

Redesign of the Baharoeddin Siregar Stadium with Green Open Space in the Context of Community Life Style in Lubuk Pakam

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Abstrak

Rapid population growth in urban areas causes uncontrolled residential development in cities and the need for infrastructure growth which can have a negative impact on the environment. Based on BPS data analysis, Deli Serdang Regency in 2022 reached 1,953,986 people. The need for space in urban areas is increasing because of this. This results in an increasingly high need for organizations which has an impact on decreasing the quality of the ecological functions of the urban environment, one of which is green open space. Therefore, it is necessary to design stadium infrastructure to support sports activities and provide green open space, especially in Lubuk Pakam City, by paying attention to the ecology and ecological environment. The aim of this research is to formulate a stadium design concept using an urban design architectural approach that blends with the landscape. The research method that will be used is a qualitative method which involves the problem identification stage, literature study, and observation of related designs to collect relevant data. This data is then analyzed to produce a design concept that will be implemented in designing a stadium. The concept resulting from this research will produce aspects such as space circulation, layout, physical design, material selection, building structure and utilities that will be adapted to the community. Through an urban design architectural approach, the stadium design is expected to be able to meet the needs of community activities and parks through infrastructure development that is integrated with green open spaces.

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Key Word

Urban Design, Green Open Space, Landscape, Ecological

1. Introduction

Lubuk Pakam, located in Deli Serdang Regency, North Sumatra, is an important sub-district. It is traversed by the Trans Sumatra Highway and the Trans Sumatra Railway. Apart from that, Lubuk Pakam is one of the development focuses in the Mebidang project (Medan-Binjai-Deli Serdang). Currently, the city is experiencing rapid development in terms of infrastructure. This can be seen from the increase in the number of commercial buildings and government property in Deli Serdang Regency. Rapid population growth in urban areas also results in uncontrolled residential growth and the need for infrastructure which can have a negative impact on the environment. Based on BPS data analysis for Deli Serdang Regency in 2022, the population will reach 1,953,986. The need for green open space in urban areas is increasing because of this. This situation results in an increasingly high demand for housing which results in a decline in the quality of the ecological functions of the urban environment, one of which is green open space. Providing green open space is a plan in the RTRW. Providing green open space is part of the planning in the Deli Serdang Regency RTRW for 2021-2041.

	Laki-laki			Perempuan		
Kecamatan	2020	2021	2022	2020	2021	2022
Gunung Meri	1667	1675	1685	1526	1546	1569
S.T.M. Hulu	6672	6687	6710	6882	6907	6942
Sibolangit	9884	9896	9920	10096	10107	10133
Kutalimbaru	17908	17965	18046	18330	18355	18404
Pancur Batu	46665	46855	47108	46805	46902	47064
Namo Rambe	19764	19813	19888	19933	19944	19983
Biru-Biru	19576	19736	19923	19507	19552	19623
S.T.M. Hilir	16567	16588	16631	16592	16627	16684
Bangun Purb	12217	12307	12414	12158	12207	12274
Galang	35380	35672	36014	34756	34921	35133
Tanjung Mor	112651	113715	114940	110799	111549	112456
Patumbak	49654	49876	50165	48340	48427	48579
Deli Tua	29742	29893	30084	29550	29674	29839
Sunggal	120818	121394	122133	120541	121012	121652
Hamparan Pe	83149	83438	83838	80372	80427	80592
Labuhan Deli	34015	34197	34426	33114	33224	33380
Percut Sei Tu	202866	203830	205075	199602	201504	203695
Batang Kuis	32958	33259	33608	32117	32329	32586
Pantai Labu	25174	25354	25569	23993	24131	24303
Beringin	30586	30854	31164	30125	30345	30609
Lubuk Pakam	43885	44055	44284	44691	44753	44877
Pagar Merba	19937	19980	20050	19877	19892	19934
Deli Serdang	971735	977039	983675	959706	964335	970311

Table 1 Population by Gender and District, 2020 – 2022; (Source: Central Statistics Agency, DeliSerdang)

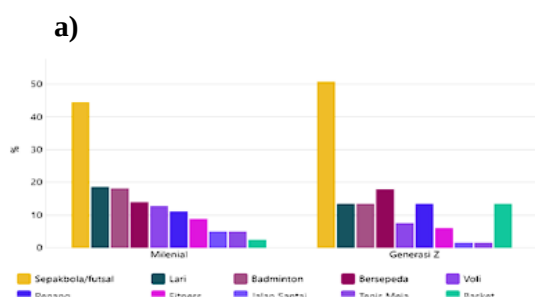


Figure 1 a.) Millennials' Favorite Sport; (Source: Google Images, 2023) b.) Baharoeddin Siregar Stadium; (Source: Google Images, 2023)

Apart from that, people's life styles are related to outside activities/sports. Sport is a human effort to achieve health, which is a general goal that exists in every human mind. Participating in sports activities is very enjoyable because people can choose the type of sport according to their personal interests or follow the trends accepted in their social environment. Every individual has different exercise preferences, with various ways to do it, as long as it is done with positive goals. The aim of redesigning the Baharoeddin Stadium is to create a stadium that is environmentally friendly and sustainable in ecological and socio-cultural aspects.

2. Literature Review

2.1 Redesign

According to the Ministry of Education and Culture 1996, the term "redesign" is taken from the English word "redesign", which consists of two parts, namely "re" which means to repeat or return, and "design" which means to plan or shape. In this context, "redesign" refers to plans to make changes to the structure and function of an artifact, building, or system to better meet the goals of the original design, or to meet goals different from those established in the original design.

2.2 Football stadium

Stadiums are important facilities for sporting activities, especially football. A quality stadium requires good management in all aspects, from administration to maintenance of facilities and infrastructure. According to the Big Indonesian Dictionary, a stadium is a place where various matches are held, surrounded by spectator stands. In the Architectural Data book volume II, it is stated that a stadium means a building designed as a place to host various sports activities, including football, athletics, as well as providing several facilities for spectators.

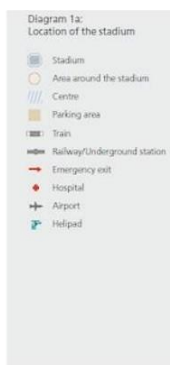
• Stadium Classification

Information	Type A	Type B	Type C
Audience Capacity and Service Area	Users Serve Provincial Areas with Seating Capacity Reaching 30,000 - 50,000	Users Serve Provincial Areas with Seating Capacity Reaching 10,000 - 30,000	Users Serve Provincial Areas with Seating Capacity Reaching 5,000 - 10,000
Minimum Running Track (100m)	A total of 8 pieces	A total of 8 pieces	A total of 8 pieces
Minimum Running Track (400m)	A total of 8 pieces	A total of 6 pieces	A total of 6 pieces

Table 2 Stadium classification based on supporting facilities; (Source: Google Images. 2023)

• Architectural Review

a)



b)

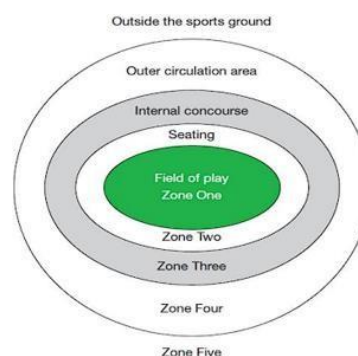


Figure 2 a.) Stadium Location; (Source:FIFA) b.) Stadium Zone; (Source:FIFA)

The ideal stadium should also be in the area which can be reached using various types

of transportation. So it's better if the stadium will be It was built to be easily accessible, whether using public transportation ora vehicle personal. Private vehicles are also related to the availability of parking space, therefore the site areacan make it easier for designers to plot parking locations for spectators and also organizer.

Usually the stadium will be divided into 5 zones to become the basis for making the stadium safe for users (John, Sheard, & Vickey, 2007). The division of zones based on the STADIA Book is as follows :

- 1) **Zone 1**, is the game area or soccer field area
- 2) **Zone 2**, is a place for spectators watching the match good access is required for spectators to be able to enter and exit safely and usually there are ticket checks at zone 2 and 3 barriers.
- 3) **Zone 3**, contains the concourse and social area which can be used as space for other activities. Therefore, this area requires supervision in security for users.
- 4) **Zone 4**, is the outer circulation area before the audience enters the inner area stadium, this areashould be able to accommodate 4-6 spectators per square meter for security.
- 5) **Zone 5**, is used for the parking area for official team and reporter vehicles and this area is a neutralarea that connects the parking area with zone 4.

a)

b)

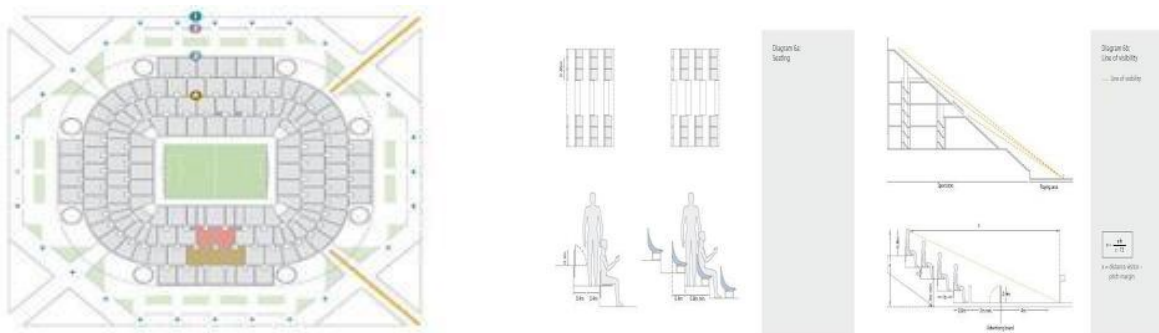


Figure 3 a.) Stadium Checking Area; (Source:FIFA) b.) Spectator Seats; (Source:FIFA)

As a place where many people gather in one place, security is a must is one of the considerations in designing the circulation. So the stadium before starting. The match must be surrounded by barriers for body checks to be carried out to avoid things happening undesirable (FIFA,2007).

In designing a stadium, seating comfort and viewing angles are importantimportant. So this must be takeninto account when designing the stadium.

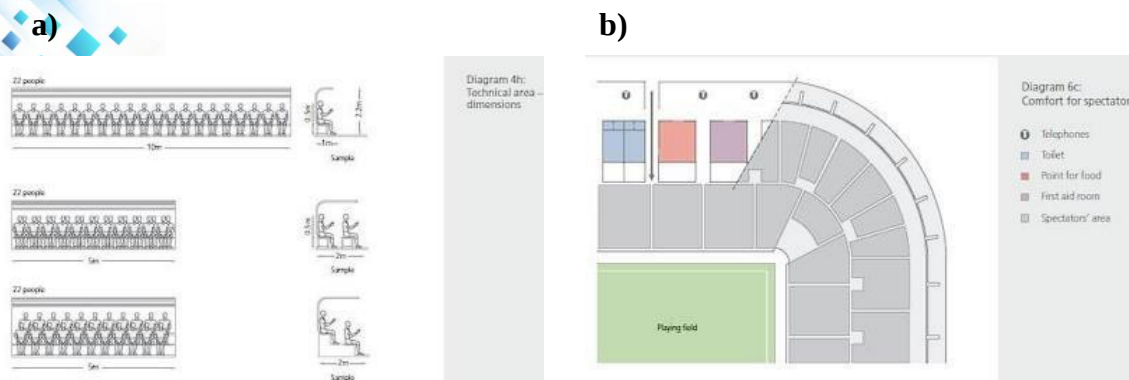


Figure 4 a.) Reserve Player Seats; (Source:FIFA) b.) Sanitation Facilities; (Source:FIFA)

In a football stadium, of course, a reserve player's seat is needed which can accommodate reserve players and the coaching team. This chair is best to use transparent material on the roof to avoid throwing bottles from spectators (FIFA, 2007).

Toilet facilities for spectators must be adequate for both men and women people with special needs at the stadium. Based on FIFA standards for stadiums hosting the world cup. The minimum number of toilets and wash basins is 20 and 7 for women and 15 WCs and 5 wash basins (FIFA, 2007). However, this toilet can still be adjusted to standard stadium adjusted to maintenance and construction costs.

2.3 User and Activities

- Visitors and Players

Person	Amount	Activity
Players	25	Change clothes, play, rest, eat drinking, playing, practicing, and competing.
Visitors	10.000 – 30.000	Watching, ordering tickets, paying, etc snacking.
Official Team	6	Helping with team needs, distributing clothes set player, and wait.
Manager Team	2	Organizing players, directing players, and watch the match (watch).
Referee	5	Change clothes, lead the game, and rest.
Commentator	2 - 3	Commenting on a match.
Journalist	10	Covering news, photos of players and so on match, interview, and create recording.

Table 3 Analyze the Activities of Visitors and Players; (Source:Author)

- Management Office

Perso n	Amount	Activi ty
Holder	1	Observe.
Manager	6	Manage, provide improvements and increase.

Accountan	2	Calculating the budget.
Receptionist	1	Receiving guests,contacting and serving.
Coach	1	Train, change clothes, and rest.
Assistant coach	1	Help the trainer,change clothes, and rest.
Creative team	5	Looking for match events, holding events,and publications.
Director	1	Manage and lead.
Promotour	1	Developing a team.

Photografer	2	Take pictures and make videos.
Official Medicine	4	Maintain player health.
Official Team	2	Assisting the needs of the team and players.
Broadcasting Room	1	Soundproof room housing TV and radio programs produced and delivered (broadcast).
Press Conference Room	1	Space to distribute information and answer media questions.
Rooftop Running Track	1	The area used for jogging is at rooftops.
Social Space Rooftop	1	The open public social space area is located at rooftops.
Commercial Space	6	Menjual berbagai olahraga, makanan, dan minuman.

Table 4 Analyze the Activities of Management Office;
(Source:Author)

- Service

Person	Amount	Activit y
Servant	6	Serve.
Kitchener	3	Cooking.
Toilet Guard	2	Serving payments and distributing tickets.
Receptionist	1	Receiving guests in the service area.
Mechanical	2	Maintain electrical and mechanical stability.
Office Boy	4	Cleaning, maintaining and organizing.
Security	4	Maintain security and supervise.
Equipment	4	Carrying goods and providing equipment.
Laundry	2	Washing clothes and other necessities.

Table 5 Analyze the Activities of Service;
(Source:Author)

2.3 Theme

- Sustainable Landscapers

Sustainable Landscapers is a concept which is basically a natural system based on the ability to renew itself for design growth/development (Klett & Cummins, 2013), designing methods that minimize damage and restore destroyed landscapes; create designs to accommodate community needs by following the principles of natural ecology and beauty. The concept of sustainable landscape design creates designs that are aware of the existence of local nature and natural growth processes (Herman, Sbarcea, & Panagopoulos, 2018; Malek, Mariapan, Shariff, & Aziz, 2014).

a) Integrative

Unifying infrastructure functions with landscape through the Landscapers concept.

b) Green

- Making Green Open Space a focus in terms of being environmentally friendly and sustainable.
- c) **Active**
Accommodating community activities that currently do not provide public facilities.
- d) **Iconic**
Making a building that appreciates culture and can become an icon of Lubuk Pakam.

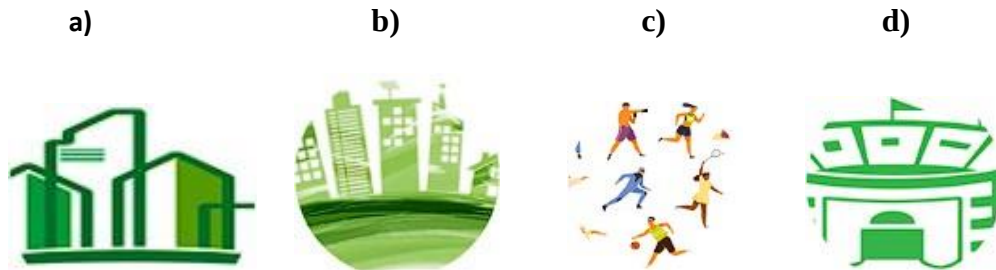


Figure 5 a.) Integrative; (Source: Google Images. 2023) b.) Green; (Google Images. 2023) c.) Active; (Source: Google Images. 2023) d.) Iconic; (Source: Google Images. 2023)

- Sustainable Landscapers Indicators

- a) Environmental Indicators

Availability of green open space, maintaining water and air quality, flora and fauna, productive land use, determining land use functions, using environmentally friendly materials, saving energy.

- b) Economic Indicators

Agricultural and livestock cultivation, development and tourism, entrepreneurship/investment/employment. Economic indicators refer to data, usually on a macroeconomic scale which is used to measure the economy.

- c) Socio-cultural Indicators

Education, health, scientific experience, cultural identity/local wisdom, space for social interaction, group or individual collaboration. Culture contains the entire meaning of norms, values, knowledge, as well as the entire social structure.

- d) Architectural Indicators

Providing a space and place experience with attractive visual quality and a comfortable environment. Includes building mass, plan shape, appearance, structural system used, space organization, circulation, and building materials.

- e) Effectiveness Indicators

Policy, participation and commitment of all parties. The institutional and social indicators used in carrying out sustainability assessments are developed and used in a consistent manner, especially reliability and institutions. validity.

3. Method

The criteria in this design are the "Sustainable Landscapers Architecture" approach in the design which is expected to unite infrastructure with nature by providing green open

space. There are 2 approaches used in this method:

- Construction and Materials
Use of building structures and materials that prioritize functionality and aesthetics.
- Wide Span Truss System
use of wide spans to accommodate various activities from the community using the stadium.

These two approaches will produce criteria with a strategy for creating a landscape that is friendly and responsive to the environment.

4. Result and Discussion

4.1 Project Description

The “Redesign of the Baharoeddin Siregar Stadium with Green Open Space in the Context of Community Life Style in Lubuk Pakam” . is a project located in Lubuk Pakam District, Deli Serdang, North Sumatra. This project prioritizes the functionality of the building which can accommodate sports activities both inside and outside. Green open space is also one of the focuses of this project, where the stadium area is a program from the district government. Deli Serdang as written in the regional government's RTRW. Making the building a sports facility and developing outdoor space into a green area that pays attention to a sustainable environment.

4.2 Location

The location choice was on Jl. Medan-Pematang Siantar, Deli Serdang Government Complex, Pagar Merbau, Lubuk Pakam, Deli Serdang district, North Sumatra 20551. The location of the Baharoeddin Stadium site is right in the Deli Serdang Regency government area, directly adjacent to the Regent's Office and local government buildings. The research location is on Jl. Medan-Pematang Siantar, Deli Serdang Government Complex, Pagar Merbau, Lubuk Pakam, Deli Serdang district, North Sumatra. Based on calculation analysis via Google Earth, this location has a total area of around 57,010.82 m² or an area of 5.7 hectares.

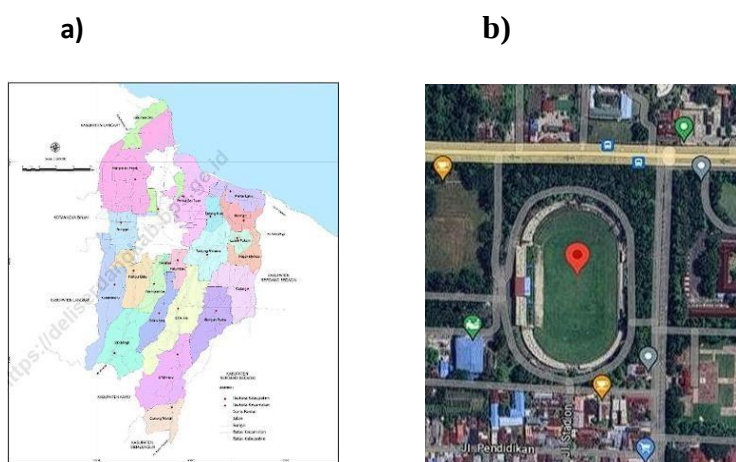


Figure 6 a.) District Map Serdang Deli; (Source: District Government. Deli Serdang) b.) SiteLocation; (Google Images. 2023)

4.3 Site Boundaries

The location choice was on Jl. Medan-Pematang Siantar, Deli Serdang Government Complex, Pagar Merbau, Lubuk Pakam, Deli Serdang District, North Sumatra 20551. The location of the Baharoeddin Stadium site is right in the Deli Serdang Regency government area, directly adjacent to the Regent's Office and local government buildings. The research location is on Jl. Medan-Pematang Siantar, Deli Serdang Government Complex, Pagar Merbau, Lubuk Pakam, Deli Serdang district, North Sumatra. Based on calculation analysis via Google Earth, this location has a total area of around 57,010.82 m² or an area of 5.7 hectares.

a)



Figure 7 a) Site Location Boundaries; (Google Images. 2023) The following are the administrative boundaries of Lubuk Pakam:

- North : Borders Beringin District.
- East : Borders Pagar Merbau District.
- South : Borders Pagar Merbau District.
- West : Borders Tanjung Morawa District.

4.4 Regulation

Based on the spatial structure, the location of the site is an embodiment of the centers in the district areas in the district's RTRW. Deli Serdang as a development of the Lubuk Pakam service center.

a)

NO	PROGRAM UTAMA	LOKASI	BESARAN (000.000)	SUMBER DATA	INSTANSI PELAKSANA	WAKTU PELAKSANAAN						
						Tahun						
						2021	2022	2023	2024	2025	2026	2027
A.	PERWUJUDAN STRUKTUR RUANG											
1.	Perwujudan pusat-pusat kegiatan di wilayah kabupaten											
	Pengembangan Pusat Pelayanan											
	L.L. Kawasan (PPK) Lubuk Pakam											
	Perencanaan Rencana Detail Tata Ruang (RDTR) Kecamatan Lubuk Pakam	Kec. Lubuk Pakam	200	APHD	Roppeda							
	Peningkatan Fasilitas Pelayanan Pemerintahan	Kec. Lubuk Pakam		APHD	Roppeda, Dinas PUPR							
	Peningkatan Fasilitas Akses dan Layanan Pendidikan	Kec. Lubuk Pakam		APHD	Dinas Pendidikan							

Figure 8 a.) Site Location Based on Spatial Structure; (*RTRW Deli Serdang District*)

4.5 Site Context and Connectivity a)

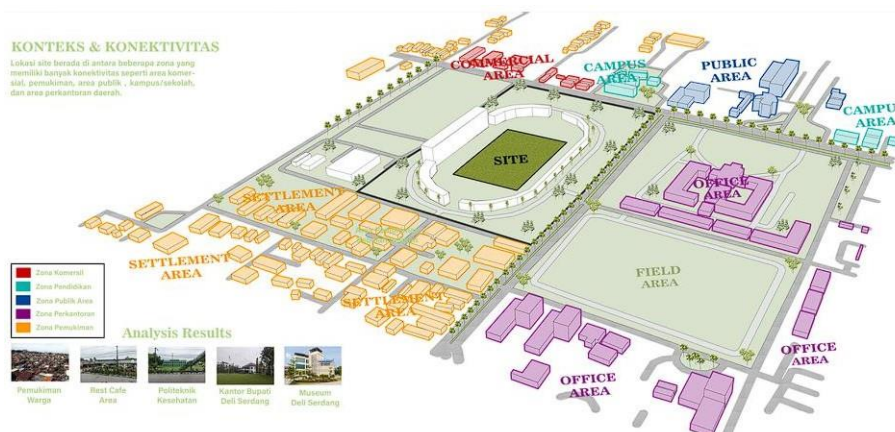


Figure 9 a.) Context an Connectivity Site Location; (*Author*)

The site location is between several zones that have a lot of connectivity such as commercial areas, residential areas, public areas, campuses/schools, and local government areas.

- Commercial zone (marked in red)
- Education Zone (marked in light blue)
- Public Area Zone (marked in dark blue)
- Office Area Zone (marked in purple)
- Settlement Area Zone (marked in orange)

4.5 Space Program

The space program is an important stage in the space or architectural planning process. This involves a thorough analysis to determine the space requirements necessary to fulfill the planned functions and activities. Here are some steps that are usually carried out in a space program:

No	Space Program Requirements	Standart	Capacity	Type
1	Parking Area	One car for 4 passengers.	20.000	Public
2	Players' Changing Room	-	22	Semi-Public
3	Medical Room	-	14	Semi-Public
4	Field Arena	105 m x 75 m	25	Public
5	Supporters Arena	0,4(m2)	25.000	Public
6	Doping Control Room	-	4	Privat
7	Recreation and Commercial Areas	-	-	Public
8	Administrator	3(m2)	56	Semi-Public
9	Media	3(m2)	90	Semi-Public

Table 6 Space Program; (*Source:Author*)

4.6 Activity Patterns

Sports Activities Football

- Player (field user)
- Service Officer
- Spectators (if there is a match)

Commercial Area (café, retail and store)

- Visitors
- Employee

Jogging

- Visitors

Green open space (garden/landscape)

- Visitors

Security

- Employee

5. Conclusion

Redesign of the Baharoeddin Siregar Stadium with Green Open Space in the Context of Community Life Style in Lubuk Pakam. is a solution to maintain building quality and functionality. The use of sustainable building and environmental concepts is expected to be able to maintain building standards as sports and recreation facilities or icons of Lubuk Pakam. Carrying a sustainable theme that not only focuses on the condition of the building, but also the surrounding environment. Outdoor space can be used as a greenopen space area according to the district government program. Deli Serdang. Apart from that, the use of outdoor space is also varied, such as commercial facilities, park areas, open spaces, jogging tracks andcommunity interaction spaces.

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