) are seen and it is insufficient to meet the needs of areas where the community can especially do recreational activities and natural environment.

The datum taken from the questionnaire shows that, Biga Town people are sensitive towards recreational activities. Just as, the 50% of the participants imply that they use the area mostly for walking, sports, strolling at the open area. It is seen that the important rate of the participants (48%) uses the area few times a week. Again the 36% of women who participated the questionnaire sees the environmental beauty and walking at priority. At men, this rate is 12%. Men mostly incline to (15%) sport areas.

From the questionnaire results, the ones whose education level is primary school (30%) feel that sport areas, picnic areas, children playgrounds and sitting areas are insufficient. This rate is the same at the university level.

At the end of these determinations, to meet the needs of the town people whom are seen to be sensitive towards recreational activities at the Kocabas Stream and environs, various planning decisions should be applied urgently. With this reason, at the 1,5 km part of the Kocabas Stream which is a subject to the research and which is shown at Fig. 3, between bridge 1 and 2, bridge 2 and 3, bridge 3 and 4. These suggestions can be made for recreational use:

Between 1st and 2nd Bridges:

- Firstly amendment work should be done to prevent overflowing.
- At the current plantation, care and renewal should be made.
- Picnic and walking areas should be formed. At these areas various equipment elements (sitting bank, lighting, garbage tin etc.) should be placed.
- The garbage among the stream should be picked up and the environment should be kept clean.
- The sewer connection to the stream should be cleared away.
- The faces of current facilities and buildings should be brought to harmony with the environment.
- The materials used at the 2nd bridges construction should be renewed with a more contemporary and modern style.
- To gain the water in the stream some movement, sound and activity, here and there a waterfall look should be made with natural stones.

Between 2nd and 3rd Bridges:

- Amendment work should be done to prevent overflowing.
- The current water surface here and there for recreational use should be widened.
- At the wide parts at the east of the stream, sport complexes should be established and parking should be constructed for this establishment.
- At the east of the stream, at the high parts of the area watching terraces should be made.
- At the same area dense plantation should be made.
- At the west of the stream, the parking for automobile, minibus, bus and truck should be developed.
- At the west, at high places, walking track should be made parallel to the retaining wall.
- At the general of the area equipment elements should be used enough.
- The garbage and sewage problems should be removed.
- Using more modern and contemporary materials should restore the 3rd bridge.

Between 3rd and 4th Bridge:

- Amendment work should be done to prevent overflowing.
- At the current plantation, care and renewal should be made.
- The water surface should be widened and should be suitable for especially water games.
- At the east of the stream, for people to use often various recreational activities such as picnic, playground, open and covered entertainment areas should be developed.
- At the west of the stream walking track and watching terraces should be formed.
- Garbage and sewage problems should be removed.
- Enough equipment elements should be placed.
- The current open and covered entertainment areas should be reconstructed to be harmonious with the environment.
- At the east of the stream, across the 4th bridge the current sport areas, should be varied to be capable for more different sport activities.
- The 4th bridge should be established again to be more contemporary and harmonious with the environment.
- At the east of the stream, to meet the parking need of people who come to the area for activities such as picnic, entertainment, across the 4th bridge parking should be established.

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