



Univerza v Ljubljani
Fakulteta za arhitekturo
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Adapting Parks for Inclusive Recreation

A Case Study of Tivoli Park in Ljubljana

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Adapting parks for inclusive recreation (Space and Recreation Workshop)
Strokovna monografija: 1. izdaja/Professional monograph: 1st edition

Lektura/Lectorate:
Oblikovanje in tehnična ureditev/Design and technical arrangement: Nourelein Elmarsafy

Izdala in založila/Edited and stored: Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo
Bibliografsko-informacijska obdelava/Bibliographic and informational editing: Teja Koler Povh
Ljubljana, maj 2023

Publikacija je brezplačna/Publication is free of charge.

E-publikacija, dostopna na naslovu/E-publication available at:
<https://oblak.fgg.uni-lj.si/s/oKGCDr2JLxRdckj/download>

Kataložni zapis o publikaciji (CIP) pripravili v Narodni in univerzitetni knjižnici v Ljubljani

[COBISS.SI-ID 157135363](#)
ISBN 978-961-6884-84-6 (PDF)



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Research Purpose



Public space has proven to be a crucial element in the process of urban design and it plays an important role in providing recreational entertainment for its users, and with the growth and diversification rates of populations, urban designers should keep up with their trends in creating public spaces suitable for recreational activities that are inclusive, welcoming and adaptable to different needs.

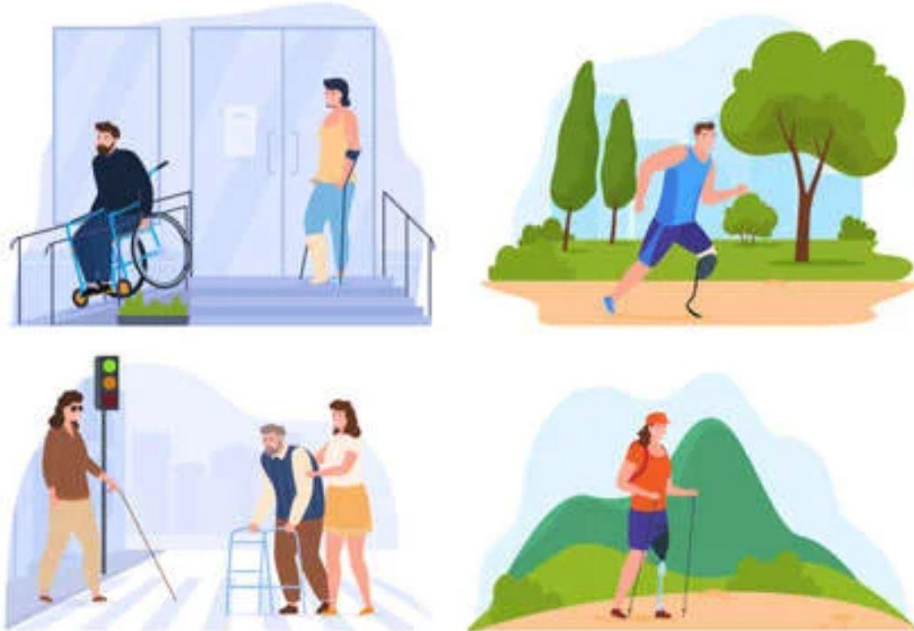
Ljubljana is one of the European cities that has been improving its residents' quality of life by keeping their share of public space as the share of green public space per capita is no less than 542 m² (Slovenian Tourist Board, n.d.). However, most public spaces face the challenges of adapting to different citizens' needs and applying the concept of inclusion.

Tivoli park is a central park and forest area located in the heart of Ljubljana city. They are complemented by species-rich meadow, wetland and water ecosystems. It is a place where nature is connected to culture and where sports and other leisure activities are closely intertwined.

As Tivoli park represents the center of recreational activities in Ljubljana, it is the perfect location for awareness and adaptation for the concept of inclusion which means that a space is used by various individuals despite their differences creating a sense of place to the location through social and recreational activities. The purpose of this research is to adapt Tivoli park to inclusive recreational activities creating a sense of diversity and inclusion in space.

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Inclusion Concept



1. Definition of Inclusion

Inclusion as a general concept is defined as the practice or policy of including and integrating all people and groups in activities, organizations, political processes, etc., especially those who are dis-advantaged, have suffered discrimination, or are living with physical disabilities. It has applications in many fields but the field relevant to this research is inclusive urban planning, which seeks to address issues in access to urban services and the equitability of the urban socio-economic structure through ensuring that all participants have access to the same level of services and opportunities as each other, according to the UCL Energy institute.

However, the main focus of this research is on inclusive recreation in public spaces which is the part of inclusive urban planning that ensures that different groups access recreational activities in public spaces despite their different needs or physical disabilities. According to the National Center on Health, Physical Activity and Disability (NCHPAD) in University of Alabama in the United States of America, inclusive recreation is defined as recreation that would extend to individuals with all types of physical disabilities and accommodate them and not just limited to physical disabilities. The concept can be applied on public spaces that are used for recreational activities creating a space that provides individuals with different needs accessible spaces that are safe for them to practice recreational activities and giving them a sense of belonging to the space.



2. Types of Inclusion

Inclusion can be categorized differently depending on its applications. For example, In the field of urban planning and design, the world bank has identified urban inclusion as: Spatial inclusion, which is providing citizens with affordable housing, water, and sanitation, social inclusion, which can be summarized in equal rights and participation, and economic inclusion which is job creation and economic development chances for citizens. Inclusion can also be categorized depending on the focus on the group being included regardless of the reason or purpose behind inclusion. As a result inclusion can be regarding:

- Age
- Gender
- Sexual Orientation
- Race
- Ethnicity
- National Origin
- Physical Ability
- Mental Ability

The focus of this research, however, is related to urban inclusion regarding recreational activities which can be defined as inclusive recreation with a focus on the age and physical ability groups in public spaces.

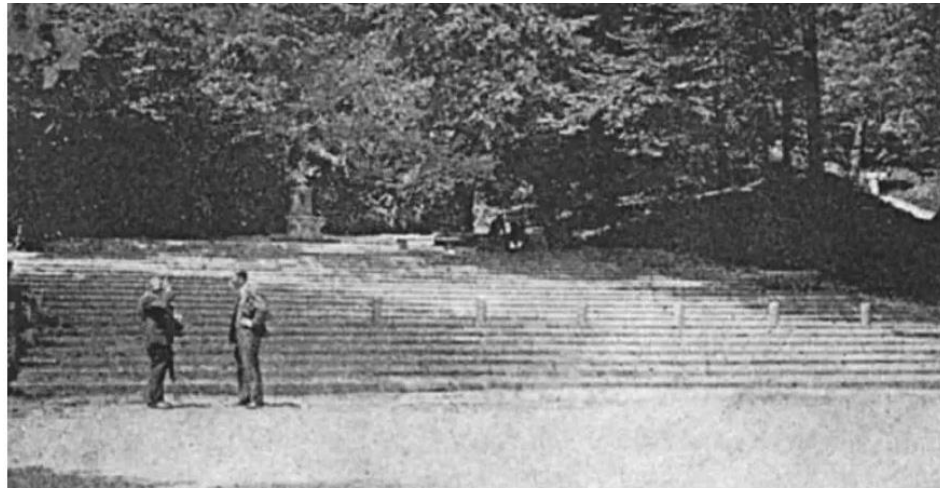


1. About Tivoli Park

Tivoli park is one part out of two main parts of this area which are: Tivoli city park and the forest areas of Rožnik, Šiška Hill and Koseze forest (originally named Koseški boršt) covering a total area of 459 hectares. The area in the near vicinity of Ljubljana city center with rich nature and culture contains many paths that lead to Mostec, Šiška Hill or Cankar Peak where the Visitation of Mary Church and the Rožnik Inn are located. The park has more than 2,800 species of plants, insects and animals, some of them are endangered which makes the area a natural reserve and diverse eco system in the heart of the city

The park has a wide range of uses varying from natural reserves, monumental, recreational and touristic. It has 4 small protected areas that are home for endangered species and considered as natural reserves. It also has some important locations of historical buildings that represent Ljubljana culture and heritage telling the story of the park history along the years. In addition, the park has different hiking trails for outdoor activities and recreational facilities providing different types of sports and entertainment services for indoor activities.

- Treasures in the middle of the city: Tivoli Rožnik and Šiška Hill Landscape Park, by: Municipality of Ljubljana, Department for Environmental Protection, November 2019



2. History

The area was first associated with a water supply system built in the 2nd century, which supplied the Roman colony of Emona with water. By the 15th century, the area was already covered by natural resources of plants and forests. That's when a church and a leper hospital was built on top of Rožnik hill. However, the main attractions of the area which are Tivoli Castle & Cekin Mansion were designed by a French architect named Blanchard whose work was continued by the Austrian governor Latterman who planted the avenue between the present Tivoli Castle and Cankarjeva Road around the same century. Their names at that time were, Podturn Manor for Tivoli castle and Leopoldsrue Castle for Cekin Mansion.

The name Tivoli was given by the buyer of Podturn Manor in the mid 19th century, y Franz Joseph I. of Austria. And when the mansion with all its land became an urban estate, this name was given to the entire park area between both mansions.

Between 1921 and 1939, Tivoli Park was rearranged by the famous architect Jože Plečnik, who designed a wide promenade in the central park area as a connection to the city centre. Th e promenade ends in front of the staircase under Tivoli Castle and is named after the Slovene impressionist painter Rihard Jakopič.



2. History

In the following years and during the Yugoslavian era, the Ilirija swimming pool complex was built according to the plans of Stanko Bloudek, in addition to a ski jumping hill at Galetovo, of which only the tower was preserved. Later, a sports park under Cekin Mansion was named after Stanko Bloudek. The park also included tennis, basketball and roller-skating courts, as well as a children playground and grew to be the main public recreational spaces in Ljubljana. The park still continued to have sports facilities for swimming, fitness and bowling and included halls for different activities as events and concerts.

Today's main promenades of Tivoli Park are surrounded by wild chestnut tree avenues complemented by numerous paths, individual flower parks, interesting trees representing the natural diversity of the area, fountains and statues representing the rich history of the space. The Slovenian government also contributes in cultivating the visitors of the area about its rich heritage through informative banners around the park.

- Historical Parks and Gardens in Slovenia - Historical Parks and Gardens in Slovenia, European Cultural Heritage Days Collection, 1995

Tivoli Park



3. Location

The area is situated in the north-western part of Ljubljana. It includes Tivoli city park and the forest areas of Rožnik, Šiška Hill and Koseze forest. In the eastern part, Tivoli Park is located. It represents a transitional area between the urban flat part of the city and the hilly forest area. The central and the largest part is covered by forest together with the some peaks as Rožnik Hill, Šiška Hill, Rakovnik Hill, Drenik Peak and Tivoli Peak.

On the western side, the hills blend into a flat land of two forest areas of Koseški boršt and Za Mošenico, where the forest joins urban areas. On the western edge, the park is surrounded by the Trail of Remembrance and Comradeship that symbolically joins the commitment to a healthy lifestyle and the preservation of historical values.



4. Analysis

The area of Tivoli park and the forest areas of Rožnik, Šiška Hill and Koseze forest covers a total area of 459 hectares. The area is divided into 6 main parts which are shown in the following map:

1. Tivoli Park & Pond
2. Tivoli Castle & Hill Top
3. Šiška Hill
4. Cankarjev Hill Top
5. Rožnik Forest
6. Mostec Forest

Visitors of the area have different intentions and expectations depending on their interests, which are met by each of these parts as each has its own type of activities depending on its facilities and proximity to services.

1. Tivoli Park & Pond

The park is found on the edge of the area which is a lowland flat ground. It has different sports facilities of indoor and outdoor activities. There is also the artificial Tivoli pond created in 1880 and now serves as a socializing spot with a coffee house.

3

Tivoli Park

1



2



3



4



5



6



4. Analysis

2. Tivoli Castle

Located on the top hill of Tivoli, In 1986, the City of Ljubljana established the International Centre of Graphic Arts in Tivoli Castle and has been housed here ever since.

3. Šiška Hill

At 429 meters above sea level, Šiška Hill is the highest peak of Tivoli, a hill that rises above the center of Ljubljana. There is no view from the top, where some transmitters are located around the hill to ease communications from the forest.

4. Cankarjev Hill Top

Having Cankar Home, In 1910, the Slovenian writer Ivan Cankar moved in the Rožnik Inn and lived there until 1917. In 1948, the City Museum of Ljubljana arranged the Cankar Memorial Room.

5. Rožnik Forest

It consists of 2 parts, small rožnik and big Rožnik, both having hiking trails and a variety of outdoor activities including Ljubljana Zoo in big Rožnik forest.

6. Mostec Forest

One of the most popular recreational spots in Ljubljana. It offers visitors walking trails through pleasant wooded terrain, a modernly equipped trim track, several hiking trails that lead to Rožnik and the nearby Šiška Hill, and the opportunity to rest in a guest house next to the ski jumps of the Ilirija Ski Club.



5. Why Tivoli Park?

Tivoli park stands for most of the public recreational activities for the residents and visitors of the city of Ljubljana. Its location is also central and would provide important exposure to any awareness case to be adopted by its lands. As a result, it is a convenient space considering its central location, cultural and re-creational significance in the city.

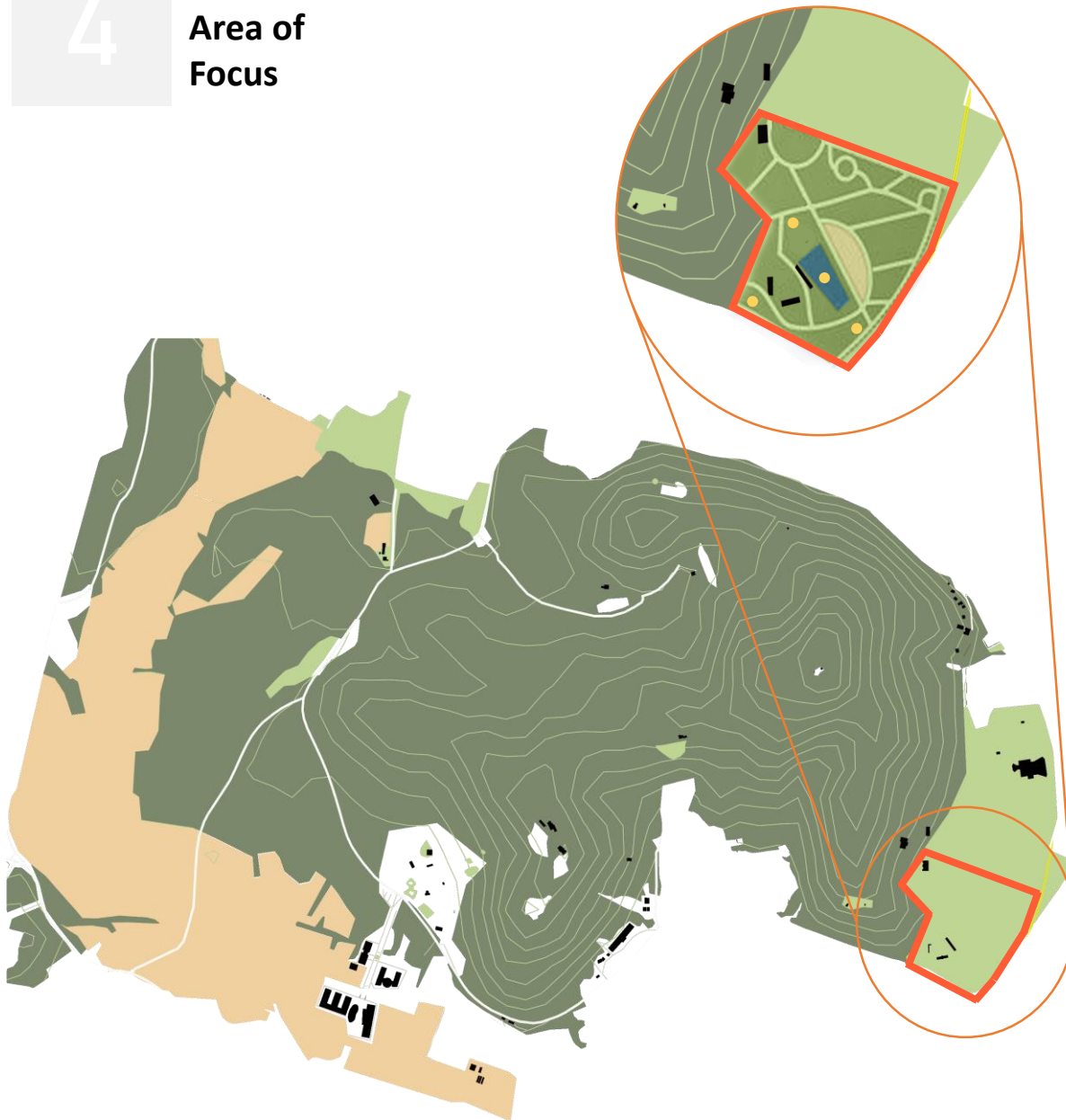
In addition, due to the diversity in its functions and landscape, it can adopt the concept of inclusion on a wide variety of land types whether flat or hilly, and in different types of recreational activities whether in-doors or outdoors. Eventually, providing a sense of social inclusion for the residents of the city and can act as a touristic attraction for visitors.

4

Area of Focus



The area of focus is on the edge of Tivoli park. Its location is considered to be on the west of Plečnik's promenade. This particular location was chosen for its practical area of approximately 100,000 square meters, which offers several solutions for inclusive recreation according to age and ability. In addition, this area includes a children's area, a café, a lake, and open green spaces with acceptable slopes suitable for creating recreational activities for the group of people who are the focus of this study and for applying the concept of inclusion to multiple activities.



4.1. Current Uses

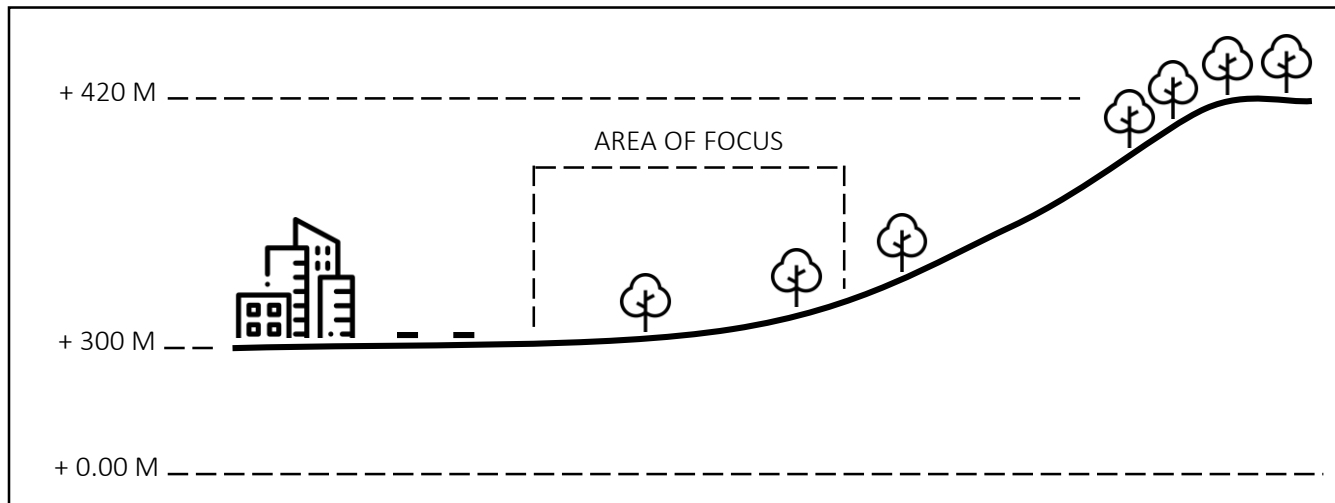
The space is of area 100,000 square meters containing different uses as shown in the following figure. Most of the uses are open green spaces divided by pedestrian paths. The area also has a pond that contains one of the monuments of Tivoli park which is called The Fish. In addition, there is a children playground overlooking the pond, a coffee shop and a greenhouse botanical garden belonging to the university of Ljubljana. The area contains other multiple monuments as The Bee Stand, The Monument of Edvard Kocbek and The Monument of Rožna Dolina Hostages.

Map Key

- Area of Focus
- Green Areas
- Pedestrian Paths
- Buildings
- Kid's Space
- Pond
- Monuments

4

Area of Focus



4.2. Visual Analysis

The visuals surrounding the chosen area are divided into 3 parts: The first is the western and northwestern part of the park, where one can see the Tivoli Hill and the wooded, green terrain from close up and a slightly higher and denser terrain at a greater distance; the second is the southern and northern part, which represents a deterioration of the terrain towards the urban skyline of Ljubljana; the third is the eastern part, which represents the urban skyline of Ljubljana, consisting mainly of neoclassical architecture in the European style.

The park itself can be described as a semi-level terrain with minimal slopes. It consists mainly of grass separated by paths made of concrete, fine gravel or crushed stone. The park also contains a pond inhabited by various species of animals and plants.

4

Area of Focus



4.3. User Behavior

The users vary between different ages and limited abilities. For example on the low sloped pathways it is easy to find all ages but on higher slopes younger and middle ages are more abundant but not as many older ages as it can be difficult for them to use. In the children's playground the base ground is sand and fine gravel for easier impact in case of accidents but at the same time it can be challenging for the physically challenged to use the space. On the other hand for the rest of the spaces such as the grass (green areas), they are mainly used for picnics or by kids and pets running around. Users also gather by the pier overlooking the pond in the idle of the chosen area to take a closer look on the wildlife in the pond and possibly interact with it. In addition, the coffee place next to the pond has a semi covered area where people still enjoy the clean air with some protection from conditions like rain and snow. Finally, the botanical garden belonging to the university of Ljubljana is mainly used by students if not used at all but it shows its variety from the outside and is a nice view to the users of the park.

5

Problem Definition



Ljubljana is considered one of the European countries with the highest percentage of green areas and public spaces per inhabitant. Some of those places are dedicated for the sole reason of public green spaces without a specific function and some are dedicated for recreational activities. In the case of public green spaces, the concept of inclusion is taken into account in terms of abilities and age. However, in the case of recreational areas, this aspect is hardly taken into account. On the other hand, Tivoli Park is one of the most famous parks in Ljubljana and offers various recreational activities. For this reason, it is perfectly suited to represent Slovenian recreational activities and take the first step towards inclusive recreation in Ljubljana.

As a result, the lack of inclusive recreational activities in Ljubljana can be addressed by creating an inclusive, age and ability appropriate recreational spaces in the most famous park in Ljubljana representing Inclusive Recreation in Slovenia.

Beneficiaries



There are a list of beneficiaries from a project adopting this topic. They are divided into 3 parts: the public, the government and the private sector.

First of all the public beneficiaries are divided into 2 parts. One of them are the groups of people that shall be included in the project or that the project is for which are the people with diversities in their age and ability. For example, the project will mostly benefit children and elderly people as it facilitates their process of recreation in public spaces in Ljubljana. In addition, people with physical disabilities in Ljubljana would have more variety in their recreational activities.

The other one are the public of young and middle ages in addition to the caretakers of the disabled, as this area would be suitable for their hangouts and well as strengthening their ties with all the members of their family and of all ages and physical disabilities through the use of public spaces and sharing the love for recreational activities together.

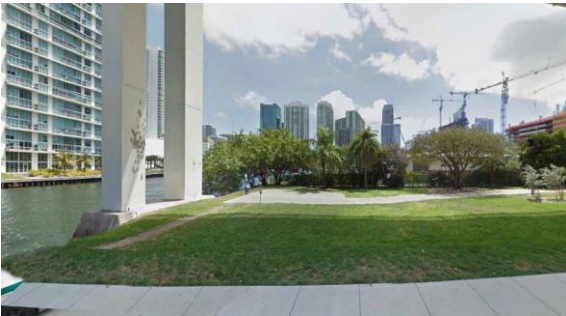
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Beneficiaries



Secondly, the government can benefit from the concept in international marketing for the country being in favor of inclusive tourism which includes adding the inclusive recreational activities and the areas where tourists with age and ability diversities can use on their visit to Slovenia, in that case Tivoli park. In addition to the concept itself adding to the sustainable tourism sector of the country insuring the increase in the number of tourists visiting annually and therefore the increase of the tourism share in the global domestic product of the country.

Finally, private sectors can widely benefit from supporting the concept of inclusive recreation as it can help them reach new customer segments and accessing new capital. In addition to, on the long run adopting the concept of inclusion in their sector and therefore, achieve productivity, talent acquisition, and retention within their entities.



7.1. The Underline USA

This project is a linear public space created in Miami, Florida on an urban trail of 10 miles. The project aims to improve the economic value of the area when it comes to job creation and talent acquisition, support alternative and green transportation, adding more public spaces to the city, support public art, promote mobility and recreation, improve the city's connectivity, promote sustainable tourism and create the longest biking, walking corridor in the country running below transit. The project is designed to be a continuous green corridor under a transit bridge connecting 3 municipalities and 8 stations. It provides a safe route for users seeking pedestrianization and cycling in addition to including public spaces for different recreational activities for all ages and abilities. The project is a perfect example on designing an inclusive space that can act as a catalyst to recreational practice for users of different ages and abilities. The project is a public and private partnership with involvement of Miami residents and community. It is divided upon 3 phases, the first one is already completed and the second is under construction until June 2023.



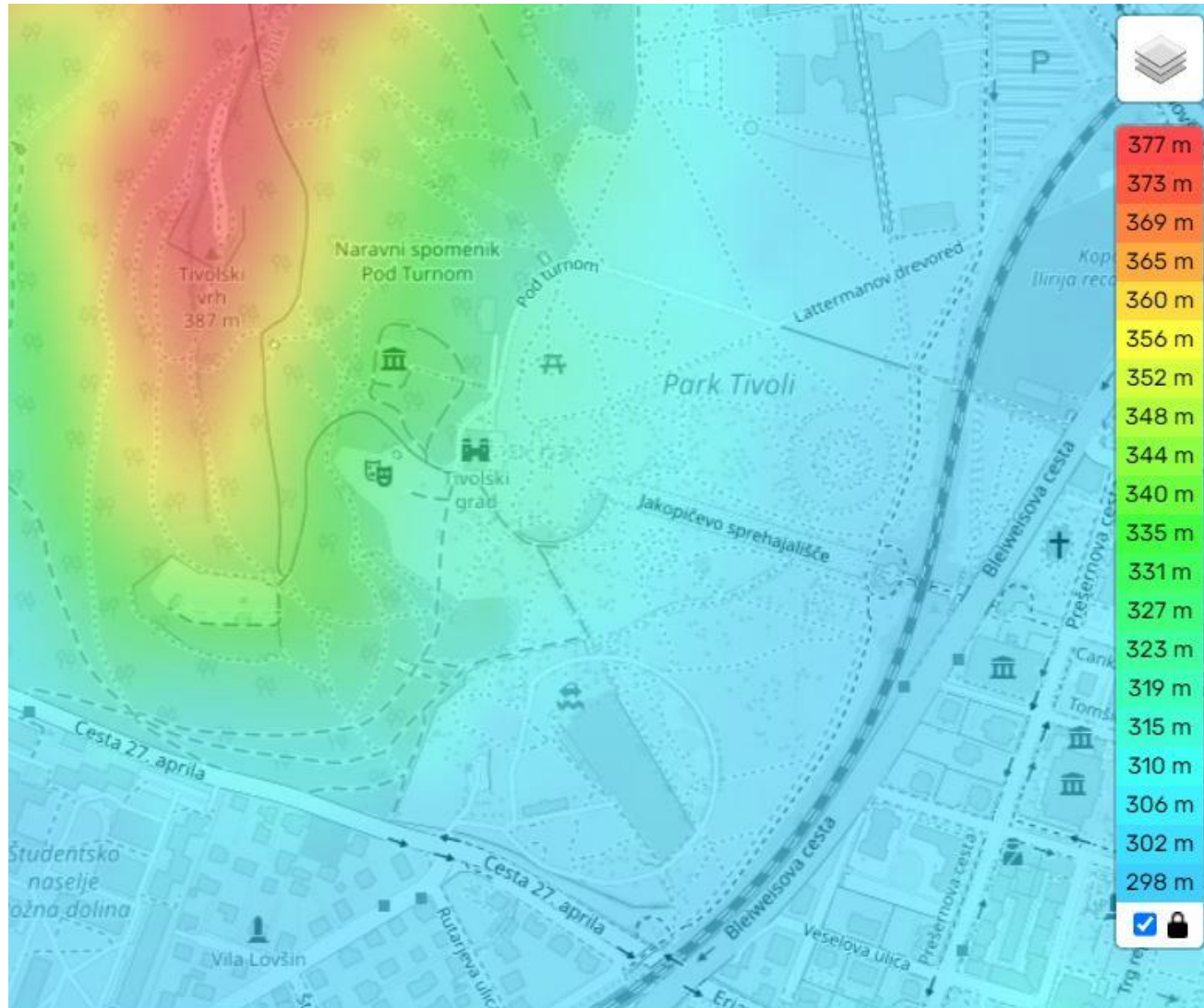
7.2. Vancouver Art Gallery Plaza Canada

This project is a collaborative initiative between the City of Vancouver's VIVA Vancouver program, within the Street Activities branch in Engineering Services, and UBC Sustainability Greenest City Scholars program.

It aims to examine current approaches to evaluating public space, with a focus on inclusivity. The open space concept turns the space in a way to be a host of different event whether recreational or not for example, it is a place where movie nights for cultural or entertainment purposes is held in addition to political protests. However, it also hosts recreational activities including users of different ages and abilities. As it is easily adaptable according to the event, it is one of the most famous plazas used by users all around Vancouver in addition to the fact that it was designed with coordination with the public opinions and input.

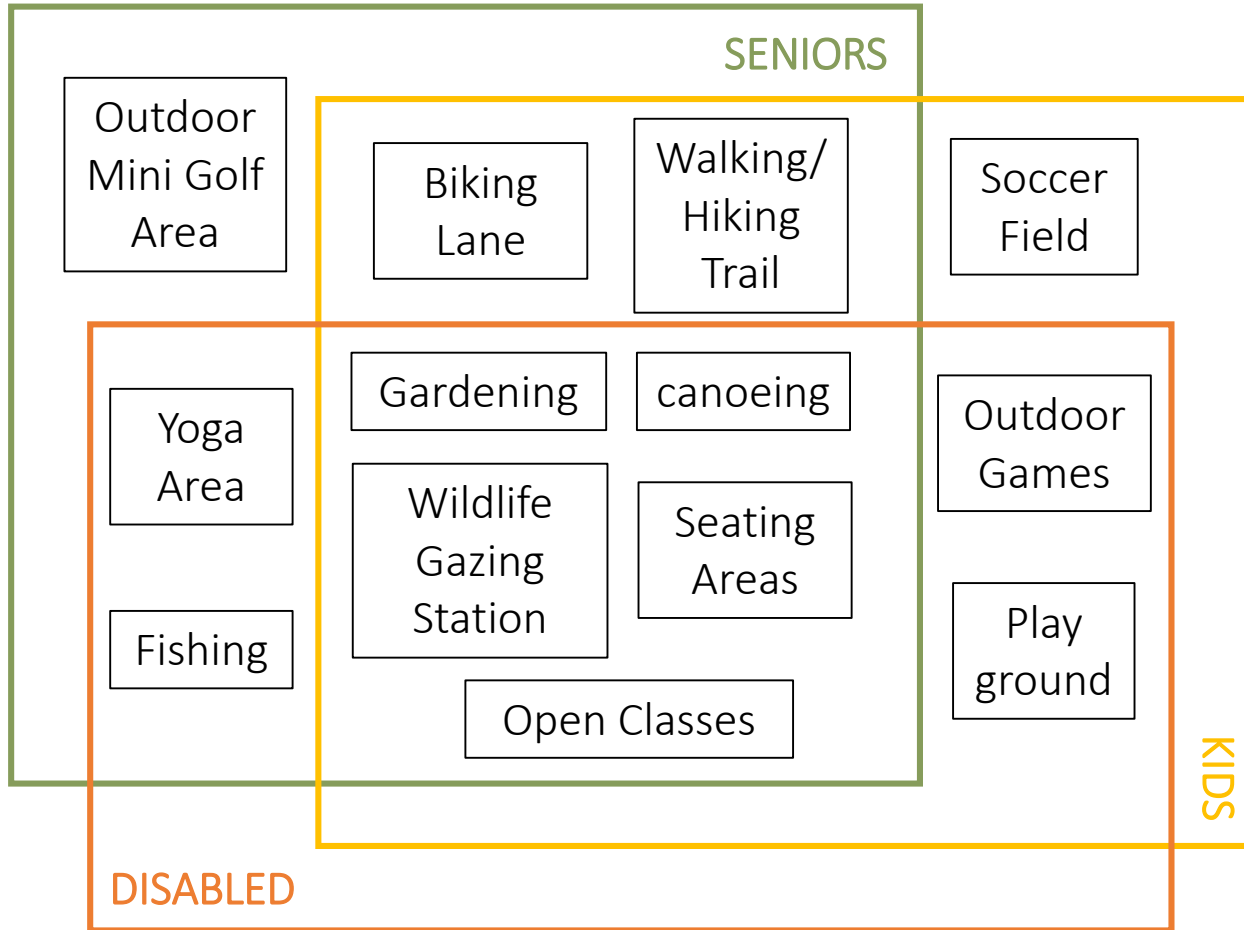


The idea behind this research is to redesign and adapt this part of the park to inclusive recreation as Tivoli park itself marks the heart of recreational activities specially the ones that the Republic of Slovenia is famous for as hiking for example. This project marks an update in Ljubljana recreational activities as it promotes the concept of inclusion with a focus on age and ability which mean that it is designed to provide convenient recreational activities for people of all ages and physical abilities.



8.1. Concept

The concept follows the topography of the park land adapting the uses of the park according to its slopes whereas areas with lower slopes are dedicated for the users of more challenging age or abilities and places with higher slopes can be for the other users. In addition, the existing pathways and children's area is to be adapted accordingly to include different ages and abilities whether it is through changes in zoning or landscape materials.



8.2. New Uses of Space

The aim of the space redesign is to assign functions to spaces that can be multi-used by people of different ages and abilities, creating a sense of belonging of the user to the space, promoting the concept of inclusion and encouraging outdoor recreational activities by everyone.

To reach this aim, the following figure shows outdoor recreational activities for the target user groups that can be translated into planned spaces and it also shows that each function can be used by different groups. Seniors can enjoy some activities like yoga, fishing and golf that can be in common with juniors and people with physical disabilities as well as Walking/Hiking Trail, Biking Lane, Gardening and Seating Areas, Playground, Soccer field, canoeing, Open Classes Area, Wildlife Gazing Stations and Multiple Use Area.



8.3. Zoning

The area zoning is planned upon the concept of the park's slopes where the lowest slope has activities used by the disabled, the children's activities are based around the existing playground for the users safety and boundaries and finally the seniors activities also has their own areas with respect to the intersections between those activities.

Map Key

- Area of Focus
- Pond
- Pedestrian Paths
- Buildings
- Playground
- Disabled Users Zone
- Kids Zone
- Seniors Zone















1	Kids Playground	4	Yoga Area
2	Soccer Field	5	Gardening Area
3	Classes Area	6	Golf Area
7	Wildlife Gazing Stations		



8.3. Zoning

The following map shows a more detailed zoning level showing approximate shapes and sized of the areas for the previously mentioned functions for their designated users.

Map Key

-  Area of Focus
-  Pond
-  Pedestrian Paths
-  Buildings
-  Playground
-  Soccer Field
-  Seating Areas
-  canoeing Deck
-  Fishing Deck
-  Yoga Area
-  Mini Golf Area
-  Gardening Area
-  Open Classes/Multiuse Area
-  Wildlife Gazing Stations





8.5. Inclusive Design Guidelines

This section focuses on the design guidelines required to apply the concept of inclusion in recreational activities concerning age and physical disabilities and it will be divided according to the recreational activities previously mentioned and present in the program of the design.

8.5.1. Soccer Field

The field can be either surrounded by a rebound wall or can be open to be played by goal and touch lines (Labosport, 2010). The size of the field should be ideally according to a ratio of 2:1 with a minimum size of 15x30 meters. The field should use a specific playing surface to ensure the stability of players of all ages and abilities which is Long pile (or third generation) synthetic turf as described in BS EN 15330. The field should be tested for stability before use according to FIFA standards.



8.5.2. Walking

To be accessible by everyone, they should have specific design guidelines.

Material

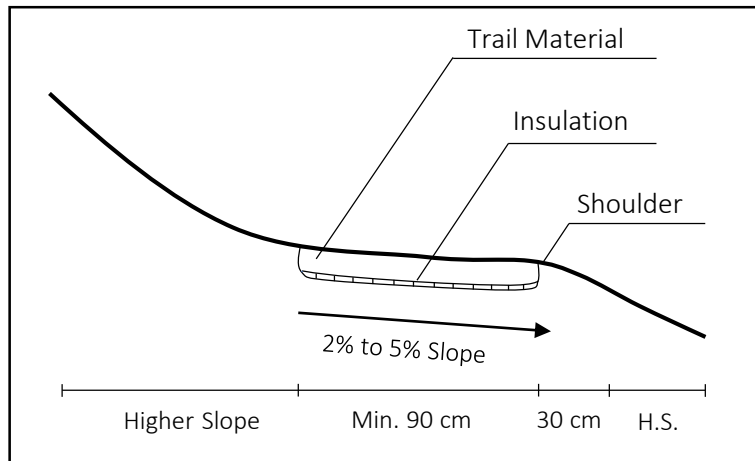
In order to make walks accessible to persons with disabilities, surfaces must be firm and stable. Generally, walks in developed areas in this plan will have hard surfaces including resin-based soil stabilizers, asphalt, concrete or boardwalk (wood, recycled wood or plastic lumber).

Width

Walkways need to be at least 1.2 meters wide, although 1.5 meters is the preferred width since it allows passing space for wheelchair users. When walks greater than 61 meters have less than 1.5 meters of clear tread width, passing spaces would be provided at least every 61 meters to make them accessible.

Slope

In order to be considered accessible to persons with disabilities, the running slope of a walk would be 1:20 (5%) or less with a cross slope no greater than 1:50 (2%).



8.5.3. Hiking Trails

Hiking trail experiences can be provided to persons with physical disabilities and seniors of age by applying the recommended trail construction guidelines for accessibility.

Material

Depending on the use of the trail, nearby soil and resources, trail surfaces could be soft or, in some circumstances, hard. Generally, natural or soft surfaces are preferred. Surfaces may be stabilized to improve the accessibility and increase longevity. Ways of stabilizing trails include using enhancements using crushed rock to strengthen and improve the natural surface, wood chips, fine granular stone or recycled materials. Hard surfaces include resin-based soil stabilizers, asphalt, concrete or wood.

Width

Hiking trails could vary in width. Typically, clear tread widths of trails could range from 6 meters to 1.8 meters. However, the minimum width of accessible trails is generally 9 meters or 8 meters in those areas

considered exceptions to the guidelines. When trails have less than 1.5 meters of clear tread width, passing spaces would be provided at least every 300 meters. Boardwalks would have a minimum clear tread width of 1.525 meters.

Grade

In general, trails would have easy grades. No more than 30% of the total length of a designated accessible trail can exceed a running slope of 1:12 (8.3%) or have a cross slope greater than 1:20 (5%). In general, the running slope of an accessible trail would be 1:20 (%). However, steeper trails could be considered accessible in the following conditions:

- Maximum running slope of 1:12 (8.3%) for 60 meters with resting intervals.
- Maximum running slope of 1:10 (10%) for 9 meters with resting intervals.
- Maximum running slope of 1:8 (12.5%) for 3 meters with resting intervals.

Resting Intervals

Due to much of the terrain being steep, it is anticipated that many new



trails constructed under this Plan would have running slopes close to the maximums for accessible trails. Resting intervals, properly spaced, provide a greater degree of accessibility for persons with disabilities. These resting areas should be at least 1.5 meters long and as wide as the trail with a cross slope of 1:20 (5%) or less in order to be accessible.

Edge Protection

Edge protection is often provided on trails to increase safety. When it is provided, it should be at least 75 cm high since a lower surface might not be obvious or detectable to people with limited vision who use canes.

Obstacles

The following are considered obstacles to trail users and should be minimized in trail construction. The presence of any of these obstacles would prevent a hiking trail from being a fully accessible trail:

- Openings in trail surfaces
- Protruding objects
- Tread obstacles greater than 50 mm high.



8.5.4. Biking Lanes

This project is a great opportunity to introduce and normalize inclusive cycling options and apply their design standards in Tivoli Park

Types of Inclusive Cycles

According to England's cycle design vehicle which is an inclusive concept that captures all shapes and sizes of cycles, defined as 2.8m long and 1.2m wide and can be divided into various types as:

- Tricycle
- Tandem
- Hand Cycle
- Recumbent
- Wheelchair Tandem
- E-cycle
- Tag-a-long cycle

Width & Slope

An inclusive accessible bike lane should range between 1.5 to 2 meters in width and when it comes to the slope, for shorter ramps it should be maximum 1:20 and longer ramps 1:40.



8.5.5. Canoeing

Canoeing is an ideal activity in which wheelchair users and other people with lower limb impairments can participate. However, by using the right equipment and by making some simple adaptations.

Guidelines for Canoeing

- Craft stability and supportive seating for back and lateral safety either by standard seating support or buoyancy aids.
- Adaptive gloves can also be bought or made that improve grip of individuals with limited grip abilities.
- Lightweight and adjusted paddles for different ages and abilities.
- Suitable docking system to ease the transfer between the canoe and the dock.

Dock Width

The width of the dock should be at least 120 cm to be able to comfortably maneuver a wheelchair in the process of transferring to a canoe.



Conclusion



This research focuses on providing the residents and visitors of Ljubljana with public recreational spaces that are inclusive when it comes to users of different ages and physical abilities. Tivoli park has been chosen as a location to spread awareness about the concept of inclusion as it represents a recreational and cultural significance in the city of Ljubljana in addition to being one of Ljubljana's biggest parks and most visited by the city residents and visitors. The project aimed to add recreational activities that are adapted to the use of people of various ages and physical abilities allowing kids, teenagers, seniors and physically disabled users to enjoy recreational activities like canoeing, soccer, fishing and golfing turning this part of Tivoli park into an example of inclusive recreation in Ljubljana.

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