

Planning and Design for the Waterfront Redevelopment of the West Bank of the Rhine River Bonn, Germany



Department of Landscape Architecture and Urban Planning
College of Architecture, Texas A&M University
CARC 301 Study Abroad Design Studio
Fall 2010

From a Roman camp to the electoral residence, to the temporary seat of the government of the Federal Republic of Germany and finally to the Federal City: this is a colourful piece of Western history right here at the Rhine in this charming city – Bonn.



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Texas A&M University
Akademie für Internationale Bildung

Acknowledgements

As the lead instructor of CARC 301, I would like to acknowledge the following people who have made their important contributions to the completion of this studio project:

First of all, I would like to thank Mr. David Baier, Head of the Department of Green and Open Space Planning, City of Bonn, for offering us an opportunity to work on this challenging and stimulating project, for the information and time he provided to the class, and for his valuable advice and insightful comments for the project.

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Changshan Huang, Ph.D., AICP, ASLA, RLA
Harold Adams' 61 Endowed Interdisciplinary Professor
In Landscape Architecture and Urban Planning

Introduction

Since 2006 the College of Architecture at Texas A&M University has offered a faculty-led study abroad program to its undergraduate students at AIB in Bonn, Germany. In the fall of 2010, a group of 26 undergraduates from three programs offered in the College of Architecture participated in the program, consisting of twenty-one 5th year landscape architecture students, four 4th year urban planning students, and one 3rd year environmental design student. Not only is this an interdisciplinary group, but it also has been the largest group so far in terms of program enrollment since it started four years ago. The group is led by Dr. Changshan Huang, a faculty member and holder of the Harold Adams '61 Endowed Interdisciplinary Professorship from the Department of Landscape Architecture and Urban Planning, College of Architecture, Texas A&M University.

The overall educational goal of the study-abroad program is to provide our students with an experiential learning experience in a foreign environment and culture. The theme of this semester's design studio (CARC301) is "culture-sensitive design for sustainable development and healthy cities." The specific teaching objective of this class is to help our students develop their culturally appropriate design skills.

Since early September, 2010, the students of CARC 301 have been working on a planning and design project for an urban riverfront redevelopment along the west bank of the Rhine River in the City of Bonn, Germany. The project is sponsored by the Department of Green and Open Spaces of the City of Bonn. The project site is a 10 kilometer-long riverfront corridor, from the auto ferry site near Graurheindorf to the south end of Freizeitpark Rheinaue in Bonn, including the land areas between the Rhine River and Romer Street.

Throughout this semester the project was carried out in three phases. The theme of the first phase was to read Bonn as a cultural landscape. The goal of this phase was to teach students how to study a cultural landscape which they are not familiar with and to help them better understand the physical, social, economic, demographic, historical, cultural, and regulatory context of the project at the city or regional scale. In this phase, the class was divided into 13 teams. Each team was assigned to a specific subject or aspect of Bonn for them to investigate. At the end of phase one, each team presented their findings to the whole class. The task of the second phase was to collectively develop a comprehensive design program and a schematic master plan for the entire project area. In this phase, the class was divided into six teams. Each team was assigned to focus on one of six sections within the project area. Those six sections were identified and delineated with considerations of the site history, existing land use, future functions and characteristics of user profiles. During the third phase, each student was asked to develop a set of detailed site plan for an area of their own choice within the overall project area to demonstrate how those goals, objectives, and concepts established for the master plan developed in the second phase can be implemented at site design details.

The project was completed and presented to the city officials of Bonn and public on December 8, 2010. The present document is the complete report of the project.



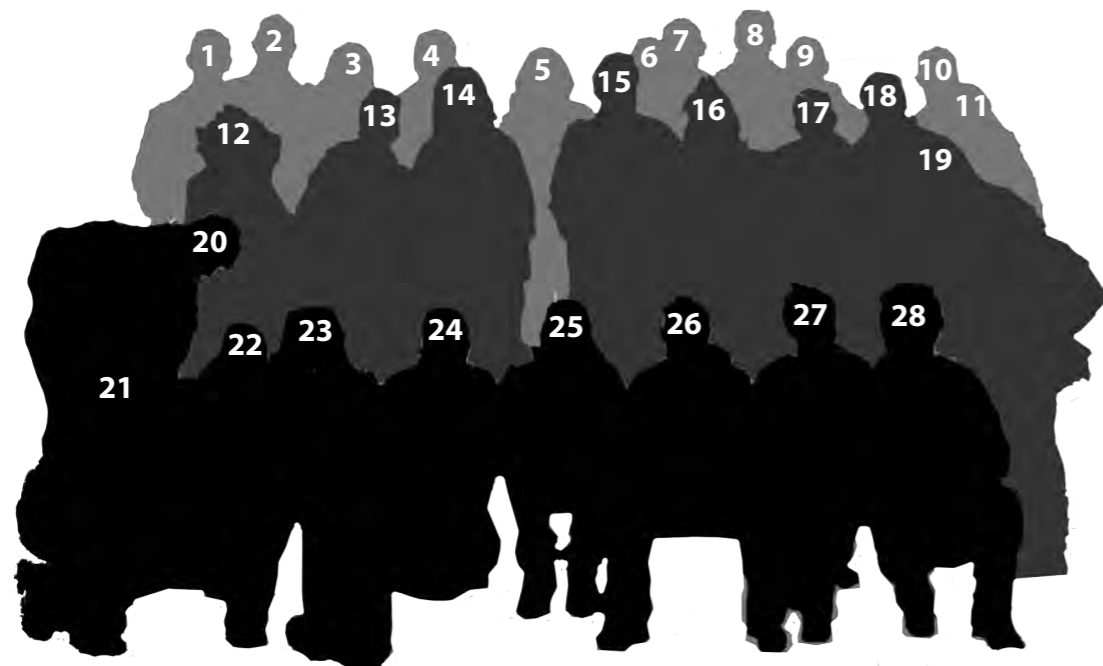
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Class Roster

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2. Justin Marston
3. Marsha Jenkins
4. Brian Stewart
5. Kaitlin Kuyatt
6. Diego Barrera
7. Tyson Gaspard
8. Brent Bailey
9. Benjamin Miller
10. Trace Unruh
11. Jeanette Pelzer
12. Darcy Gustafson
13. Kira Smith
14. Pin-Yun Wu
15. Alexander Gonzalez
16. Elizabeth Chapman
17. Arabella Lopez
18. Arianna Rojo
19. Caitlin Williams
20. Kristina Benson
21. Hector Martinez
22. Leslie Snyder
23. Jennifer Kelliher
24. Gregory Ontiveros
25. Travis Ward
26. Jesse Cruce
27. Michael Droske (Teaching Assistant)
28. Dr. Changshan Huang (Professor)



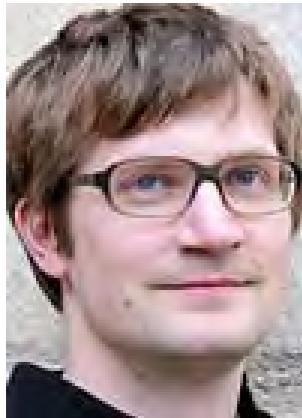
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Project Context



Planning and Design for the Waterfront
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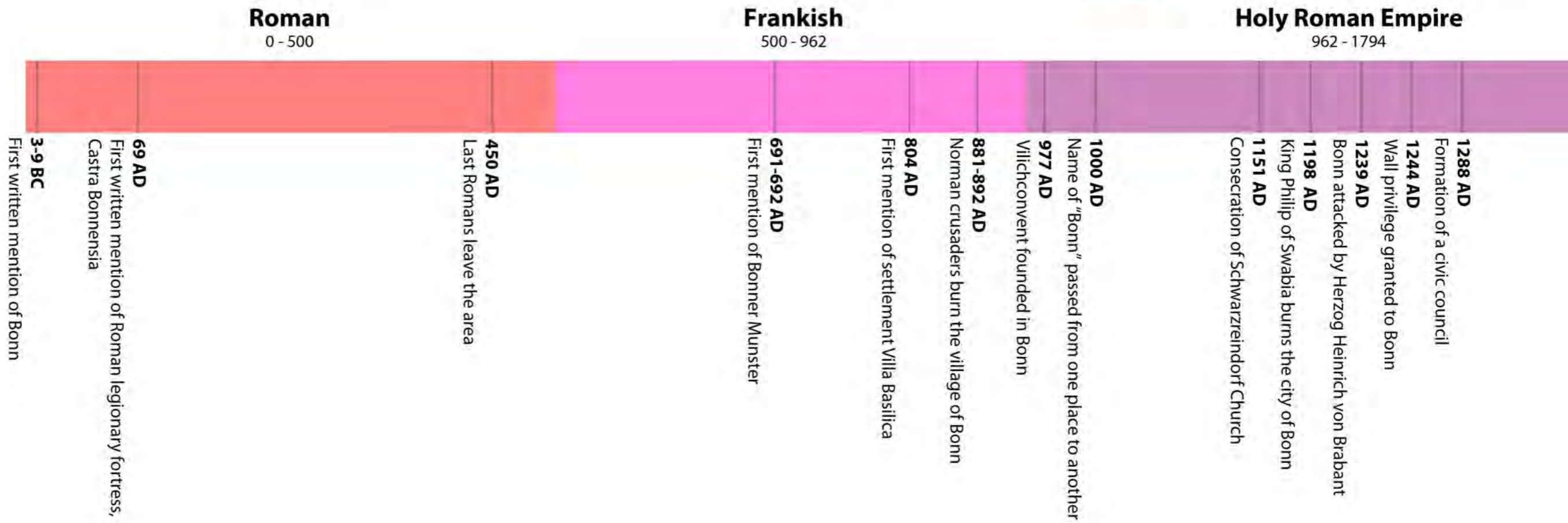
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Project Context

Texas A&M University

C-1

Heilige Adelheid von Vilich
970-1015
Patron Saint





1542-1546 AD Reformation attempt of the electoral prince, Hermann of Wied

1583-1587 AD Truchsess War

1597 AD Bonn becomes the royal city and capital of the electoral princes and archbishops of Cologne

1689 AD Friedrich von Brandenburg III occupies and destroys Bonn

1715 AD Beginning of extension of the city

1786 AD Extension of Bad Godesberg mineral springs

1790 AD Founding of Academy of the Last Cologne Kurfurst, Bonn's first university

1794-1814 AD Bonn is under French rule

1815 AD Bonn is under Prussian rule. Rheinische Friedrich-Wilhelms Universität, today's Bonn University, is founded

1848 AD Revolution of 1848. Seven professors from Bonn are sent to the first democratic parliament

1898 AD Today's Kennedy Bridge was the first permanent bridge across the Rhine River

1904 AD Incorporation of surrounding towns and villages begins

1914 AD World War One begins

1918 AD Weimar Republic is formed by the constitution of 1919

1919 AD Bonn is occupied by allied troops

1920-1926 AD Occupied by Anglo-Canadian and French troops

1933 AD German troops occupy Bonn, signifying a breach of the Versailles Treaty

1936 AD Third Reich is established. Begin of national socialism

1938 AD Hitler and Chamberlain meet in Bad Godesberg. Area synagogues are burned

1939 AD Germany attacks Poland, beginning World War Two

1942 AD Four hundred jews from Bonn are imprisoned. Seven survive

1944-1945 AD Bomb attacks destroy much of Bonn

1946 AD Bonn is occupied by American troops

1948 AD West Rhine-Westphalia is established

1949 AD Occupied by British troops. Bonn becomes the capital of West Germany

1949 AD Constitutional convention held for the new republic of West Germany

1990 AD Germany is reunified. The capital moves to Berlin

1999 AD All departments are officially moved to Berlin





Photos taken by: Jeanette Pelzer

- 1 970-1015 Heilige Adelheit von Vilich
She was the head of the cathedral chapter which her parents founded in Vilich and the patron saint of the municipality Beuel.
- 2 1723-1761 Kurfuerst Clemens August
One of the most brilliant and popular rulers and his building activities linked the landscape and the architecture.
- 3 1769-1860 Ernst Moritz Arndt
A poet and thinker and professor in Bonn.
- 4 1770-1827 Ludwig van Beethoven
Composer born in Bonn and gave his first concert at age eight. He studied at the Bonn University and later Joseph Hyden taught him.
- 5 1789-1866 Peter Joseph Lenne
The most significant landscape architect of German classicism.
- 6 1810-1856 Robert Schumann
Composer and pianist, he died in a mental hospital in Bonn.
- 7 1810-1858 Johanna Kinkel
Writer and composer, active democrat in the revolutionary years.
- 8 1819-1896 Clara Schumann
Composer (a rare occurrence for women) and pianist, wife of Robert Schumann.
- 9 1829-1896 Friedrich August Kekule
Chemist who taught at the University of Bonn. There he also had a big influence on the interior design of the chemistry building.
- 10 1858-1940 Alexander Koenig
Zoologist who began the construction of the Natural History Museum which was later named after him.
- 11 1868-1942 Felix Hausdorff
Created theory of topological and metric spaces and introduced the theory of partially ordered sets.
- 12 1876-1967 Konrad Adenauer
First chancellor of the Federal Republic of Germany
- 13 1887-1914 August Macke
Created the majority of his works (paintings, prints, sculptures and crafts objects) in Bonn.
- 14 1893-1948 Marie Kahle
She helped Jewish people and ended up having to flee from the police. Author of "What would you have done?"
- 15 1913-1992 Willy Brandt
Politician, received the Nobel Peace Prize in 1971
- 16 1922-2003 Annemarie Schimmel
Most important Islam Scientist of the 20th century taught at Bonn University and Harvard University.



Roman

Cologne was first mentioned in 9 - 3 BC. Castra Bonnesia, a Roman legionary fortress was first mentioned in 69 AD. Romans then remained here until 450 AD. In that time Castra Bonnesia and the surrounding area grew significantly. To the south of the fort lived the civilians and many estates provided supplies for the troops.



Model of Roman Fort in Bonn (view from the northern entrance)

http://de.wikipedia.org/wiki/Datei:Bonn_model_Roman_camp.jpg

Frankish Period

"Villa Basilica" was first mentioned in 804. The people that lived there bought quality products. Then in 881 and 882 Norman crusaders burned down the village.

Holy Roman Empire



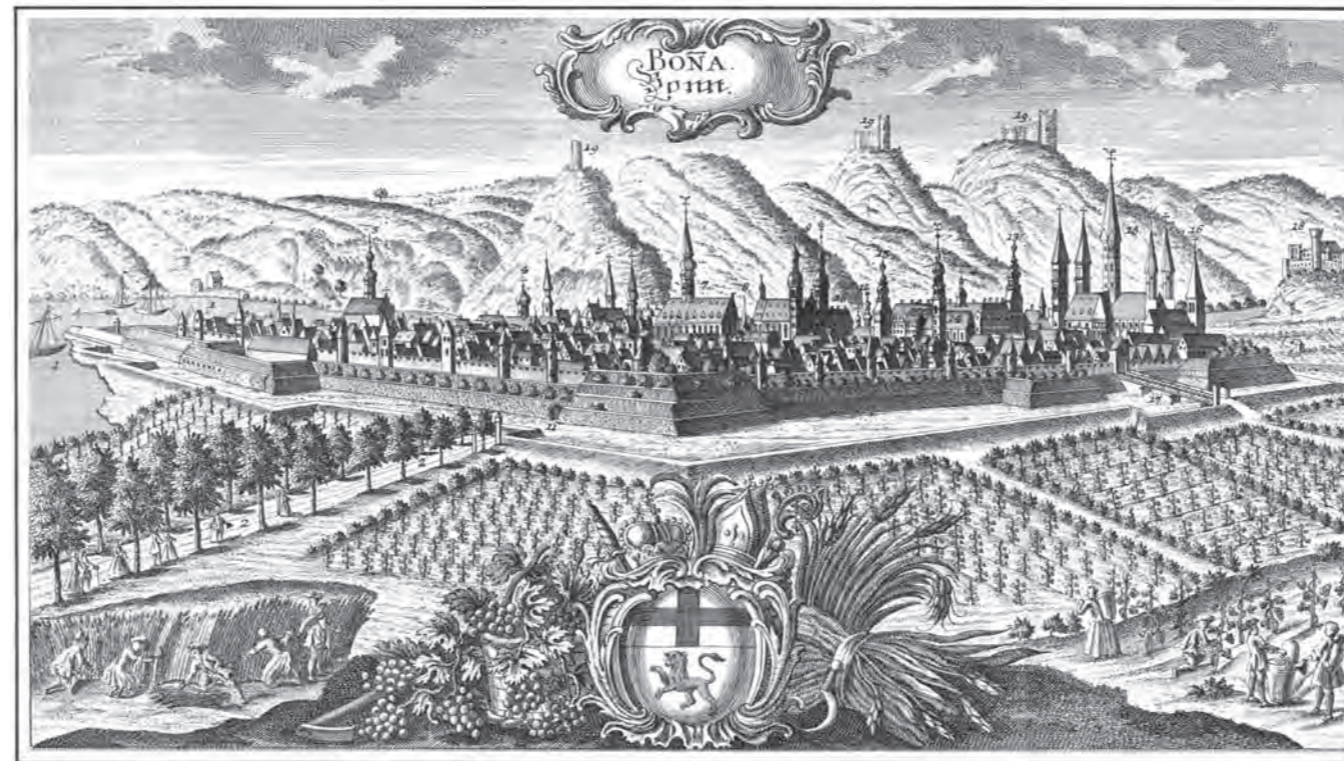
Most convents built were poor and insignificant but the Vilich convent was built by a wealthy and powerful family for their daughter in 997. Then around 1000 the center shifted from the old roman camp to a settlement by the Bonner Muenster, taking the name

Bonner Muenster
Photo taken by: Jeanette Pelzer

"Bonn" with it. The middle ages continued with the consecration of the twin spired church Schwarzreindorf. In 1198 and 1239 Bonn was attacked and burnt down yet again, which later led to the granting of wall privilege. Bonn became a "legal" town in 1288 with the formation of a civil council. There were two reformation attempts, one by the electoral prince Hermann of Wied and the other by the electoral prince Gebhard Truchsess of Waldburg. The latter ended up as the Truchsess War in 1583-1587. In 1597 Bonn finally became the royal city and capital city of the electoral princes and archbishops of Cologne. The city that had been extended to become a modern fortress was occupied and destroyed in 1689 by Friedrich von Brandenburg III. 1715 marked the beginning of the extension of the city when it was converted into a Baroque royal seat under the Wittelsbach electoral prince Joseph Clemens (1688-1723) and Clemens August (1723-1761). Then in 1786 Bonn got its first university and in 1790 the Godesberg mineral springs are extended. These springs are said to have been used by Romans for their health.



The big city seal of Bonn
<http://www.bonn-region.de/english/geschichte/stadtentwicklung-im-mittelalter/stadtwerdung.html>



Bonn around 1700

http://de.academic.ru/pictures/dewiki/66/Bonn_um_1700_stadtansicht_von_nordwesten-3.jpg



Truchsess War

Riemer, Ilse, 1978. Altes Bonn. Verlag Weidlich, Frankfurt.

French Rule

From 1794 to 1814, Bonn and the surrounding area was conquered by the French and is under French rule. All power was lost, but citizens gained legal equality under "Code Napoleon". In 1815, Congress of Vienna awarded the Rhineland to Prussia. In the same year, the Rheinische Friedrich-Wilhelms-Universität, today's Bonn University, was founded.



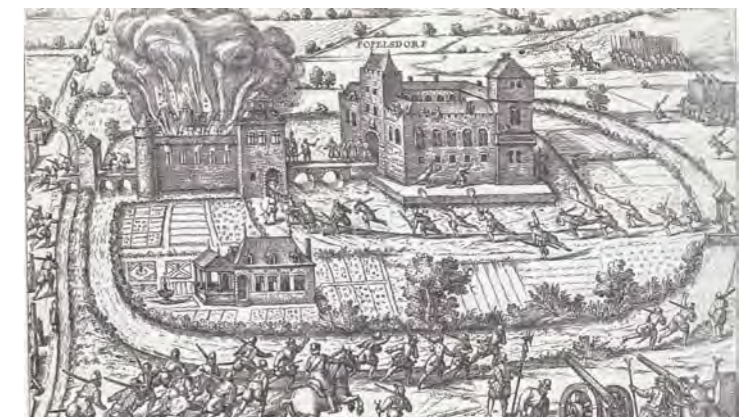
Bonn University

<http://www.unicp.de/Universitaeten/Uni-Bonn/180/>



Bonn, 1900

http://commons.wikimedia.org/wiki/File:Rathaus_Bonn_1900.jpg



Truchsess War

Riemer, Ilse, 1978. Altes Bonn. Verlag Weidlich, Frankfurt.



Prussian Rule

Thirty eight years later, the Revolution of 1848 began in Germany. After the revolution ended, seven professors from Bonn were sent to the first democratic German parliament. In 1898, the Kennedy bridge was the first permanent bridge to cross the Rhine River. The bridge was originally called Alte Rheinbrücke and was renamed Kennedy Bridge after the assassination of President Kennedy in Dallas, Texas.



American soldiers moving into Bonn
<http://www.corbisimages.com/Errors/UnexpectedError.aspx?Activity=f077a308-59bd-443d-bcb-c-b43f921cc23e>

World Wars I + II

Beginning in 1936, the Rhine Valley was demilitarized and German troops enter and occupy the region, breaching the Versailles Treaty. In 1938, Adolf Hitler and Chamberlain meet in Bad Godesberg. In this same year was the Reichskristallnacht, which is the burning of synagogues in Bonn, Poppelsdorf, Beuel, Bad Godesberg and Mehlem. Then in 1939, Germany invades and attacks Poland on September 1, marking the beginning of World War Two. In 1942, over four hundred Jewish citizens were deported to camps from Bonn during World War Two. Only seven of the four hundred survived. From 1944 to 1945, bomb attacks destroyed much of the city of Bonn. World War Two ends in 1945 and the region is occupied by American troops.

Cold War

The state of North Rhine-Westphalia was created as a result of World War Two in 1946. In 1948, a constitutional convention for the new federal republic that succeeded the three western zones of occupation was held. Bonn is in the British zone of occupation in 1949 and becomes the capital of West Germany. Bonn celebrates its 2000th anniversary of its founding in 1989.

Bonn's Federal District

http://www.germany.info/Vertretung/usa/en/___pr/GIC/2010/07/08__Bonn__PM,archiveCtx=1996610.html



Alte Rheinbrücke

<http://www.photographersdirect.com/buyers/stock-photo.asp?imageid=2282822>



Kennedy Bridge

<http://www.flickr.com/photos/32148150@N07/3875277390>

Reunification

East and West Germany are reunified and the capital begins its move to Berlin in 1990. In 1991, the Bundestag makes Berlin the official capital June 20. Finally, in 1999, all departments have officially moved to Berlin. Beginning in 1904, the incorporation of surrounding towns and villages around Bonn begins and ten years later marks the beginning of World War One. After the conclusion of World War One, the Bonn area is occupied by Allied troops in 1918. The Weimar Republic is formed by the constitution of July 31, 1919. The Weimar Republic is classified as the second German nation and was formed as a result of World War One. The Weimar Republic is occupied by Anglo-Canadian troops and French troops from 1920 to 1926. This period is marked by hyper-inflation and political unrest. In 1933 the Weimar Republic becomes the Third Reich. This marks the begin of national socialism. The Third Reich is labeled as a continuation of the German state founded in 1867.



CONCLUSION

Bonn has an extensive history dating back over 2,000 years. The city has been under the rule of many different parties, including Rome, France, and Prussia. Because of the myriad of different ruling bodies, Bonn has been influenced culturally from many different areas. Bonn has always been an establishment of importance, serving as a seat of federal government and being located along the major transportation route of the Rhine River. It has also been home to intellectuals from both academia and the arts.

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Legionary fortress
"Castrum Bonnensium"



- | | | |
|----------------------|--------------------|--------------|
| 1. Principia | 5. Bath | 9. Stable |
| 2. Praetorium | 6. Farm Buildings | 10. Barracks |
| 3. Hospital | 7. Stables | 11. Latrines |
| 4. Flats of Tribunes | 8. Flats of Immune | 12. Chapel |

Early Settlements

The first known settlements in the Bonn region were known as the Hunsrück-Eifel-Culture (c.7th century B.C. – 250 B.C.). The Hunsrück-Eifel were a culture which was located in the middle Rhineland. They are known through their burials which included a number of outstanding princely burials. This culture was part of the late Bronze Age which helped develop new technologies for production, melting and processing of the Bronze ore. The Germanic tribe followed, and settled in the Bonn region, where they were known as the "Ubi" around the year, 30 B.C. According to Roman historian, Publius Annius Florus there was a bridge constructed across the Rhine River known by the name Bonna (present day Bonn). In the 2nd century A.D. Bonn became a Roman fortress known as "Castrum Bonnensium" and it accommodated approximately 7,000 soldiers. To the south of the Roman fort, a suburban town connected housing the families of the soldiers and further down the Rhine craftsmen's shops stood, known as "Vicus Bonnensis".

Shift of Gravity:

Roman Fort (#3) --> Villa Basilica (#1)

Legend

- 1. Villa Basilica
- 2. Monastery Dietkirchen
- 3. Old Roman Camp
- 4. Castrum Bonnensium



Middle Ages

By the beginning of the Middle Ages, Romans had already left Bonn and the French arrived. The Franks settled in the old Roman fort and named it "Bonnburg". In the 8th century construction of the foundation of the church later known as "Bonner Münster" (Bonn Minster) began. A century later, the settlement around this foundation became known as "Villa Basilica", shifting the center of gravity away from the old Roman settlement. Also, "Villa Basilica" encompassed an open market settlement called "Oppidum Bonnense" which was mentioned in the 13th century. During this time, a wall privilege was granted and a civil council was complete, making Bonn's development into a town in a legal sense. Bonn's emergence is due to the two nuclei: the church foundation area and the market settlement.

Bonn 1650's



Sources: "Bonn Plan ." Historische Karten Und Bilder - Historic Maps and Pictures. Web. 12 Sept. 2010. <<http://www.historic-maps.de/>>; Personal photograph. Post WWII Museum. Bonn, Germany. September 2010.; Christians, Waltraud. Bonn-Nord: Die Wiege Bonns ; Mit Beiträgen Von Bonner Bürgerinnen Und Bürger. Bonn: Ortsausschuss Bonn-Nord, 1997. Print.





Great Destruction of 1689



Bonn in 1689

Reformation to Enlightenment Era

The Reformation era never gained strength in Bonn. Several attempts were made but failed. Archbishop Hermann of Wied, who published the most important Reformation paper in Bonn called "Simple Reflection", made the first attempt but was overthrown by the diocesan of Cologne. The last attempt was marked by the "Truchsess" or "Cologne" War of 1583. Also during this era Bonn would become royal seat for the archbishopric of Cologne. In 1689 Bonn was completely destroyed because of the War of Palatinian Succession, a war that broke out over the succession of France and Palatinate-Neuburg. The Enlightenment Era was marked by Joseph Clemens and Clemens August's ideas to extend Bonn. Max Franz also contributed during this era by laying the foundation of Bonn's first university. This era would later end in 1794 when French revolutionary troops occupied the city of Bonn.

French Rule

After French troops settled in Bonn, the city was reduced to virtual insignificance. This is mainly due to political change. Bonn's initial support on part of the local residents for French rules was quickly lost after they decided to exchange Bonn's money to a new paper currency, the assignat. Before long, Bonn's economy came to a standstill and residents began fleeing the city, resulting in a population loss of 20 percent. The church lost all of its estates and power due to secularization. Napoleon would later introduce "Code Zivil" (Civil Code) which made all citizens equal but poor due to the stagnation of the economy. One positive thing was that "Code Zivil" introduced the freedom of trade.

Sources: "Bonn Plan 1689." Historische Karten Und Bilder - Historic Maps and Pictures. Web. 12 Sept. 2010. <<http://www.historic-maps.de/>>. ; "Geschichte: History." Hotel, Tourismus, Reise, Veranstaltungen Und Kongress in Der Region Bonn: Startseite. Tourismus & Congress GmbH Region Bonn / Rhein-Sieg / Ahrweiler 2010 Web. 12 Sept. 2010. <<http://www.bonn-region.de/englisch/history.html>>

Portrait of:
Napoleon Bonaparte



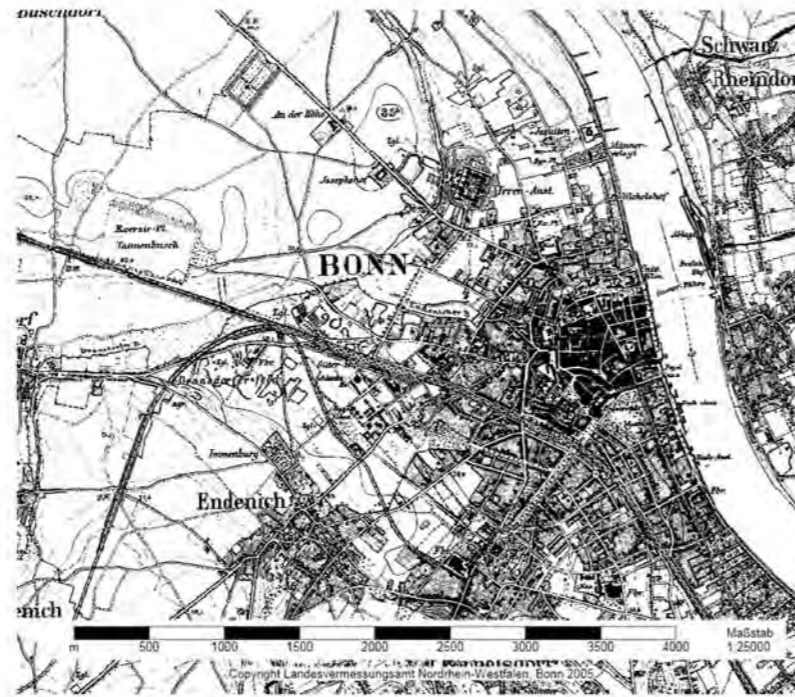
Bonn under French Rule





Urban Development

- Urban Area Bonn
- 1845
- 1893



1893
Inner City Expansion

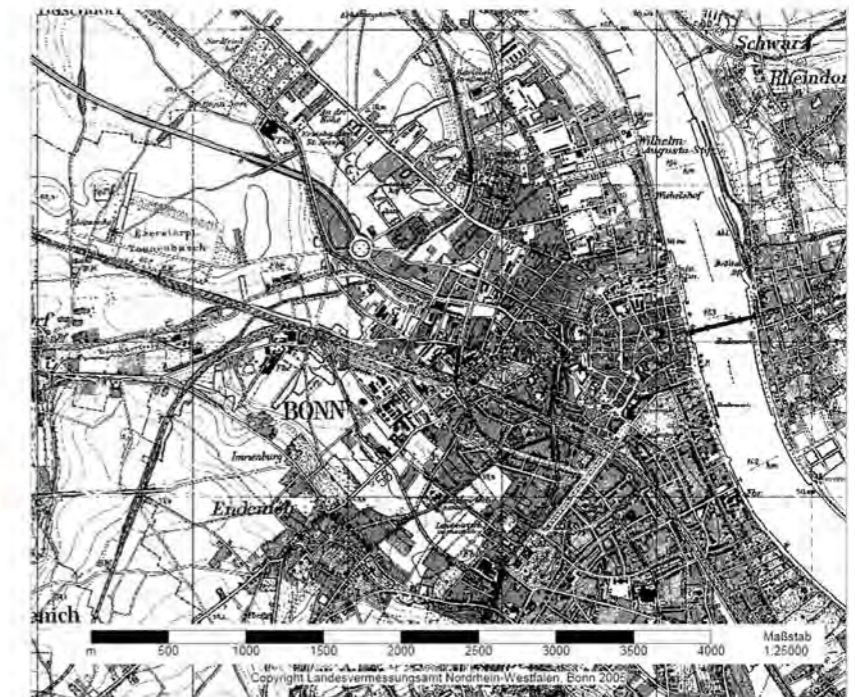
19th Century

After being ruled by French troops, in 1815 Bonn became Prussian. Not much happened under Prussian control in terms of factors affecting settlement change. 1844 became the year Cologne and Bonn inaugurated a railway connecting both cities. This benefited Bonn because from this year and on, new developments could be seen along the railways. Trade primarily characterized the second half of the 19th century, as it was the city's economic base. Also, tourism began to flourish and became a new branch of industry. This is much due to the fact that the Rhine River and its landscape expressed a new sense of attractiveness based on the understanding of the Romantic period. In addition, in this period Bonn avoided the consequences of early industrialization and as a result millionaires started to settle in southern part of Bonn mainly to enjoy its beautiful landscape. This peaceful and economically stable era soon came to an end because of World War I.



Urban Development

- Urban Area Bonn
- 1845
- 1893
- 1933



1933
Inner City Expansion

Settlement Between World Wars

The two main consequences that both World Wars brought were economic poverty and political turmoil. Bonn suffered from the consequences of the First World War because of its special economic structure. Bonn used to have high income tax revenue which was the core of the city's wealth. The economy gradually improved due to the currency reform of 1926 but quickly came to another halt. Adolf Hitler was appointed Reich chancellor in 1933 and thus came a change in politics, National Socialism. World War II left Bonn completely destroyed and, as a result, it displaced many families. After Germany's surrender, no one expected Bonn to become the federal capital of West Germany.

Sources: Dieckmann, Bärbel. Biodiversitätseberic 2008. Print; Landesvermessungsamt Norderehin-Westfalen. 2005. Historische Karte. CD Encyclopedia.





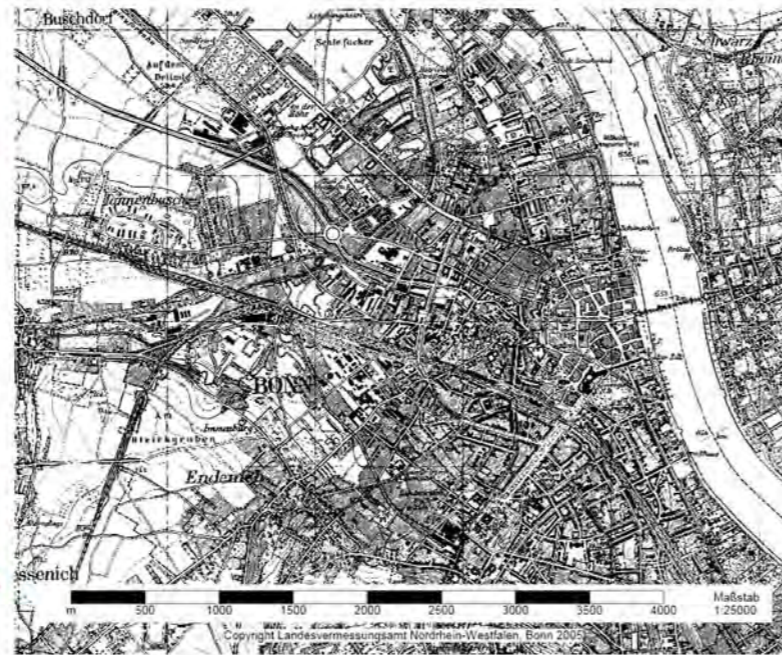
Urban Development



21st Century

There was speculation that Bonn would fall apart after the capital moved to Berlin. In reality the city grew, retaining most important state functions and eventually becoming the home for more than 20 federal authorities, and numerous national and international organizations. Also, Bonn has established itself as an international hub for dialogues and conferences. As the city started to house such institutions, Bonn has found itself with a growing population, which will lead to a future expansion of Bonn.

Sources: Dieckmann, Bärbel. Biodiversitätseberic 2008. Print; Landesvermessungsamt Norderehin-Westfalen. 2005. Historische Karte. CD Encyclopedia.derehin-Westfalen" 2005



1957
Inner City Expansion

From Federal Capital to Federal City (1949-1990)

Shortly after the end of the second World War, the city of Bonn was voted as provisional capital of West Germany. This created mass movement in terms of reconstruction within the city. Soon, Bonn became the focal point of interest in the media, and thus exposed it to the whole world. Great things followed and in 1969 the city of Bonn annexed the near by towns: Beuel, Bad Godesberg, and Hardtberg; making the Bonn region larger. In 1976 a financial agreement was struck between the federal government, federal state, and the city concerning the extension of Bonn. Under the Unification Treaty of 1990 Bonn was no longer the federal capital of West Germany, and made Berlin the new capital of Germany.



Urban Development



1998
Inner City Expansion



Conclusion

In summary the following topics are a representation of beneficiating factors that have lead the city of Bonn settlement expansion through out its history:

- Roman settlements
- Religion
- Wars
- Politics
- Trade
- Transportation
- New national & international institutions & organizations
- Rhein River

Although the Rhein River is not heavily mentioned as a factor for expansion, we concluded that it did played a major role in Bonn and its neighboring cities. The Rhein River has been used as a transportation route for many centuries, due to its perfect location in Europe.

Urban Development (1845-2002)



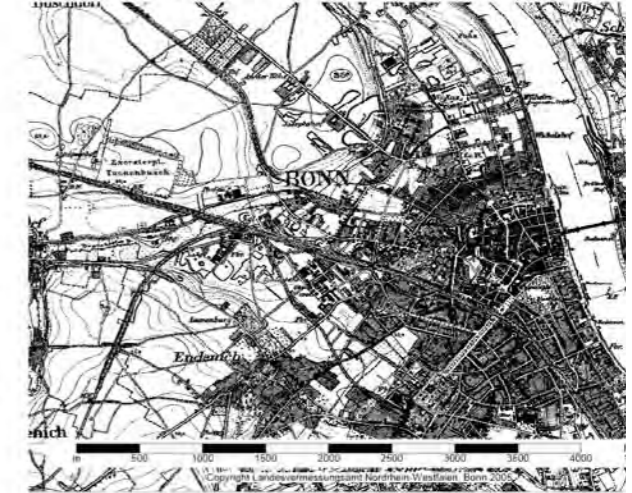
Urban Expansion of the Region of Bonn.



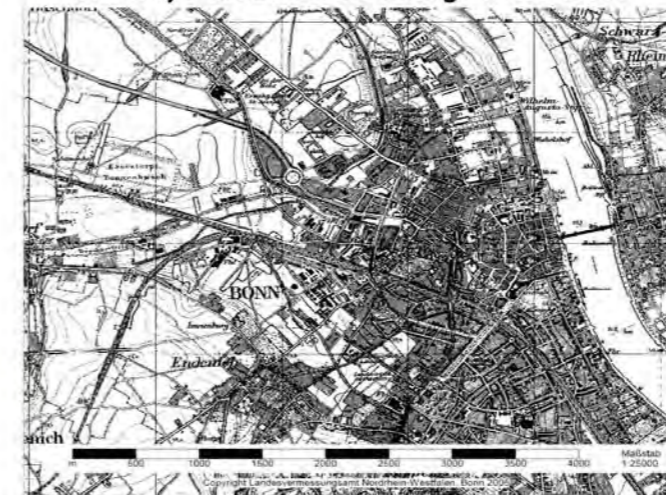
1807
Historic Roman settlements influence



1913
Railway Station Bonn-Cologne Influence



1933
Railway Station Bonn-Cologne Influence



1965
Merging of surrounding cities



1989
German Reunification



2010
New Institutions Communication Technology Influence



Sources: Dieckmann, Bärbel. Biodiversitätseberic 2008. Print; Landesvermessungsamt Norderehin-Westfalen. 2005. Historische Karte. CD Encyclopedia.



Economic and Social Demographics

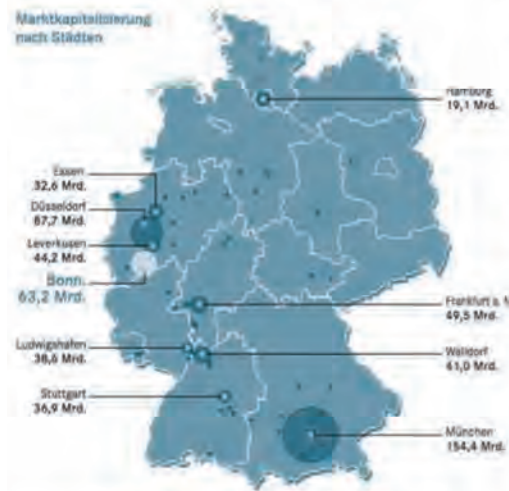
Introduction

The city of Bonn, located in the state of North Rhine-Westphalia, is a leader when it comes to population and economical growth. Currently Bonn is the third largest market at the German stock exchange, as measured by the DAX. (Stadt Bonn, 2010a) Additionally, Germany has a high purchasing power totally 2.81 trillion USD. (CIA, 2010) Germany also has the second highest sales per company, and is the information and telecommunications industry leader. With Bonn's healthy economy, the city has one of the lowest unemployment rates in the state of North Rhine-Westphalia. (Stadt Bonn, 2010a) Bonn has a strong presence within the social demographics of Germany, due to the fact that as the population growth slows nationwide, Bonn nevertheless continues to have birth rates exceeding death rates as well as stable migration rates. Also, Bonn has become an important health center within the state of North Rhine-Westphalia. Therefore, Bonn is an important contributor to all of Germany.

Economic Outlook

In recent years, Germany has risen as a world power, now ranking fourth in world GDP, \$3.673 trillion yearly, and fifth in world purchasing power. (CIA, 2010) By having one of Europe's largest economies and one of the most populated nations, Germany plays a key role in Europe's economic, political, and defense organizations. As shown in figure 1.a, comparing the German economy to the Bonn economy shows interesting similarities and differences.

Figure 1.b DAX City Chart



Source: Stadt Bonn, 2010b. *Jahreswirtschaftsbericht 2010*. <http://www.bonn.de/wirtschaft_wissenschaft_internationales/wirtschaftsfoerderung_bonn/daten_und_fakten/eigene_studien_und_analysen/08651/index.html?lang=de>.

For instance Germany's annual economic growth rate has been steadily declining. Bonn's job growth rate decreased by 5.5% in 2009, but looking at the big picture since 1991 (the year the capitol moved back to Berlin) the job market has increased by a total of 12.8%, allowing Bonn to have a strong and growing economy. (Stadt Bonn, 2010b) Additionally, Bonn has a lower unemployment rate than the national unemployment rate and has a big service and industrial sector that provide many jobs for the community.

Figure 1.a Germany vs Bonn Economic Outlook

	Germany	City of Bonn
Population	81,757,600 ¹	317,595 ²
Avg. GDP	\$3.673 trillion ¹	not available
Annual Growth Rate	Economic: 2.7% (2006) 2.5% (2007) 1.7% (2009) ¹	Job Growth Rate: -5.5% (2008-2009) ²
Unemployment Rate	9.0% (2007) 8.6% (2010) ¹	6.7% (2008) ²
Service Sector	72% (2009) ¹	66.2% (2009) ²
Industry Sector	27.1% (2009) ¹	32.7% (2009) ²
Exports	Exports \$1.498 trillion: Chemicals, Cars, Iron, and Steel ¹	not available
Imports	\$1.232 trillion: Food, Petroleum products, Manufactured goods, Electrical products, & Apparel ¹	not available
Tourism	Foreign Arrivals 15,837,000 ¹	Foreign Arrivals 110,109 ³ (0.69% of total arrivals)

Source 1: CIA, 2010. "The World Factbook: Germany." Central Intelligence Agency. Web. <<https://www.cia.gov/library/publications/the-world-factbook/geos/gm.html>> (Obtained 23 Sept. 2010).
 Source 2: Stadt Bonn, 2010a. *Jahreswirtschaftsbericht 2010*. <http://www.bonn.de/wirtschaft_wissenschaft_internationales/wirtschaftsfoerderung_bonn/daten_und_fakten/eigene_studien_und_analysen/08651/index.html?lang=de>. (Obtained: 15 Sept. 2010)
 Source 3: Federal Ministry for Economic Cooperation and Development, 2006. Germany. Rep. Web. 24 Sept. 2010. <http://www.paris21.org/Dir_Partners_06/dir_partners_06_de.pdf>

There are three companies in Bonn that predominately contribute to the community through employment and fiscal prosperity. The three companies, Deutsche Telekom, Deutsch Post DHL, and Postbank, are also publicly traded on the Frankfurt Stock exchange. (Stadt Bonn, 2009) Figure 1.b indicates Bonn's presence in the Frankfurt Stock Exchange by scaling circling to indicate a city's influence on the market. Furthermore, Deutsch Post and Deutsche Telekom are listed on DAX (Deutscher Aktien-Index), an index, which uses the top thirty companies to rate the health of the German economy. In March 2010, Bonn's major companies made up €63.2 Billion or 8.6% of the DAX index. Bonn holds third place in the "stock exchange league" of German cities, with only Munich and Düsseldorf ranking above.

Figure 1.c indicates the employment for each major company, their main products, gross revenue, operating income and areas serviced. Gross revenue is a good indicator of company size. Operating income indicates the health of the company by illustrating the revenue produced after subtracting the operating cost. For example, Deutsche Telekom has both very a large gross revenue and a large operating income, meaning the company is likely very stable and economically efficient. Additionally, Deutsche Telekom employees the most people from the Bonn region.

Bonn contains many other big companies that are not on the public stock exchange. For example, Haribo, as a one of the largest confectioneries worldwide, employs 1,100 people in the Bonn region, making

approximately €1.7-2.0 billion a year in gross revenue. (Answers Corporation, 2010)

Between 2007 and 2008, the largest sector growth in the Bonn economy was achieved in the field of "Freelance, Scientific and Technical Services", with an increase of +9.9%. Overall, a total of 14,477 employees work in this sector, which represents a 9.6% share of all employees in Bonn's economic structure. Bonn has also benefited from having the United Nations offices and complexes, since the UN has over 750 employees in the city.

Tourism in Bonn has been increasing over the last several years. (U.S. Department of State, 2010) Though, when compared to the overall tourism in Germany, Bonn makes up a very small percentage. On a yearly basis, Germany gets about 15,837,000 foreign arrivals while Bonn receives about 110,109 foreign arrivals. Bonn's foreign arrivals make up only 0.69% of Germany's overall tourism numbers. (Federal Ministry for Economic Cooperation and Development, 2006)

Figure 1.c Deutsche Telekom, Deutsche Post DHL, Postbank

	Deutsche Telekom ¹	DHL ²	Postbank ³
Employees in Bonn Region	14,208	8,000	2,554
Products	Land & mobile telephone, broadband and fixed-line internet, network services, etc.	Post delivery, express mail, freight forwarding, etc.	Retail banking, insurance, loans
Gross Revenue	€64.6 Billion	€46.2 Billion	€3.09 Billion
Operating Income	\$6.012 Billion	€231 Million	(Profit) €76 Million
Areas Serviced	Worldwide	Worldwide	Worldwide

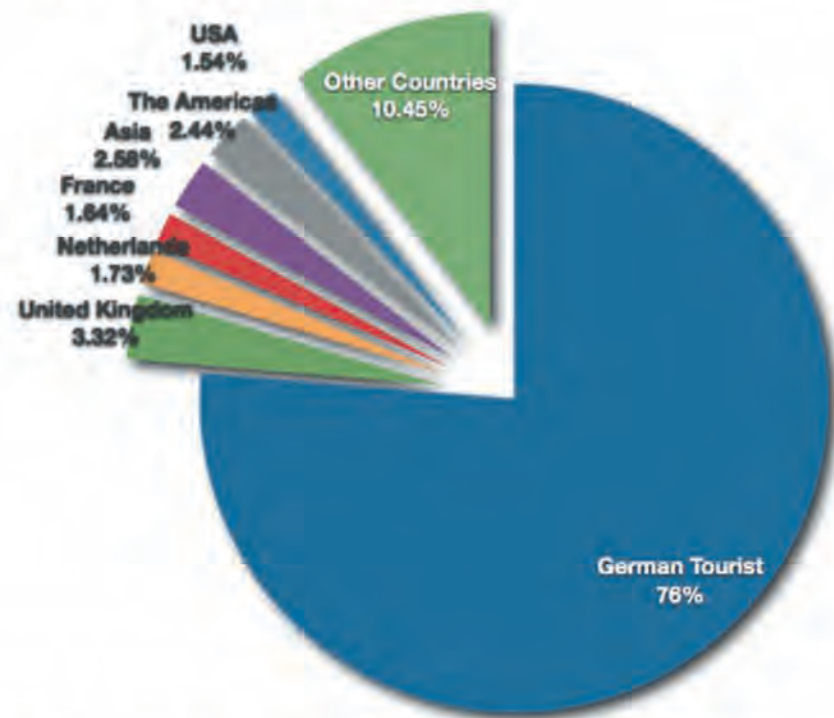
Source 1: Deutsche Telekom, 2009. The 2009 Fiscal Year. <http://www.download-telekom.de/dt/StaticPage/82/04/80/deutsche_telekom_annual_report_2009_820480.pdf> (Obtained: 23 Sept. 2010).
 Source 2: Deutsch Post/DHL, 2009. Annual Report 2009. <http://www.dp-dhl.com/content/dam/dpdhl/investoren/en/investoren/publikationen/DP_DHL_Publikationen_GB09_en_2010-03-16.pdf> (Obtained: 23 Sept. 2010).
 Source 3: Deutsche Postbank, 2009. 2009 Group Annual Report. <https://ir.postbank.com/download/Companies/postbank/Annual%20Reports/PB_GB09_E.pdf> (Obtained: 23 Sept. 2010).



Economic and Social Demographics

In 2008, Bonn gained third place in North Rhine-Westphalia after Cologne and Düsseldorf with 1,198,040 guest nights. (Stadt Bonn, 2010a) Compared to 2007 this was an increase of +3.1%. The number of arrivals of guests from abroad increased markedly by +3.7% to 110,109 compared to 2007. A total of 607,406 guests came from abroad, 0.8% more than 2007. Shown in Figure 2.a, the 2008 share of guest nights booked by foreign guests in Bonn was around 23.7%. The majority of foreign guests (72.3%) came from elsewhere in Europe, the main countries of origin being the United Kingdom (14.0%), the Netherlands (7.3%) and France (6.9%). This number was matched closely with guests from other continents such as Asia (11.8%) and America (10.3%). The USA (6.9%) was in third place in the total source market for Bonn.

Figure 2.a Tourism in Germany

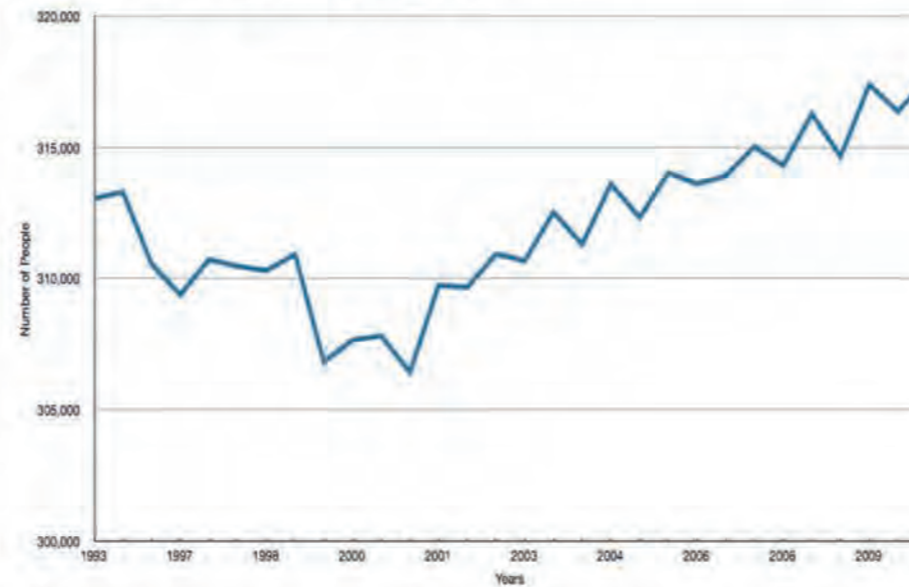


Created from data source: Stadt Bonn, 2010. "Stadt Bonn - Development Trends." <http://www.bonn.de/wirtschaft_wissenschaft_internationales/wirtschaftsstandort_bonn/wachstum/Index.html?lang=en> (Obtained: 23 Sept. 2010).

Social Demographics

Bonn has a current population of 317,380, which was last recorded on June 30, 2010. In December 2008, Bonn had a population of 316,264, which was an increase of +1,239 people or a +0.4% increase from 2007. (Stadt Bonn, 2010d) According to the current

Figure 2.b Population Growth



Created from data source: Stadt Bonn, 2010. "Stadt Bonn - Statistik Und Wahlen." <http://www2.bonn.de/statistik_wahlen/index.asp?10200> (Obtained: 12 Sept 2010).

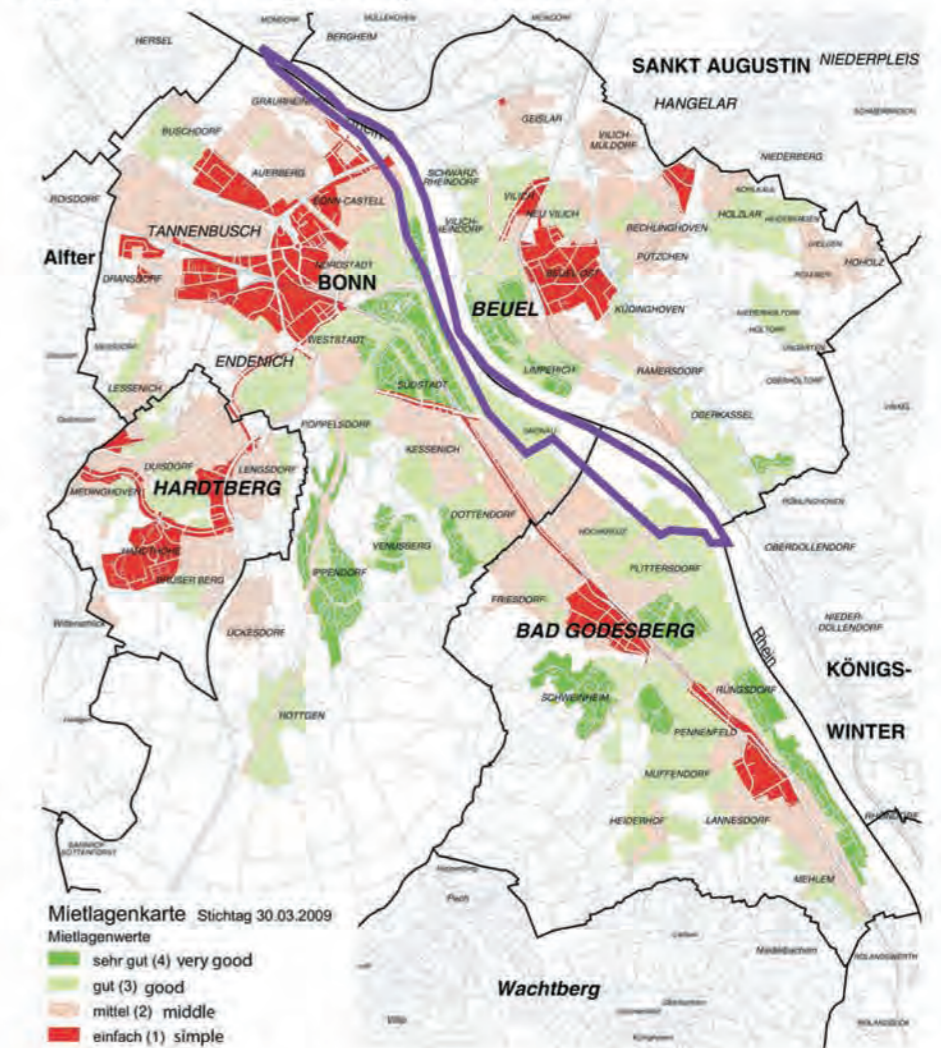
prognoses from the North Rhine-Westphalia State Statistics Office, the population of Bonn will increase by +11.8% (+37,200) to about 353,600 residents between 2008 and 2030. (Stadt Bonn, 2009) This growth will be due to a net +9.0% surplus resulting from the balance of all arrivals in and departures from Bonn and a net +2.8% increase resulting from births and deaths. Currently Germany is experiencing 8.18 births/1,000 population and 10.9 deaths/1,000 population with a -0.053% population growth rate while Bonn has a slightly higher birthrate than the national average. Figure 2.b shows the population growth in Bonn over time starting in 1993 and ending in 2010 with population measured in six month intervals. The chart demonstrates the large decline in population after the capital move from Bonn to Berlin but also shows tremendous growth starting in 2001, which still continues to today.

Housing Quality

In 2010 the city of Bonn conducted a study in order to determine the average qualities of housing and boroughs located throughout the city. (Stadt Bonn, 2009) The city also wanted to determine the average rental expectancy and the wealth distribution of the different districts of Bonn. The way the city analyzed the data was through luxurious household features like satellite, crown molding, and intercoms, centrally controlled heating, etc., because houses that contained these types of amenities increase the value of the home. The city also looked at the bathroom amenities that different houses had, such as quality of the fixtures, date built, and quantity of bathrooms in a house.

Location of the houses and the land value and the year the houses were built were also factored into the final results. At the study conclusion, the areas in red were lower quality houses with few amenities and were usually built after World War two in an effort make housing available quickly and affordability. The people who live in these areas in red often make lower wages and pay lower rent and overall have a less disposable income. The areas in green, on the other hand, have higher quality houses that contain many more amenities. The location is also better situated and the land values tend to be much higher. These houses are typically built before the war and are newly renovated or newly constructed. The people who live in these areas in green typically earn higher incomes, pay a higher rent, and have more disposable income. Figure 2.c below demonstrates the house quality distribution and the purple outline locates the project site.

Figure 2.c Housing Quality in Bonn, 2009



Source: Stadt Bonn, 2009. Bonner Mietspiegel. <http://www.bonn.de/umwelt_gesundheit_planen_bauen_wohnen/mietspiegel/index.html> (Obtained: 22 Sept. 2010).

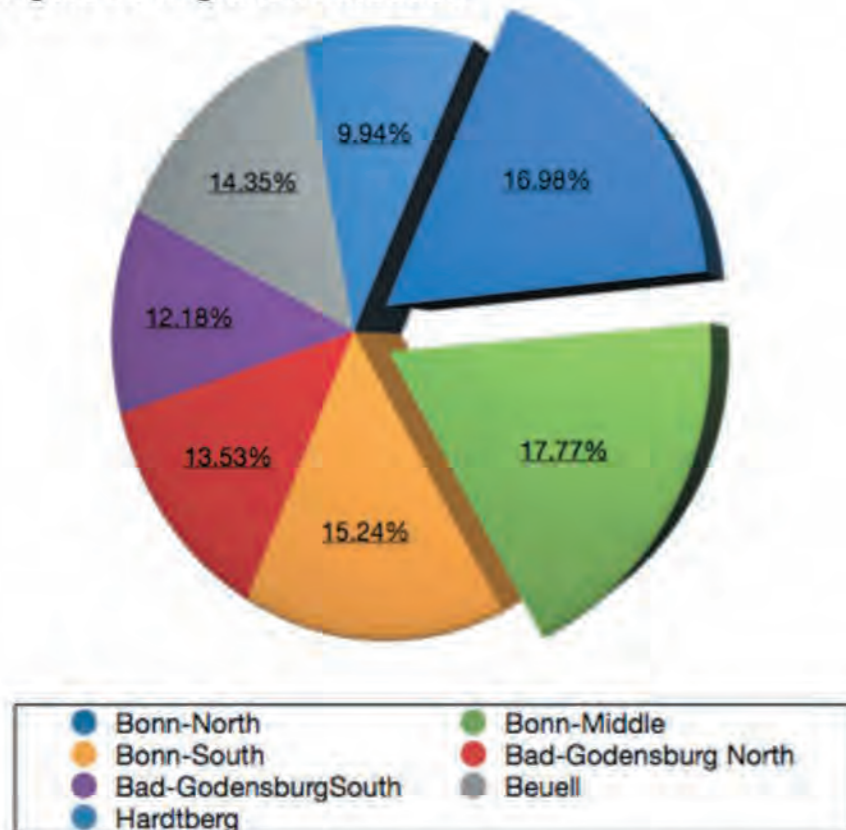


Economic and Social Demographics

Immigration and Migration

In 2009, Bonn experienced growth through migration with a total of 75,917 migrants. (Stadt Bonn, 2009) Out of the total number of migrants in 2009, 41,235 of those came from 174 foreign countries and 34,682 from within Germany. Figure 3.a below shows the immigrant distribution within the city of Bonn. The two pie pieces jutting from the rest indicate areas connected to the project site.

Figure 3.a Migrant Distribution



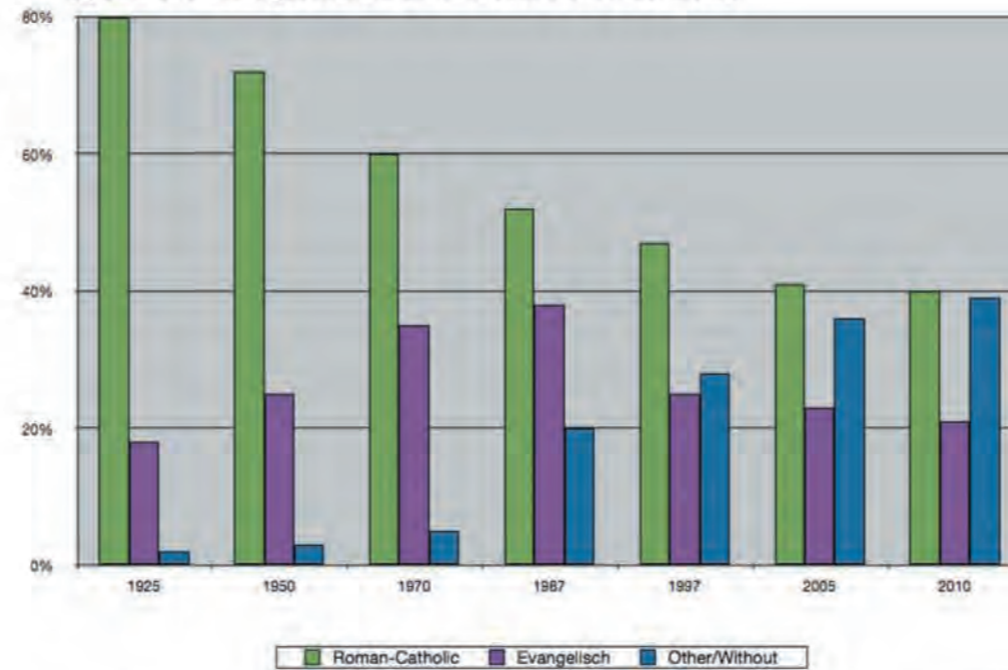
Created from data source: Stadt Bonn, 2009. "Stadt Bonn - Haushaltsrede Online." <http://www.bonn.de/rat_verwaltung_buergerdienste/buergermittwirkung/buengerhaushalt2010/00940/index.html?lang=de>. (Obtained: 12 Sept. 2010).

Religious Trends

Religious trends, shown in Figure 3.b within Bonn have changed significantly over time. In the data analyzed Roman Catholicism in 1925 was about 80%, while those who considered themselves without religion or neither Catholic nor Protestant was at nearly 3%. Over time Catholicism declined steadily while Protestantism reached its peak in 1987 and then began to steadily decline afterwards. The other religions and those who considered themselves without religion have been climbing at a continual rate since 1925 to 2010. As time goes on

Religion in Bonn has been becoming more diversified. This is indicated in the figure 3.b below.

Figure 3.b Religion in Bonn from 1925 to 2010



Created from data source: Stadt Bonn, 2010. "Stadt Bonn - Haushaltsrede Online." Bonn - Startseite. 7 July 2010. <http://www.bonn.de/rat_verwaltung_buergerdienste/buergermittwirkung/buengerhaushalt2010/00940/index.html?lang=de> (Obtained: 12 Sept. 2010)

In the beginning of the 1960s, when Germany was experiencing an economic growth and as such there was a high demand for labor. (N24 Television, 2010) At the same time Turkey was experiencing mass unemployment and the timing was perfect. Germany created a recruitment treaty in 1961 allowing the Turkish to enter as guest workers. Many choose to stay instead of returning back to Turkey and brought their families over to live in Germany. As of 2009 there are over 4 million Muslims who currently live in Germany. Out of the 4 million Muslims 63.2% of those come from Turkish decent. A majority of the Muslims in Germany are immigrants or come from immigrant families. As of 2009 only 45% of the 4 million Muslims have German citizenship.

Conclusion

Bonn plays a major role in the German economic prosperity by housing €63.2 billion of the DAX index. Bonn has a steadily growing employment rate that is supported by the large service industry companies. Even though in 1991 when reunification occurred and most of the government jobs left Bonn, the city was able to continue to grow in a positive way. The population rate in Bonn continues to grow at a steady rate while the unemployment stays low and even below the national average. In Bonn the religious beliefs continue to become more diverse over time. The

population distribution continues to change as more migrants from foreign countries continue to become part of Bonn's population. The distribution of wealth within the City of Bonn shows that the lower income families tend to live in the northern part of the city, while the center, south and areas near the forest have a higher income bracket living in those areas. Bonn has been projected to grow in a positive for many years to come and to play an important role in Germany's continued success.

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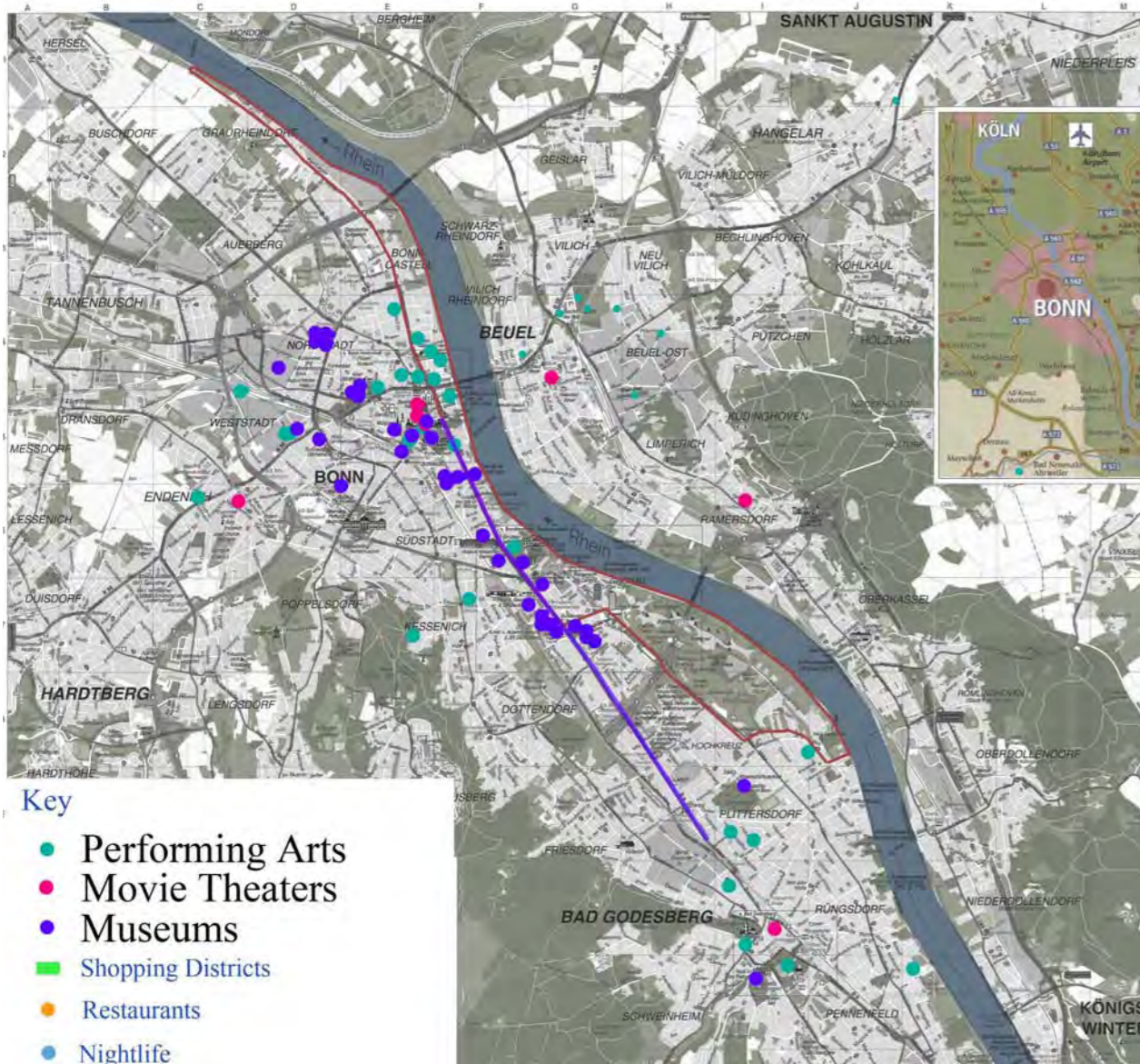


The unique sites and events of a city, as well as the daily activities of its people, greatly contribute to the character and culture of the city. Bonn and its surrounding area offer many diverse activities, events, and places to see.

Social Life and Activities

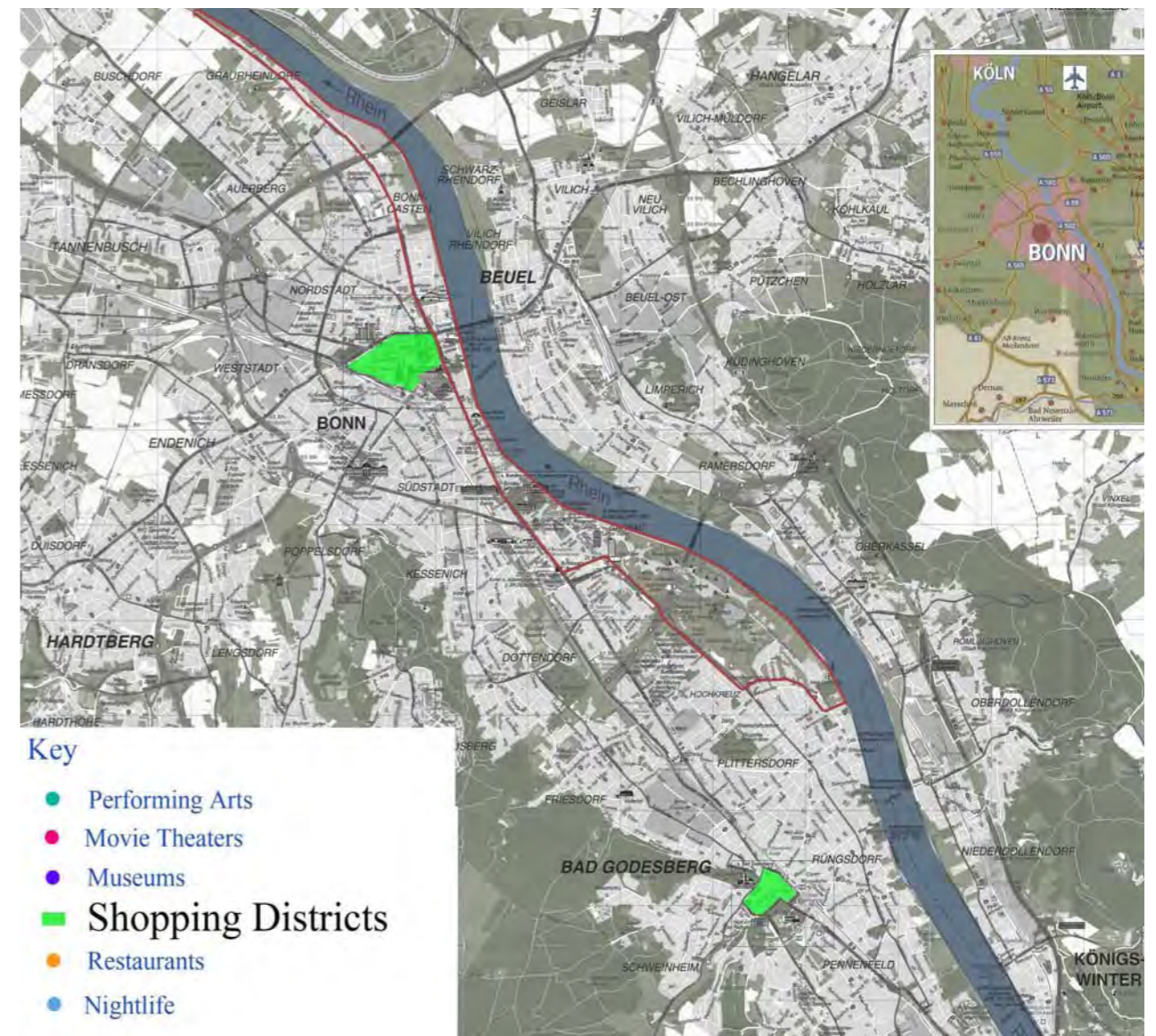
Both residents and tourists of Bonn can enjoy a lively and diverse social life. Bonn has something to offer for almost everyone, with an array of museums, performing arts theaters, movie theaters, places to shop, and restaurants. The area also has a lively nightlife scene. By mapping some of these individual venues, it becomes apparent where some of Bonn's social districts are located.

Figure 1 shows the locations of some of Bonn's primary cultural attractions. The various performing arts venues in the area are concentrated in each of the three town centers of Bonn, Beuel and Bad Godesberg. Movie theaters, on the other hand, are a bit more spread out. The majority of the major museums in the Bonn area are concentrated along a strip known as "Museum Mile" and in the city center of Bonn.



- Key
- Performing Arts
 - Movie Theaters
 - Museums
 - Shopping Districts
 - Restaurants
 - Nightlife

Figure 1. Map of Locations of Performing Arts Venues, Movie Theaters and museums.
Sources: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.



- Key
- Performing Arts
 - Movie Theaters
 - Museums
 - Shopping Districts
 - Restaurants
 - Nightlife

Figure 2. Map of shopping districts.
Sources: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.

The major shopping areas of Bonn consist of many stores clustered together, forming shopping districts (Figure 2). The main shopping districts of Bonn are again concentrated in the city centers of Bonn and Bad Godesberg.



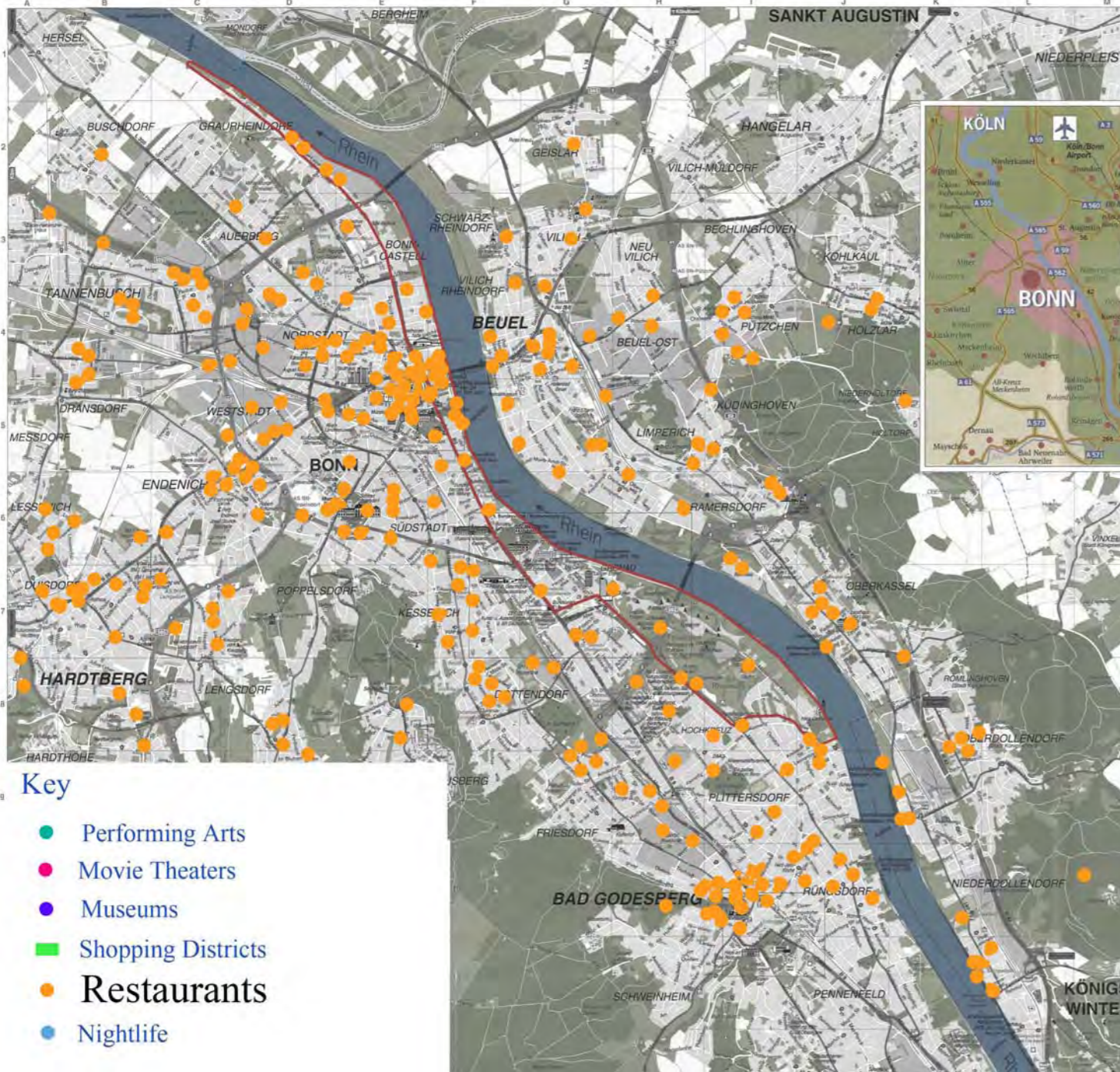


Figure 3. Map of restaurant locations.
Sources: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.

As shown in Figure 3, restaurants are scattered all over the Bonn region. The highest concentrations of restaurants, however, are in the town centers of Bonn, Bad Godesberg, and to a lesser degree, Beuel. Overall, it appears that the restaurants are densest along the Rhine, dissipating outwards. The town centers are all located near the Rhine, so it seems that both the busy town centers and the river each have an effect on the location of restaurants.

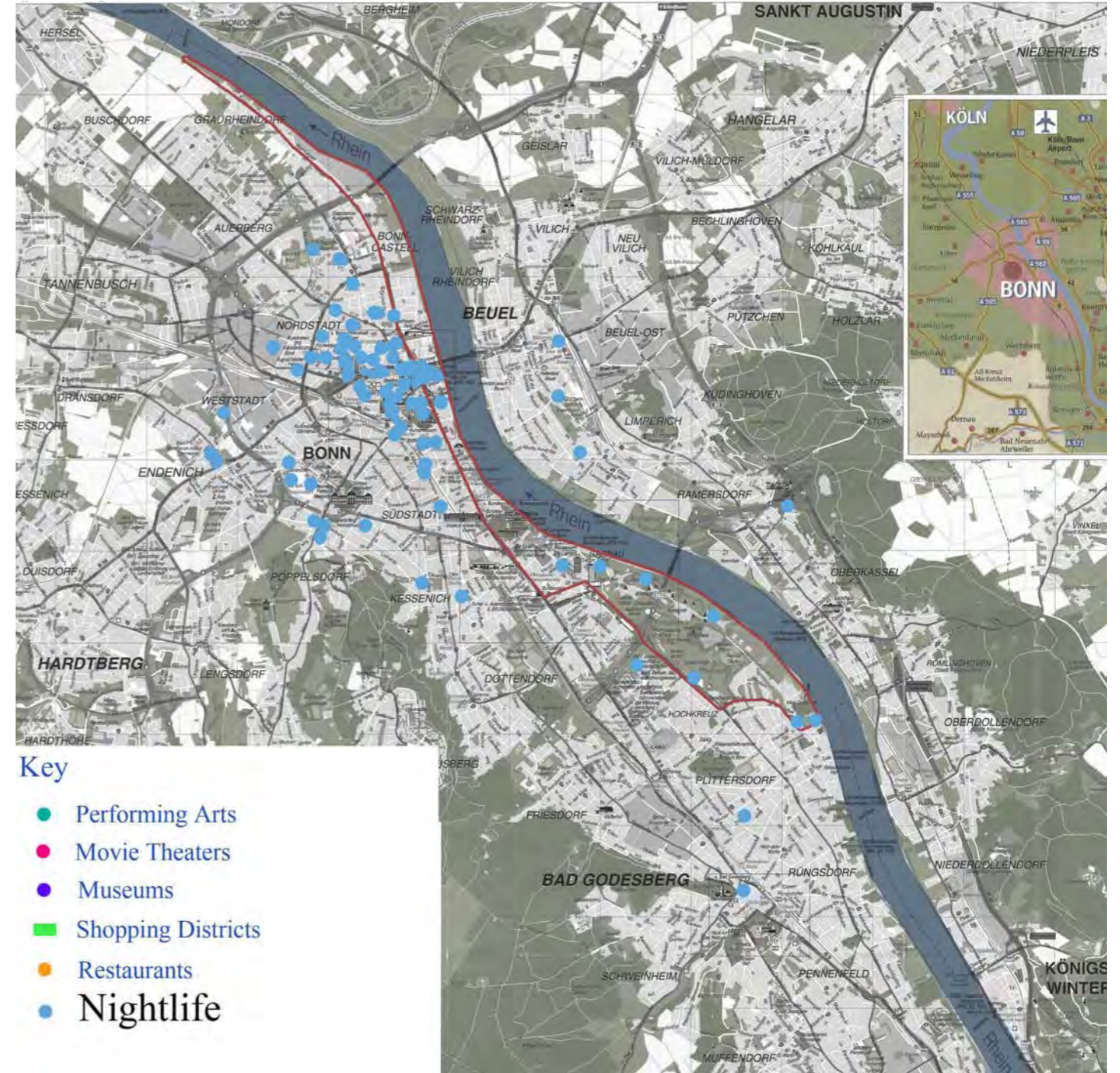


Figure 4. Map of nightlife locations.
Sources: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.

The nightlife scene in Bonn shares a similar distribution pattern with the restaurants of Bonn, in that it is also focused mainly along the Rhine (Figure 4). The city center of Bonn by far has the densest concentration of nightlife spots, such as dance clubs, bars and lounges.



Landmarks

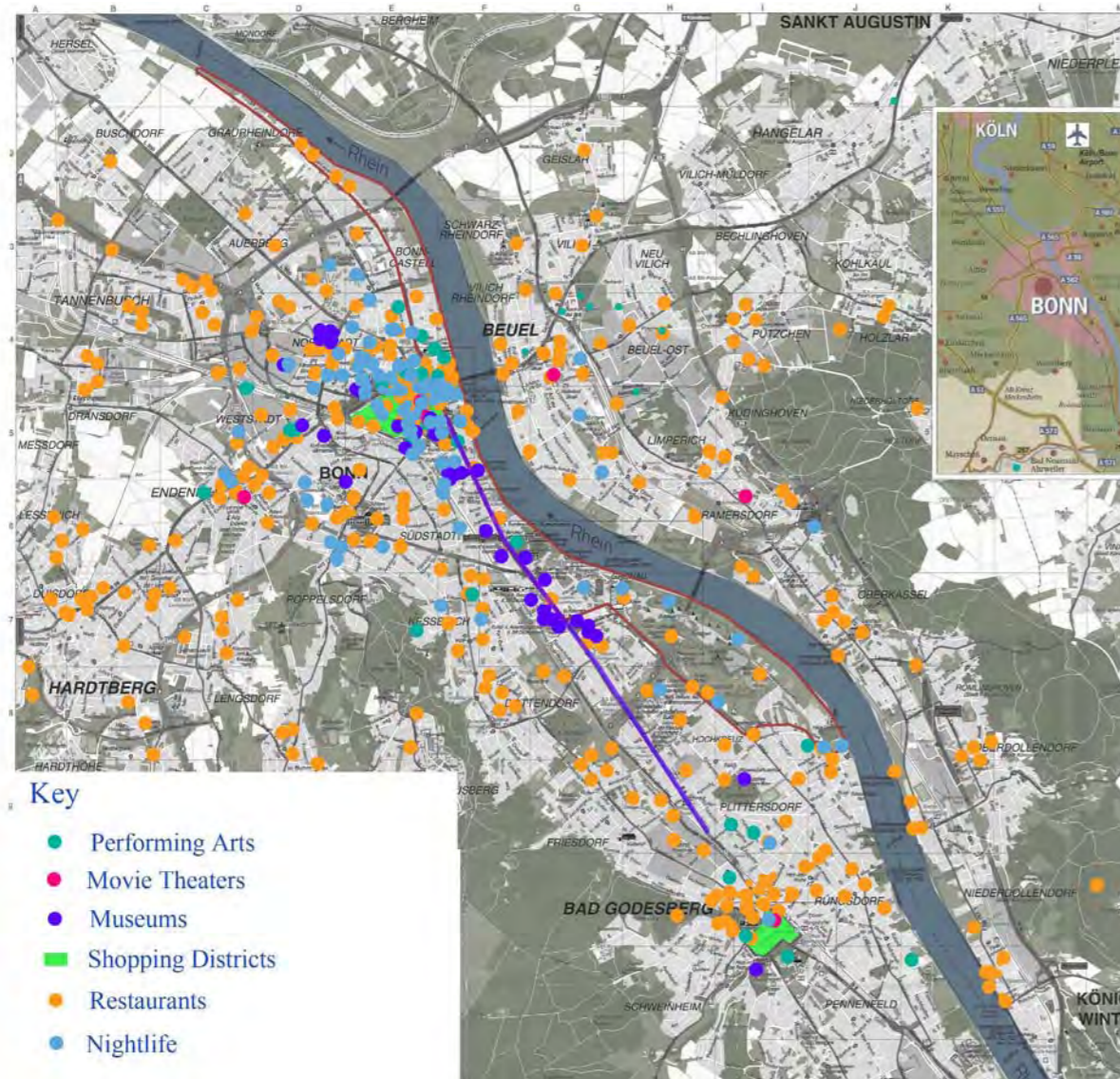


Figure 5. Map of combined social highlights of Bonn.
Sources: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.

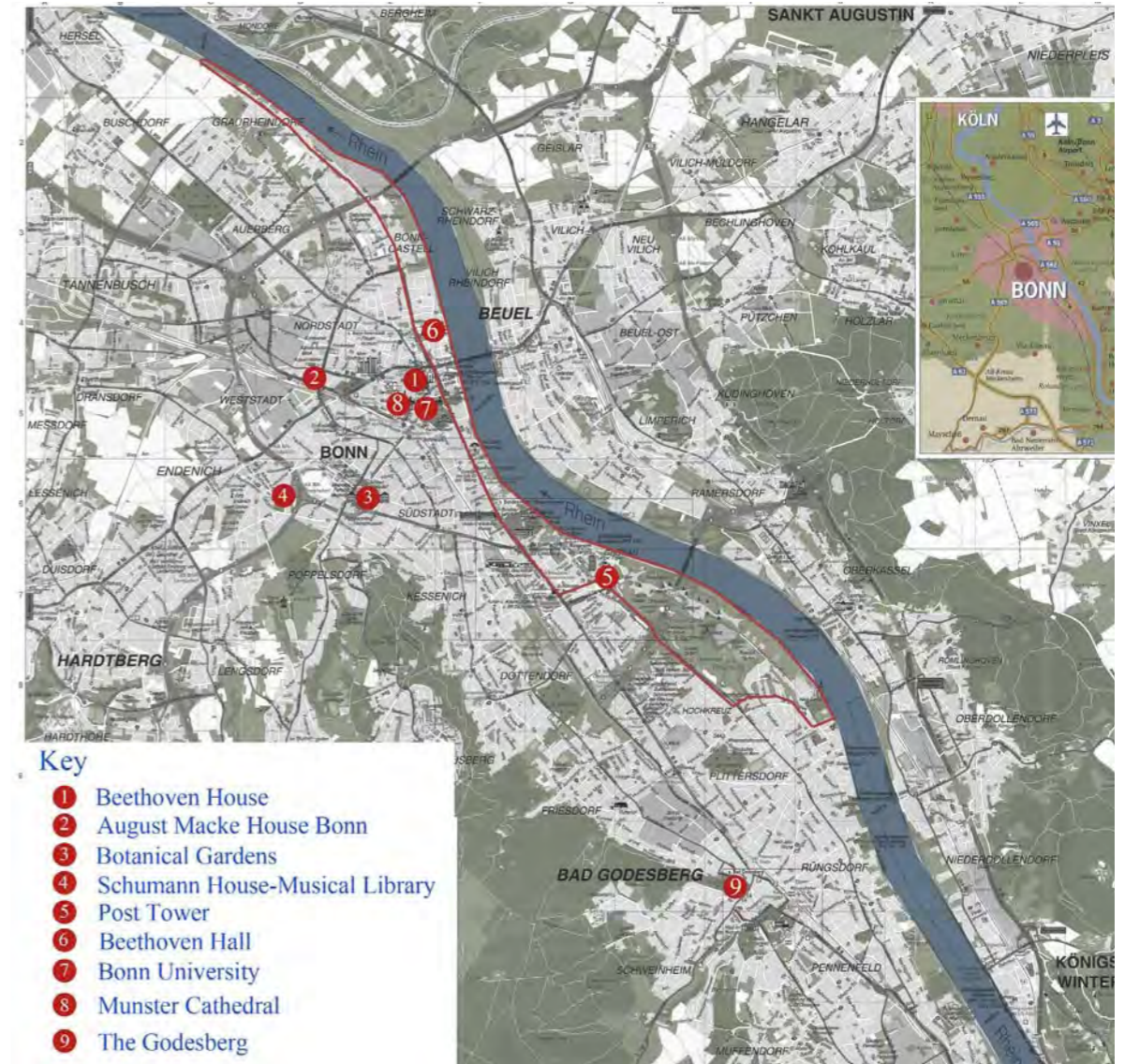


Figure 6. Map showing locations of major landmarks or tourist attractions.
Source: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher.

When all of the social destination maps are combined, it is easier to see how each category is related to the others (Figure 5). The overall trend of concentration in the city centers and along the Rhine is reinforced in this map. The city center of Bonn is clearly the most intense grouping of social spaces in the area. This is not surprising, because it is common for activity to be centered in the heart of a town. Outskirts of towns often tend to be reserved for other uses, such as residential areas, agricultural land, and industrial areas. It is convenient to group similar uses together, especially for consumers. Thus, it is a good idea, economically, to concentrate these social spaces into the busiest hubs of the cities.

In addition to the many social activities and annual events, the landmarks around the city of Bonn are also important to its tourism industry. Figure 6 shows the locations of some of Bonn’s major landmarks and tourist attractions, excluding the attractions previously mapped, such as museums. These landmarks are located solely in the city centers of Bonn and Bad Godesberg and along the Rhine. Most are clumped near the Rhine in Bonn’s city center.

One of Bonn’s major landmarks is the World Conference Center, located in Bonn’s former governmental quarter along the Rhine. The building is used to hold important meetings, many of them governmental. Because Bonn was the official seat of government of United Germany in the 1990’s, there are still many remnants of the city’s governmental past, despite many of its functions having moved to Berlin. The World Conference Center is in close proximity to the buildings of several other international organizations, including the United Nations Campus. Bonn has hosted various UN events through the years, including Rio Conventions and Climate Change Talks. Landmarks such as these show that Bonn is an important site of international communications.



Holidays, Festivals and Events

Many events, including festivals, holiday celebrations, marathons, concerts and various markets, take place in and around Bonn throughout the year. These general event categories, as well as some of the events that constitute each category, are listed with their respective months of occurrence in Figure 7.

Event Name	J	F	M	A	M	J	J	A	S	O	N	D
NATIONAL PUBLIC HOLIDAYS	X		X	X	X	X				X	X	X
New Years Day	X											
Good Friday			X	X								
Easter Sunday			X	X								
Easter Monday			X	X								
Labour Day					X							
Ascension Day					X							
Pentecost Sunday					X	X						
Whit Monday					X	X						
German Unity Day										X		
All Saints Day											X	
Christmas Day												X
St. Stephen's Day												X
MARATHONS				X		X				X		
Rheine Energie Marathon**				X								
Kaiser's Bonn Triathlon**						X						
Three-Bridge Run**										X		
MARKETS				X	X	X	X	X	X	X	X	X
Flea Markets				X	X	X	X	X	X	X		
Greatest Flea Market-Leisure Park**				X	X	X	X	X	X			
Children's Fall Flea Market-Redeemer Church**								X				
Reptile Exchange-Beueler Bridge Forum								X				
Antique Markets				X			X			X		
Arts and Crafts Markets				X								
Pottery						X						
Ceramics						X						
Computer Market										X		
Christmas Markets											X	X
Fabric and Tuchmarket										X		
Fish Market										X		
CONCERTS					X	X	X	X	X			
Bruhl Palace Concerts*					X	X	X	X				
Open Air Concerts on the Museumplatz**					X	X	X	X				
Rheinkultur**						X	X					
Sound Wave Bonn**								X	X			

Event Name	J	F	M	A	M	J	J	A	S	O	N	D
FESTIVALS (EXCLUDING CARNIVAL)	X	X	X	X	X	X	X	X	X	X	X	
Museum Mile Festival**					X	X						
Gourmet & Wine*	X	X	X	X	X	X	X	X	X	X	X	
Fest of the Promenade**						X						
Biennial/International Theater Festival**						X						
Fest of the Derle Valley*							X					
Family Play Fest**							X					
Bonn Beer Festival**							X					
Beethoven Festival**									X			
Town Fest of Bad Godesberg**									X			
Theater Fest**									X			
Bonner Lessefest**										X	X	
Bonn Fest**										X		
Pantheon A Capella Festival**										X	X	
Winegrowers' Festival & Funfair*										X		
Endericher Herbst**										X		
Bonn Skating**							X					
Days From Home-East German Market Day**									X			
Putzchens Market**									X			
CARNIVAL IN THE RHINELAND	X	X	X								X	X
Kick Off*											X	
Women's Carnival**			X	X								
Storming of the Old Town Hall**				X								
Shrove Monday/Rosenmontag Parades*				X								
Fastnacht				X								
General Festivities*	X	X	X								X	X
MISCELLANEOUS						X	X	X	X	X	X	X
St. Nikolaus Day												X
Bonn Summer**						X	X	X	X			
European Grand Prix							X					
Bonn Theater Night**							X					
Bonsai Show							X					
Siegtal Pur*									X			
Beethoven Night**												X
Smart Beach Tour*										X		
Bonn Summer Cinema**									X			
Rhine in Flames*							X					
International Hot Air Balloon Meeting										X		

The events listed with no asterisks by their names are the holidays and events that are not unique to the Bonn region, such as Christmas Day and antique markets. The specific ways in which holidays and events are celebrated can surely differ in Bonn from those in other regions, but the recognition of these events is not specific to the region.

Figure 7. Chart showing timeline of event types.
Source: Darcy Gustafson.



The events that have one asterisk by their name are more specific to the Rhineland region and the areas surrounding Bonn, such as Carnival in the Rhineland and Rhine in Flames. Carnival in the Rhineland takes place in cities all throughout the Rhineland, as suggested by its name. Individual towns may celebrate Carnival differently, but it is an important season throughout this entire region. The Rhine in Flames celebration takes place along the Rhine River from Linz to Bonn. It is the largest fireworks show in the Rheinauen region. Over 100,000 spectators attend this event each year. The events that have two asterisks by their name in the chart are those that are even more specifically unique to the city of Bonn.

composer is celebrated all over the city. The Beethoven Orchestra plays many shows around town during this time. Bonn Summer is a collection of over 100 events, such as musical performances. It focuses on "Dialogue Between Cultures". Putzchens Market has evolved over time from a pilgrims' market to one of the biggest funfairs in the Rhineland.

The events in Figure 7 take place all over the city of Bonn. Figure 8 shows a distribution of common spots for these events. In this map, the larger dots correspond with places that host more events than the areas marked with small dots. More events are hosted along the Rhine River than elsewhere, as indicated by the largest purple dot. The city centers of Bonn and Bad Godesberg have the next largest dots, which supports the previous observation that high levels of social activity are present within city centers.

One of Bonn's major landmarks that is home to several events is the World Conference Center, located in Bonn's former governmental quarter along the Rhine. The building is used to hold important meetings, many of them governmental. Because Bonn was the official seat of government of United Germany in the 1990's, there are still many remnants of the city's governmental past, despite many of its functions having moved to Berlin. The World Conference Center is in close proximity to the buildings of several other international organizations, including the United Nations Campus. Bonn has hosted various UN events through the years, including Rio Conventions and Climate Change Talks. Governmental event sites such as these show that Bonn is an important site of international communications and cooperation.

Conclusions

This research indicates that the most successful social events and places to visit are located within the city centers of Bonn and its surrounding areas or along the Rhine River. This is promising for new developments along the Rhine, as the Rhine is already a popular location. It also means that many businesses, landmarks, or events that take place along the Rhine will need to be taken into consideration when creating new designs for the waterfront areas.

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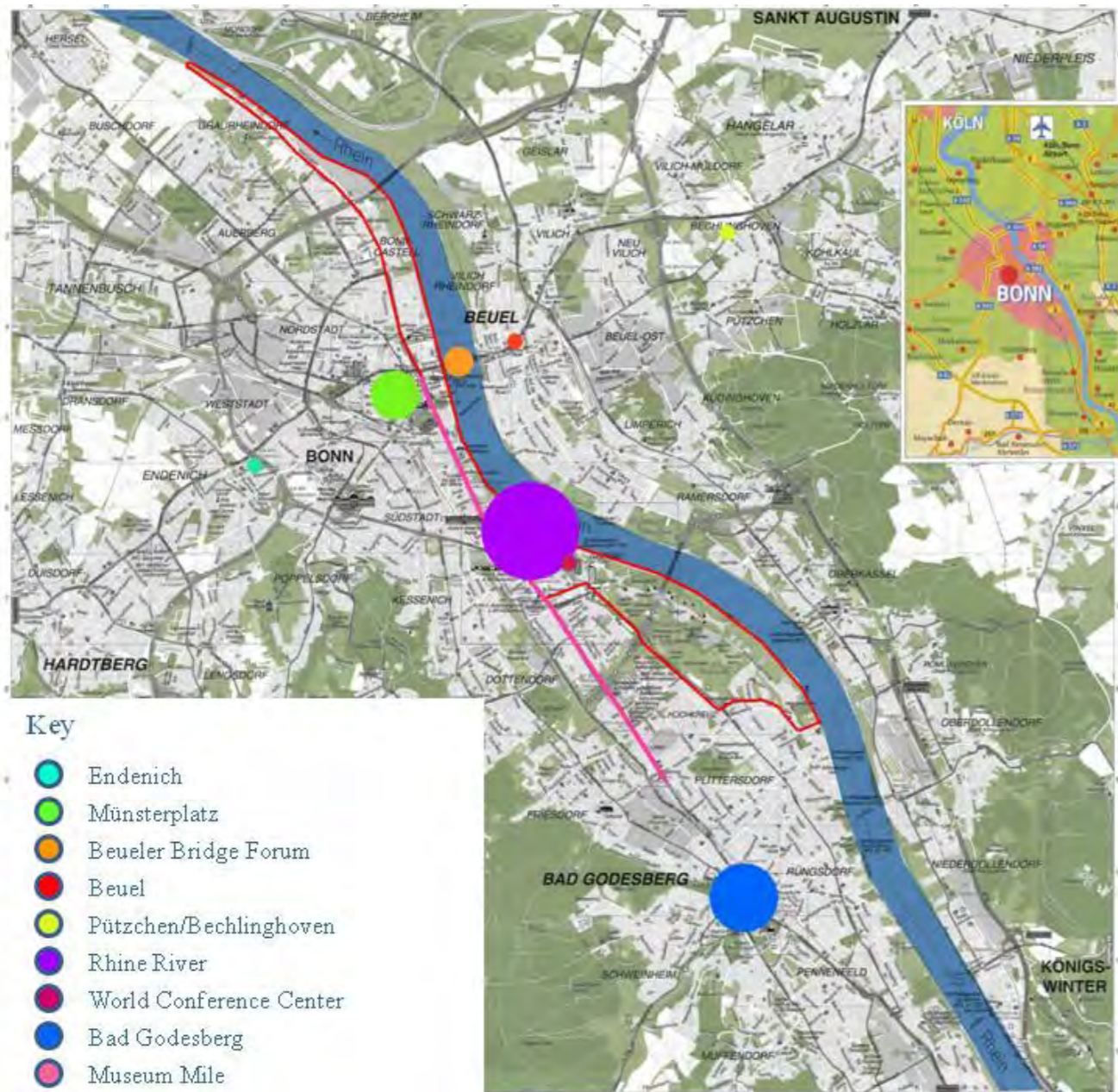


Figure 8. Map showing distribution of events.
Source: Bonn Welcome Card Brochure, Google Maps, Jennifer Kelliher, Darcy Gustafson.

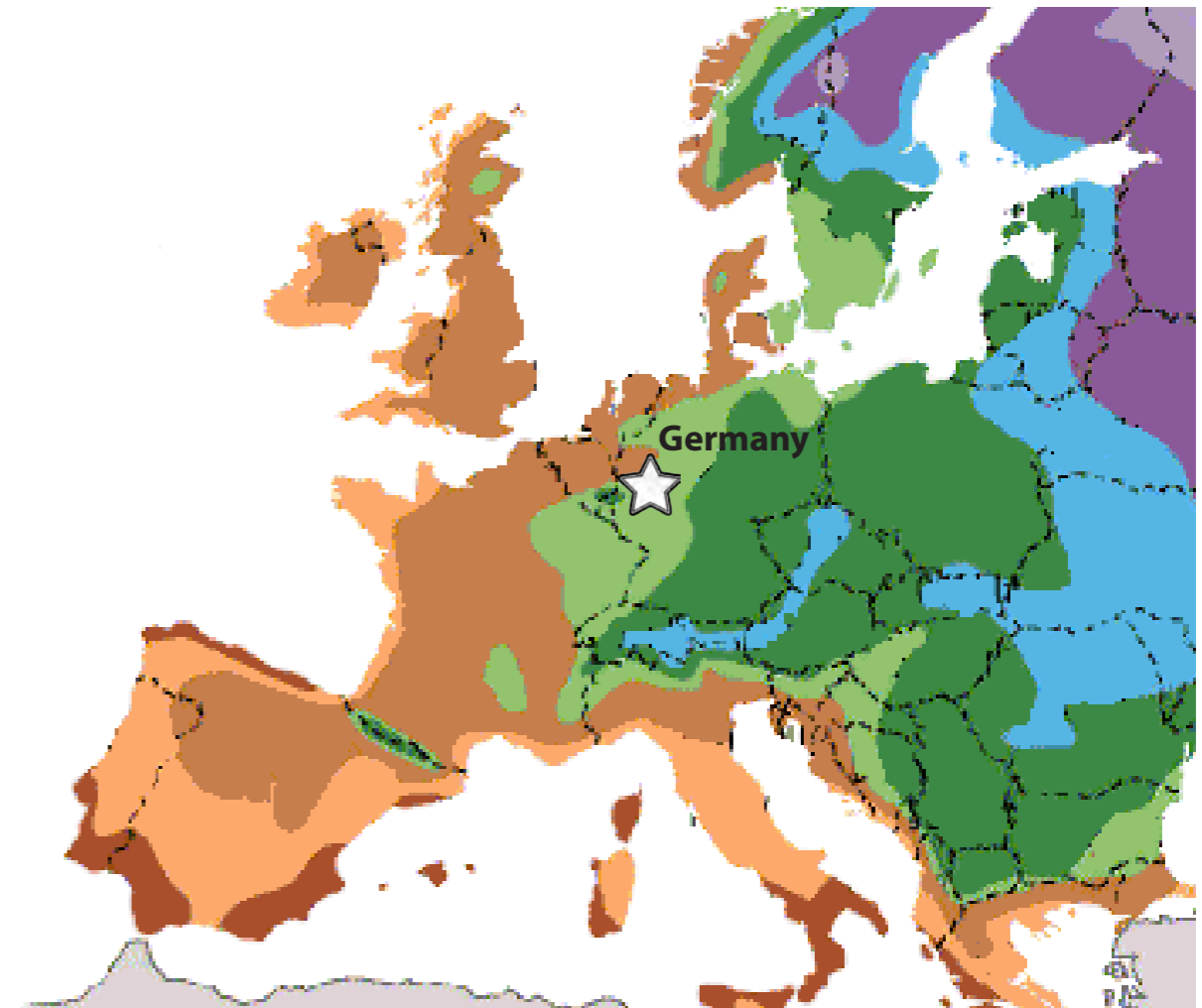
These local events include Women's Carnival, Beethoven Festival, Bonn Summer and Putzchens Market, among many others. Women's Carnival is a part of the general Carnival Season, and is celebrated in the Bonn-Beuel region. Women cut off men's ties on this day, in exchange for a kiss. This celebration stemmed from early feminist movements. Because Bonn was the home of Ludwig van Beethoven, it is fitting that the city has so much pride in him and in their associations with him. During Beethoven Festival, the famous





Temperature

Bonn, Germany is roughly located along zone 7 and 8 with an Average Annual Minimum Temperature ranging between 0 and 15 degrees Fahrenheit (-18 to -7 degrees Celsius). This zone is comparable to places in the United States such as Arkansas, North Carolina, and Virginia.



Introduction

Climate can be defined as the meteorological conditions, including temperature, precipitation, and wind, that characteristically prevail in a particular region. The climate of a location plays a major role in determining the everyday life of the people as well as the culture that has been developed. With these facts in mind, this report details the meteorological conditions found in Bonn, Germany, while giving insight into the environment, culture and values that exist among the citizens.

Overview

The weather in Bonn is characterized by four fairly distinctive seasons: spring, summer, fall, and winter. With this said, the climate conditions only slightly change from month to month. The summers are typically warm with temperatures topping 25°C/77°F, even rising to 32°C/90°F until they ease into mild winters. During these winter months snowy weather is light at most, with January being the coldest month averaging around 3°C/37°F. Spring soon rolls around raising the average temperatures back to around 10°C/50°F by the end of March.

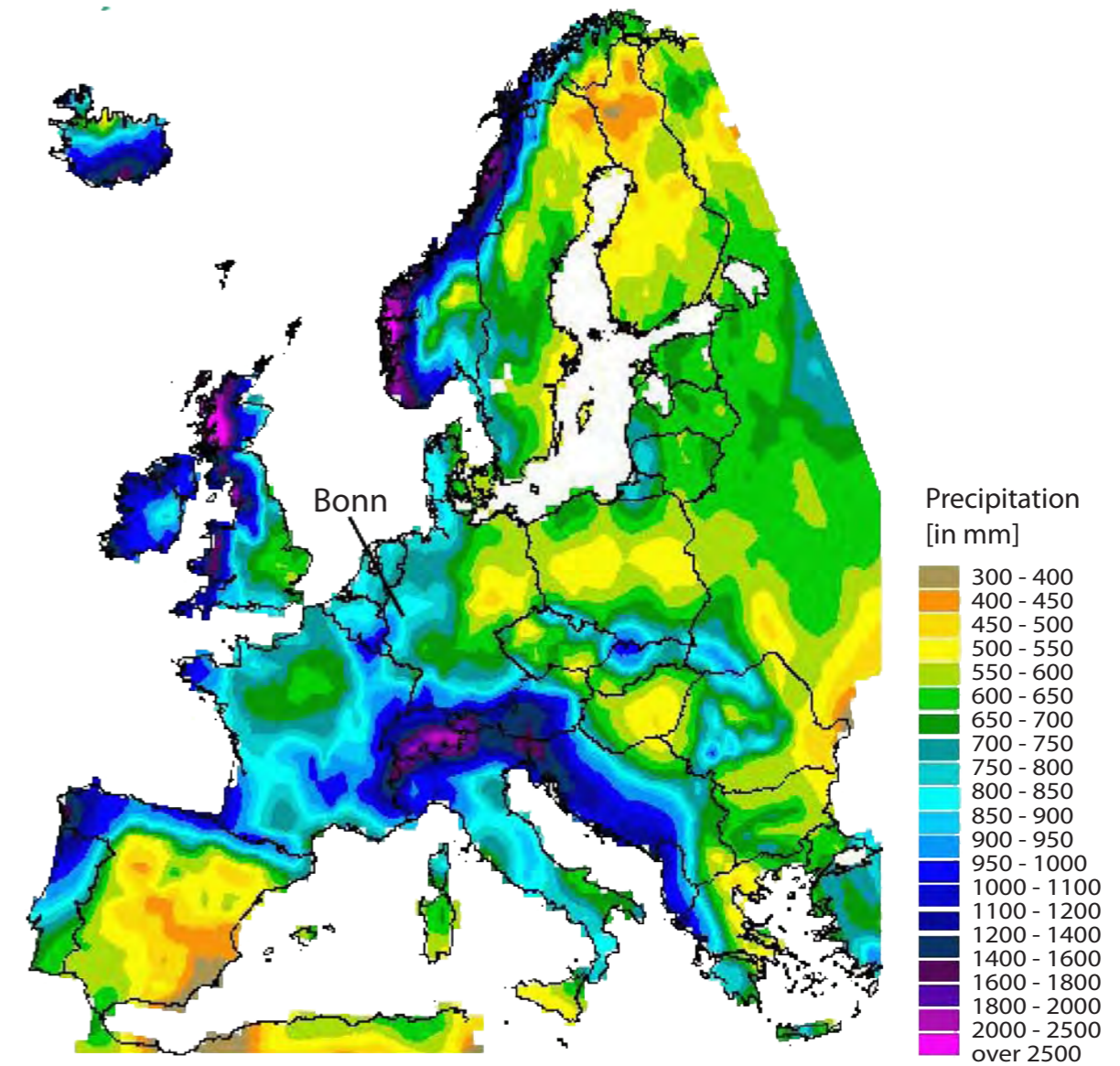
°C	Zone	°F
-40 to -35	3	-40 to -30
-35 to -29	4	-30 to -20
-29 to -23	5	-20 to -10
-23 to -18	6	-10 to 0
-18 to -12	7	0 to 10
-12 to -7	8	10 to 20
-7 to -1	9	20 to 30
-1 to 5	10	30 to 40

Average Annual Minimum Temperature

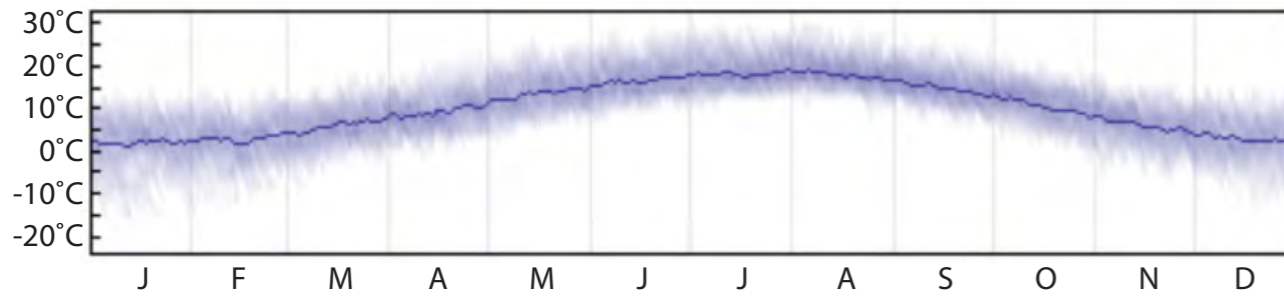


The average temperature, recorded from 1931-2010, reflects that temperatures occurring in the summer months of June through August remain around 77 degrees Fahrenheit (25 degrees Celsius) but can reach highs nearing or surpassing 90 degrees Fahrenheit (32 degrees Celsius). The coldest winter months are December through February with lows sometimes reaching close to 10 degrees Fahrenheit (-15 degrees Celsius).

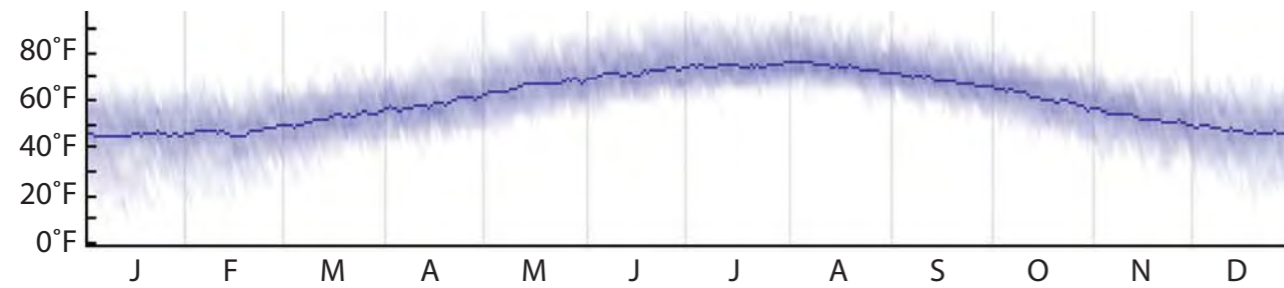
Europe Annual Precipitation



Temperature distribution:



Temperature distribution:



(1931 - 2010 data)

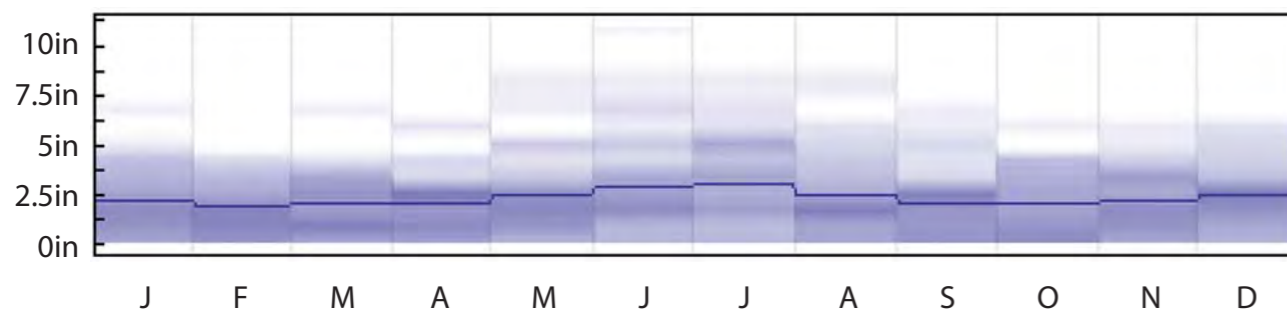
Precipitation

The Average Annual Precipitation for Bonn is 31-33 inches (800-850 mm). The months of heaviest rain usually occur in the summer months, reaching up to 8 inches (approximately 20 cm) per month. This Annual Precipitation is comparable to College Station, Texas.

This amount of rain accompanied with a mild climate allows for a diverse palette of flora to flourish and thrive throughout many parts of the year.

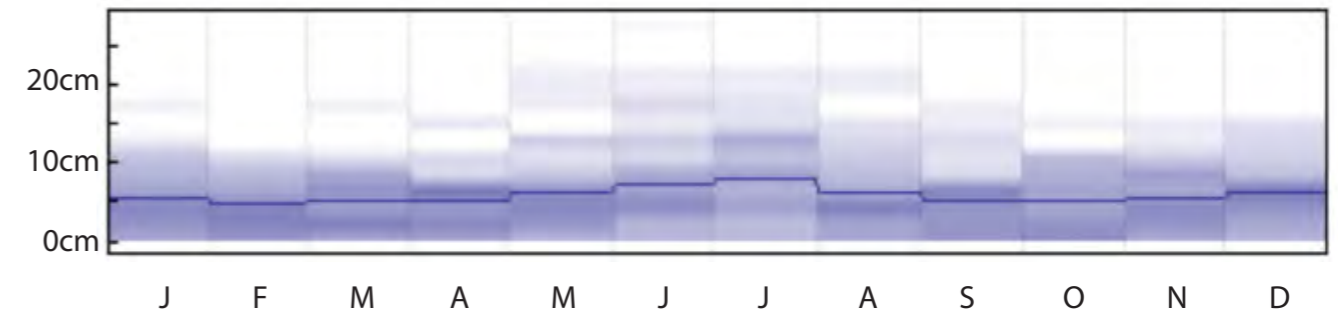
The precipitation in Bonn can at times be random so leaving for hours at a time without an umbrella can very well result in a wet day. The following page displays historic trends of precipitation in the city of Bonn.

Precipitation distribution:



(1931-2010 data, 1 month totals, with water equivalent of snow)

Precipitation distribution:

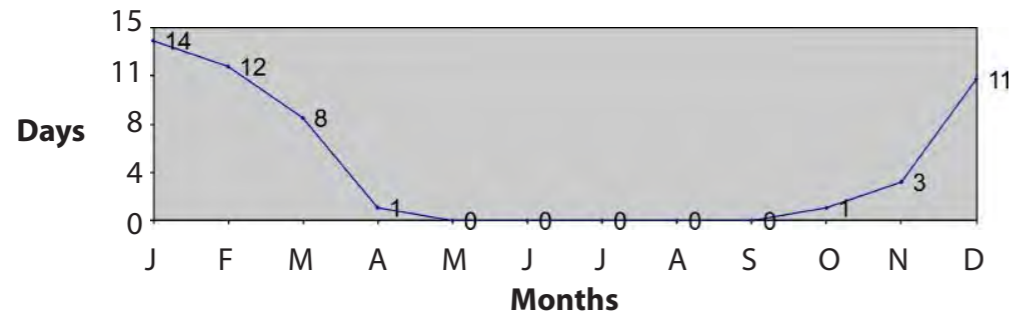


Snow and Frost

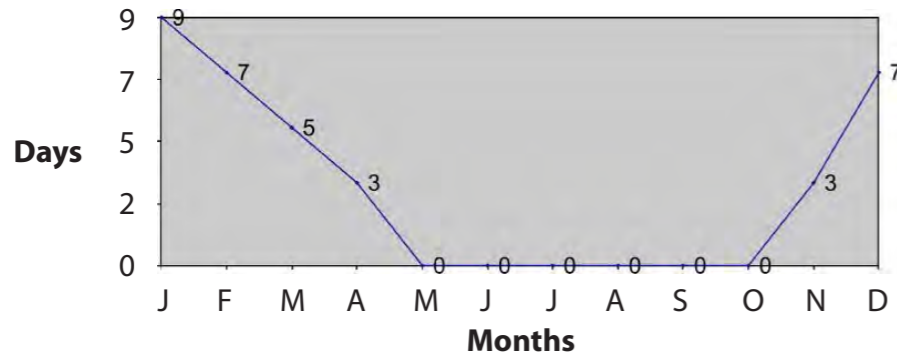
The peak month for snow is in January, averaging 9 days of snow out of the month. December and February follow close behind, averaging 7 days of snow per month. Snow fall could occur from November until April. May through October reflect 0 average days with snow.

Days with frost follow along the same curve as snow, with January averaging highest with 14 average days of frost. December and February follow close behind with an average of 11 and 12 days of frost per month. May through September reflect 0 average days with frost.

Average Days With Frost



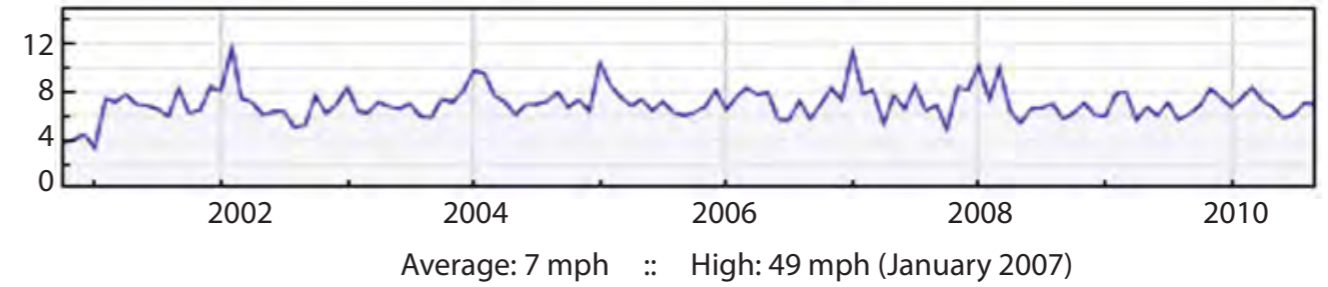
Average Days With Snow



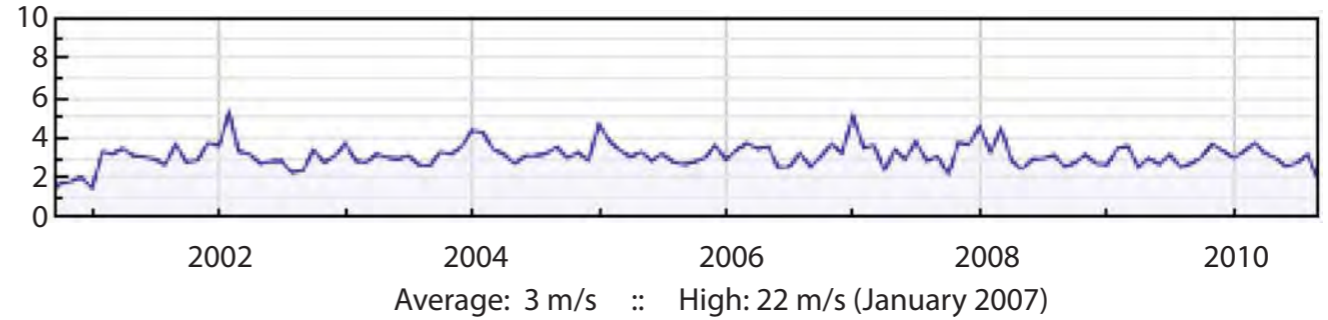
Wind & Cloud Cover

Bonn typically faces a southeastern wind that remains relatively calm throughout the year. The average wind speed is 6.5 mph (approximately 3 m/s), relatively comparable to cities such as Austin, Texas.

Average Wind Speed For Bonn, Past 10 Years (mph)

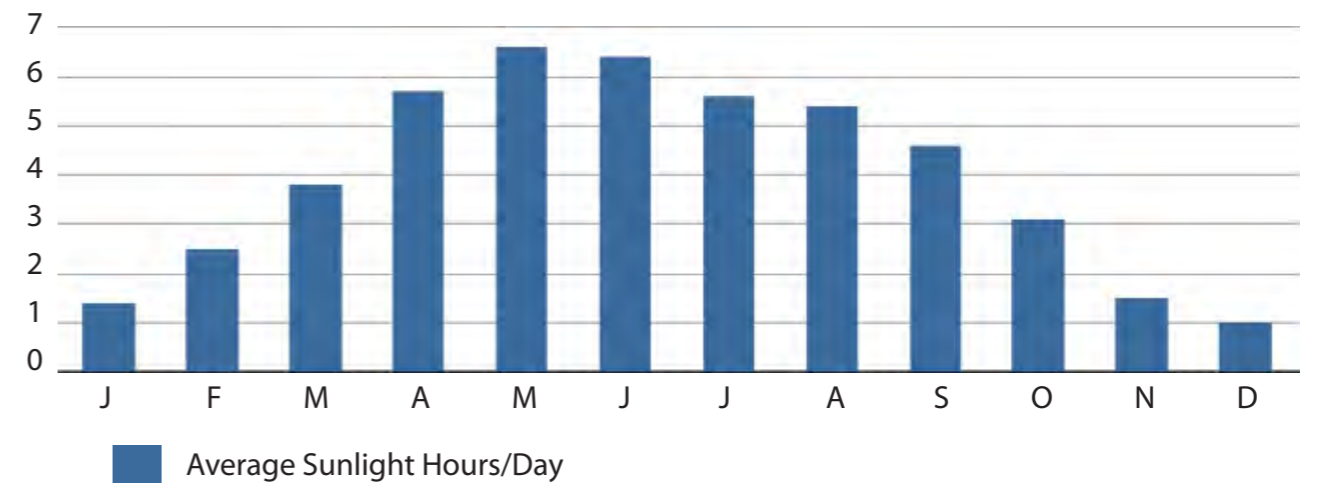


Average Wind Speed For Bonn, Past 10 Years (m/s)



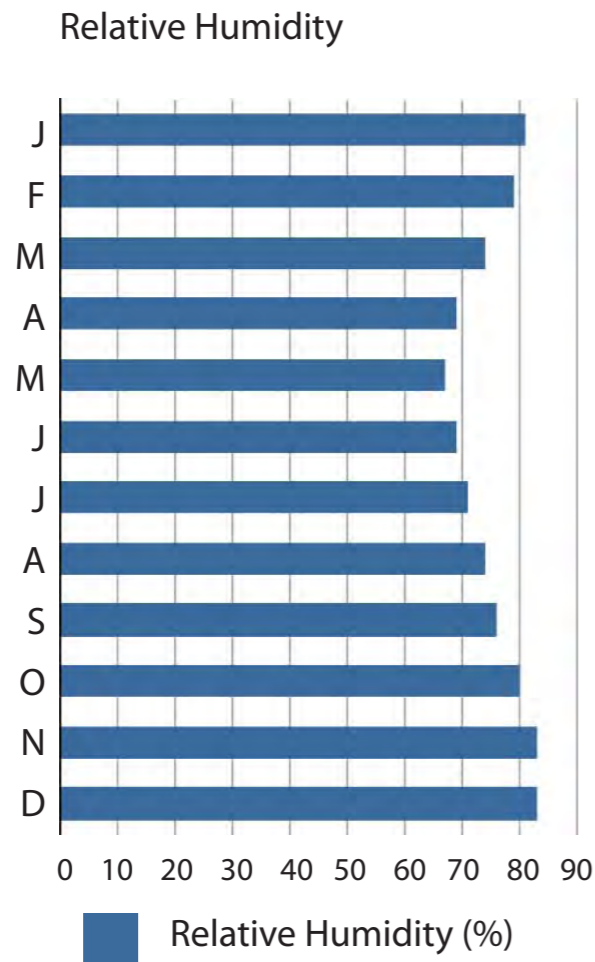
Typical days in Bonn include abundant cloud cover allowing for minimal sunlight. Summertime conditions allow for an increase in average hours of sunlight, averaging close to 6 hours a day. There is a constant decrease in hours of sunlight per day when entering the winter months. November through December have the lowest number of average hours of sunlight per day, averaging close to 1 hour a day.

Average Hours of Sunlight



Relative Humidity

Humidity levels in Bonn are fairly consistent, with higher percentages occurring in the winter months. In summer the average humidity reaches around 70%, while in winter levels are closer to 80%. There is not a huge fluctuation in the humidity levels.



Climate Change

The climate in Germany has gone through noticeable changes, especially in the last forty years.

- Higher temperatures in both the winter and summer have been documented. An increase of 1.1°C has occurred that may reach 2°C under current conditions.
- A higher number of extreme heat events (consecutive days with temperatures reaching at least 90°F) have become common.
- Precipitation has increased as well. Winters along with autumn and spring have seen a 34% increase and 10% increase in rainfall, respectively.
- The pattern of rainfall has also become more erratic. Droughts are followed by heavy rain occurring in unusual months.

Analysis & Conclusion

The information gathered on the topic of Climate is important in order to gain a better understanding of the city and citizens of Bonn. This knowledge will directly apply to the future steps of the project. Bonn's climate is mild, even milder in comparison to surrounding upland areas. Climate change impacts the climate of Bonn, creating warmer summers and milder winters, which actually benefits warm loving species of Mediterranean and even subtropical origin. This mild climate found in Bonn:

- Creates a high level of species and habitat diversity, allowing native as well as non native species to thrive. An example of this can be found at the Botanical Gardens of the University.
- Helps create an environment that establishes strong values for interacting with and promoting nature.
 - Bonn is known as the Green City due to an extensive amount of parks and natural areas found throughout and around the city.
 - Encourages citizens to be active outdoors, enjoying the sun and participating in multiple activities such as walking, biking, exercising, eating, relaxing, meeting friends, playing sports, and concerts.
- Is good for tourism and the promotion of outdoor events.
- Should be taken into consideration when choosing plant materials for future designs.



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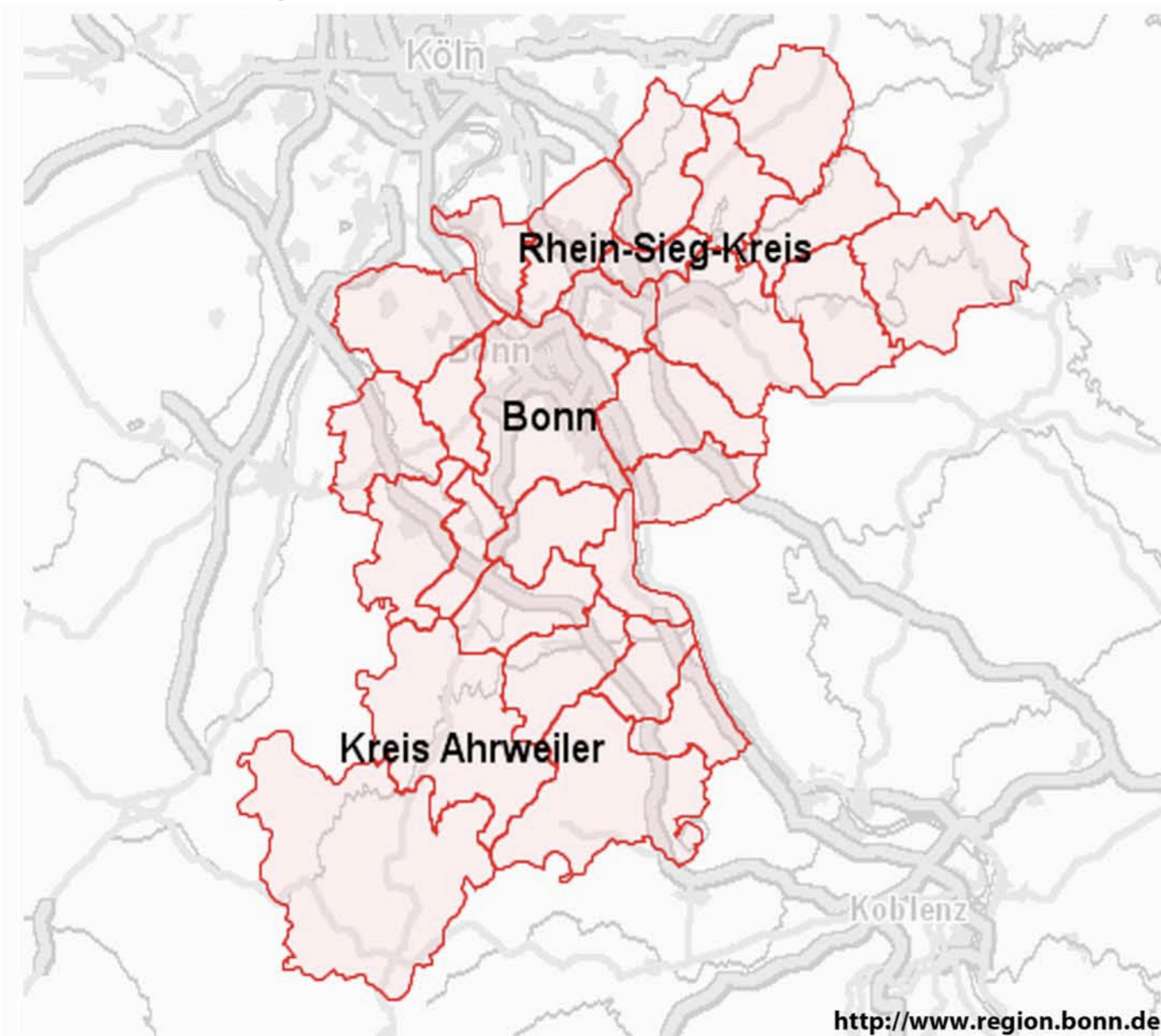
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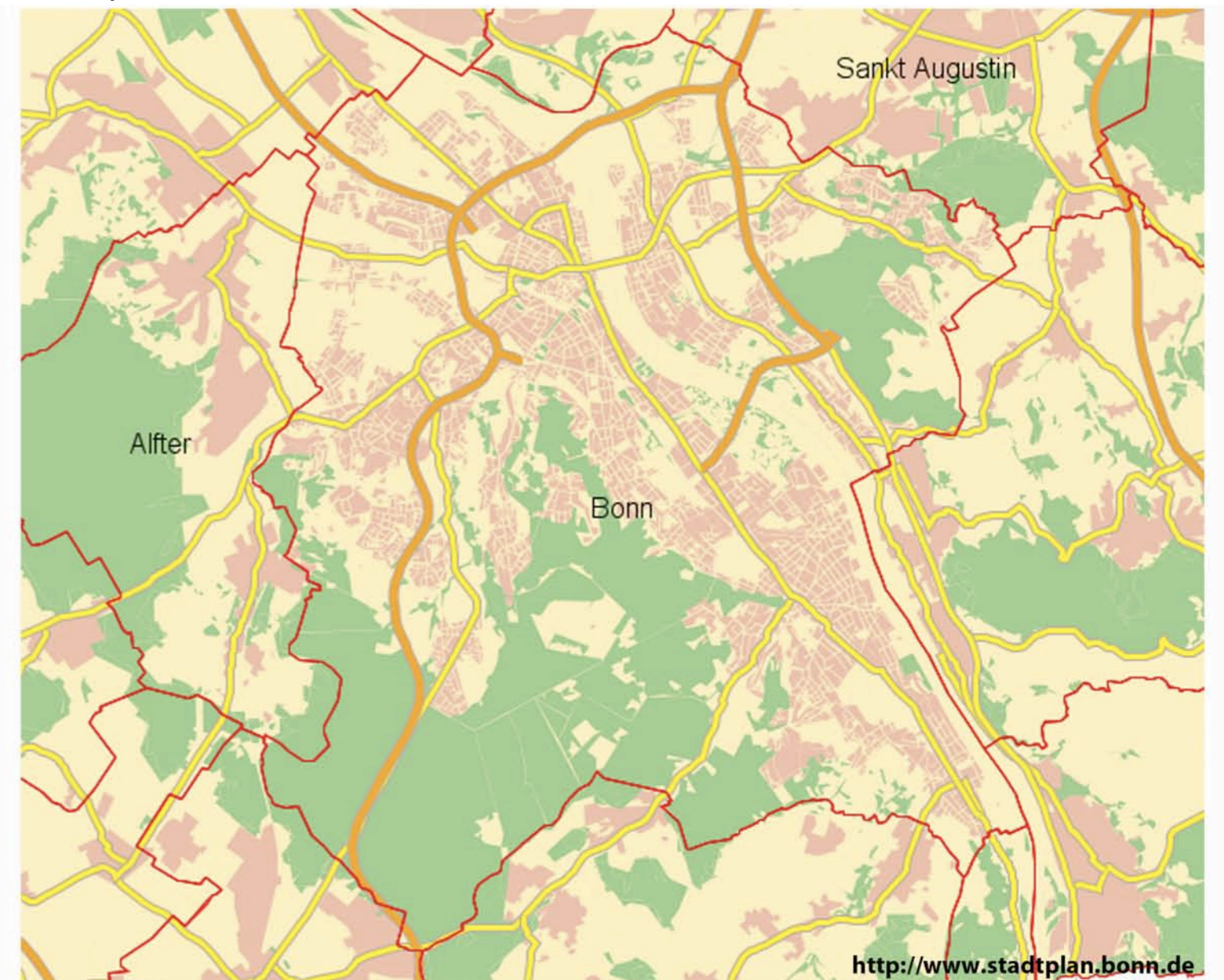


Bonn Region map



The Bonn region is a metropolitan region located within the Cologne/Bonn region and is located in the state of North Rhine-Westphalia. The region covers an area of 3,839 km² with 3,13 million inhabitants (population density 815/km²). The Rhine river is the geographical center of the region and boasts being the most diverse landscaped region in the state. The Bonn Region map shows the area we started with for our research on geology, soils, and topography. We examined the city of Bonn as well as the project site within this larger area to understand the context of the city and the project site.

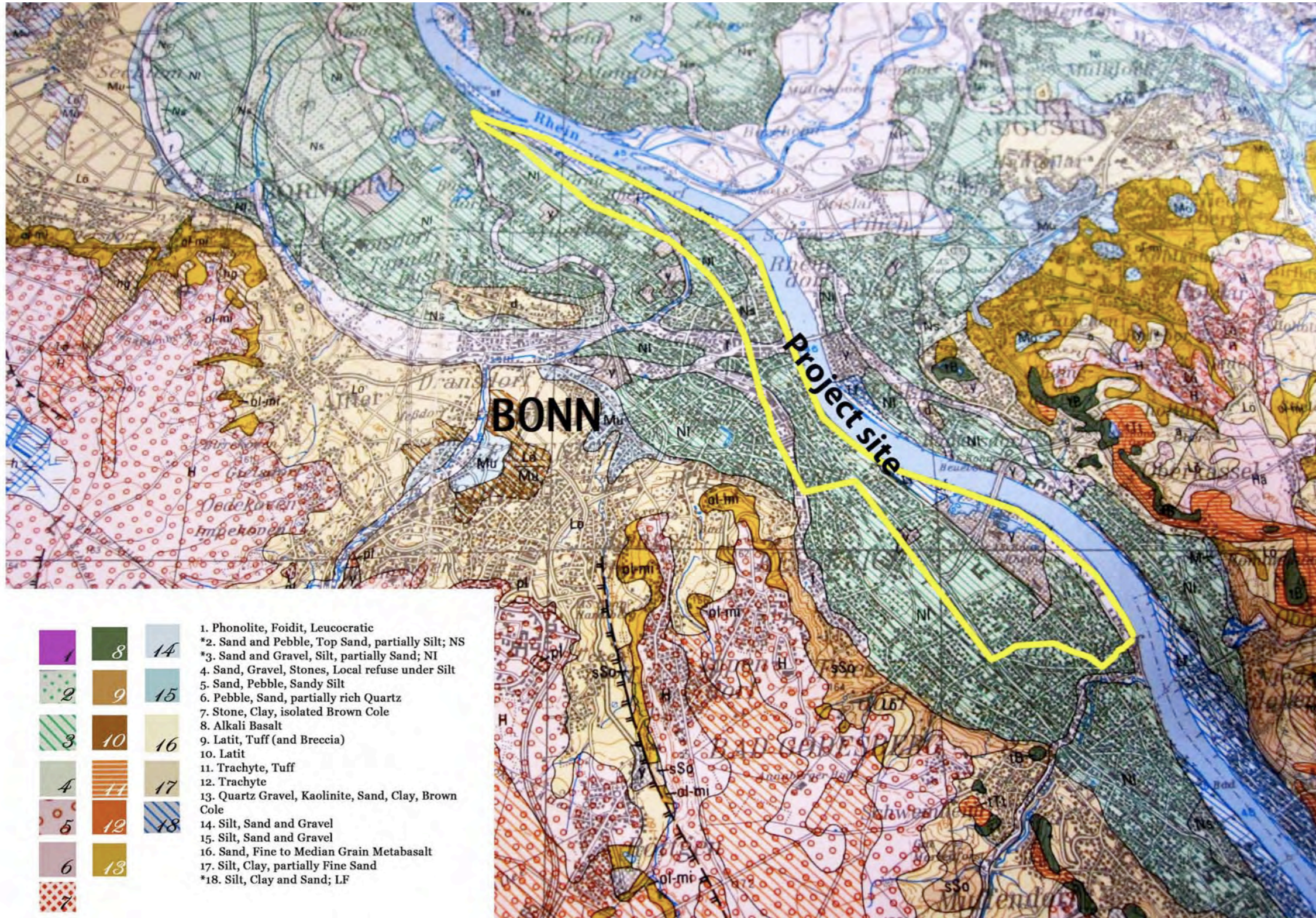
City of Bonn map



Bonn is the 19th largest city in Germany and is located about 25 kilometers south of Cologne. It was the capitol of West Germany from 1949 to 1990 and the official seat of government of of United Germany from 1990 to 1999. The City of Bonn map shows the boundary of the city and is the next area we examined in our research on Geology, Soils, and Topography. The Rhine river flows through the city on the eastern side and next to the entire project site. Major roads and highways are also visible on this map as well as open green spaces and developed areas. After examining the entire city of Bonn we examined the project site and its relationship to the city.



Geology Map: City of Bonn and surrounding areas



University of Bonn

The Project Site

This map shows the geology for the city of Bonn and the surrounding areas including the project site which is highlighted in yellow.

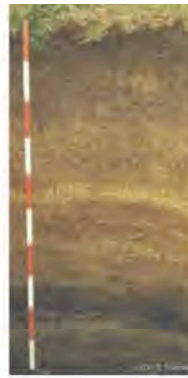
There are a variety of geological formations however, the most prevalent and of importance to the project site are the ones labeled in the key by the numbers 2, 3, and 18.

The first is composed of sand and pebble, top sand, and partial silt. The second is composed of sand and gravel, silt, and partial sand. The third is composed of silt, clay, and sand. With the third being the most prevalent out of the three. Most of the project site is composed of this one.





Brown Earth



Luvisol



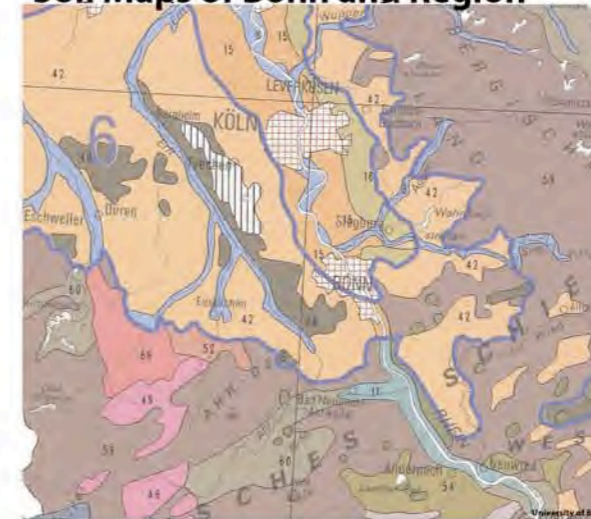
Regosol



Soil Regions of Germany

- 1 Holocene Coastal Plains**
Characteristic soils: Tidal Marsh/Regosols
 - 2 Major Fluvial Plains**
Characteristic soils: Fluvisols/ Gleysols
 - 3 Younger Glacial Drift Areas**
Characteristic soils: Luvisols/Podzoluvisols/ Gleysols
 - 4 Older Glacial Drift Areas**
Characteristic soils: Cambisols/Podzols/Gleysols/Luvisols/Histosols
 - 5 Quaternary Gravel Plateaus and Tertiary hills of the Alpines Foreland**
Characteristic soils: Cambisols/Luvisols/Gleysols/Regosols
 - 6 Loess and Sandy Loess Areas**
Characteristic soils: Luvisols/Chemozems/Gleysols/Podzoluvisols/Reosols
 - 7 Mountains and Hills of Non-Metamorphic sedimentary rocks partly covered by Loess**
Characteristic soils: Luvisols/Leptosols/Cambisols/Gleysols
 - 8 Mountains and Hills predominantly of non-metamorphic calcareous sedimentary rocks**
Characteristic soils: Leptosols/Regosols/Cambisols/Luvisols/Gleysols
 - 9 Mountains and Hills predominantly of non-metamorphic Sandstone, Claystone, and Marlstone**
Characteristic soils: Cambisols/Podzols/Luvisols/Gleysols
 - 10 Mountains and Hills predominantly of Igneous and Metamorphic Rocks**
Characteristic soils: Cambisols/Podzols/Gleysols
 - 11 Mountains and Hills predominantly of Slates**
Characteristic soils: Cambisols/Gleysols
 - 12 The Alps**
Characteristic soil: Leptosols/Regosols/Cambisols/Gleysols
- ⊗ Federal State of National Soil Survey

Soil Maps of Bonn and Region



- Fluvisol/Gleysols
- Fluvisol/Gleysols
- Haplic Luvisols
- Dystric Cambisols
- Haplic Luvisols
- Stagnic Gleysols/ Eutric Cambisols
- Rendzic Leptosols
- Eutric Cambisols
- Andic Cambisols
- Spodic Cambisols
- Spodic Cambisols
- Rendzic/Urnbric Leptosols
- Large Cities Urbic Redeposites
- Surface Water

Soils of the Region and Site

Very different soil associations are developed in the Rhenish Slate Mountains, the Lower Rhine Basin and the valleys of the Rhine as well as its tributaries. The geology of the underground rock has influenced the formation of the soil.

The Lower Rhine river area contains older rocks and deep glacial sands as well as a covering of clays. Thick brown coal occurs between these layers in some areas. After the Glacier melted, water fed the rivers from the main terrace gravel and backfill in the remaining valleys were cut later.

Luvisols can be found on our site. Luvisols as a whole cover over 650 million hectares around the world with concentrations in central and eastern Europe. They are characterized by their outstanding drainage and high nutrient content, making it suitable for agriculture, from grains, orchards and vineyards.

Fluvials are also heavy within our site. Fluvials are soil deposits laid down by the river. The Rhine is continually depositing and collecting solid particles of rock and soil from its bed throughout its length. Where the river flow is fast, more particles are picked up than dropped. Where the river flow is slow, more particles are dropped than picked up. The river along our site moves at a fast pace, so therefore more sediments are being collected then dropped off.



Topography Map: City of Bonn and surrounding areas

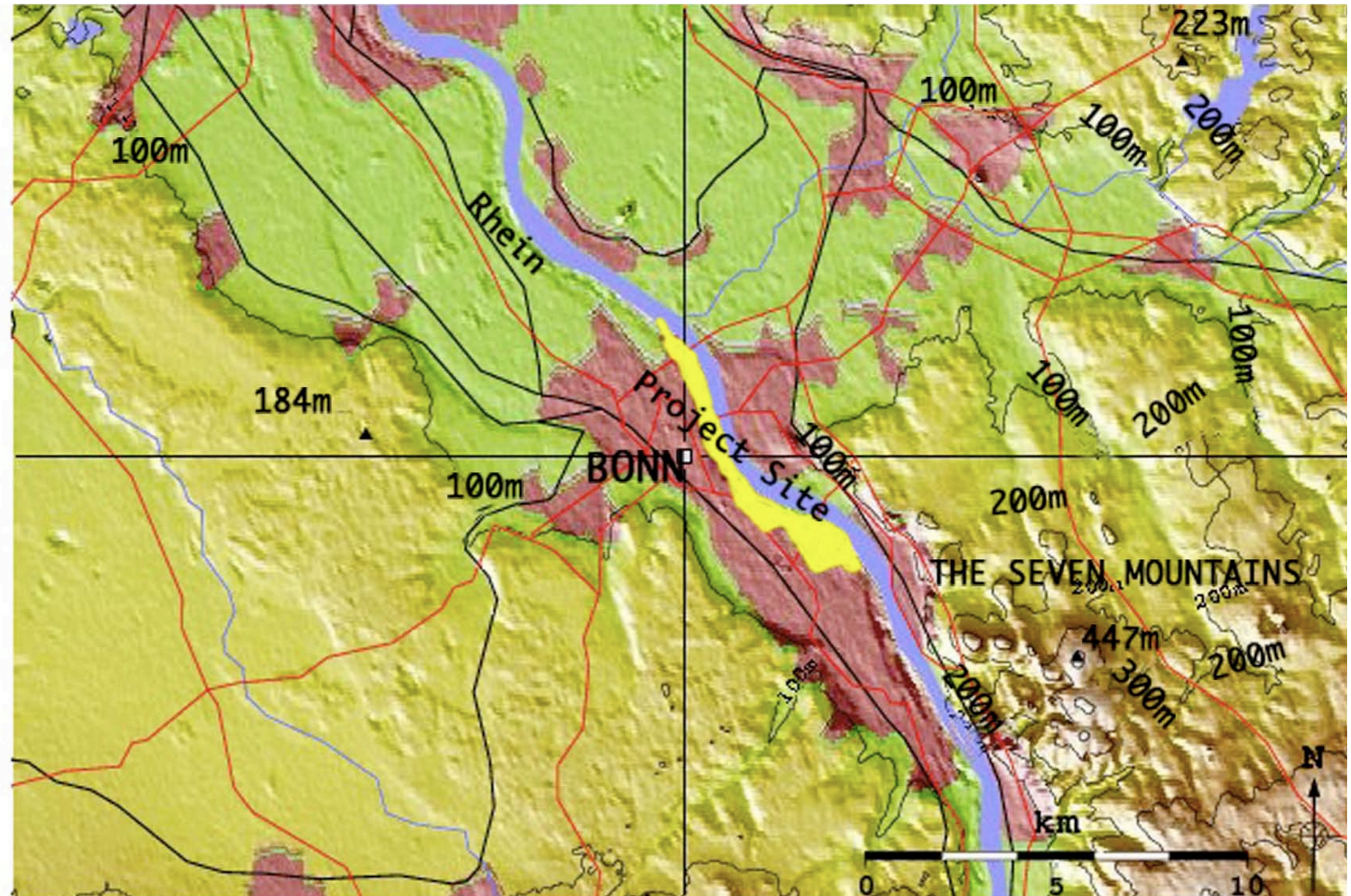
Topography of Germany

Germany is located in Central Europe, covering an area of 356,959 square kilometers

Germany has an irregular, elongated shape
The topography is varied

Basically, Germany is flat in the north and elevated in the south and can be divided into four distinct topographic regions

1. Flat **North German Lowlands** including the North sea coast
2. Mountainous **Central German Uplands** with its forests, rifts, and valleys
3. **Rhine river valley** with its mild climate in the West
4. Southern **Alpine Foreland and Alps** with its green hills and glacial lakes



<http://www.weather-forecast.com>

The topography within the City of Bonn and the project site is relatively flat. Changes in elevation occur mostly in the open green areas such as the Freizeitpark Rheinaue park to the south of the city and the project site. However, these elevation changes in the park mainly consist of man made hills. The terrain starts to rise towards the South of the city where the Siebengebirge (seven mountains) are located. This is a National park that consists of seven scenic hills along with other landscape features that overlook the Rhine river. The highest point in elevation is located towards the center of the park at 447 meters. The Rhine river flows past Bonn to the North.





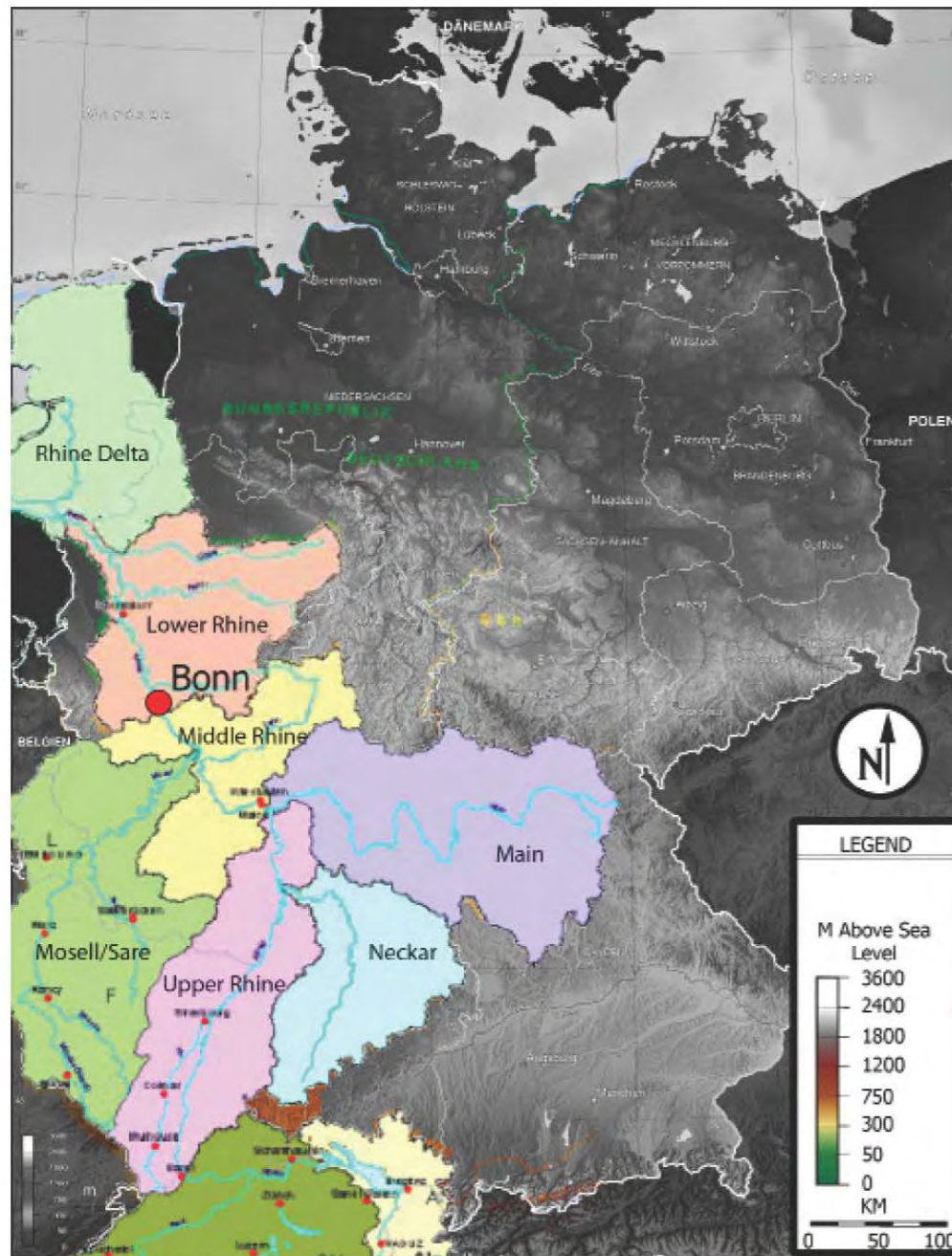


Figure 1 Nine Rhine River Basin Subdivisions

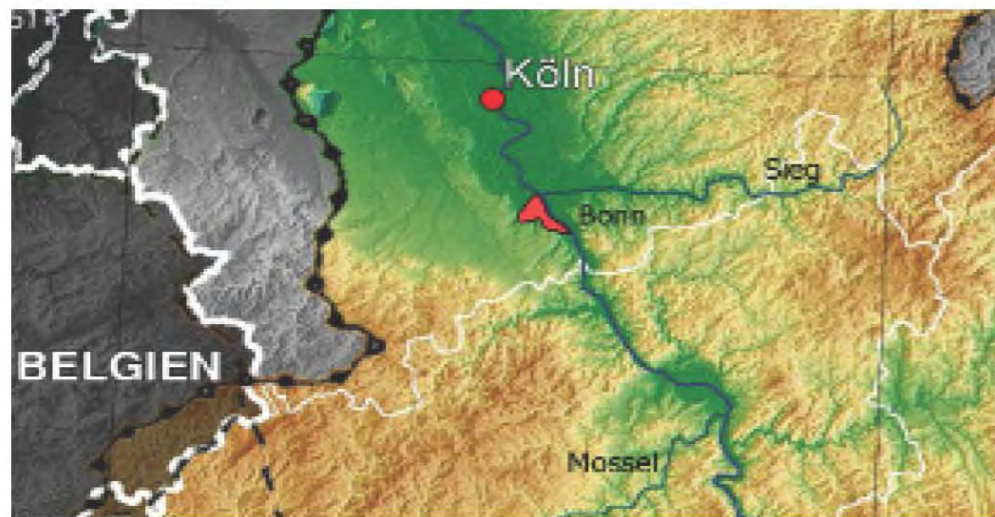


Figure 3 Rhine River around Bonn

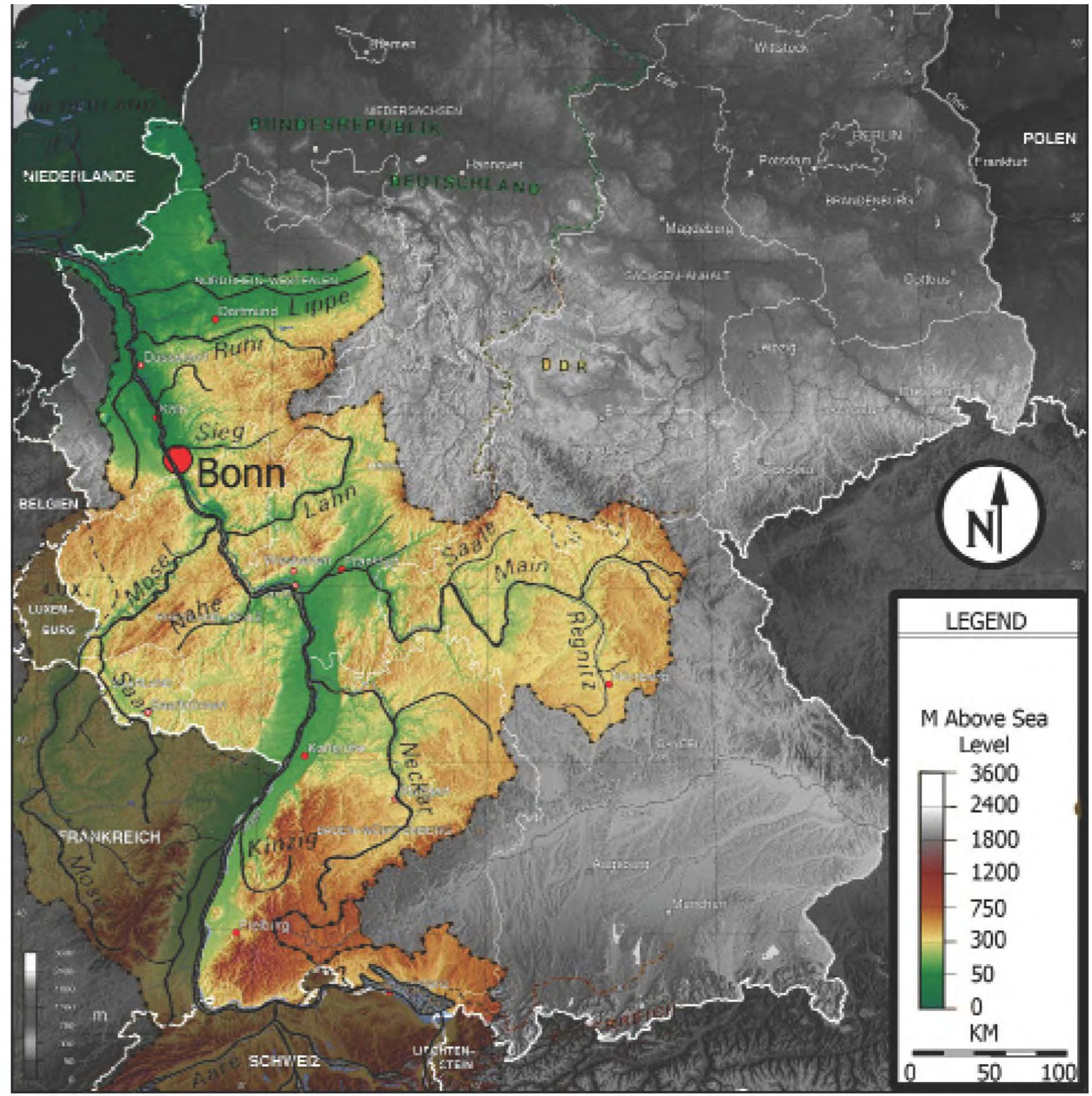


Figure 2 Rhine River and Tributary Rivers



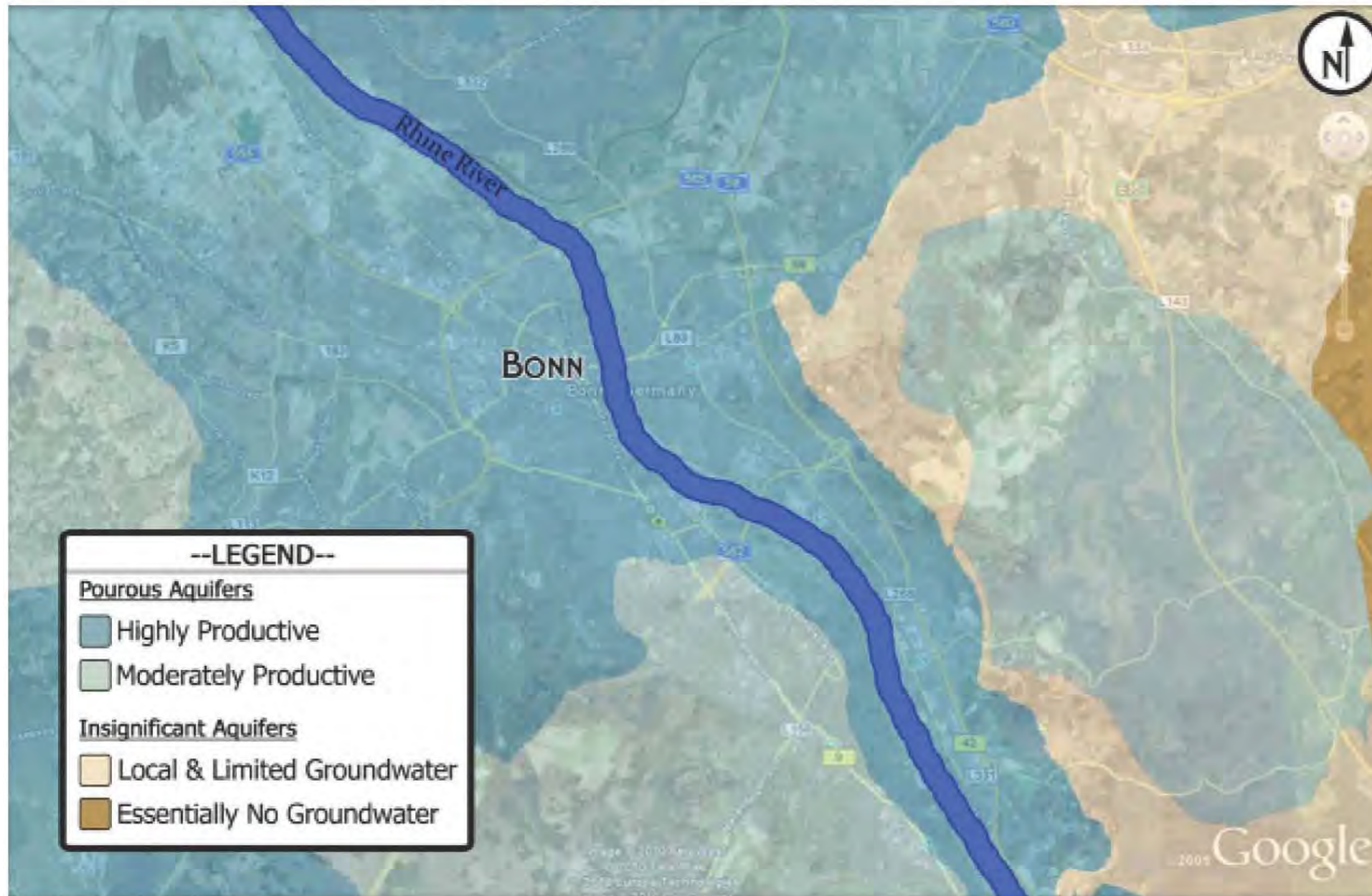


Figure 4 Hydro-geological map of Bonn
Rhine River Basin

The River Rhine is 1230 kilometers long, 700km of which is navigable for large vessels, flowing north from the mountains near Basel, Switzerland to the North Sea at Rotterdam, Netherlands. The river at Bonn produces an average flow rate of 2520 cubic meters per second (26,617 cubic feet per second). The river drainage basin spans over 104,000 square kilometers, spanning sections of Switzerland, France, Belgium, The Netherlands, and Germany.

The Rhine River Basin is controlled by nine multinational region organizations distinguished by tributary watershed sections. These organizations help write legislation regulating processes that affect the River Rhine and its tributaries.

Bonn Falls under the Lower Rhine Regional Watershed, as can be seen in Figure 1. This region is demarcated by the abrupt topographical change that can be seen from the river front of Bonn. When looking south from the river front the seven hills, (Siebengiberge) landmark can be easily observed, and to the north the much more flat lands of the Rhine flood plain, which surrounds Bonn can be distinguished.

Limnology

The Rhine has many tributary rivers; however the largest and most important of which is the Mosell River which contributes almost one quarter of the Rhine's total water discharge. The Mosell and Sare river

basin drain most of eastern France and join with the Rhine River at the city of Koblenz approximately 70 kilometers (43 miles) south of Bonn. The Mosell is the final tributary before Bonn on the Rhine, as can be seen in figure 3.

Immediately north of Bonn lies the river Sieg. The Sieg drains only a small area. The Sieg is also of little importance to our design except that it parallels the northern border to our site on the opposite side of the Rhine.

Aquifers

According to Figure 4, the area in and around Bonn is comprised of four hydro-geological zones. While our site is contained within the zone demarcated as highly productive it is important to realize the product of the highly productive site as well as the additional three sites.

The highly productive area in blue is demarcated as highly productive porous aquifers, meaning that this area readily absorbs precipitation through the soil. Due to its proximity to the river we can infer that most of this absorbed water still percolates into the Rhine.

The area demarcated as moderately productive, shown in light blue, still readily absorbs water through the soil, though at a slower rate than that of the highly productive area. The lessened ability of the area to absorb water can be explained by two factors; soil type or geology and topography. Some soils in these areas have higher bulk density and thus less pore-space to absorb water. These areas also exhibit steeper topography which accounts for less time for water to absorb into the surface.

The two areas marked as insignificant aquifers located on the Beuel side of the Rhine, do not readily absorb water into the soil surface for the same reasons as the moderately productive site; soil or geology and topography. These areas are composed of shallow soil profiles underlain with relatively impermeable trachyte geology. Also these areas are significantly steeper than the area adjacent in Bonn. The major implication of these facts is that surface runoff is significantly higher in this area, however due to the minimal size of these areas the affects of runoff are negligible within our site.



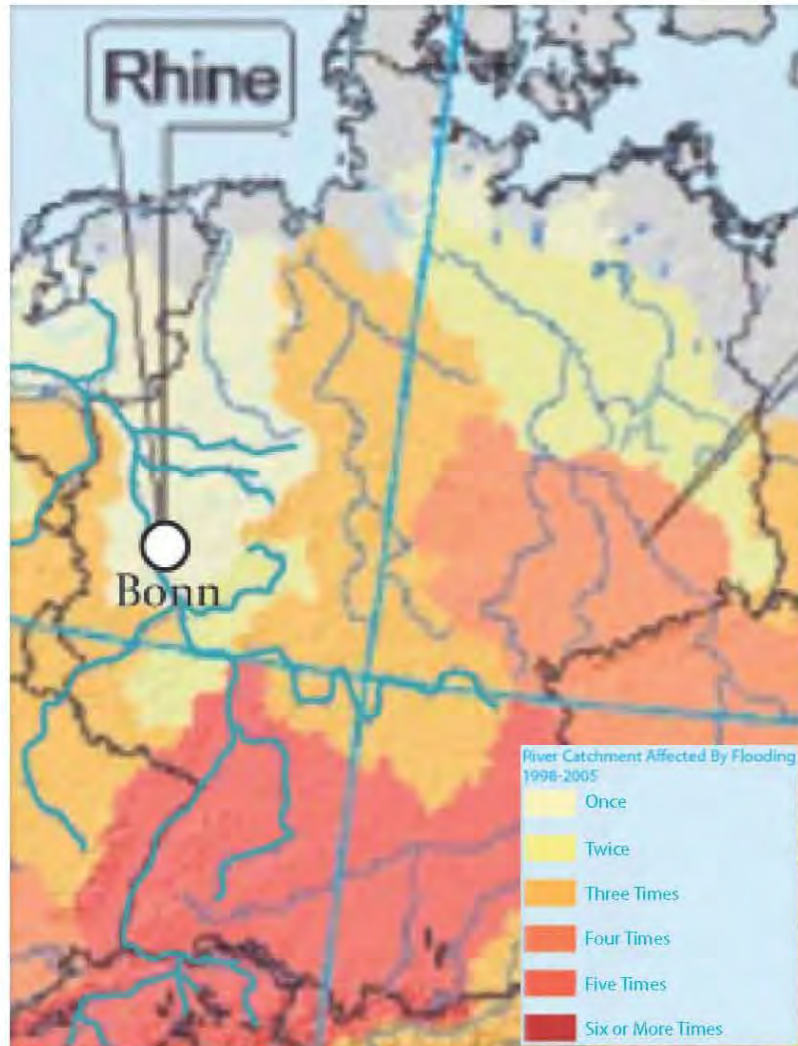


Figure 5 Flooding from 1998-2005
https://floodmaster.hydro.tu-dresden.de/wiki/rhine_river



Figure 7 Areas of Damage from the 1995 Rhine River Flood

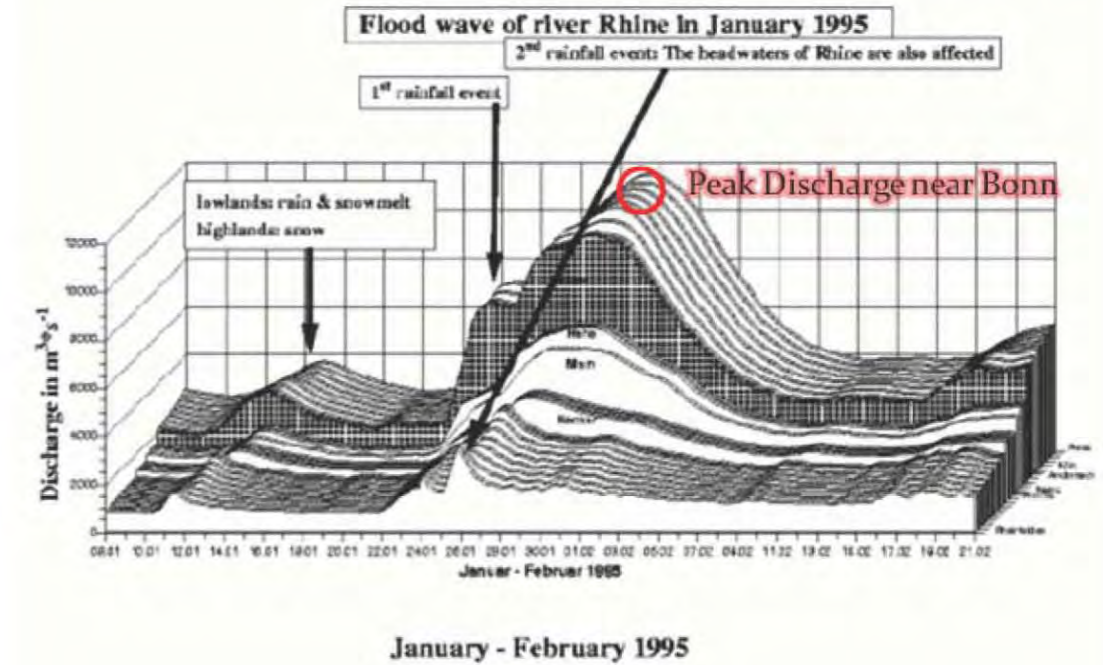


Figure 8 River Water Discharge from the 1995 Flood

Areas in Germany Affected by Flooding

Flooding is a serious disaster that is relatively common throughout the Rhine River Basin especially in Germany and the Netherlands. Floods must be considered in design and in construction projects along rivers because of their potentially devastating effects. While Bonn still experiences floods, it is in a region that suffers from floods much less often than other regions in Germany, according to Figure 5. This is no reason to neglect the possibility of flooding, because they do still occur. Also in the advent of global climate change, the likelihood of increased frequency and magnitude of flood events warrant action for prevention and protection.

River Water Heights from 1901-1997

Water heights along the Rhine are measured from an established marker. This marker is a relative measuring tool that measures all water heights from that set point. Using this method of determining water height, data has been collected along the Rhine for the last 100 years (see graph – Caption: Data shows only the greatest water height measured during that specific year.). As you can see, during 1995 the Rhine river water level was at almost 10.2m (33.15ft) above the set marker. This caused extreme flooding in Köln and in Bonn as well.

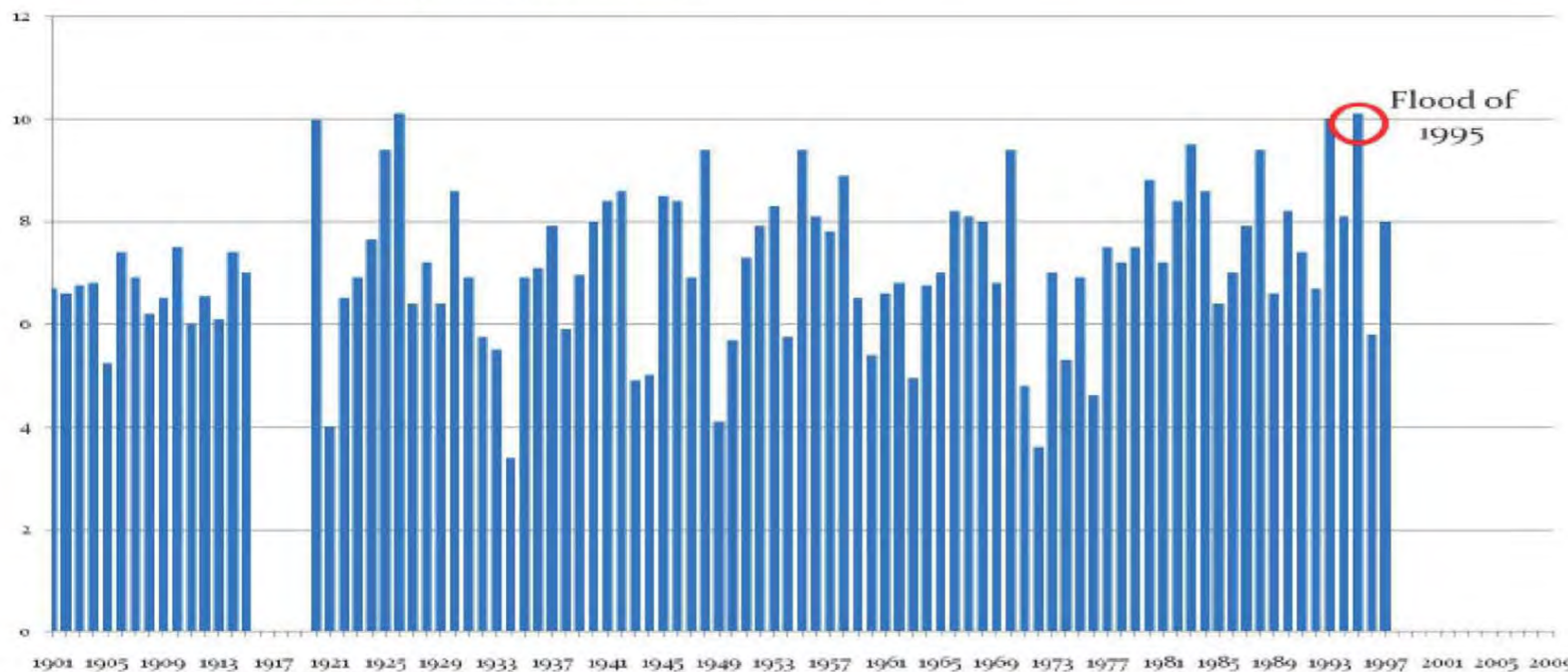


Figure 6 Maximum Rhine River Height from 1901-1997



1995 Flood Zone

Extensive damage from the flood of 1995 occurred mainly in the northern region of Bonn, with more prevalent damage occurring in the Netherlands, shown in Figure 7. Flooding is more prevalent within the northern region of Bonn's city limit due to its lower elevations. The topography of the land north of the city flattens above Bonn's city center. Due to Bonn's position at the mouth of the flood plain, the city is the first area to be hit by high waters. The northern region of Bonn is more likely to flood because the southern region of Bonn still has steep topography in its favor as well as a series of manmade levee walls that contain flood waters as well. The large hills and built up riverfronts help protect the southern region of Bonn from flooding, while allowing the northern regions to flood much more easily.

Rhine River Discharge 1995

Flooding occurs when the peak discharge and height of the river exceeds the volume the river can effectively handle. The average discharge of the Rhine River around Bonn is roughly 2,520 cubic meters per second. In the beginning of February 1995, the peak discharge rate escalated to roughly 11,000 cubic meters per second. This significant increase in discharge contributed to the flooding because the river bed could not contain such a large volume of water. There are many causes for the increase in water discharge during this period of time. Along with a heavy early season rain, a mild winter caused glaciers within the Rhine's discharge zone in the Alps to melt earlier than normal. The combined forces of rain and glacial melt contributed to the exceptional increase in discharge.

Influences to Flooding

There are many influences that contribute to flooding. There are natural processes as well as anthropogenic influences that increase the probability and capability of flood damage. Natural influences are processes that are ultimately outside of human control. Flooding is a natural process that with or without human interference will always occur. This process is created due to several processes and influences found naturally. These influences include weather, precipitation, geography, as well as many other forces. Rainfall is a major influence to flooding. Having an abnormally high rate of precipitation will cause the river basin to fill quickly and increase the discharge of the river into which the water runs. It has also been noted that the volume of rainfall has been steadily rising during



Figure 9 Channelization of the Rhine River



Figure 10 Example of a meandering "Oxbow" River

the past century, as well as a steady increase of annual glacial melt. Wintertime precipitation has also increased roughly 40% during the past century. An increase in the volume of snow can create a problem, especially if the climate during the winter is particularly mild. Mild climates during the winter increase the rate at which snow melts as well as the period of the year at which it melts, thus increasing the volume of water that enters into river. Average temperatures in Germany have increased between 1°C and 1.5°C. The accumulation of greenhouse gases can be attributed to the even milder winters in Northwestern Europe. The Rhine River also flows through a relatively narrow gorge for a large portion of its course. This is a problem because it encourages greater flow velocities by restricting the amount of land on either side of the river that is available to absorb overflow from the river, causing decreased hydrologic lapse rates. While this only creates a small problem in the gorge, it increases the risk of flooding downstream when there is no longer elevated land to help keep the water contained.

As well as natural processes that contribute to flooding, there are also many anthropogenic influences. Many of these influences are related to

the urbanization and agricultural practice of land areas directly adjacent to the river and contained within the rivers flood plain. For humans to develop land along a river they must first clear the existing environment of many obstacles. Often, these obstacles include trees, marshes, swamps and other environmentally sensitive areas. By altering the environment humans change the characteristics of the land. If an area is deforested then the surface runoff of that area will be increased, along with erosion and sedimentation in rivers. With increased surface runoff, more water will find its way into the river. This process increases the volume of water in the river and consequently increases the discharge and possibility that the river may flood. Humans have also drained marshes and destroyed floodplains to make way for development. This greatly increases the probability of flooding because these environments effectively serve as sponges that soak up excess water when they are left in their natural state. A loss of these natural "sponges" will result in an increase of surface runoff and a significant stagnation in the water infiltration rate along the river. Modern farming practices such as removing windrows, forests and draining wetland areas also contribute to a decrease in water infiltration rates. Humans have also affected the Rhine River in a much more direct way. The natural form of a river within a flood plain develops into a meandering pattern made up of many "Oxbows", (see Figure 10). But the Rhine has been altered by humans over time to develop in reverse. The Rhine actually became straighter over the course of the last 1000 years. Figure 9 shows a representation of the straightening of the Rhine over the last 1000 years. Human interference by canalization as well as the use of hydro-electric dams north of Bonn and increased sedimentation due to these forces has increased the risk of flooding on the Rhine.



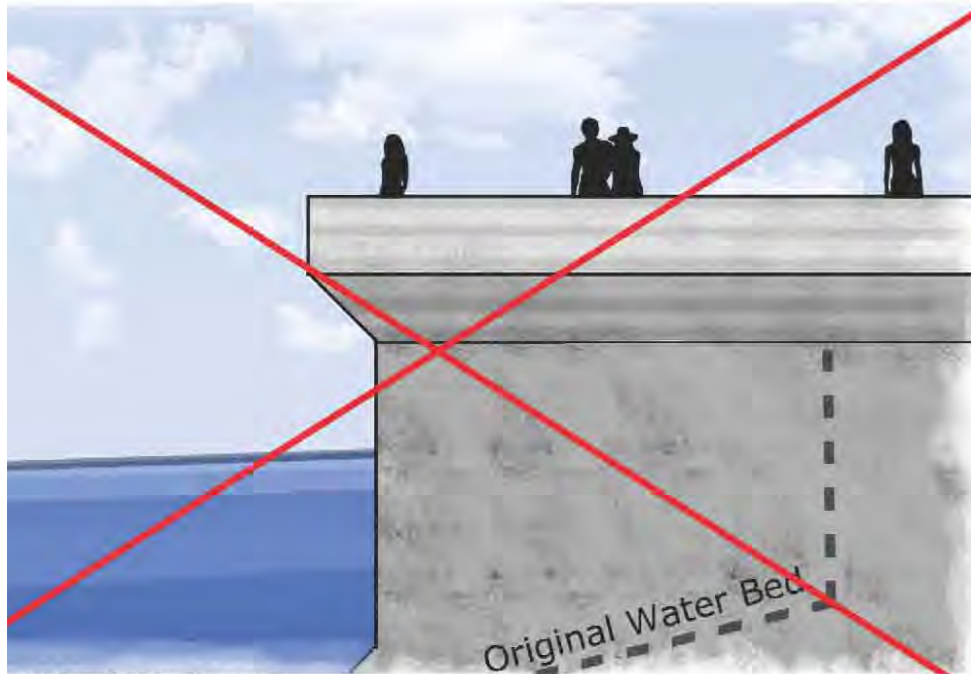
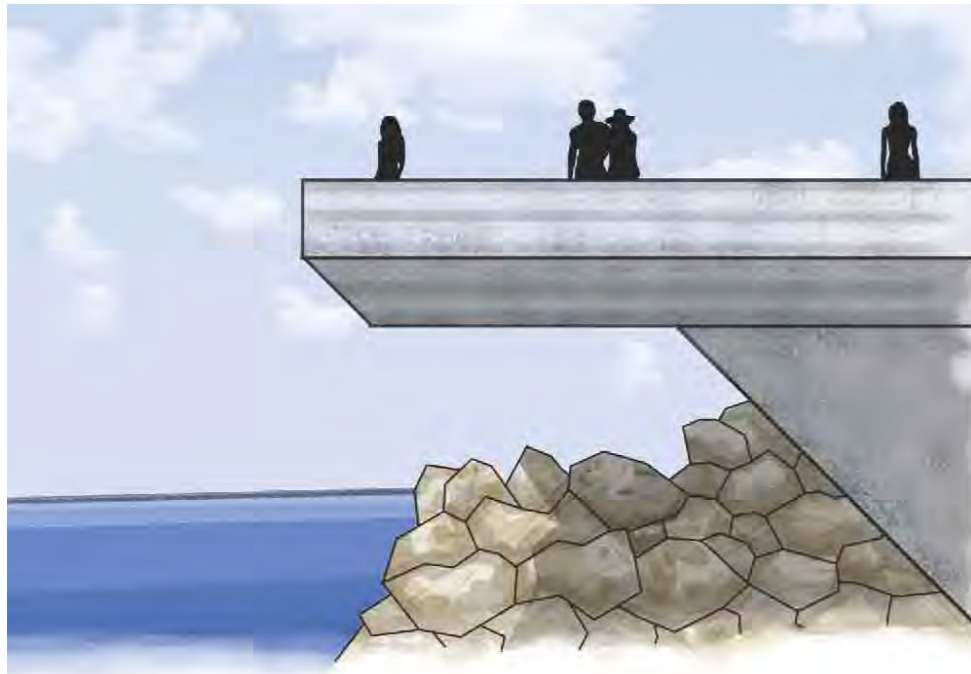


Figure 11 River Building Easement

Easement and Structural Law

Information dealing with the capacity to build on the Rhine River has been difficult to find, and no literature has been found to directly back up our theory on the legality to build in and around the Rhine. However during an interview with a senior architect from the area we were led to believe that any structural development that leads to a change in the water course of the river is prohibited. However structures that extend over the river, are proven structurally sound, as long as they do not block navigation of the river are acceptable.

CONCLUSION

In the previous text we have presented evidence relating to the general hydrology of the Rhine River Basin, as well as the hydro-geological features affecting river flow around the Rhine River. It is concluded that many of the negative facets of these studies affect our site only negligibly.

Design for flood control should be a top priority around the city of Bonn as the risk of potential flood damage increases with global climate change. Building along the Rhine must not directly contribute to its ability to flood especially in areas around the city.

Buildings that disrupt the water course of the Rhine are strictly prohibited, while building in a way that extends over the present river bed, while not directly disrupting the flow, is acceptable. Structures must be designed and built in a way that is both structurally sound from both standpoints of typical use as well as the horizontal forces that are applied during high water situations.

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P.M. Van Dijk, F.J.P.M. Kwaad "Modelling suspended sediment supply to the River Rhine drainage network; a methodological study" (1998) *Modelling suspended sediment supply to the River Rhine drainage network; a methodological study* IAHS Publ. no. 201, 1998

List of Illustrations

Figure 1 Nine Rhine River Basin Subdivisions

Map Data Provided By Bundes. Ministry of Hydrology and the European Geological Survey. Map produced by Benjamin Miller Fall 2010

Figure 2 Rhine River and Tributary Rivers

Map Data Provided By Bundes. Ministry of Hydrology and the European Geological Survey. Map produced by Benjamin Miller Fall 2010

Figure 3 Rhine River around Bonn

Map Data Provided By Bundes. Ministry of Hydrology and the European Geological Survey. Map produced by Benjamin Miller Fall 2010

Figure 4 Hydro-geological map of Bonn

Map Data Provided By Google© and the European Geological Survey. Map produced by Jesse Cruce Fall 2010

Figure 5 Flooding from 1998-2005

https://floodmaster.hydro.tu-dresden.de/wiki/rhine_river

Figure 6 Maximum Rhine River Height from 1901-1997

Data collected from: http://pegel.bonn.de/php/rhein_auswertung.html. Graph created by Jesse Cruce Fall 2010.

Figure 7 Areas of Damage from the 1995 Rhine River Flood

Map Data Collected from <http://geographyfieldwork.com/RhineEffects.htm>. Augmented for Presentation Benjamin Miller

Figure 8 River Water Discharge from the 1995 Flood

https://floodmaster.hydro.tu-dresden.de/wiki/rhine_river. Augmented for presentation by Jesse Cruce Fall 2010

Figure 9 Channelization of the Rhine River

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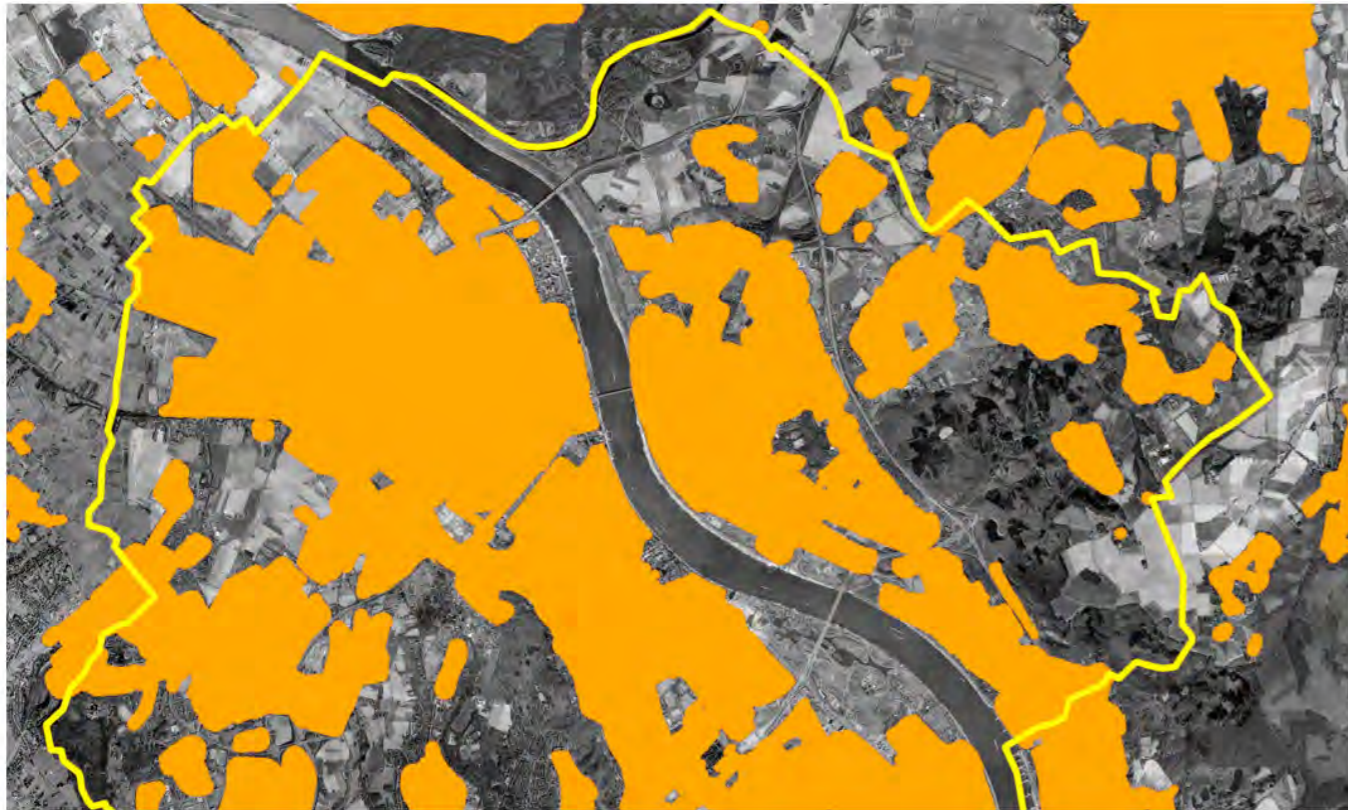
Figure 10 Example of a meandering "Oxbow" River

<http://intranet.friaryschool.com/new/includes/departments/geography/rivers.htm>

Figure 11 River Building Easement

Prepared by Jesse Cruce Fall 2010

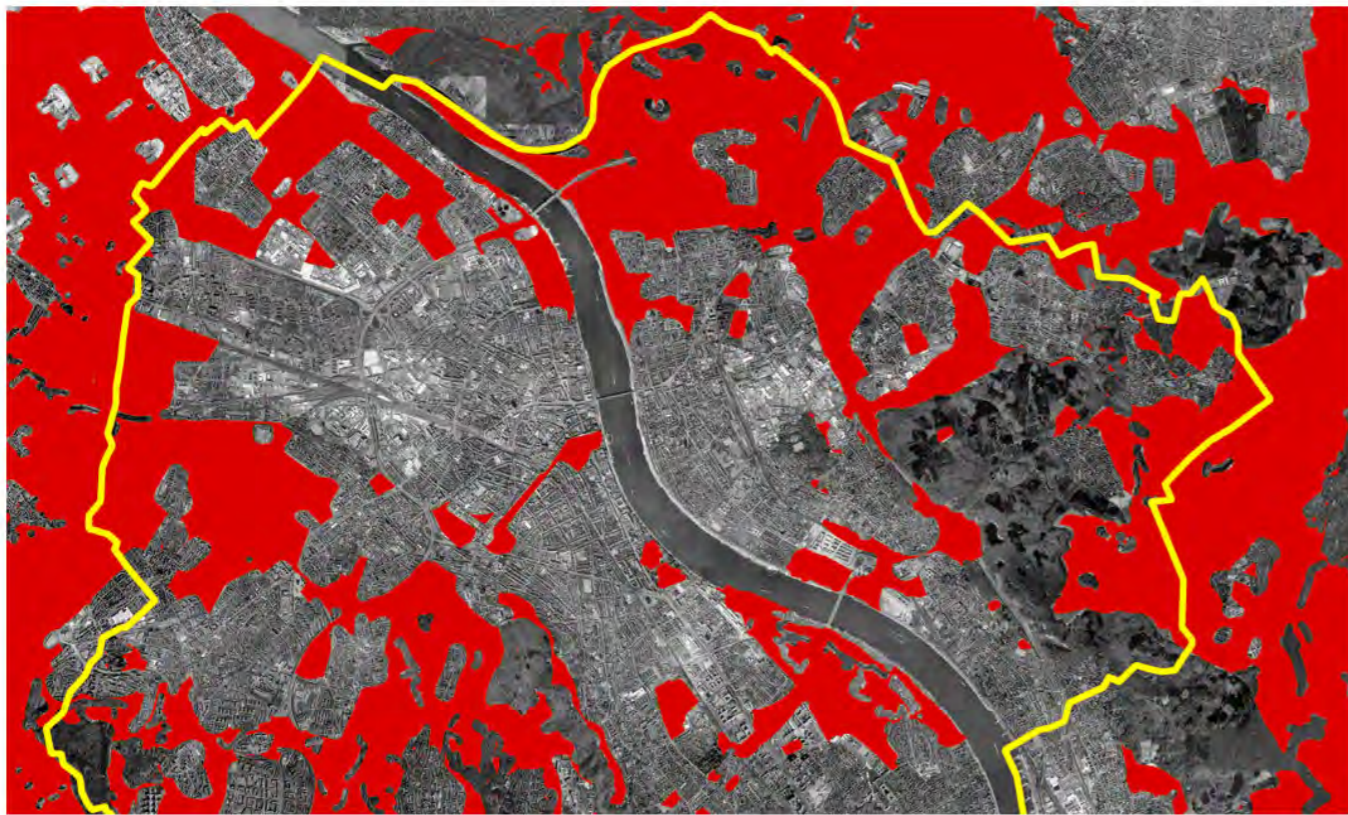




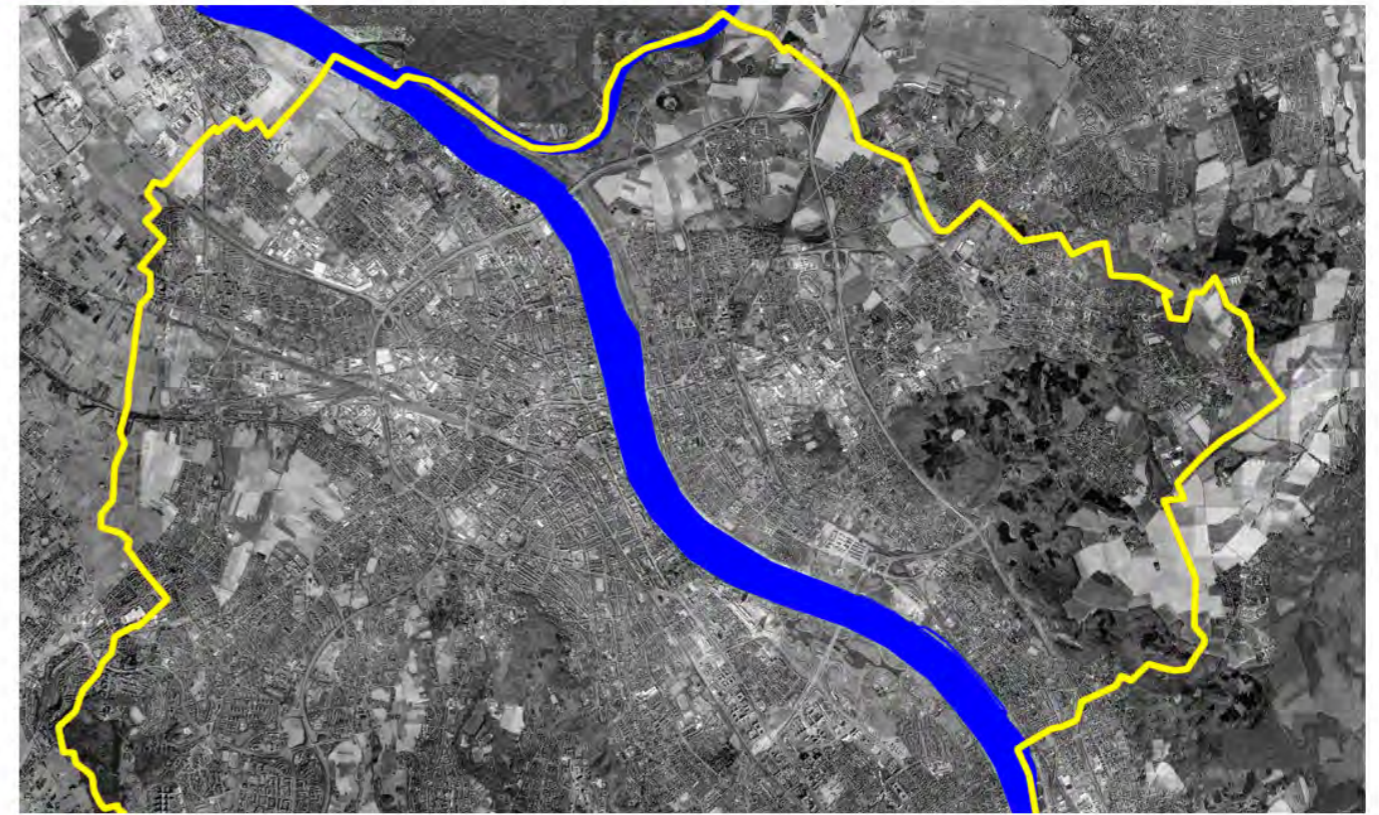
City biotope highlighted in orange.



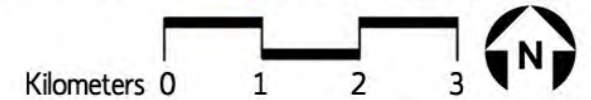
Forest biotope highlighted in green.

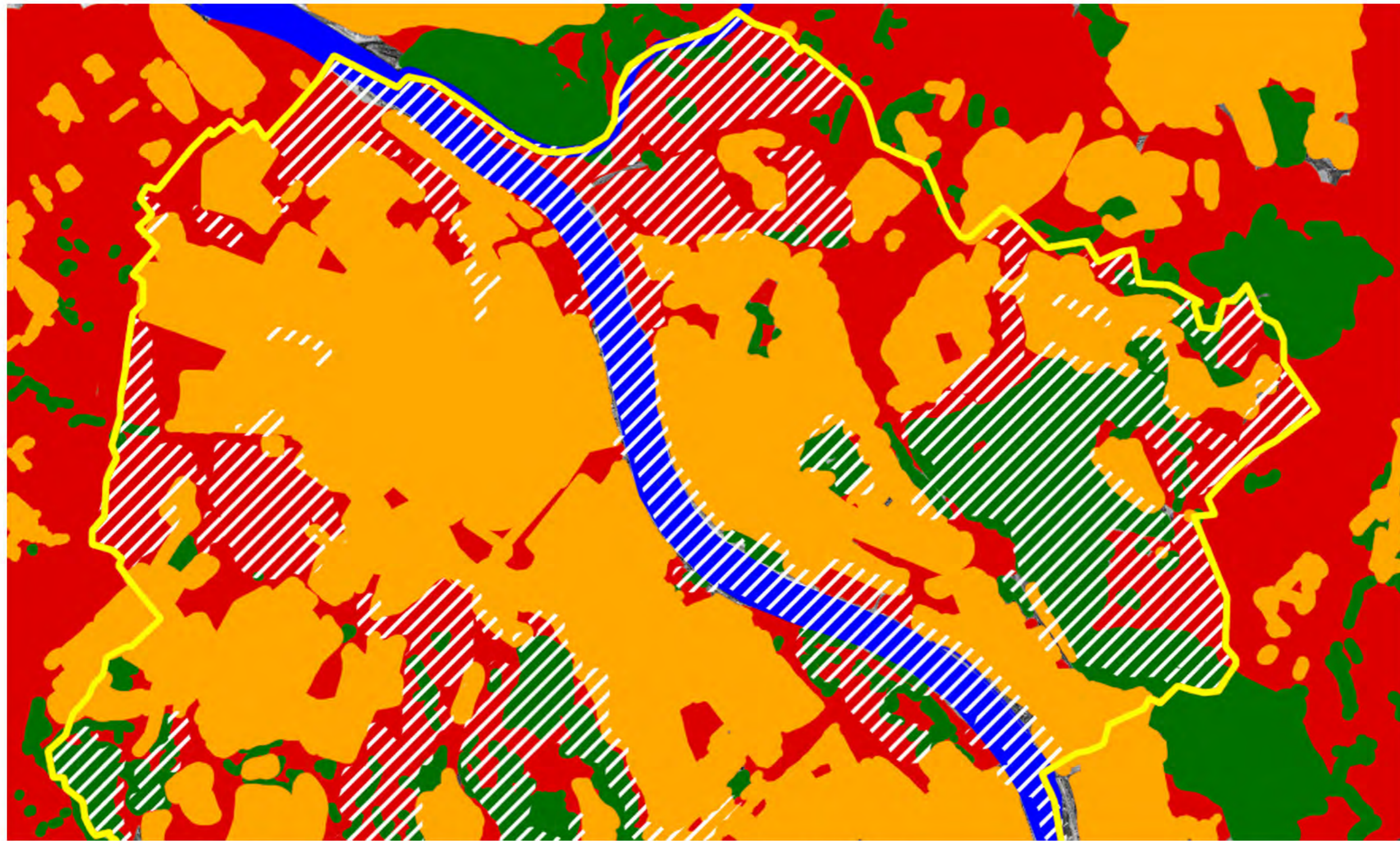


Open land biotope highlighted in red.



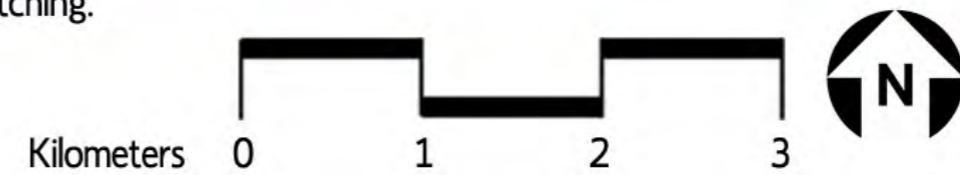
Riparian biotope highlighted in blue.









- City
- Forest
- Open Land
- Riparian

This map shows all of the biotopes combined along with the existing conservation areas in the white hatching.



		DESCRIPTION	THREATS
	<p>OPEN LAND</p>	<p>Any tract of land kept as green space can be classifiable as open land. The variety of uses range from the industrial production of vegetables, grain crops, cut flowers, et cetera. Most valuable to biodiversity of species are the cultural landscapes such as meadow orchards. Bonn still harbors some 180 meadow orchards in a total area of 1 sq.km. The Stradwald forest alone has about 312 fruit trees varying in age from 10 to 20 years old. Large areas of the Rheinauenpark, which are less intensively used, also serve as an area of high importance to biodiversity.</p>	<p>The growing population of Bonn is pushing the development of residential and commercial development onto open lands. This disappearance of rural farms also plays a role in the conversion of open land to developed land. By giving subsidies to farmers and placing cultural landscapes under protection the local government is making strides in trying to preserves these old farms and meadow orchards.</p>
	<p>CITY</p>	<p>The city biotope consists of a collection of cemeteries and Parks which act as havens for local wildlife. The inner city boasts 30,000 trees on public land and 80,000 trees on the surrounding lands controlled by the city. The trees and small intensive gardens dotted around the overbuilt city center add to the resources available to native and neophyte species of birds and mammals.</p>	<p>In the city it is especially important to protect the mature trees. These trees are important habitat nodes for many birds and bats in the city. Cemeteries are especially important for the protection of wildlife and vegetation where human interaction is limited. These cemeteries create habitats for insects, mammals, and vegetation, many of which are endangered.</p>
	<p>FOREST</p>	<p>The city of Bonn is surrounded by semi-soft wood forest. Native tree species are forest species. The most common tree genera are Acer, Aesculus, Betula, Platanus, Robinia, Tilia and Sorbus. Native species such as Norway maple, sycamore maple, common maple, etc., are in the minority within the city but are abundant in the protected areas of Kottenforst to the south and Staatsforst near Sieberg. These trees require a healthy soil profile, with a deep humus layer and an active network of mycorrhiza. Most native tree species are unsuitable for the inner city conditions and pollution. Bonn has nearly 40 km² of forests within the city limits, amounting to 28 % of the city's total area.</p>	<p>Rules designed to protect nature in conservation areas (stay on paths, do not remove plants, do not disturb animals, keep dogs on a leash) sometimes run into conflict with the intentions of the people using the forest for recreation. Strong recreational pressures exerted by the city generate frequent conflicts. Also Eutrophication, the abundance of nutrients in water table, changes the ph in the water available to plants. Trampling and other damage, i.e. illegal trails can cause harm to rare and delicate plants. As well as illegal swimming and horseback riding, disturbance of wild animals via pets.</p>
	<p>RIPARIAN</p>	<p>The Riparian meadows and forest are comprise some of the highest concentration of species of plants in the entire state of North-Rhine Westphalia. There have been over 414 plant communities, 26 endangered species, 52 species that normally prefer riparian meadows and 25 river-valley plants found along the banks of the Rhine and at the mouth of the Sieg river. The riparian biotope is also very vulnerable to being overrun by invasive species and neophytes.</p>	<p>Threat posed for indigenous plant species from neozoans may be considered relatively minor, even though some invasive plants tend to dominate habitats and can displace native plants. Such common invasive species of plant :Himalayan balsam (<i>Impatiens glandulifera</i>),Japanese knotweed (<i>Reynoutria japonica</i>),and giant hogweed (<i>Heracleum mantegazzianum</i>) have the potential to spread and push out less vigorous native speacies growing along the Rhine river banks. These invasive species most likey are spread from the domestic gardens of people living along the Rhine river.</p>





The only trees which fall into this category would be varieties of fruit trees grown in meadow orchards such as: Apple, Pear, Cherry, and Plum.

Shrubs

- Rubus fruitcosus*
- Lamium album*
- Viburnum opulus*
- Daphne mezereum*
- Vaccinium vitis-idaea*
- Cornus sanguinea*

Groundcover

- Achillea millefolium*
- Trifolium pratense*
- Vicia sepium*
- Bellis perennis*
- Silene vulgaris*
- Geranium pratense*



Open land plays an important role in the predator and prey relationship. There are a variety of small rodents that create food for mammals and birds. Owls as well as other predatory hawks and falcons find a significant amount of their food source here. Rodents often burrow and find food in these areas where commercial food production is common.



Trees
Acer platanoides "Columnare"
Aesculus x carnea "Briotii"
Tilia cordata "Greenspire"

Shrubs

- Nerium Oleander*
- Juniperus Sabina*
- Solanum dulcamara*
- Solanum nigrum*
- Hydrangea spp.*
- Rosa canina*

Ground cover

- Arctostaphylos rudis*
- Campanula patula*
- Ajuga reptans*
- Caltha palustris*
- Prunella vulgaris*
- Polygonum bistorta*



A number of small mammals live within the area of the city. They thrive off the vast abundance of vegetation, fruits and nuts the city provides. Many of these animals are liked by the general public, as they are often fed small scraps from humans. Parks and cemeteries play an important role for habitats of over 200 species of birds and two species of bats.



Trees
Sorbus aucuparia
Fagus silatica
Acer pseudoplatanus
Alnus glutinosa
Ulmus Carpinifolia
Tilla platyphyllos

Shrubs

- Cornus sanguinea*
- Rhamnus fangula*
- Corylus avellana*
- Salix carpea*
- Viburnum lantana*
- Sambucus nigra*

Groundcover

- Rubus fruitcosus*
- Vaccinium myrtillus*
- Daphne mezereum*
- Viscum album*
- Hedera helix*
- Clematis vitalba*



The forest inhabits many different species of animals where they can live with limited interaction with humans. Rodents provide food for predatory animals where vegetation provides food for larger mammals. Many animals are harvested by game hunters which include *Sus scrofa* and *Cervus dama*. The forest provides habitats for bats where they nest in the hollows of trees.



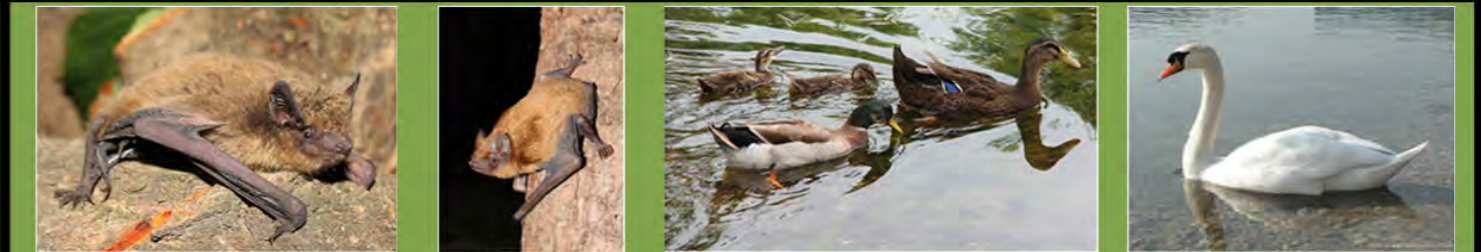
Trees
Salix alba
Populus tremula
Populus nigra

Shrubs

- Rosa canina*
- Prunus spinosa*
- Rhamnus frangula*
- Euonymus europaeus*
- Sambucus racemosa*
- Viburnum opulus*

Ground cover

- Rubus ideaus*
- Rubus fruiticosus*
- Antriscus silvestris*
- Pulmonaria officinalis*
- Galium mollugo*
- Paris quadrilolia*



The riparian meadows are the most vulnerable and most diverse areas Bonn has. This area is especially important for bats where insects are abundant. Many of these insects include over 20 species of dragonflies, beetles, gnats, and moths as well as a variety of reptiles and amphibians. Ducks and geese are common along the Rhine before migrating south for the winter.





Existing Goals for the City of Bonn

-The University of Bonn including especially its Institute for agricultural botany, department for geobotany and nature conservation (Institut für landwirtschaftliche Botanik, Abteilung Geobotanik und Naturschutz) and its Institute for evolutionary biology and ecology (Institut für Evolutionsbiologie und Ökologie) — has long made valuable contributions in the form of ecological work and studies. Along with their efforts the local government of Bonn has placed priority on biodiversity and sustainable techniques for expanding the city, where it needs to be, and conserving important landscapes key to regenerating biodiversity in the city and in surrounding areas. Such projects taken on by the local government of Bonn are as follows:

-Valuable landscape zones (valley areas, shoreline areas and mountain slopes) should be kept free of enclosing structures, and accessways to open landscape areas should be protected and restored as necessary.

-Projects in the area of soil conservation: the city of Bonn, in co-operation with North Rhine- Westphalia's Academy for nature conservation and environmental protection, and with numerous co-operation partners from Bonn and the surrounding region, held a "Bonn Soil Week" ("Bonner Bodenwoche") campaign in order to raise awareness about the importance of soil, and to educate the public about issues and problems relative to use of soil ecosystems.



Design goals for biodiversity :

-With regard to public facilities that require open areas (schools, kindergartens, playgrounds and athletic fields, etc.), connection of such facilities to such open areas. Placement of intensively used green spaces in close proximity to old centres of towns and villages, and to new centres, creates fruitful tension between densely built-up, finely structured centres and such open areas.

-Preservation of large open recreational areas within the vicinity of the city;

-Exploitation and emphasis of natural landscape topography by staggering heights of structures and placement of structures in suitable relation to key landscape contours;

-Structuring of the city's territory via placement of area-defining forest strips along highways and railway lines and along key natural contours; Protection of older trees reaching a certain girth growing within the city limits. Production of regional seeds for reviving at-risk areas under stress.



Land Use of the City of Bonn

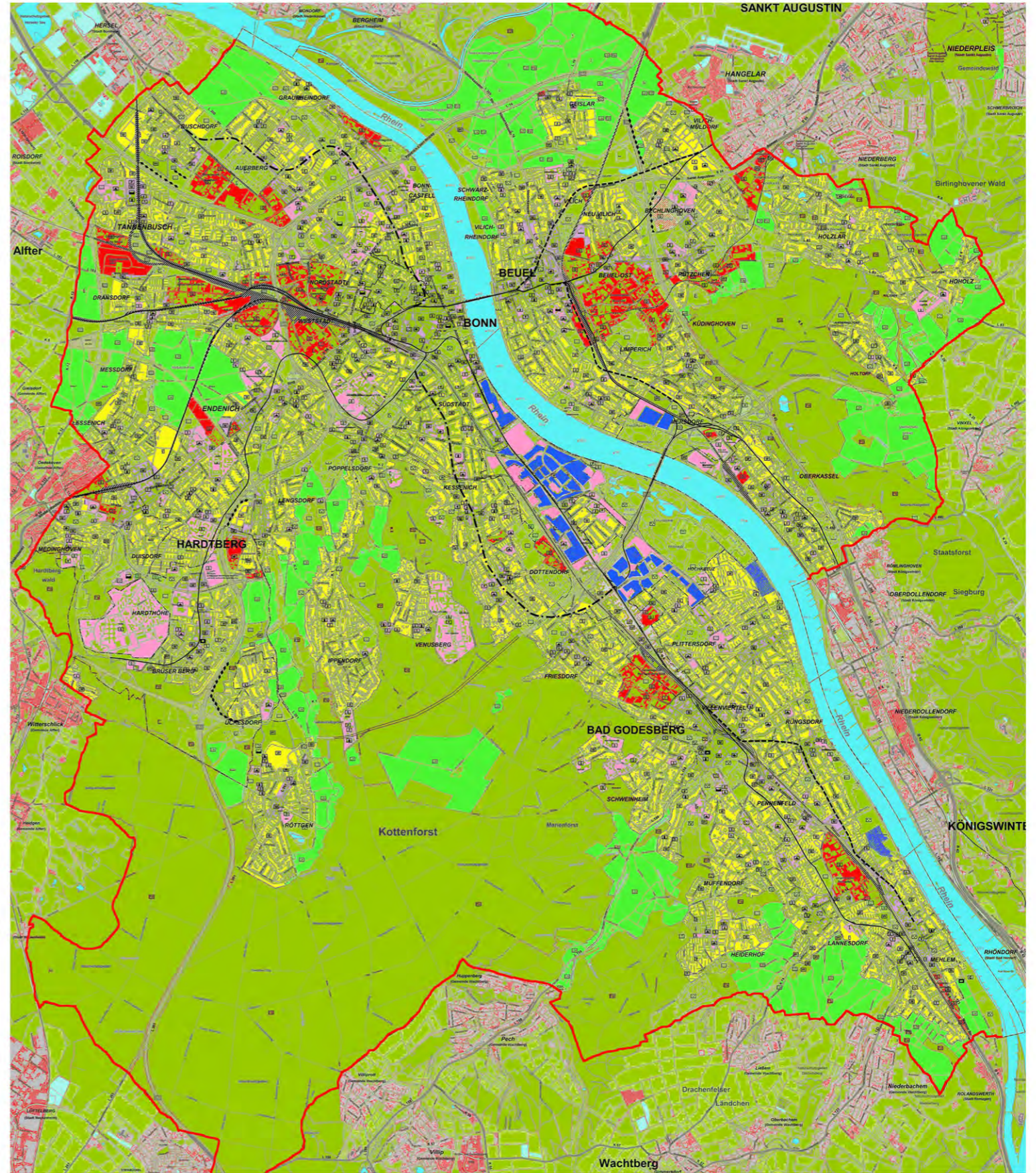
The City of Bonn has a very unique land use pattern that integrates culture within its boundaries to obtain their healthy and sustainable lifestyle. With the impeccable use of Open Space around the city, it is no wonder why Bonn is such a desirable place to live. Bonn is also noted as one of the 'greenest' cities located around the world and, in effect, gains popularity quickly and raises the value of the city. Its flourishing economy and strong political background has played a major role in the positive growth of the city and is continuing this tradition with its advanced strategic planning. Bonn is expecting strong population growth in the next twenty years and is embracing this. Bonn has many characteristics of a healthy and sustainable city and can offer its model to other cities around the world that are striving to attain this goal.

Statistical Information

- ❖ Land Use Plan in 2008:
 - Built (43.40%)
 - Open Space (56.60%)
- ❖ Population: 317,595
 - 6/30/2010
- ❖ Total Area:
 - 141.22 km²
 - 55 mi²
- ❖ Density:
 - 2,252 people/ km²
 - 5,774 people/ mi²

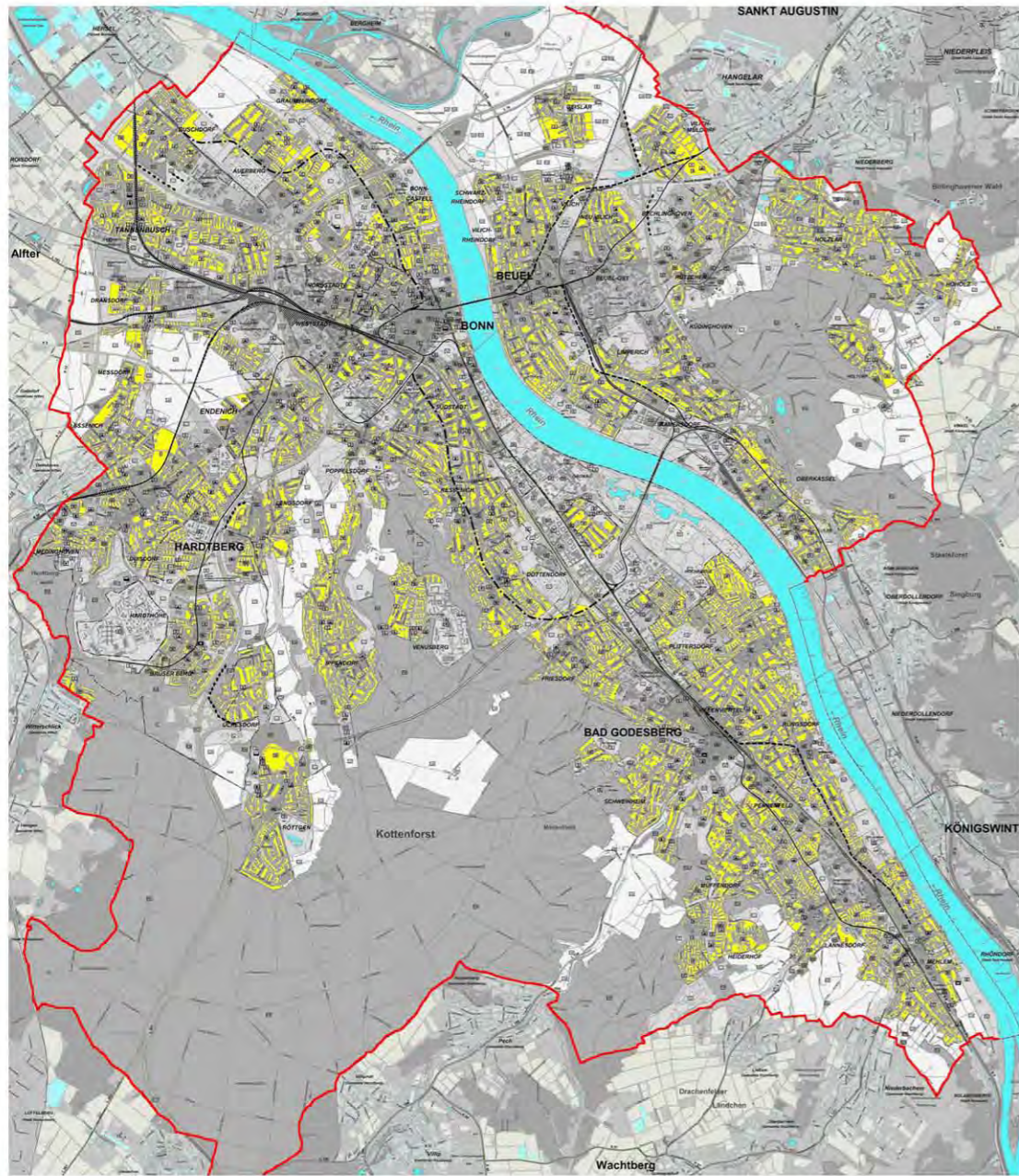
Legend

- Residential
- Commercial
- Industrial
- Transportation
- Communication and Utilities
- Institutional and Government
- Open Space
- Agriculture
- Natural Areas and Other Lands



Datum: 8.08.2010
Herausgeber: Der Oberbürgermeister der Bundesstadt Bonn. Diese Karte ist urheberrechtlich geschützt. Vervielfältigung nur mit Genehmigung des Herausgebers.
Maßstab: 1:15000
STADT. CITY. VILLE. BONN.



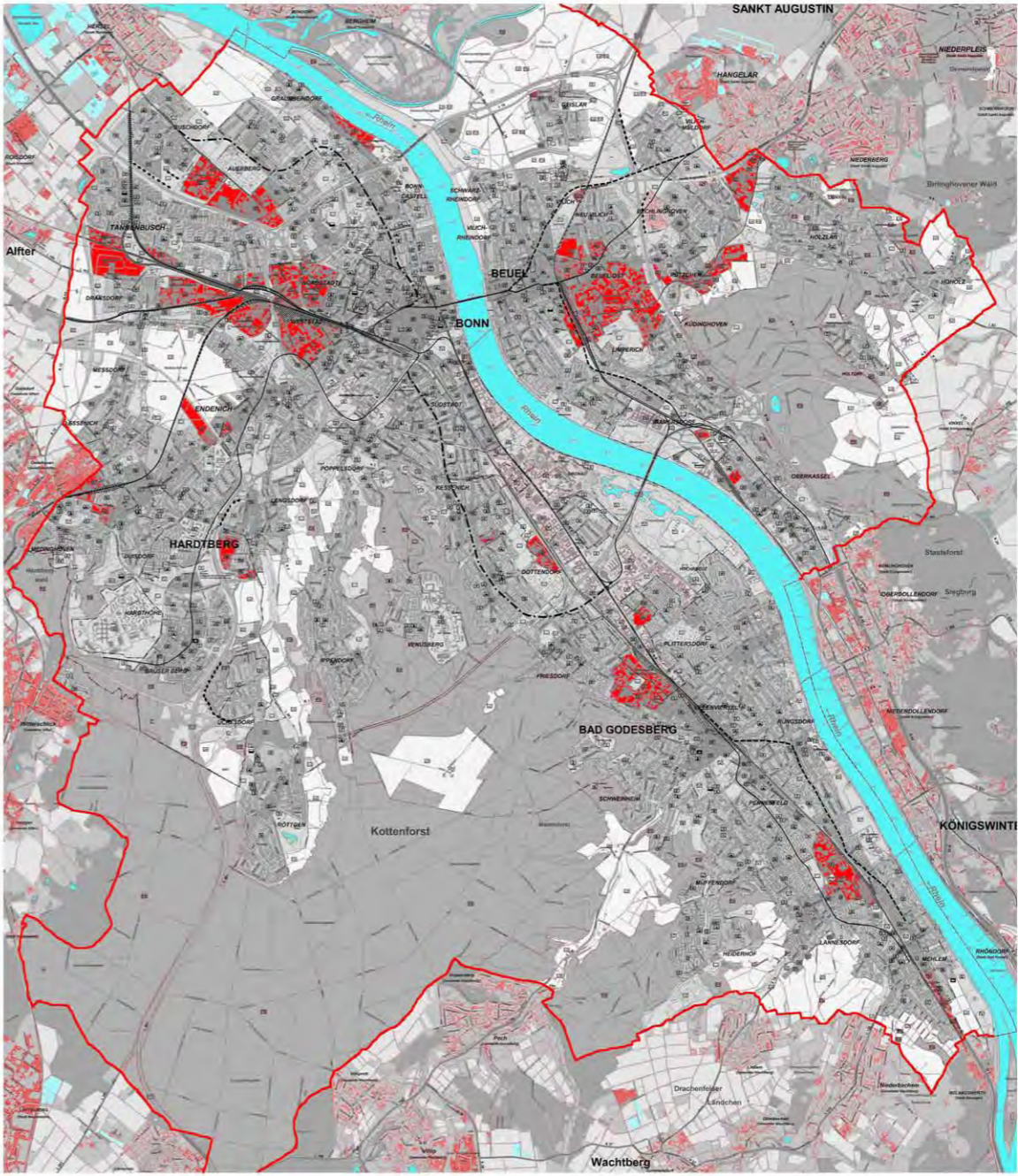


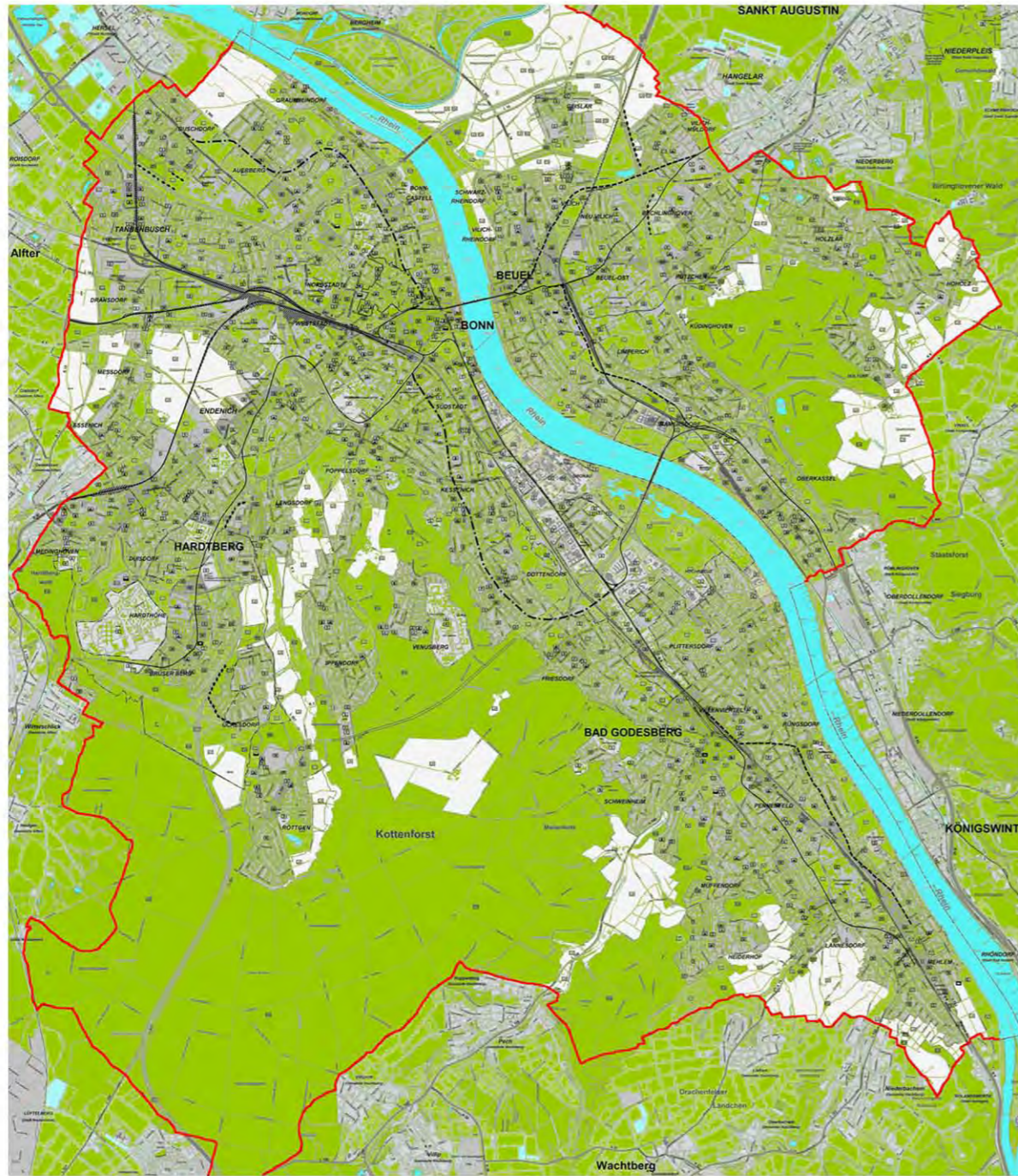
Residential

The residential areas of Bonn are another example of how the healthy living lifestyle is implemented. These areas differ by location, cost, design, and size. The mixed-use residential areas are common within the inner city of Bonn and express the qualities of a sustainable lifestyle that is desired by many. 'Single Professionals' prefer inner city living because it is connected to the lively night life of Bonn and has easy access to transportation and their workplaces. Even though mixed-use development is key for a healthy city, it is not always appropriate for all. Families are commonly located on the outside of the city where there are more schools, more room, and a lower cost of living. The suburbs of the city have more cost friendly housings where you are able to own a house almost twice the size of a house in the city with half the cost.

Industrial and Commercial

Bonn is the home of many major companies in Germany including Haribo, Kautex, T-Mobile, German Post, German Telekom, Postbank, and DHL. The area flourished with industrial and commercial companies after WWII, which happened to be the most dramatic growth of all land use types. There is a higher percentage outside of the city as well as in the Central Business District. Bonn is currently experiencing a population decrease within the inner city. To reverse this process, Deutsche Telekom and other various companies are building and expanding their offices in hopes of overturning decentralization within their city.



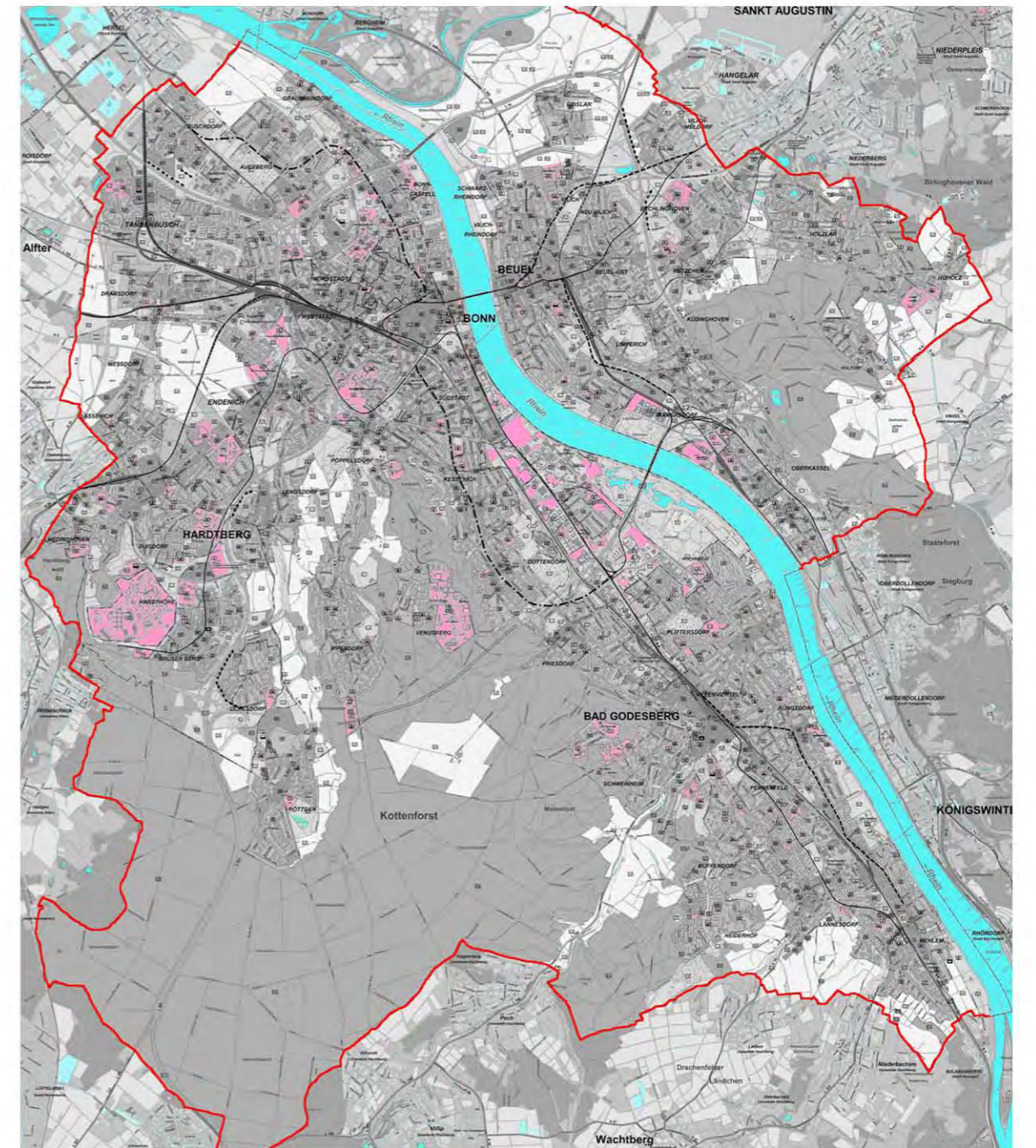


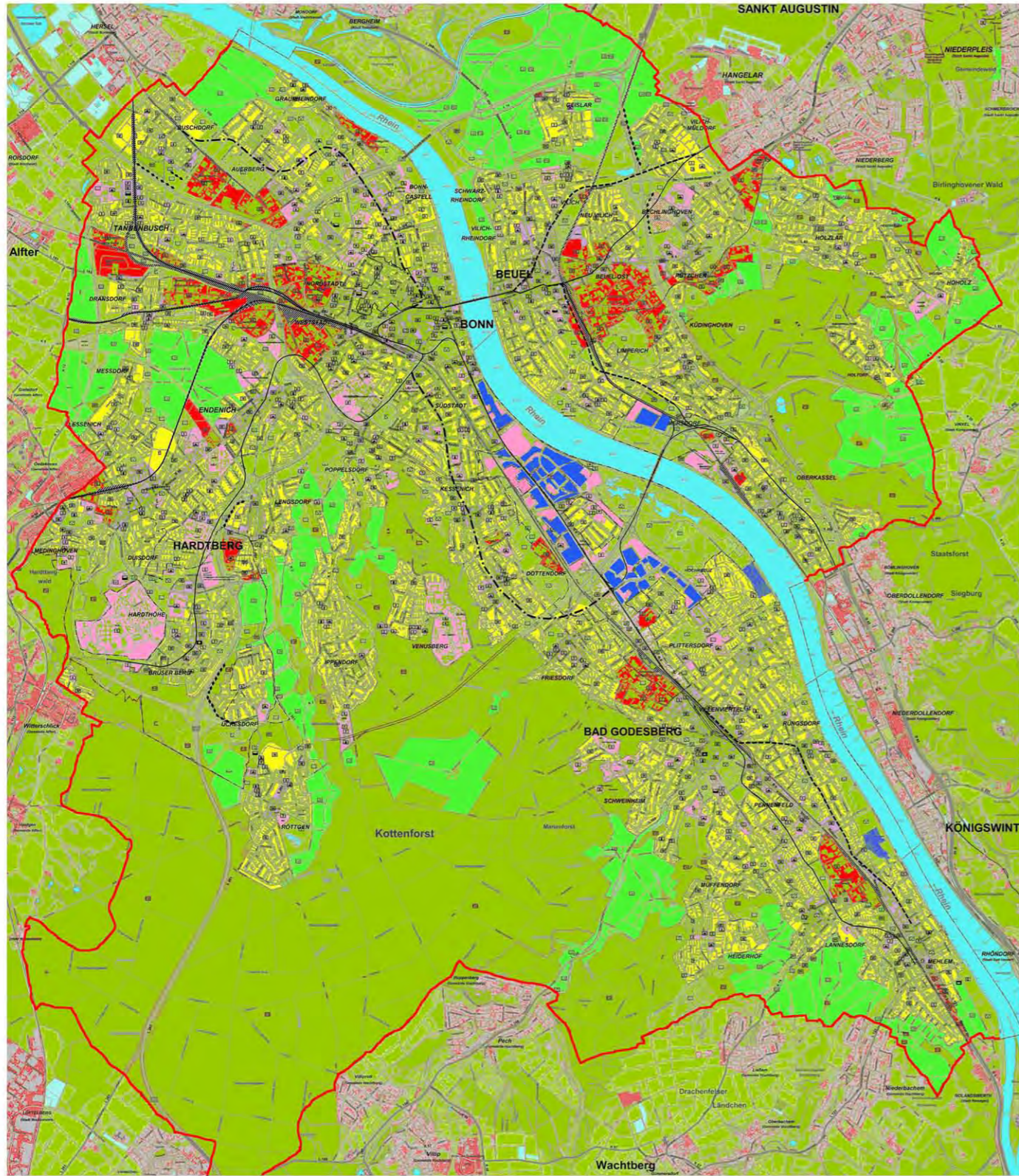
Open Space

Bonn has successfully achieved an active and healthy living lifestyle by the diversity of bike paths around the city as well as the pedestrian friendly atmosphere of the city. One of the major influences of Bonn's healthy lifestyle is the open green space that occupies almost half of the city (pictured left). Although most of the green space is forest area, it still has a considerably high percentage of open green space regardless of the forest area. One of the most predominant patterns on the map is that the residential areas are clustered and divided into small sections that are surrounded by open green space, focusing toward the western part of the city. These surroundings are the 'fingers' of open green space of the forest, agricultural areas, and other open green space around the site.

Institutional and Government

Bonn has a unique and important governmental history compared to many cities around the world. When the capital of Germany moved to Berlin from Bonn in 1990, many of the ministries stayed in Bonn and are still active today. With these unusual amounts of government space, it provides many opportunities of growth and power for the city. Bonn is claimed to be a very cultural city with many museums, theaters, and churches, which explains the high ratio of the institutional developments. It has been recently noted that the population of the inner city, where the governmental and institutional buildings are located, is declining at a steady rate. The city of Bonn is hoping to reverse this process by expanding various buildings to create jobs and hopefully bring more people to the inner city.

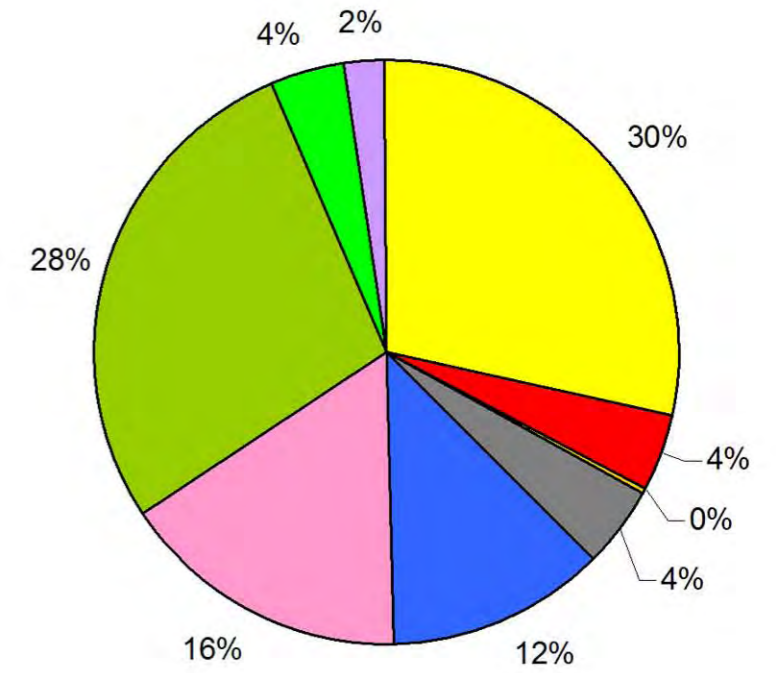




Maßstab : 1:15000
STADT, CITY, VILLE, BONN.

Legend

- Residential
- Commercial
- Industrial
- Transportation
- Communication and Utilities
- Institutional and Government
- Open Space
- Agriculture
- Natural Areas and Other Lands



Summary and Conclusion

In summary, the city of Bonn has many of the key characteristics of a healthy and sustainable city. The active living lifestyle of the city is very advanced and encourages people to take advantage of the different facilities and open spaces. Mixed used development is widely used within the city that includes inviting streetscape to the lower developments. One of the main characteristics that we found interesting was that the ratio of built area to open area was fairly high, mainly because of the forest, but is still very rare for a city this large and with its unique history. From our observations we noticed that the residents of Bonn prefer to be surrounded by nature because of the development patterns of smaller towns surrounding the inner city that are separated by 'fingers' of green space. We also found that the percentage of government space was fairly high as well, which is expected from a city with the governmental history that Bonn has. In conclusion, Bonn is a good model for land use pattern that can be useful for many cities that are striving for a healthy and active lifestyle.



Introduction:

Within the Bonn region, a web of open spaces exists which links the city, its inhabitants, and its parks, to the natural surrounding landscape. The park system of Bonn is well developed, offers a variety of public and semi-public gardens for personal enjoyment. "Green Freedom - A Guide to Bonn's Parks" is a booklet issued by the city which offers an overview of the top local parks and their amenities. In addition to this extensive park system, the open space within Bonn includes natural forests, croplands, and to the north, there is an effort to preserve a large expanse of land being called "The Green C". The map to the right shows, in detail, the breakdown of the open spaces in the Bonn Region.

Masses, Patches, and Corridors

According to the principles of Landscape Ecology, which focuses on how human activity affects the landscape pattern and its processes and strives to improve the interrelatedness between these on a multitude of landscape scales and organisational levels, the landscape can be divided into three categories.

The first category is *masses*, which is a term used to describe large areas of undeveloped land that is continuous and unified. The next term, *patches*, is defined as a homogeneous area distinct and isolated from its surroundings. Finally, the term *corridor* is used to describe a strip of land that serves as a physical linkage between habitat patches within a landscape. Together

these components comprise a landscape with varying degrees of connectivity. (Wu, J. and R. Hobbs 2007)

Masses

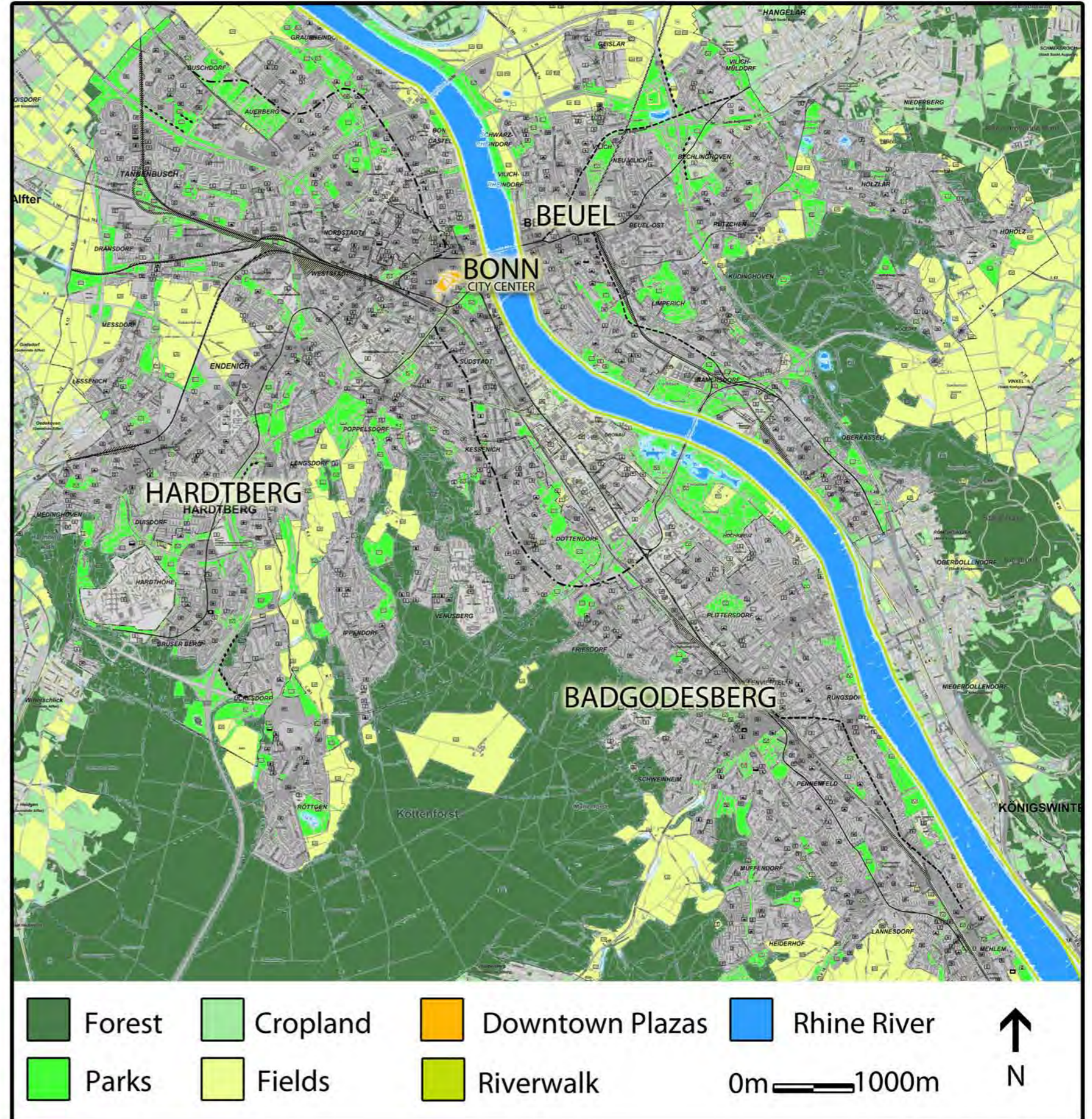
Surrounding the city of Bonn are a range of landscape masses. The most important mass is the Rhineland Nature Park, located in North Rhine-Westphalia. Founded 50 years ago under the name Kottenforst, today it is 1000 square kilometers. In 2009 it was awarded Nature Park of the year. It is also home of two world heritage sites. The landscape is versatile here, with hilly volcanic landscapes, meadows, lakes and forests, as well as flat, intensively farmed areas with small villages. (naturpark-rheinland.de)



NATURPARK RHINELAND

Patches

Patches can be found throughout Bonn, both within the city and in the surrounding areas. One of the most prominent patches in Bonn is Freizeitpark Rheinaue. This expansive recreational area is the number second



Map 1: Green Spaces



largest in the Bonn region, coming in only after the Kottenforst, and is comprised of 160 hectares located on both sides of the Rhine River. The area was transformed into a park in 1979 and designed by Landscape Architect Hansjakob for the Federal Garden Show. The park is taken advantage of throughout the year with a multitude of events and festivals being held for citizens and visitors. (www.bonn.de)



Rheinauenpark

Another park that would be classified as a patch is Stadtpark Bad Godesberg, which is an 8 hectare park in the style of an English Landscape Garden. The park has been continually expanded since 1880 by land purchased by the city of Bonn. The park consists of landscaped gardens and modeled terrain, with various tree species from countries around the world. The grounds offer ample open space with unobstructed views of the mountains, and offer a classic setting for special events. (www.bonn.de)



Stadtpark

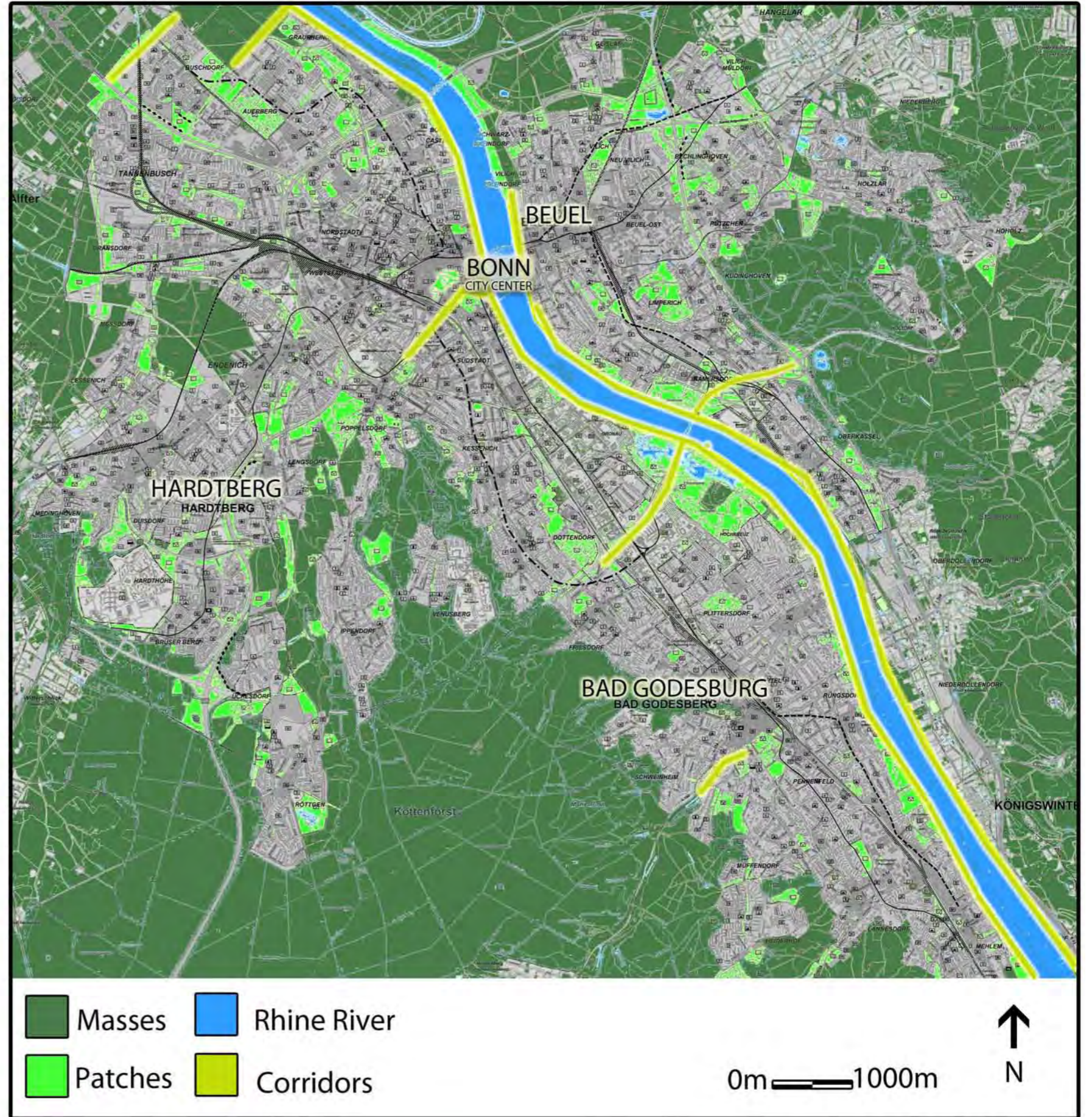
In addition to parks, the term patches also includes public plazas that are characterized with adequate vegetative qualities to serve as a 'green space'. Two significant plazas within Bonn are Munsterplatz and Marktplatz. Both are major hubs of the city, and are highly trafficked. Festivals, markets, and special events take place in both throughout the year. The plazas are surrounded with shops, cafes and outdoor seating opportunities. Situated around Munsterplatz, the Beethoven Memorial, the Basilica, and the Old Post Office all give character and historical significance to the plaza. Although both of these plazas serve as important open spaces to the city, they do not have enough vegetative cover to be considered patches.

Corridors

There exist two important green corridors in Bonn that serve as connecting links within the city. The first of these is Poppelsdorfer Allee which is located in one of the most important and prestigious regions of Bonn. It serves as an impressive visual connection, as well as an ecological corridor between Alter Zoll, the Botanical Gardens and Bonn University. The alley is a green axis amongst urban development, lined with trees and provides a place for people's enjoyment.



Poppelsdorfer Allee



Map 2: Masses, Patches, and Corridors



The next corridor that is important to the region is the Rhine River Front, which spans roughly 20 km along the water. This is a significant ecological connection that spans the entire length of the city of Bonn, and provides ample recreational and leisure activities for the citizens.



Riverfront

The Park System in Bonn

The park system in Bonn consists of various types of parks, with different features and characteristics. Map 3, to the right, shows the locations of the top 25 parks according to the City of Bonn, and the Chart to the right identifies the different amenities available to the citizens in each park, and the maps on the following page roughly show the size of some of the more important parks within the city. The parks have been divided into three further categories. "Parks", "Estates", and "Reserves" based on their character, and the history of how they were

developed. In addition to these existing parks, there is an effort within the city to establish a new region north of the city known as the "The Green C".

"The Green C"

An important grass roots movement among the citizens of Bonn is a project called The Green 'C'. The main objective of the Master Plan is to protect existing open space in their character and to create new open space when possible. The 'C' is important to the region as it provides recreation, nature, and promotes respectful treatment of the landscape and cultural heritage of the region. A joint project amongst the cities of Bonn, Bernheim, Niederkassel, Troisdorf, Sankt Augustin and the community of Alfter, the Green 'C' deals with issues pertaining to the landscape such as expansion, edge development, economic growth, agricultural usage, recreational planning and natural landscape preservation.



The Green C

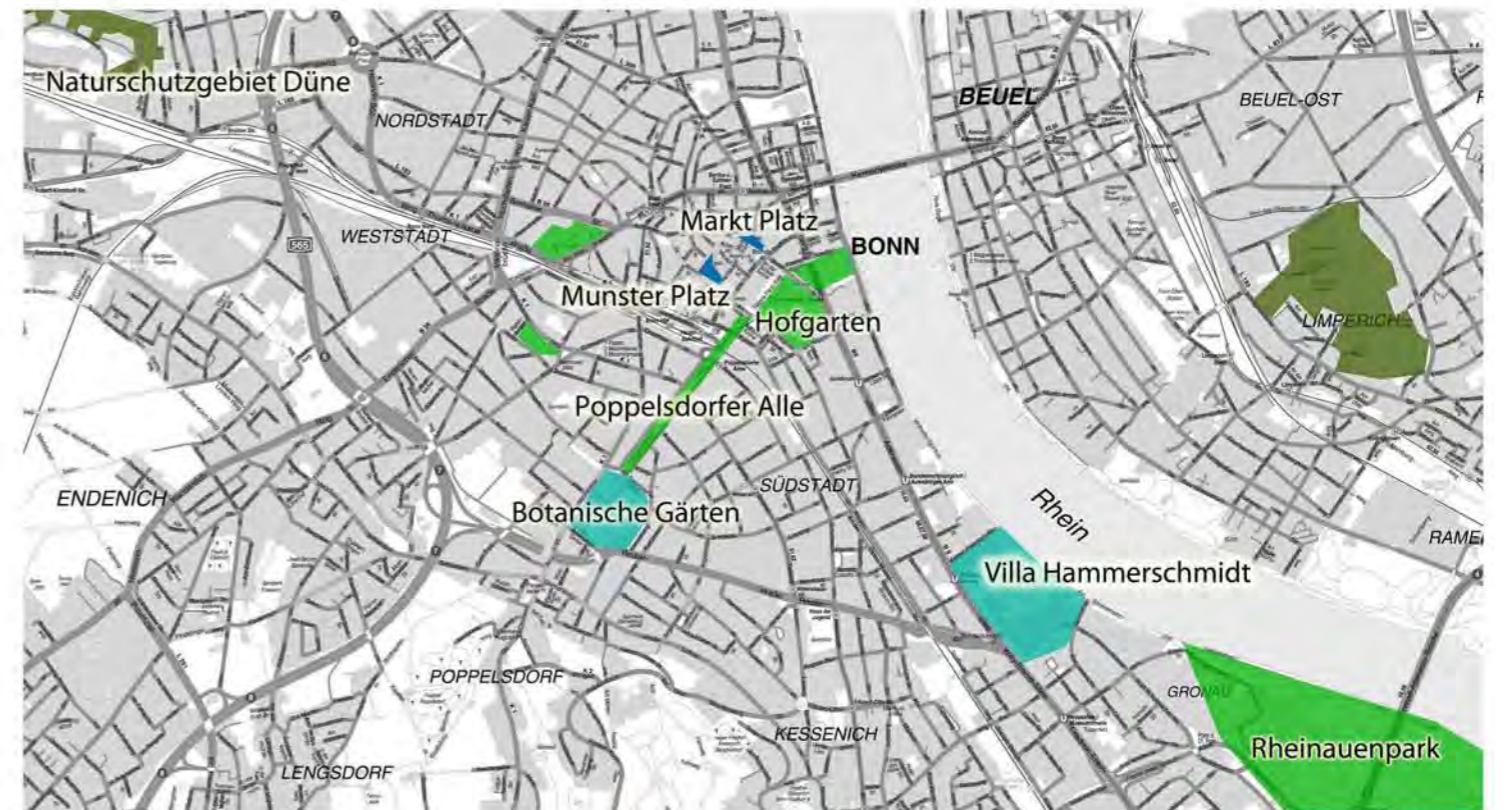
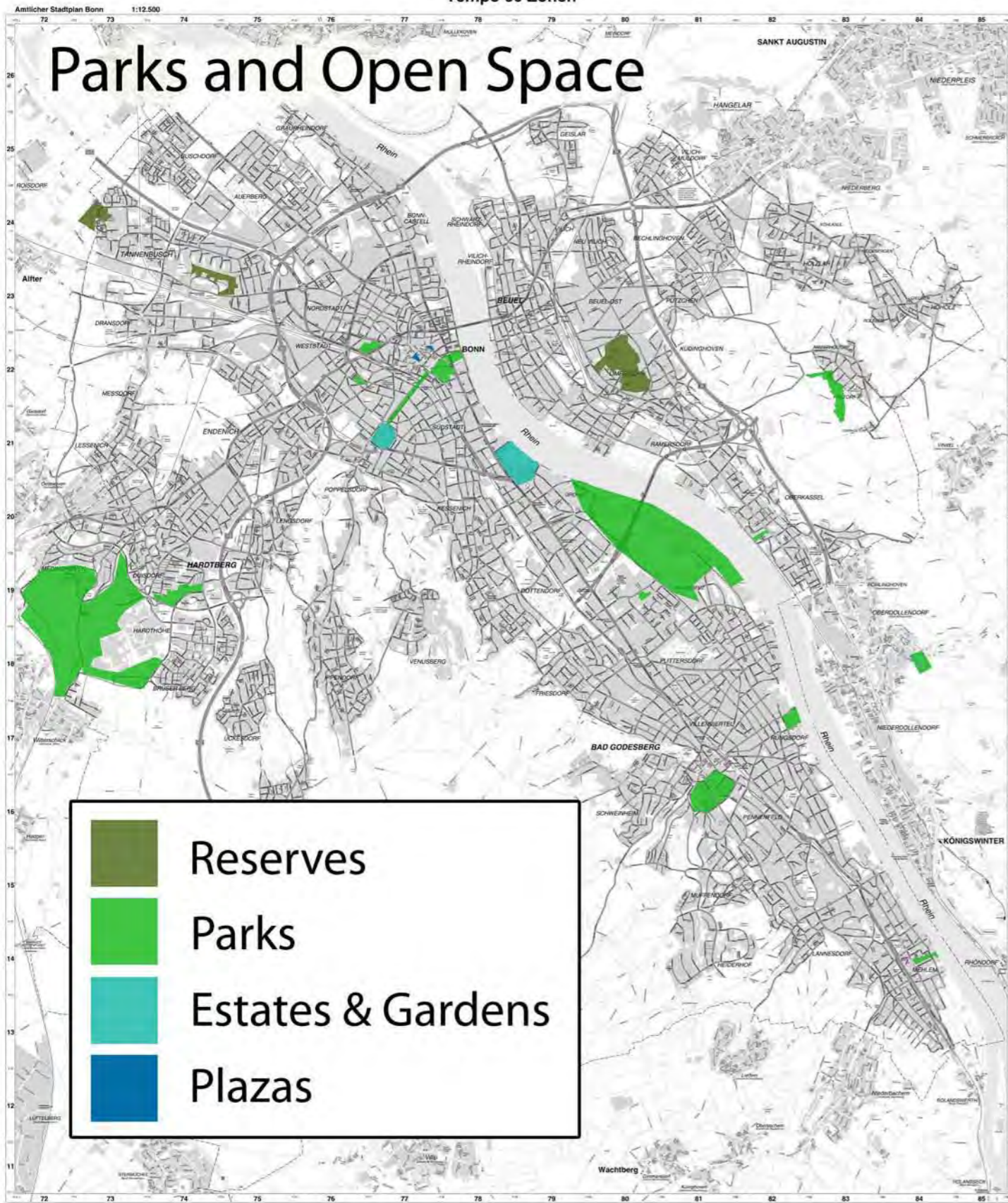


Map 3: Top Park Locations (www.bonn.de)

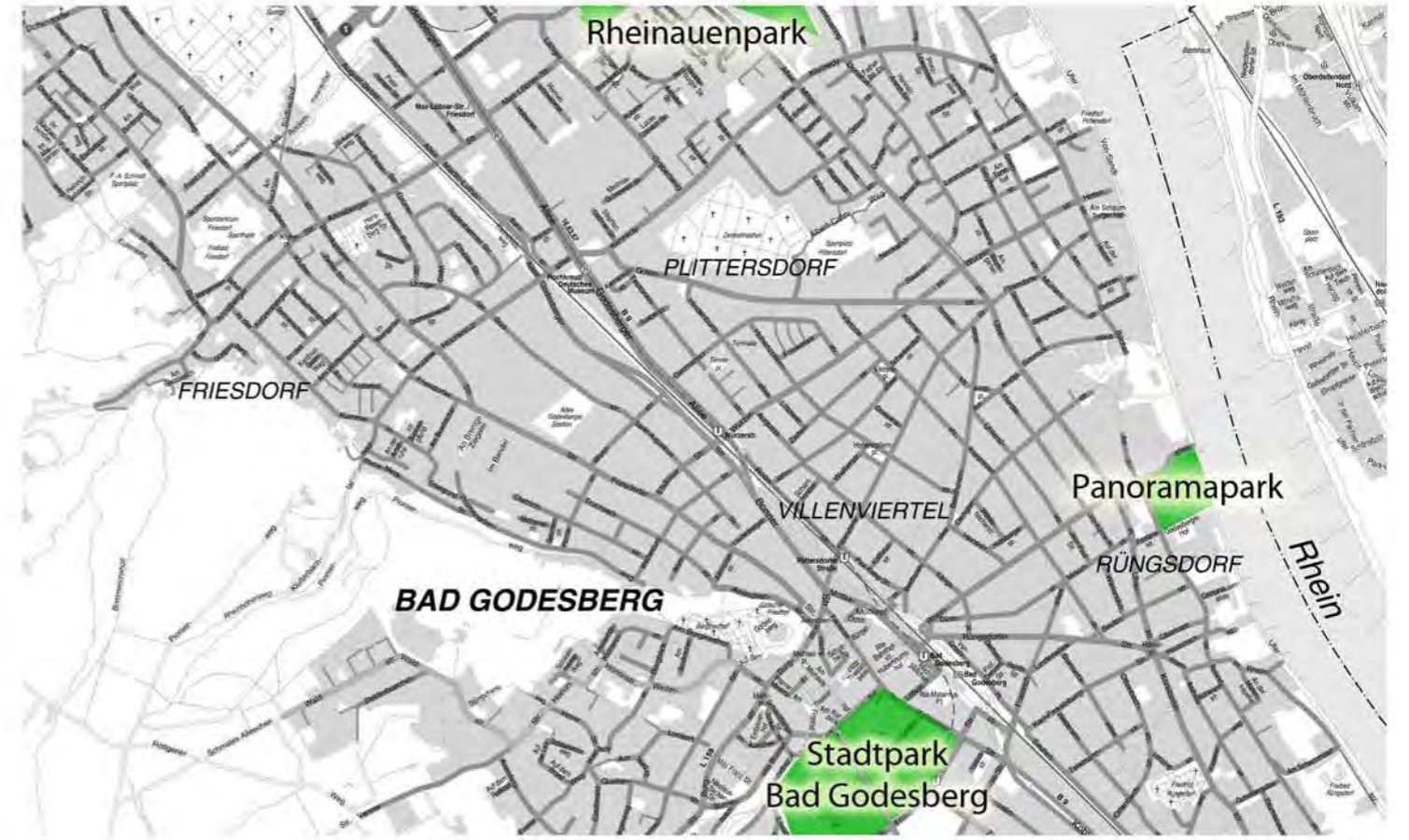
	Amenities	Play sets	Fields	Paths	Waterfront	Ampitheater	Sports Facility	Pavilions	Monument	Water Feature	Pets	Bathrooms
(Patches)												
Parks												
Alter Zoll			●	●					●		●	
Baumschulwaldchen			●	●					●		●	●
Bürgerpark Oberkassel	●							●	●	●	●	
Derletal			●	●	●		●				●	●
Drachensteinpark			●	●								2 hectares
Finkenhofpark			●	●					●		●	6 acres
Freizeitpark Rheinaue			●	●	●	●					●	160 hectares
Friesdorfer Park			●	●				●	●		●	3 acres
Grünzug Bonn Dransdorf			●	●				●			●	
Hofgarten	●		●	●							●	
Panoramapark			●	●							●	3 acres
Park der Rheinischen Landeslinik			●	●							●	
Poppelsdorfer Allee			●	●	●						●	
Redoutenpark			●	●	●						●	6.5 + acres
Stadtgarten Bonn			●	●							●	
Stadtpark Bad Godesberg			●	●	●						●	8 hectares
Estates												
Alter Friedhof				●					●		●	3 acres
Botanische Garten				●						●		
Ernst-Moritz-Arndt-Garten				●							●	
Palais Schaumburg			●	●							●	
Park Haus Carstanjen			●	●							●	
Villa Hammerschmidt			●	●	●					●		5 acres
Reserves												
Finkenberg			●	●			●				●	
Naturschutzgebiet Düne				●							●	
Grünzug Nord				●	●	●					●	7 hectares

Chart: Park amenities





Central Bonn



South Bonn

Highly Accessed Open Spaces in Bonn



Suggestions:

In summary, the city of Bonn has an active and growing park system. The majority of the current open space is intended for leisure, and emphasizes a strong connection to nature, which the citizens seem to appreciate and take full advantage of. However, there is always room for improvement, and there could be several changes made to enhance the overall open space system.

Some of the improvements that could be made include, increasing the awareness of the park system through signage in and around the city and more direct connections in the city to the surrounding open space. Many visitors to the city of Bonn are not aware of the quality of the park system and the opportunities that it provides them.

Additional parks and open spaces could also be put into place to create new corridors from the city to the Rhine River. The map to the right indicates two places where the creation of a corridor would be effective. This would enhance the existing ecological matrix, and take steps toward making it more complete.

It is also important that the majority of the newly created spaces should stay in line with the principles that characterize the current open spaces.

Conclusion:

Continuing to protect the existing open space, and establishing new areas of open space is crucial to the future of the city of Bonn. As the city continues to grow, in both size and population, this task will become increasingly more crucial, and increas-

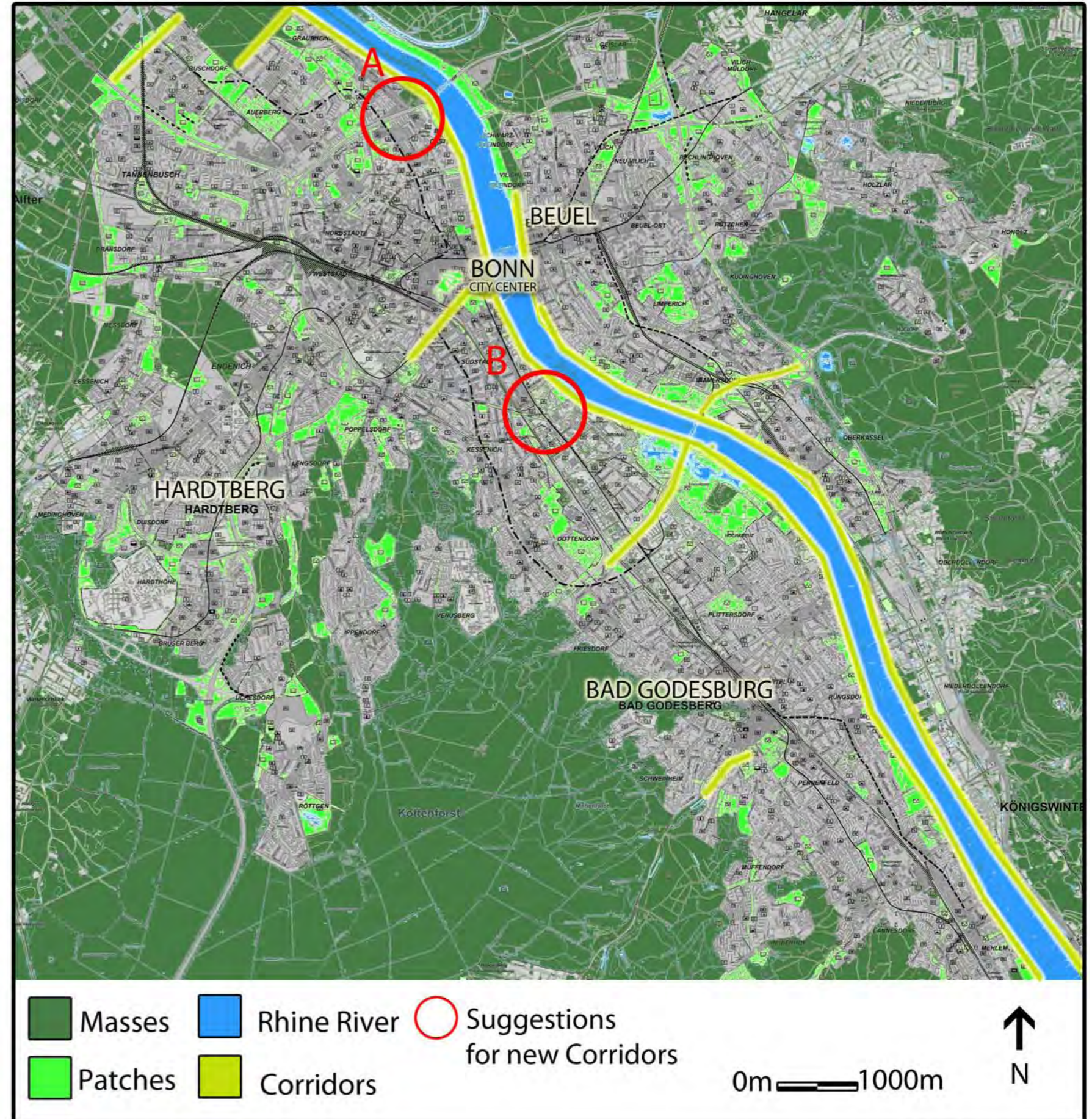
ingly more difficult, but efforts such as the "Green C" suggest that the city of Bonn may have many citizens on its side when it comes to the development of open spaces.

Sources:

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Map 3: Suggestions



Introduction

The street system in Bonn is a complicated non-grid like pattern that has evolved over many years throughout Bonn's history. It follows certain patterns of growth that show how it has grown such as along the river and near large areas of development.

History of Street System Growth

As shown in the following historic maps, the street system in Bonn has developed outward from the original settlement in the city center along the Rhine River. Some of the names have changed throughout the years, but the basic irregular pattern has remained similar. Most of the early development kept along the Rhine River and spread outward.



<http://www.map-of-germany.org/germany-map-800.jpg>



Figure 1. City Map of Bonn in 1839. Source: Bonn City Archive

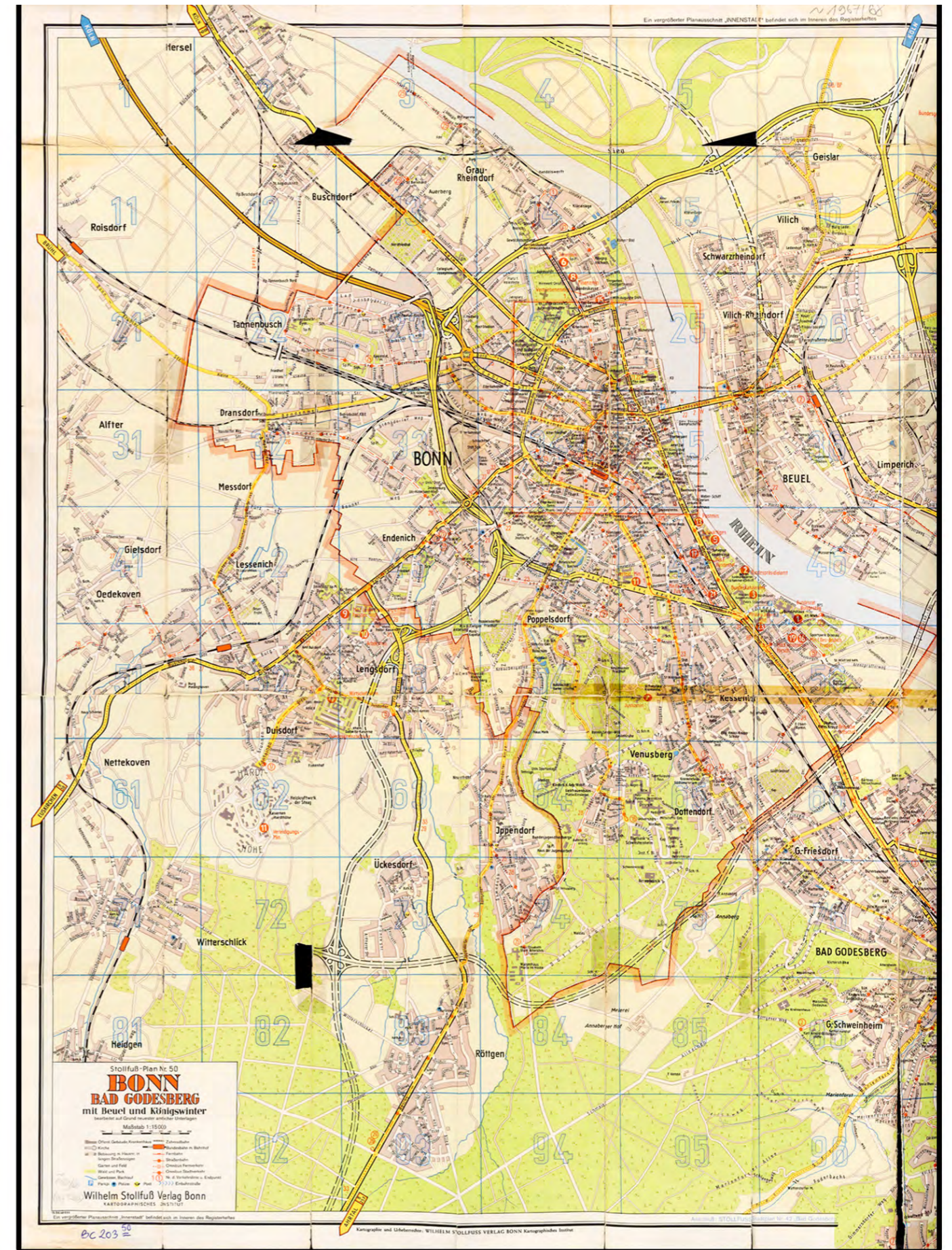


Figure 2. City Map of Bonn in 1962. Source: Bonn City Archive



Street Hierarchy

The first of these systems that wraps around the city of Bonn and connects Bonn to the regional area surrounding it, which includes nearby cities, is the Autobahn. It is regarded as the world's first motorway which was built in Berlin between 1913 and 1921. Germany built more car-only roads in 1929 which connected Dusseldorf and Opladen and in 1932 between Bonn and Cologne. Under Adolf Hitler's reign, north-south and west-east links were constructed. One of these "Reichsautobahnen" was opened between Frankfurt and Darmstadt in 1935. After construction began again in 1953, after WWII, expansion of the Autobahn continued throughout the years with the goal in mind to have access to the Autobahn within 10 km of any point in Germany. Construction halted in 1990 with the reunification of Germany in order to absorb and upgrade the Autobahns from East Germany. In 2004, the entire Autobahn system totaled at 12,044 km in length. It is currently the 3rd largest superhighway system in the world following only the U.S. and China.



Figure 3. Autobahn Regional Map. Source: <http://www.german-autobahn.eu/index.asp?page=history>

Other than the Autobahn, the street hierarchy falls into four distinct categories in the city itself. These categories are expressways, primary roads, secondary roads, and local roads. The definitions for each of the categories are as follows:

Expressway: A major divided highway designated for high-speed travel and that is used for through traffic with limited access. It has few or no intersections.

Primary Road: A major or main through road that is designed to carry a large volume of traffic. It has occasional intersections with traffic lights.

Secondary Road: A road that collects traffic from local roads and distributes it to primary roads or vice versa.

Local Road: It has the lowest speed limit and is designed to carry a low volume of traffic.

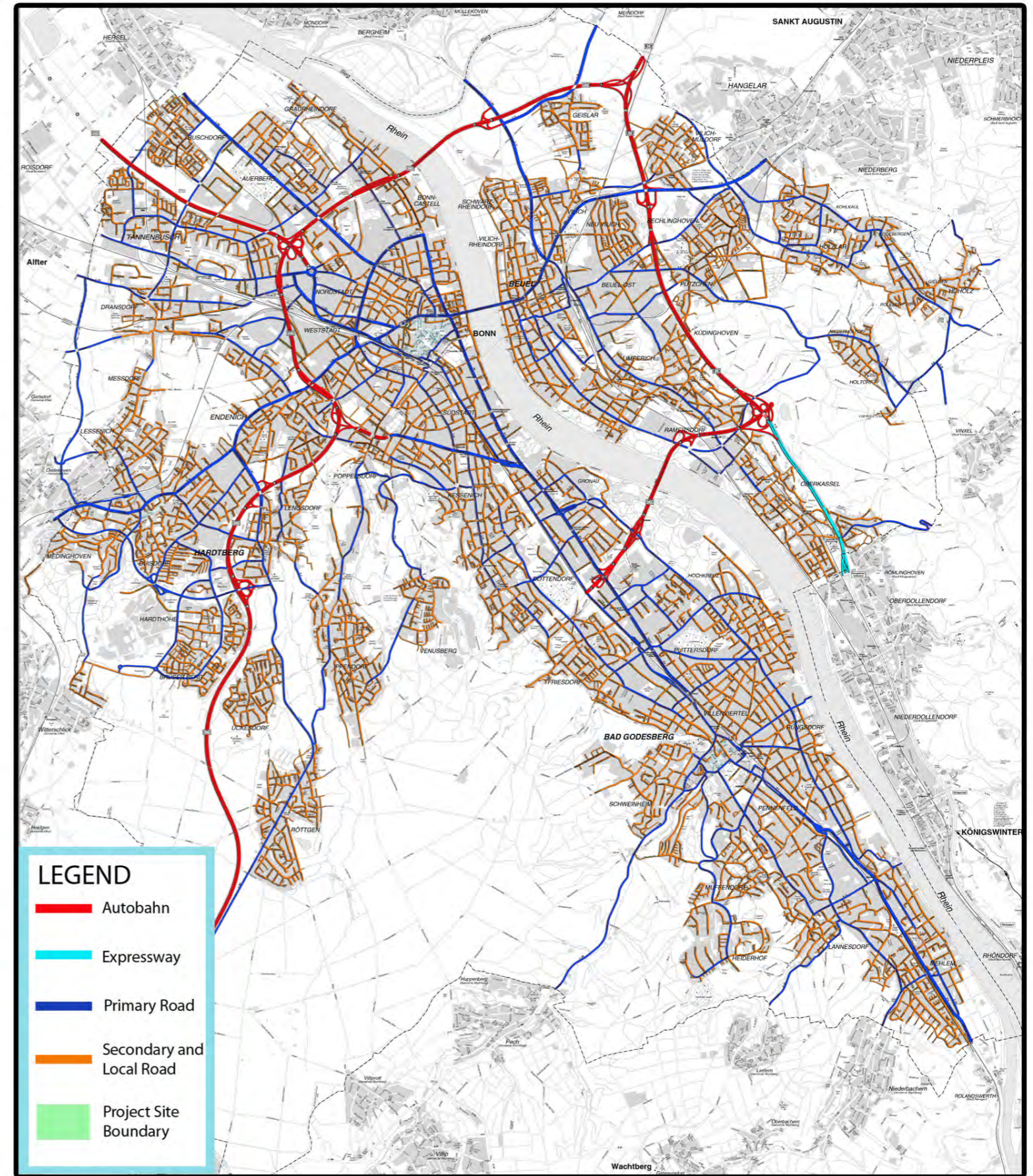


Figure 4. Street Hierarchy of Bonn, Germany.



Cross Sections

The following images show the different typical cross-sections for each type of road within the city of Bonn. Primary roads generally have 2 lanes on either side of a median with a following bike lane and sidewalk. Secondary roads have 2 lanes with 1 lane going the opposite direction. There is usually a parking lane on one side or both sides of the road that runs up to the top of the curb. This is followed by a sidewalk on either side. Local roads have a smaller lane and smaller sidewalks on both sides of the street. The cross-sections are as follows:

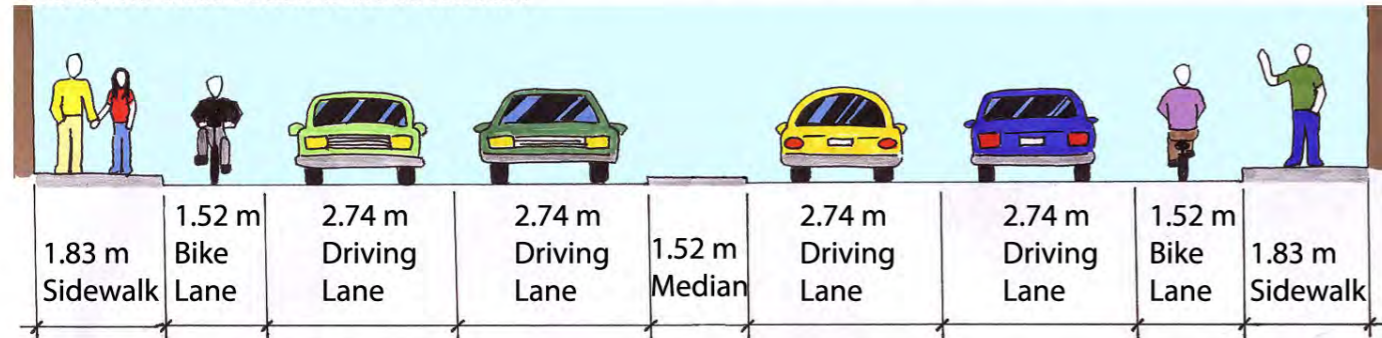


Figure 5. Primary Road Cross-Section.

Primary roads typically have a 50 mph speed limit.

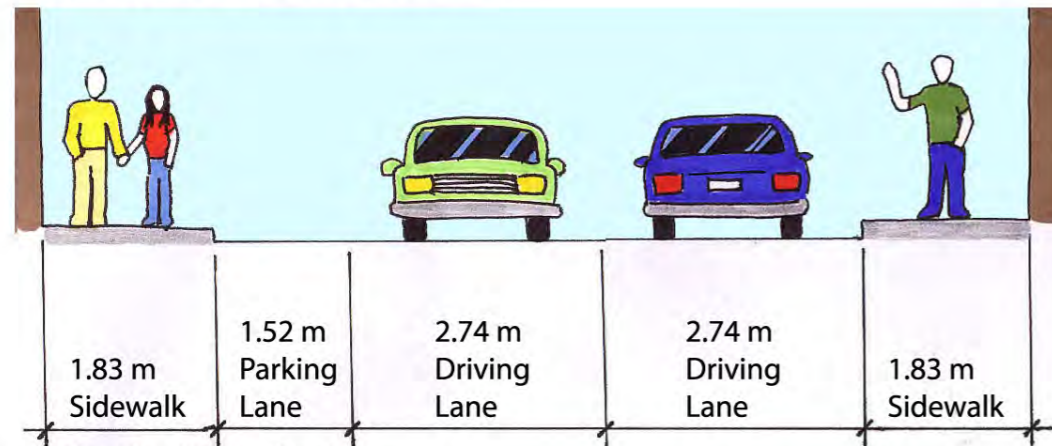


Figure 6. Secondary Road Cross-Section.

Secondary roads typically have a 30 mph speed limit.

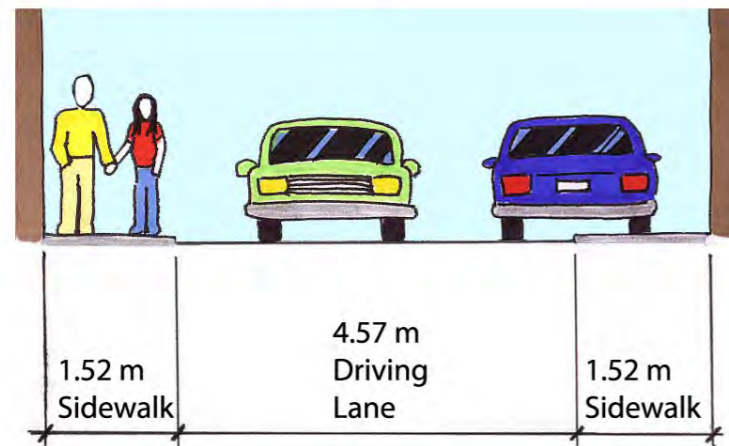


Figure 7. Local Road Cross-Section.

Local roads typically have a 30 mph or less speed limit.

Street Pattern

The street pattern is very irregular within Bonn. It has shown that it has evolved with the city growth throughout Bonn's history. The most development has shown to have grown along the Rhine River and around the city center. The system as a whole is non-grid in form, but individual neighborhoods in the city seem to take a more grid-like pattern.

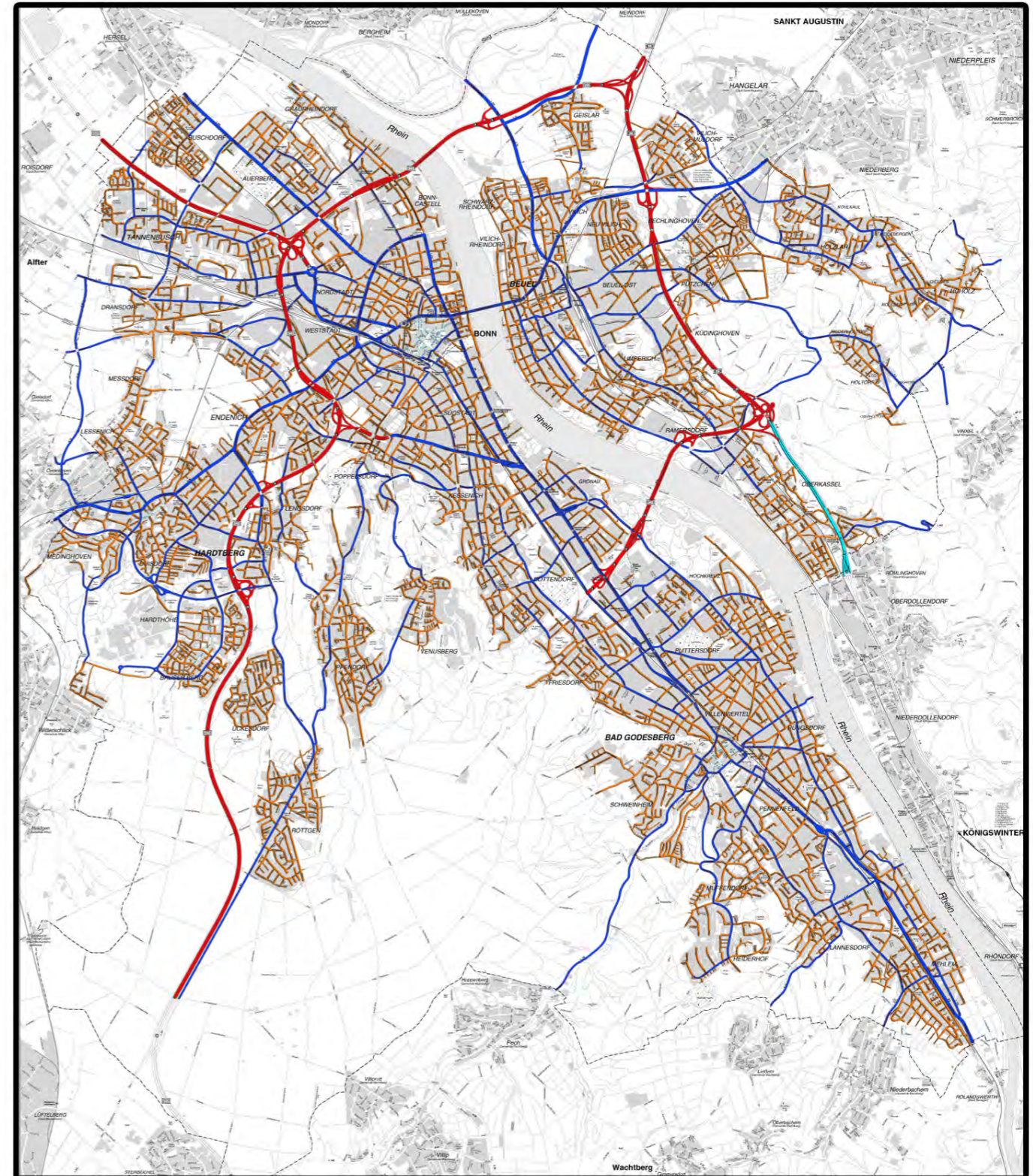


Figure 8. Street Map.



The following map shows the major parking lots that are located throughout the city of Bonn and alongside the project site.

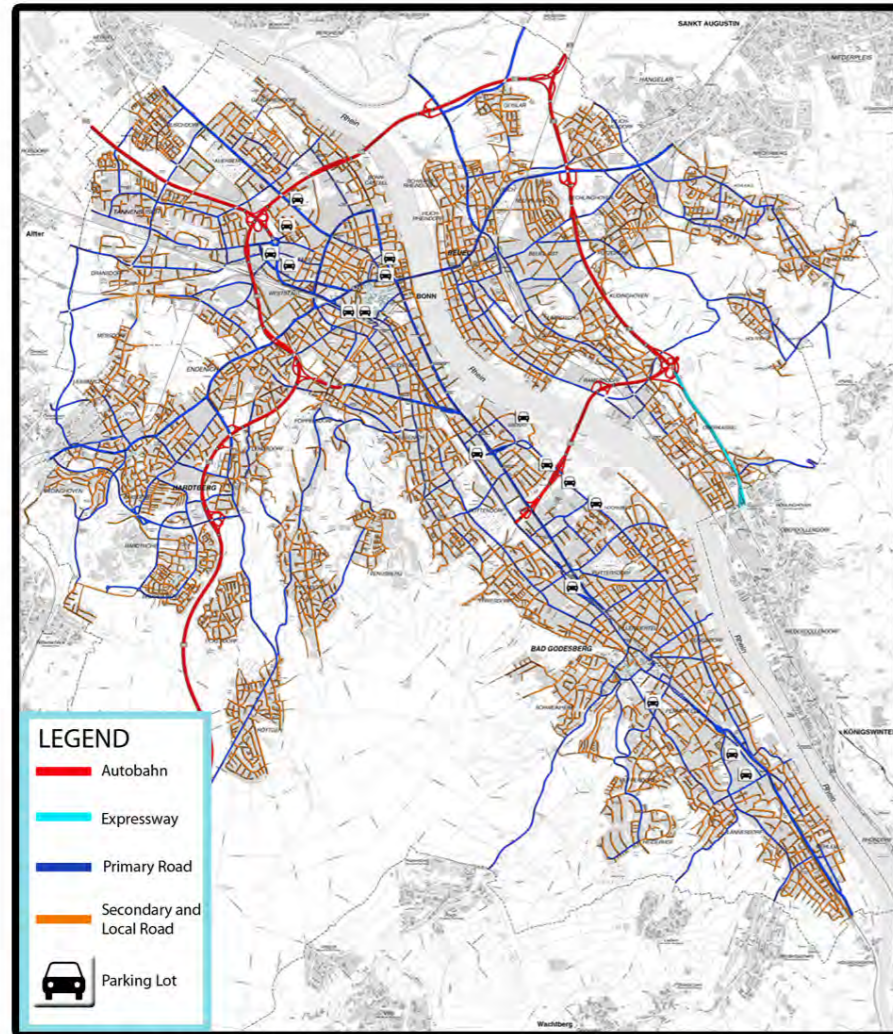


Figure 9. Major Parking Lots

The following parking garages are located in Bonn's city center. They are as follows:

- 1) Beethoven-Parkhaus
- 2) Stadthausgarage
- 3) Friedensplatzgarage
- 4) Marktgarage
- 5) Munsterplatzgarage
- 6) Bahnhofgarage

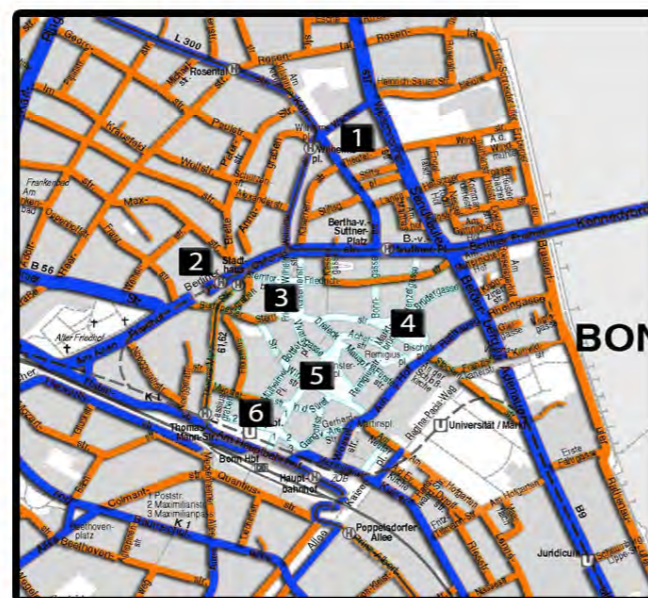


Figure 10. Major Parking Garages

Traffic Signs and Signals

The following images illustrate some of the traffic signs and signals found around Bonn, Germany as well as throughout the rest of the country. The meaning of these signs are as follows:



Figure 11. Various Traffic Signs and Signals. Source: <http://www.gettingaroundgermany.info/zeichen.shtml>

Street Markings

The following images show the street markings in Bonn, Germany which are similar throughout the country. Each of these markings designate a different action for the driver of the automobile to take. The markings are as follows:

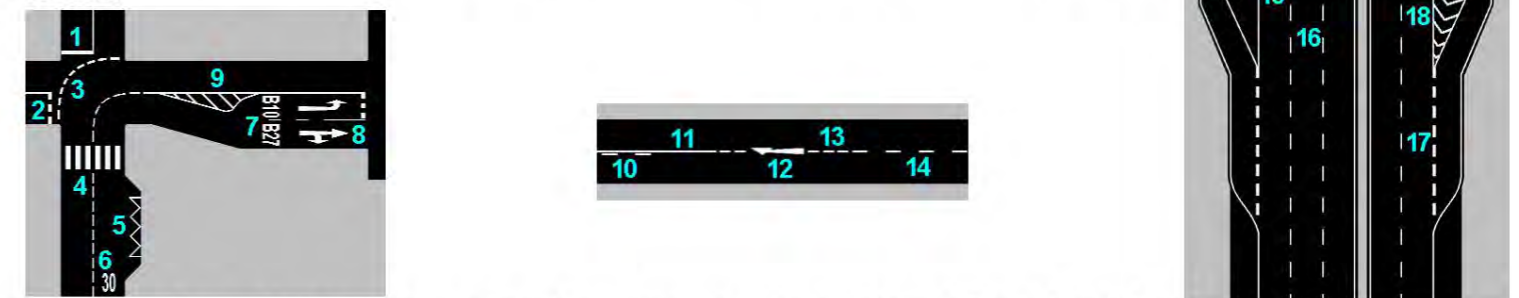


Figure 12. Street Markings. Source: <http://www.gettingaroundgermany.info/zeichen2.shtml#mark>

- 1) Stop Line: Driver must stop.
- 2) Wait Line: Driver must wait.
- 3) Priority Road: Road with the highest priority.
- 4) Pedestrian Crosswalk: The pedestrian has the right-of-way.
- 5) No Stopping/Parking Zone: Driver is not allowed to stop or park in this zone.
- 6) Numbers: Designates the speed limit. Usually is located where a distinct change in speed occurs.
- 7) Letters and Numbers: Designates the route the driver is currently taking.
- 8) Intersection Arrows: Designates the directions the driver is allowed to drive toward.
- 9) Restricted Zone: This zone is restricted to the driver.
- 10) No Passing in One Direction: The driver is not allowed to pass a long white line on his or her side.
- 11) No Passing: The driver is not allowed to pass a long white line on his or her side.
- 12) Merge Arrow: Designates that the passing zone is ending and the driver must merge to the right.
- 13) Lane Separation Line: Short dashed lines indicate that the passing zone is about to end.
- 14) Lane Separation Line: Long dashed lines indicate that the driver is allowed to pass safely.
- 15) Edge Marking: This line separates the driving lane from the shoulder.
- 16) Lane Separators: Dashed lines indicate traffic that is moving in the same direction.
- 17) Acceleration/Deceleration Line: Indicates an acceleration or deceleration when entering or exiting a road.
- 18) Restricted Zone: Driver is not allowed to drive in this zone.



Project Site

The project site for Bonn, Germany is located along the Rhine River. It is bordered by Romerstrasse on the backside and runs the length of the city. The major primary roads that interact with the site are Romerstrasse, Franz-Josef-Strauss-Allee, and Berliner Freiheit. 3 bridges also give access to the site which are Autobahn routes 562 and 565 and Kennedy Bridge.



Figure 13. Location Map of Project Site.

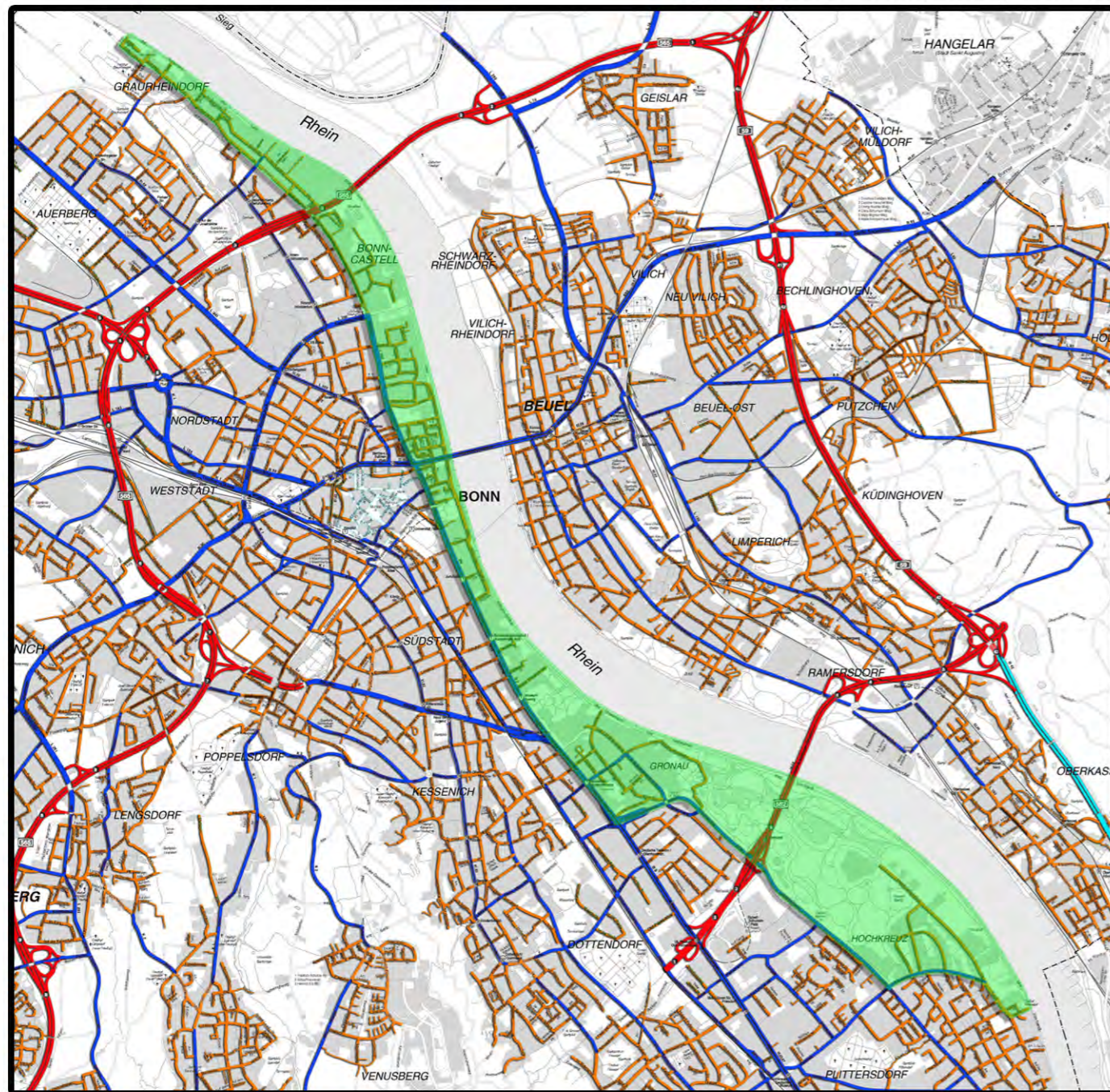


Figure 14. Project Site in Bonn, Germany.

Summary

Bonn has an irregular street pattern, that first developed along the Rhine, and then began extending outward along the major roadways.

Many of the streets today existed up to hundreds of years ago, but had different names.

Romerstrasse/Adenaueralle is a primary road that serves as the left border to our project site, as well as a major access route to the site.

Local roads comprise the majority of streets within the project area.

The intersections along Romerstrasse/Adenaueralle can serve as major connection points from the city to the project site on the Rhine.

There are several major parking garages near the project site, but none are immediately adjacent.

Adding parking areas even nearer to the site could be beneficial for higher access to the Rhine project area. Added parking would also alleviate the congestion along the local roads of the site.

Sources

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Transit Systems

Rapid Transit, U Bahn/Trains, Busses

Hierarchy of Companies

There are three main companies that control the transit systems running through Bonn. The largest of them being Deutsche Bahn (DB) which runs the Rapid Trains throughout the entire country. The next level of transit is run by a company called Verkehrsverbund Rhein-Sieg (VRS) which is in charge of the U Bahn train system including the above ground street cars and the underground trains. VRS runs throughout the Cologne and Bonn Region. The smallest tier is Stadtwerke Bahn (SWB) who runs the busses within the city of Bonn. All three of these companies are partners in supplying Bonn with adequate transportation and work together to achieve this.



COUNTRY
(GERMANY)



REGION
(KOLN & BONN)



CITY
(BONN)

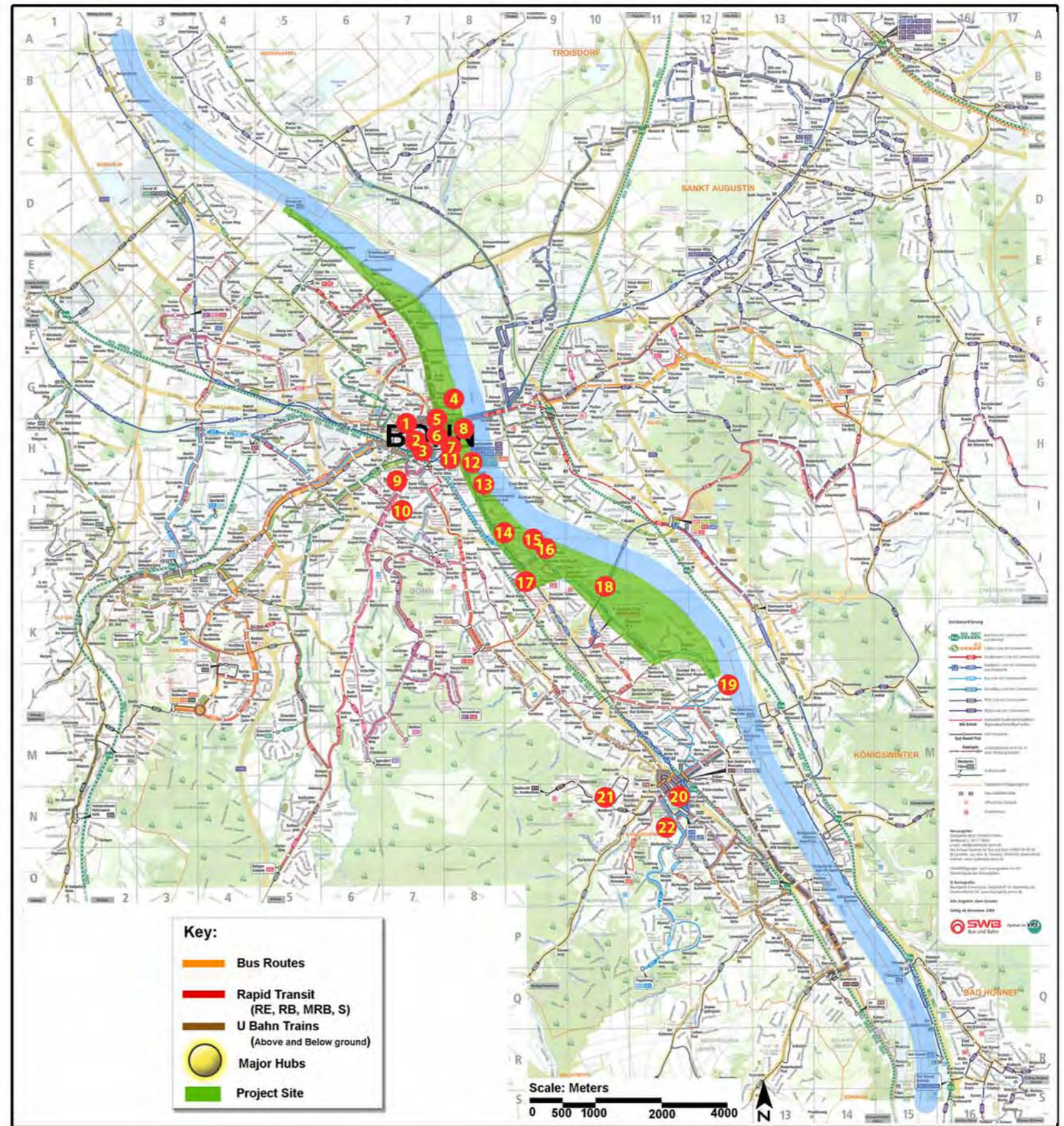
Statistics

Train passengers.....1.908 billion annually
 Bus passengers:.....800 million annually
 Local and long -distance trains.....26906/day
 Tunnels.....787
 Number of passenger stations.....5,707
 Revenue.....239,382

List of Landmarks

- | | |
|-------------------------|--------------------------|
| 1. Stadthaus | 12. Villas Hammerschmidt |
| 2. Sterntor | 13. E.M. Arndt-Haus |
| 3. Munsterplatz | 14. Museum Koenig |
| 4. Beethovenhalle | 15. Palais Schaumburg |
| 5. Beethovenhaus | 16. Int. Kongresszentrum |
| 6. Rathaus | 17. Kunstmuseum Bonn |
| 7. Stuthner-platz | 18. Lander Eugen |
| 8. Opernhaus | 19. Haus Carstanjen |
| 9. Rhein Landesmuseum | 20. Stadthalle |
| 10. Schloss Poppersdorf | 21. Godesburg |
| 11. Universitat Bonn | 22. La Redoute |

Stadtplan Bonn- Transit Map of Bonn, Germany





History

Deutsche Bahn (DB), founded in 1994 is one of the world's leading passenger and logistics companies operating in over 130 countries. Every day approximately 251,000 employees are committed to providing mobility and logistical services for customers around the world, as well as controlling and operating the related transport networks in the rail, land, ocean, and air freight transport sectors. In the 2009, DB posted revenues of 29.3 billion euros, as well as operating profits of 1.7 billion euros before special items.

Description of Rapid Trains



RegionalBahn (RB)
RB27, RB30 & RB48



RegionalExpress (RE)
RE5, & RE8 & RE23



MittelrheinBahn (MRB)
MRB26



InterCity (IC) & InterCity-Express (ICE)



Analysis

-DB owns the regional trains that cover all of the German region and VRS owns the trains that cover Cologne and Bonn.

-None of the regional trains cross the Rhein river.

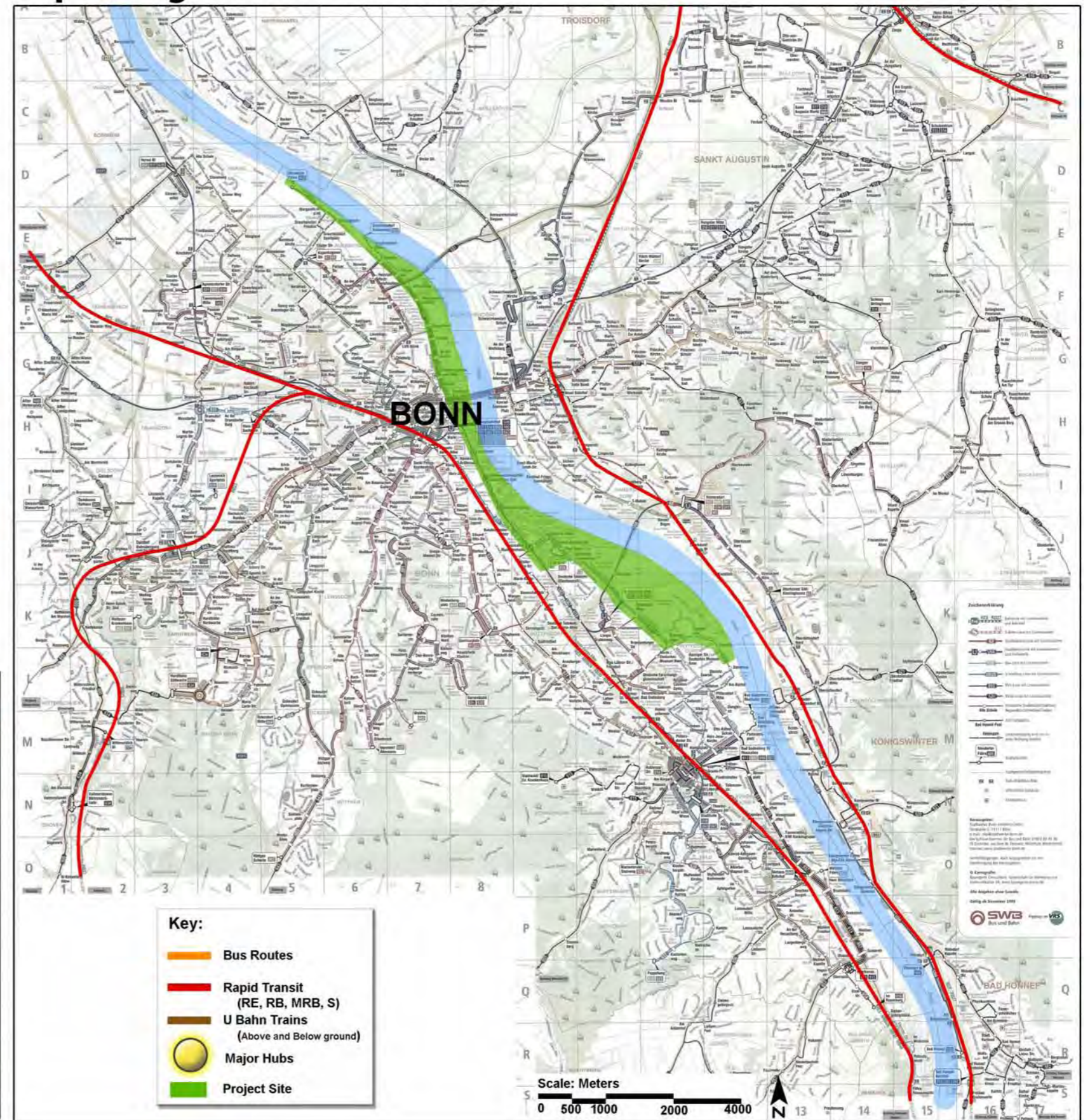
-The main regional train routes run along the Rhein river and branches off away from the Rhein to connect to other cities.

-The main train/bus stations are hubs for the regional transit converging with other forms of transportation within the city of Bonn.

Rapid Train Hubs



Rapid/Regional Train Routes

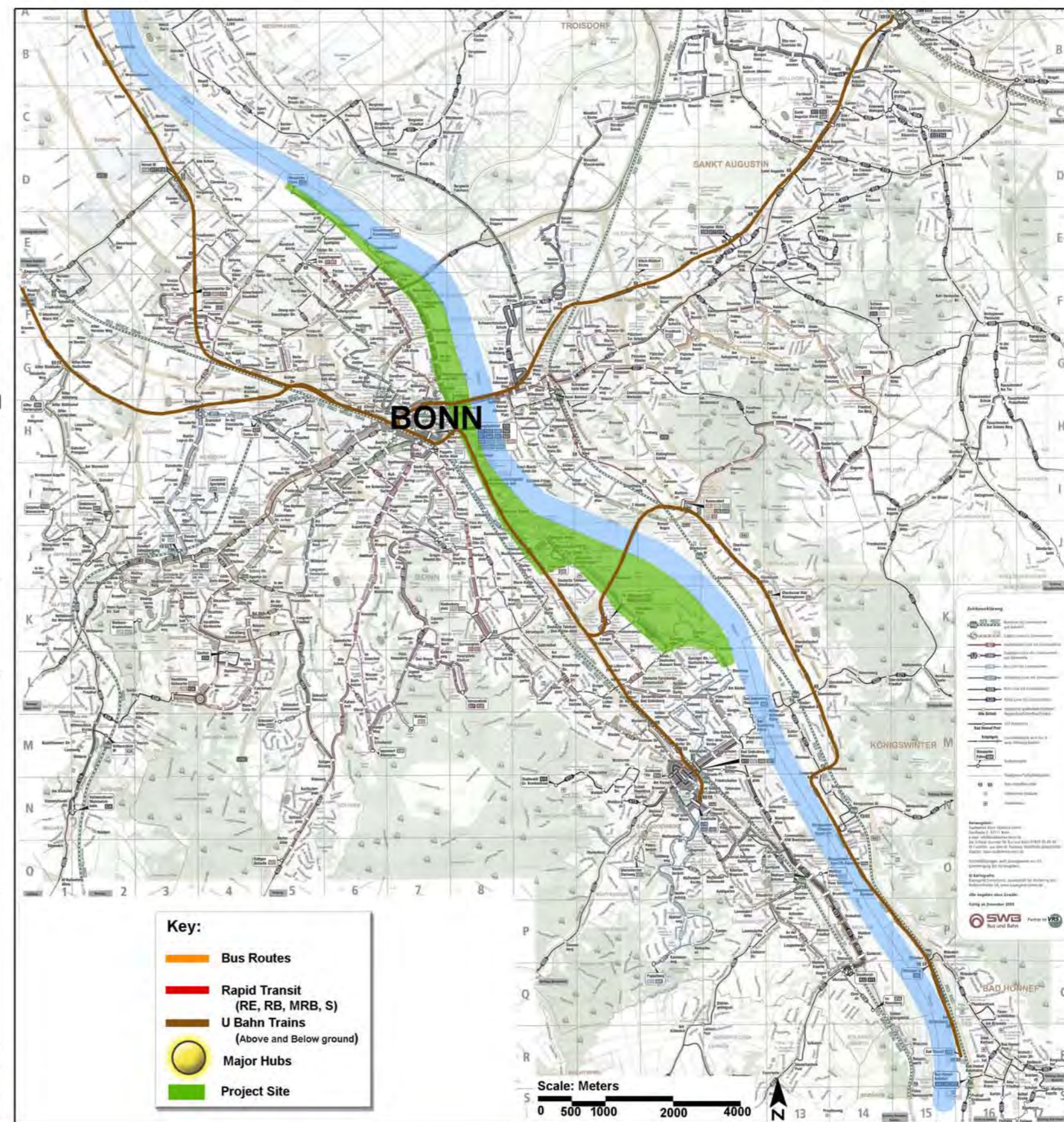


History

Verkehrsverbund Rhein-Sieg (VRS) company was founded in 1987 and supplies transportation for nine rural and urban districts (Rhein-Erft, Euskirchen, Rhein-Sieg, Rheinisch-Bergisch, Oberbergisch, Cologne, Bonn, Leverkusen and Monheim) within the Cologne/Bonn region.



Train Routes



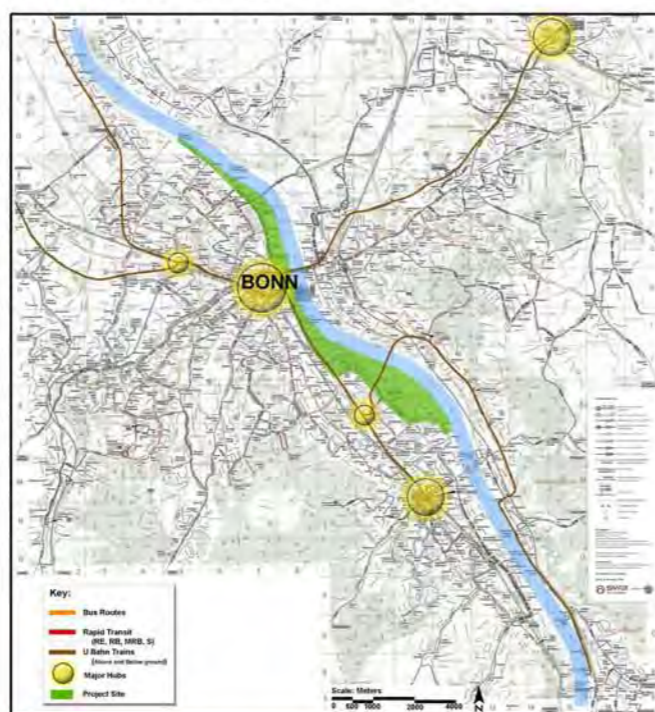
VRS Coverage



Analysis

- The train routes branch off at the Bonn Hbf (The central main station) and spread through the north and south of Bonn.
- The routes do not go into neighborhood areas and stay on the major roads to provide access.
- It also crosses the Rhein river to the other side.
- Some routes are not limited by the Bonn border, and continues to neighboring cities.
- The main hubs are the main train stations, the largest of which are (Bonn Hbf and Siegburg Hbf)

Train Hubs



Statistics

- Area.....5.111 km²
- Inhabitants.....3,3 million
- VRS partner companies.....30
- Passengers.....More than 1.4 million every day (Over 500 million per year)
- Number of lines.....522 of which 22 DB (German Rail ways) regional lines, 4 DB (German Railways) urban rail lines, 18 urban railway and tram lines, 478 bus lines
- Number of stops.....7,448
- Types of Trains:
StraßenBahn (61,62,65)
U-Bahn (U16, U66, U63, U67, & U68)





History

SWB (Stadtwerke Bonn) is in charge of energy, water, local public transport and waste processing within Bonn and the region. SWB has been an active company within Bonn for over 129 years; providing the city with energy since 1879, and providing public transportation since 1891. Stadtwerke Bonn is a community-owned company through the city of Bonn with over 2,400 employees, supplying the area with a wide range of services to its residents and visitors.

Stadtwerke Bonn's mission "is committed to ensuring sustainable and livable society in the city and actively fulfils its responsibilities with regard to environmental and climate protection. These aims are integral components of our corporate culture. The long-term benefit for citizens of Bonn and future generations of the city is at the top of our corporate agenda".



Analysis

- The bus routes cover the majority of the streets in Bonn. They provide services to the residential areas.
 - The routes concentrate in the city center and equally distributes to the outer parts of the city. The larger hubs are in main train stations, where they provide connections with trains and allow for transfers.
- There are also hubs forming where multiple trains converge.

Statistics

- Consolidated annual sales of about EUR 570 million
- Vocational trainees: 128 (2008)
- Balance sheet total: EUR 664.1 million (2009)
- Capital expenditure: EUR 46.2 million (2008)
- Sales revenue: EUR 567.3 million (2008)
- Annual result: EUR 0.5 million (2008)

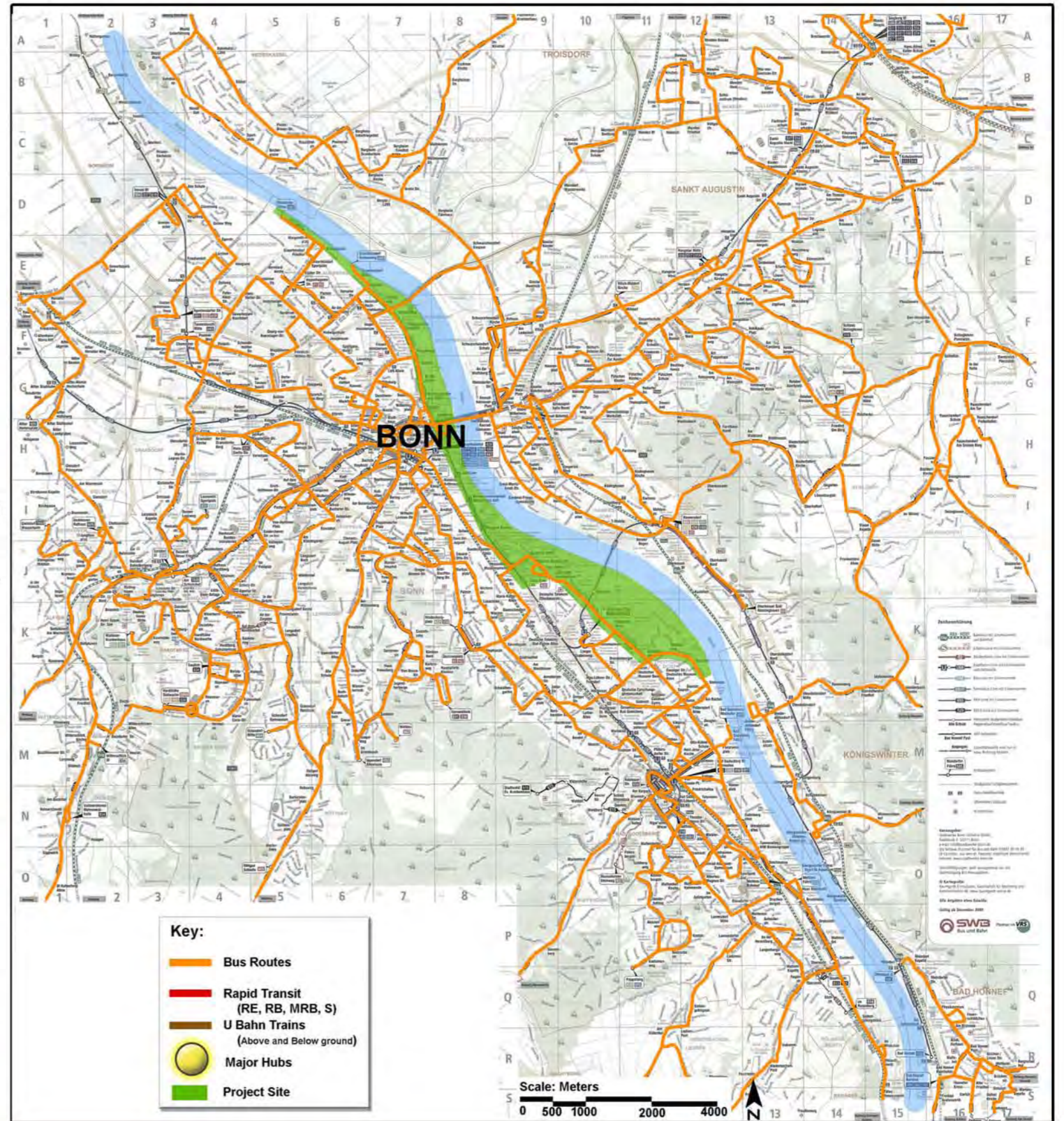
Description of Busses

- 600s.....only within city of Bonn
- 500s/800s.....other cities
- SB60.....express bus to airport
- SB55.....express bus to Lüsseldorf
- SB69.....express route for bus69
- T650/T680.....taxi-bus, need to reserve

Bus Hubs



Bus Routes

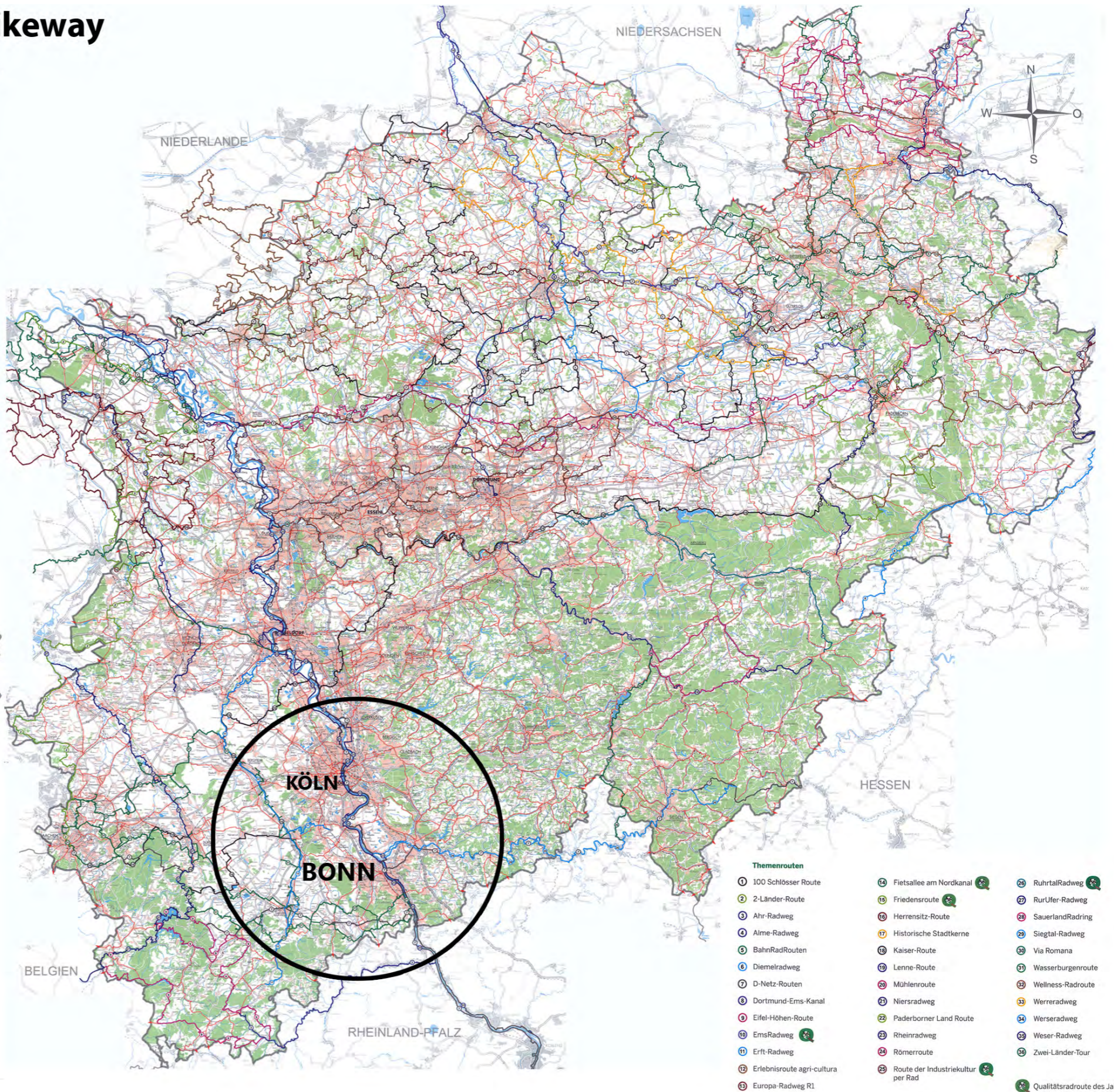


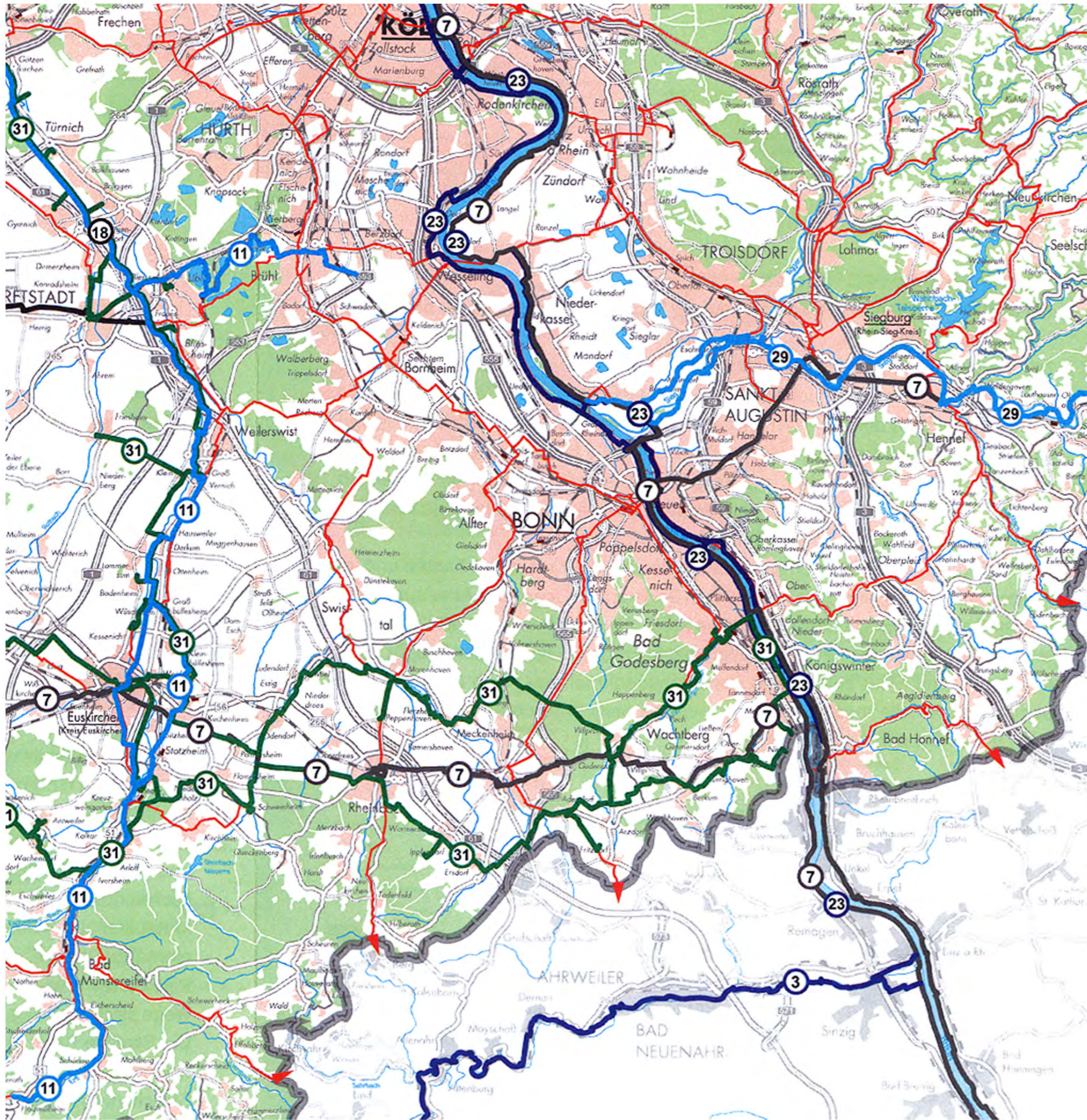
North-Rhine Westphalia State-wide Bikeway

The promotion of cycling in North Rhine-Westphalia (NRW) has a long tradition. In the last three decades, about 1.4 billion Euros was spent on the construction of 7780 km bicycle paths. Today, it remains the No. 1 biking state in Germany.

The national network of Germany has a total length of 13,800 km and includes about 70,000 signs. These signs serve as the backbone of the signposting in NRW. All subsequent development of bike paths are modeled after the national system. Many local and regional bikeway supplements are developed by the cities and municipalities and promote the local, state, and national network.

The national cycle network is the basis for further activities of the Department of Transportation in North Rhine-Westphalia. Since summer 2003, an online cycle route planner has been available to the public. This online resource allows you to compose personal cycling maps by entering departure, destination and intermediate points of interest. Cycling serves as the main tourist attraction for Germany by including accommodations like, topographic analysis, "Bed and Bike" destinations, as well as train and mass-transit access.





Regional Tourist Routes

- ⑦ D-Netz-Routen
- ⑪ Erft-Radweg
- ⑳ Rheinradweg
- ㉑ Siegtal-Radweg
- ㉓ Wasserburgenroute

LEGEND

- Federal State Boundary
Landesgrenze NRW
- Long Distance Bike Transport Network
Radverkehrsnetz NRW
- Region Themed Route
Themenrouten

Maßstab 1:250.000

0 km 4 km 8 km 12 km 16 km 20 km

This map highlights the Tourist Routes of the Region of Bonn. Within this map there are two different kinds of routes, these include a long distant bike transport network that act as bike "highways" throughout the state of North Rhine Westphalia as well as Region Themed Routes that serve the the touristic use of the Regional Bikeway Systems. Within our site there are two existing tourist routes, they include the Rheinredweg and the D-Netz Routen.

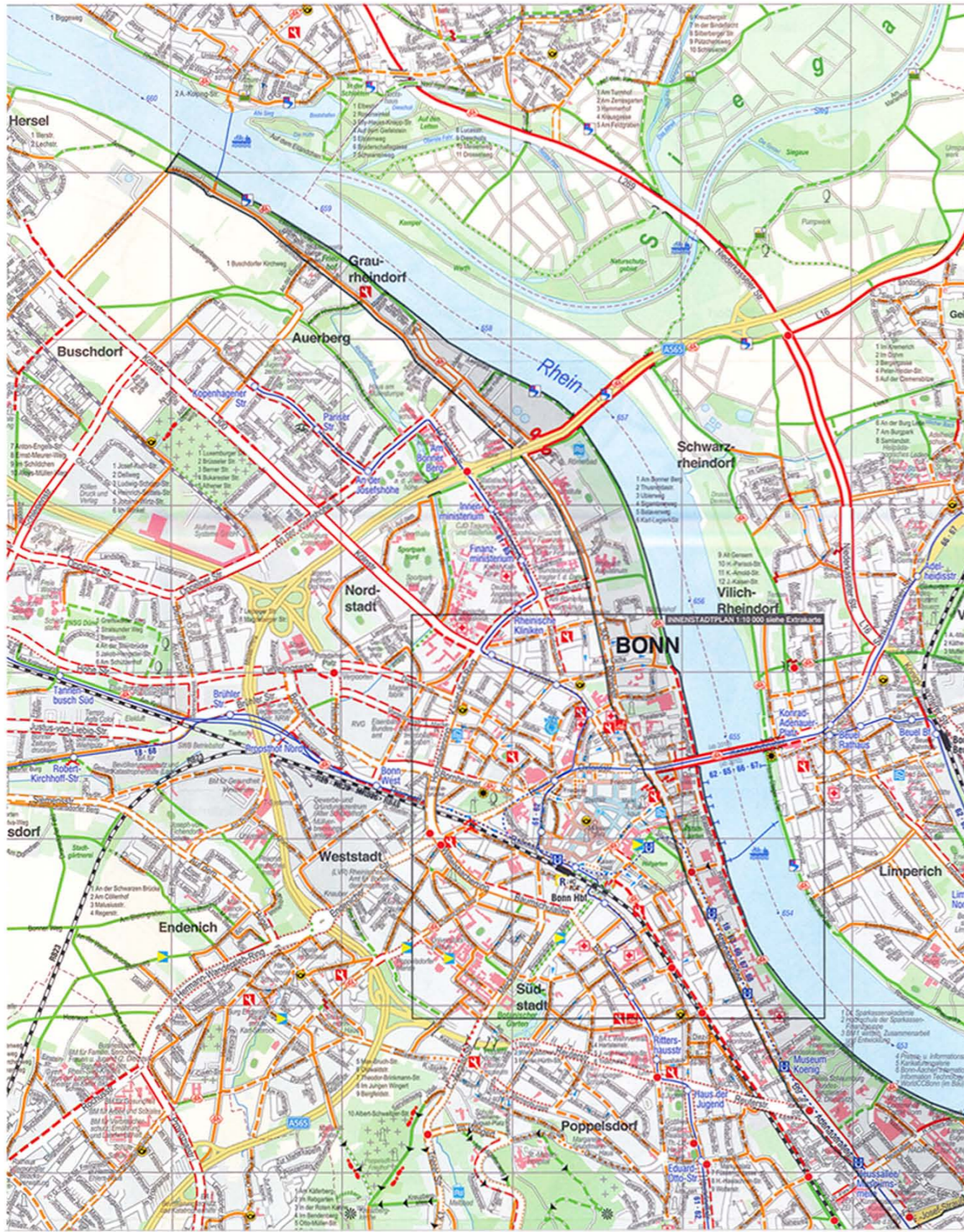


Rheinradweg
Rhine Cycle Route



D-Netz Routen
Regional Cyclist Route





Bicycle State Plan Bonn and Rhein-Sieg

The Bicycle Stadtplan for Bonn and Rhein-Sieg is organized and run by the Allgemeiner Deutscher Fahrrad-Club (General German Bike Club). There are over 400 routes within the Bonn and Rhein-Sieg Region, all of which include, Rhein Riverfront, inner-city routes, and various recreational paths. This map locates bicycle service stations within the Bonn region that are reviewed and approved by the General German Bike Club, it also establishes a hierarchical differentiation between routes, organizing them as Car-Free Bikeways, Shared Roadway, Guarded Bikeway, One-Way Bikeway, Two-Way Bikeway and ranks each category as good, mediocre, and poor as well as light, medium, and heavy traffic areas. This map helps in better planning a safe and efficient route for all cyclists. If you will notice on the legend below, this map also locates other various bicycle related services and infrastructure, some include bike and ride stations, bike rentals, covered bicycle parking, and ferryboat locations. The routes included on the Stadtplan are both regional and state wide routes, come of these routes include the Erlebnisweg Rheinschiene, RegioGrun-Erlebnisweg, and Siegtal-Route. The General German Bicycle Club has established this map to not only cater to local and touristic cyclists but to better map areas needed for improvement and locate areas of renovation focus. Our site line is indicated with a light grey outline. All existing routes within our site line are mostly well-maintained and highly used routes. Some of the most predominant routes within our site include , the Erlebnisweg Rheinschiene (Fun of the Rhein River) and Wasserburgenroute (Water Coastal Route) which runs the full length of the North Rhein Westphalia State of Germany.

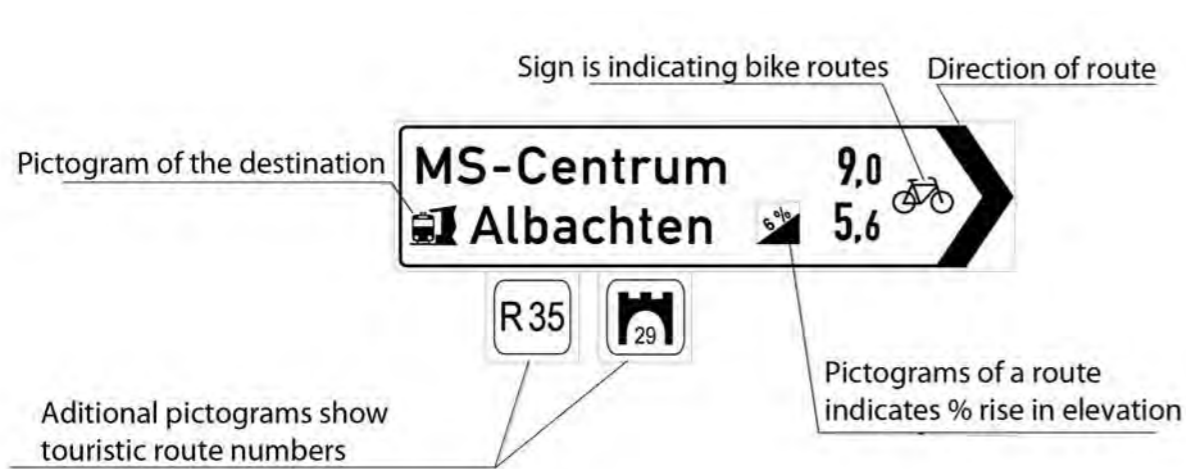
LEGEND

Car-Free Bikeways	Shared Roadway	Guarded Bikeway	One-Way Bikeway	Two-Way Bikeway	Other
Good (Solid Green)	Light Traffic (Thin Orange)	Highly Approved Routes (Thick Yellow)	Good (Thin Red)	Good (Thick Red)	Inaccessible to Bikes (Yellow)
Mediocre (Dashed Green)	Medium Traffic (Thin Orange)	Moderately Approved (Thin Yellow)	Mediocre (Thin Red)	Mediocre (Thin Red)	One-Way (Blue Arrow)
Poor (Dotted Green)	Heavy Traffic (Thin Orange)	Unsuggested Routes (Thin Yellow)	Poor (Thin Red)	Poor (Thin Red)	Pedestrian and Cyclists Share (Light Blue)
but necessary for network	but necessary for network	but necessary for network	but necessary for network	but necessary for network	Pedestrian Only (Light Blue)
					Must Get-off and Push Bike (Red)

BONN	Other
City District (Grey)	Railway (Black)
Town (Light Grey)	Industrial Railway (Black)
Hoholz (Light Green)	Underground U Bahn Railway Station (Blue)
Meßdorf (Light Green)	Aboveground Railway Way Station (Blue)
Hunting Forest Land (Green)	Conflicting Transportation Intersections (Red)
Construction (Grey)	Slope more than 3% Steep Hill (Green)
Industrial (Grey)	Cycle Barrier (Red)
Cemetery (Green)	Staircases (Red)
Restricted Zone (Grey)	Ferryboat Across River (Blue)
City Boundaries (Dashed Grey)	ADFC Headquarters (Blue)
	Bike and Ride Stations (Blue)
	Bike Repair Shops (Red)
	Bike Rentals (Blue)
	Covered Bike Parking (Blue)
	NRW Bike Route (Blue)
	Erlebnisweg Rheinschiene (Blue)
	RegioGrun-Erlebnisroute (Blue)
	Siegtal-Route (Blue)
	Wasserburgenroute (Blue)
	Post Police (Yellow)
	Sherrif Police Station (Yellow)
	Hospital (Red)
	Outdoor/Indoor Pool (Blue)
	Churches (Blue)
	Track and Field (Green)
	Memorial (Blue)
	Monument (Blue)
	Archeological Graves (Blue)
	Endangered/Old Trees (Blue)
	Camping Site (Blue)
	Forest Administration (Blue)
	Docking for Ships/Ferries (Blue)
	Rhine km Markers (Blue)
	Scenic View (Blue)

0 miles 0.124 0.248 0.372 0.496 0.62 miles
 Maßstab 1:20 000
 0m 200 400 600 800 1km
 Herausgeber: Allgemeiner Deutscher Fahrrad-Club (ADFC), Kreisverband Bonn/Rhein-Sieg e. V.
 Digitale Kartografie: Baumgardt Consultants, Gesellschaft für Marketing und Kommunikation gR, Berlin und Leipzig
 © J.P. Bachem Verlag, Köln 2009
 © Allgemeiner Deutscher Fahrrad-Club (ADFC)
 Stand: Februar 2009





Signage and Dimensions

The national German network is another significant step in promoting cycling in NRW. The cycling network of Germany and the state of NRW connects all towns and cities of the country with uniform signposts for cyclists. The centers of the municipalities are connected through short and direct routes to each other. The HBR NRW provides all stakeholders with an assist in the planning, installation and implementation of bicycle signs in North Rhine-Westphalia. The instructions explain to supplement the "Code of the landmark signs for bicycle traffic" of FGSV planning, legal, technical and organizational aspects, with particular consideration of the RVN NRW. However, they apply specifically to all bicycle signage in the country.

The HBR NRW currently includes about 150 pages and is a "loose leaf collection created" to actually respond to new evidence and changes in the regulatory environment will. You can order a printed copy of the service area of the website of Transport under www.mbv.nrw.de.

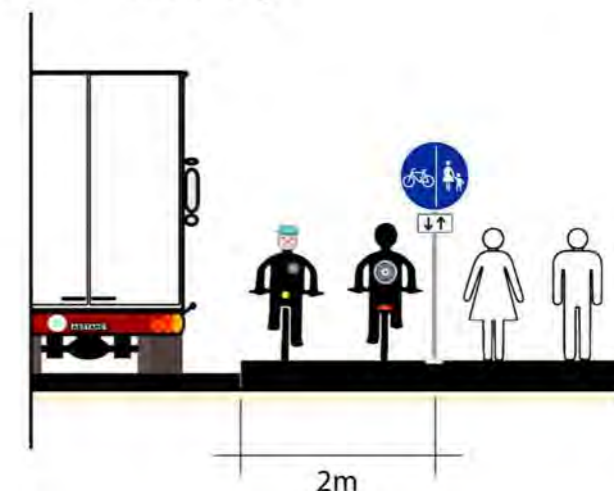
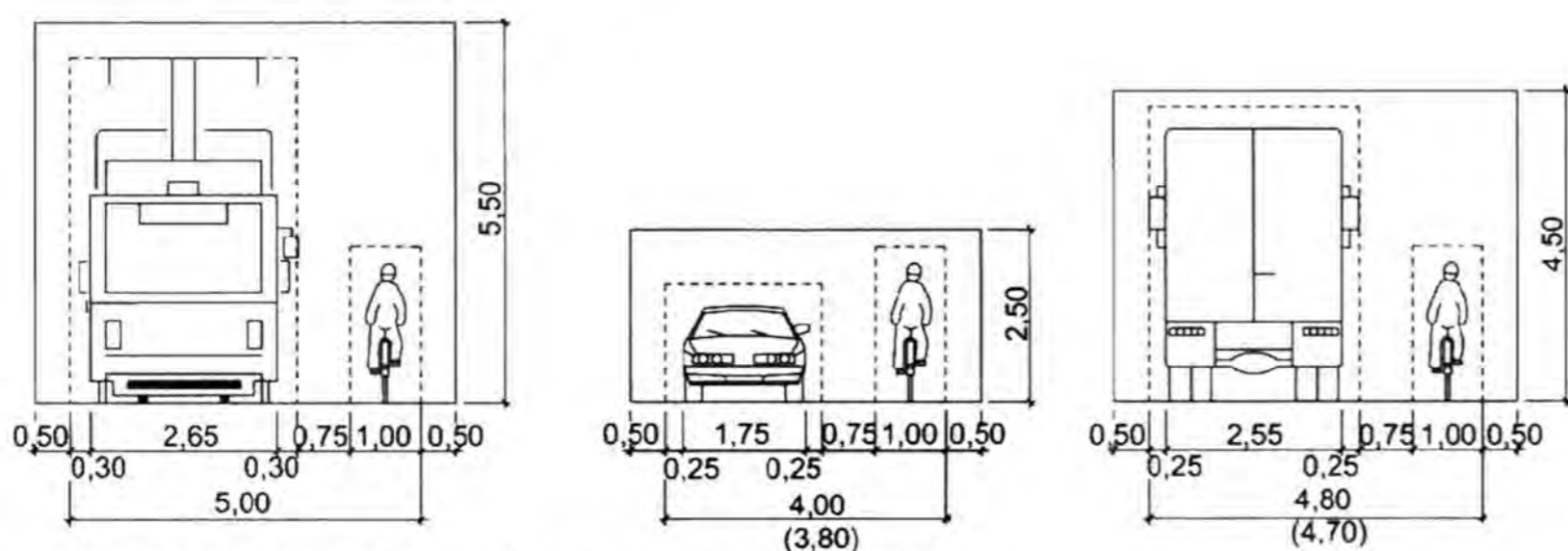


Diagram showing a two way bike path

Dimensions of the NRW Bicycle road network signage



Standards for traffic room of pedestrian and cyclist paths are around 1.00 m. They are expanded by situation specific security rooms (In meters)

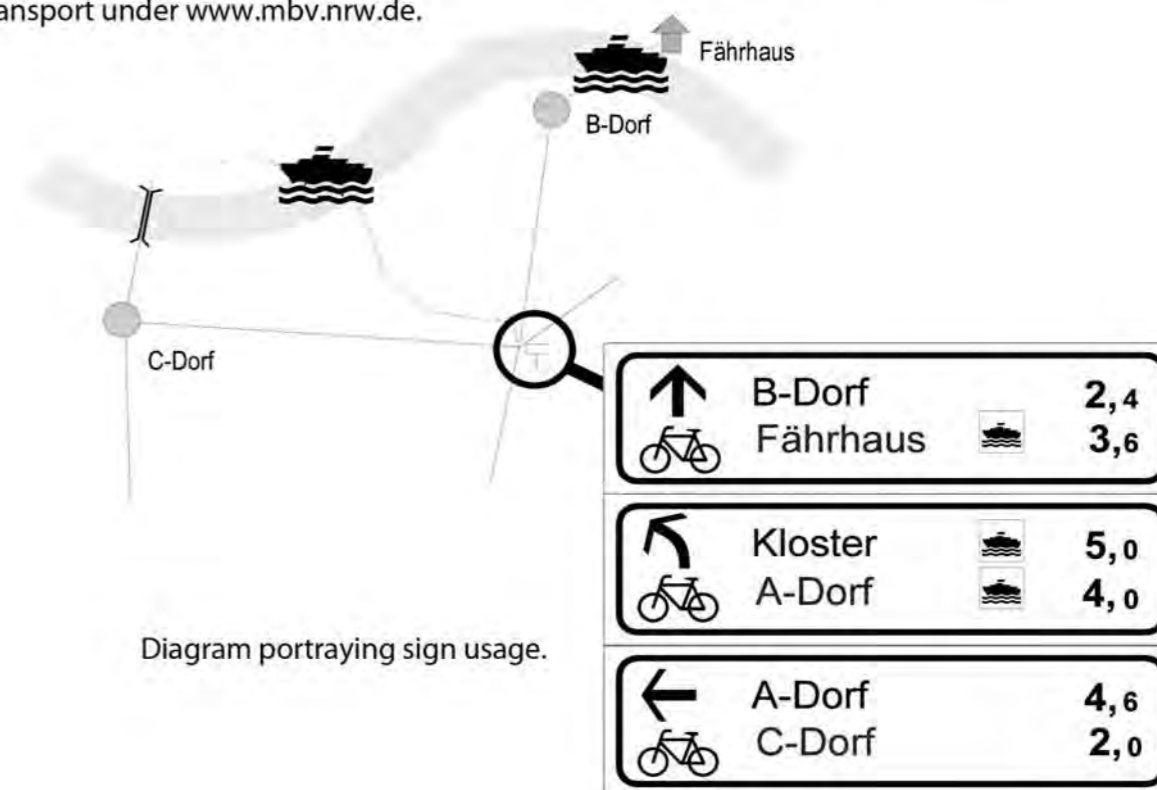


Diagram portraying sign usage.





Master Plan



Planning and Design for the Waterfront
Redevelopment of the West Bank of the
Rhine River, Bonn, Germany



Department of Landscape Architecture and Urban Planning,
College of Architecture, Texas A&M University
CARC 301 Study Abroad Design Studio, Fall 2010

Master Plan

Texas A&M University

M-1

Graurheindorf Rhein Park

The area concerning section 1 of the Rhine Riverfront project spans, at its north edge, from about 200 meters from of the auto ferry to the town of Mondorf to the 565 Autobahn.

The west limit of the site is delineated by a line of roads running from south to north: Romerstrasse, Estermannstrasse, An der Pfaffenmutze, and Michgasserweg. The eastern edge of the site is formed by the Rhine River entirely.

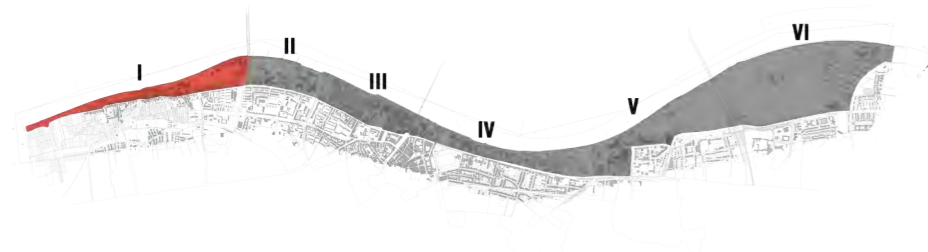
This section of the site encompasses a majority of the village of Graurheindorf. The village section of the site is composed of mainly small multistory houses, a few restaurant/bars, a newly developed track of land boasting a row of high-end residential buildings fronting the Rhine River's shore, and St. Margaretha church. The site also maintains a waste water treatment plant owned by the City of Bonn as well as a harbor used by international freight ships.

There is an existing section of the Rhine River-side bike and pedestrian path which not only runs along the shoreline of most of the site but also ventures around the restrict shoreline of the harbor into the heart of Graurheindorf.

On the northern edge of the site there a large amount of land either abandoned or vacant which has become overgrown or littered with debris. These areas have a high potential to become a viable space adjacent to the river where people and wildlife could benefit with the correct amount of passive and active recreation.

The village of Graurheindorf exudes a unique identity through its antiquated architecture, comely street experience, a close relationship to the river, and a rural lifestyle; even though this village is a short bike ride from the city center of Bonn.

The waste water treatment plant has the potential to become an integral part in the surrounding community. With its close location to the river this facility has a possibility to hold community educational courses to let the citizens of Bonn become more familiar with their municipal responsibilities.



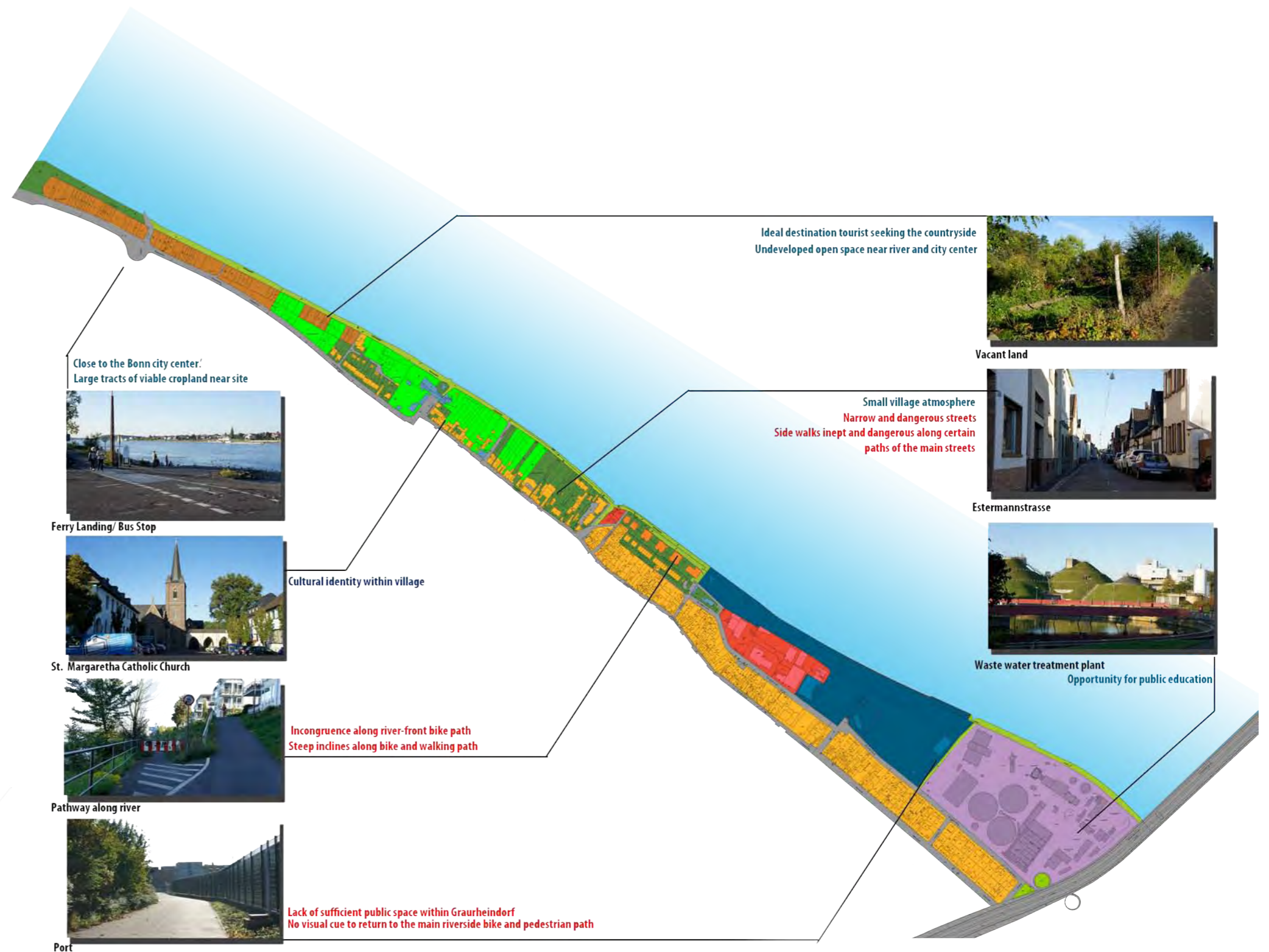
Key Map

Potentials

- Ideal destination for local visitors and tourists seeking the countryside
- Close proximity to the city center of Bonn
- Economic boost from small business Bed & Breakfast
- Undeveloped open space near Rhine River and city center of Bonn
- Small village atmosphere and strong cultural identity
- Large tracts of viable cropland near Graurheindorf

Issues

- Incongruence of river-front bike path
- No visual cue to return to the main riverside bike and pedestrian path
- Sidewalks inept and dangerous along certain portions of primary streets
- Steep inclines along bike and walking path
- Lack of sufficient public space within Graurheindorf
- Auto-centric community and incompetent public transportation services



	ACTIVITIES	SPACES	ELEMENTS
RESIDENTS	Residing	Housing	Infill residential development
	Recreation Entertainment Cultural/Events	Rhine River Parks and Open Space Commercial District	Improved aesthetics of Rhine River front Commercial development near ferry Series of public squares and parks
	Transportation Parking	Pathways and Connections Streetscape	Coherent riverside bike/ped path Bike paths on street level Viable ferry landing station Pedestrian and bike-oriented streetscapes
VISITORS	Recreation Entertainment	Rhine River Parks and Open Space Commercial District	Improved aesthetics of Rhine River front Series of public squares and parks Commercial development near ferry
	Transportation Parking	Pathways and Connections Streetscape	Coherent riverside bike/ped path Viable ferry landing station Pedestrian and bike-oriented streetscapes
WORKERS	Working Residing	Housing Rhine River	Infill residential development Improved aesthetics of Rhine River front Preservation of Rhine's current function
	Entertainment	Commercial District	Commercial development near ferry
	Transportation Parking	Pathways and Connections Streetscape	Coherent riverside bike/ped path Bike paths on street level Viable ferry landing station
WILDLIFE	Residing	Rhine River Parks and Open Space	Restoration of potential habitats Creation of wildlife corridors
	Environmental Processes	Pathways and Connections Undeveloped Land	Preservation of undeveloped land



Mission Statement

This project will revitalize the village of Graurheindorf by creating a system of parks and open space accessible to the public. In addition an extensive admendment to the existing riverside pedestrian and bike path will result in a holistic continuity of bike and pedestrian routes through the town of Graurheindorf. The town of Graurheindorf will become a key point of interest as it connects the towns of Mondorf, Roisdorf, and Bornheim to the main city center of Bonn. These augmentations to the village of Graurheindorf will be done while considering the unique identify and antiquated appearance of the village.

Goals and Objectives

1. Develop an environment which encourages public health
 - Establish a coherent and distinguished river-side bike and pedestrian path
 - Create a pedestrian oriented streetscape within the town while preserving the small village appearance of the town
2. Enhance the viability of the ferry landing
 - Revive the western side of the ferry landing into a multi-use hub
 - Restore portions of landscape to ecologically sound habitats
3. Develop areas to enhance social and cultural interaction
 - Develop a series of linked squares and open green-space
 - Encourage the development of currently undeveloped
4. Create efficient connections to the surrounding neighborhoods as well as the city center of Bonn
 - Provide more distinguishable signage for the riverside bike path
 - Provide more coherent bike lanes on street level
 - Develop a bus route to help deal with increase in need for connection



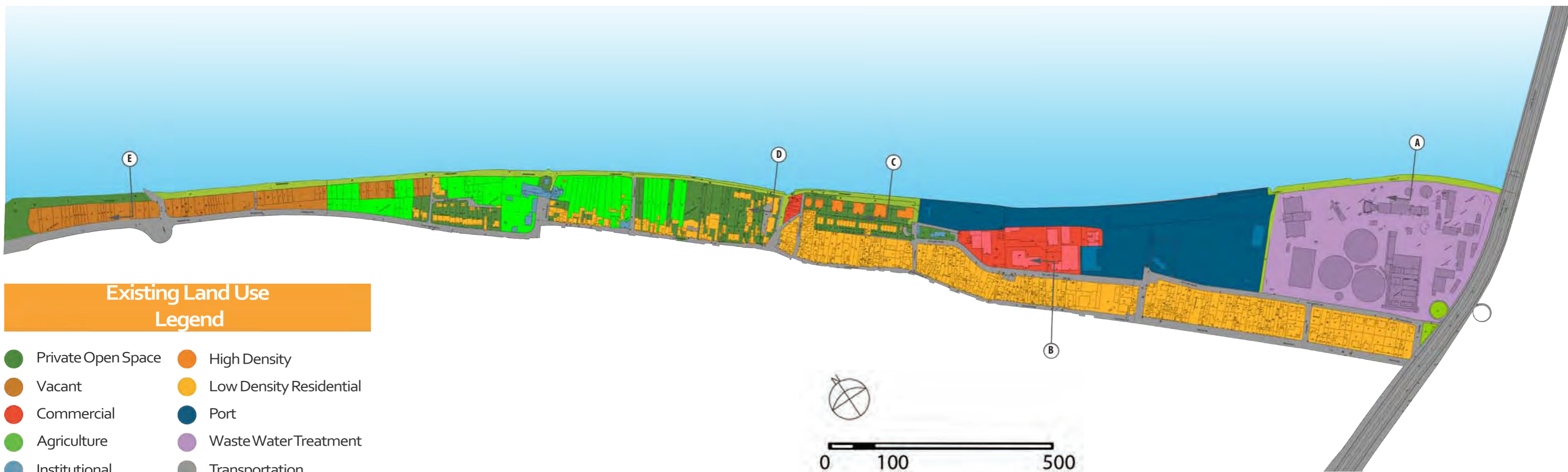
Waste Water Treatment

Port

Commercial

High Density Residential

Low Density Residential



Ferry Landing Aerial



St. Margaretha's Aerial

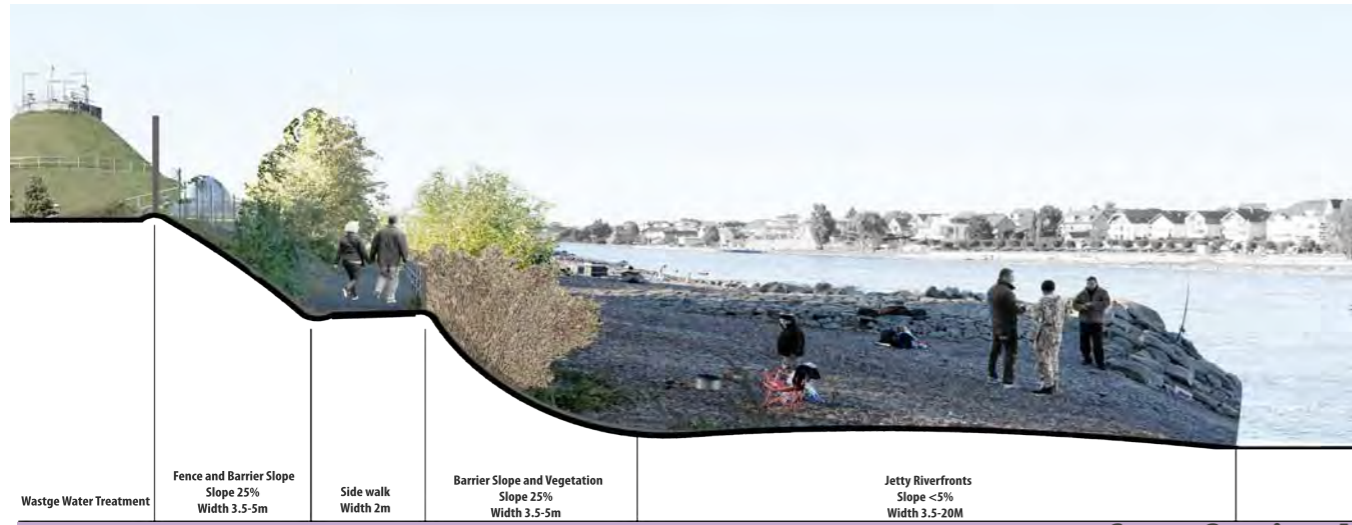


Northern Port Border Aerial

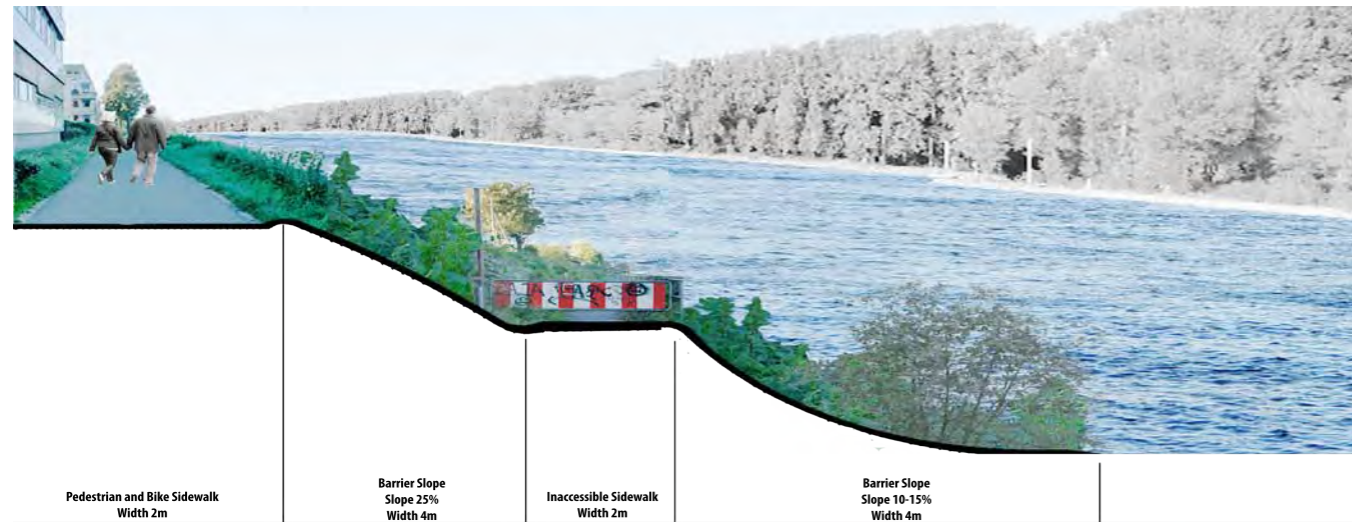


Waste Water Treatment Plant Aerial

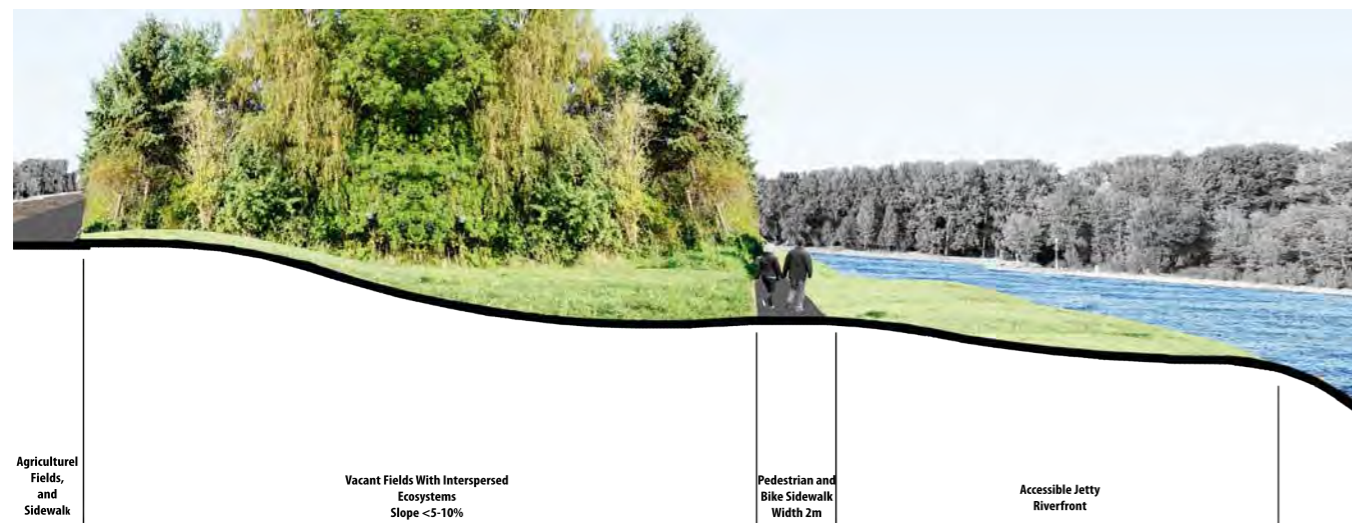




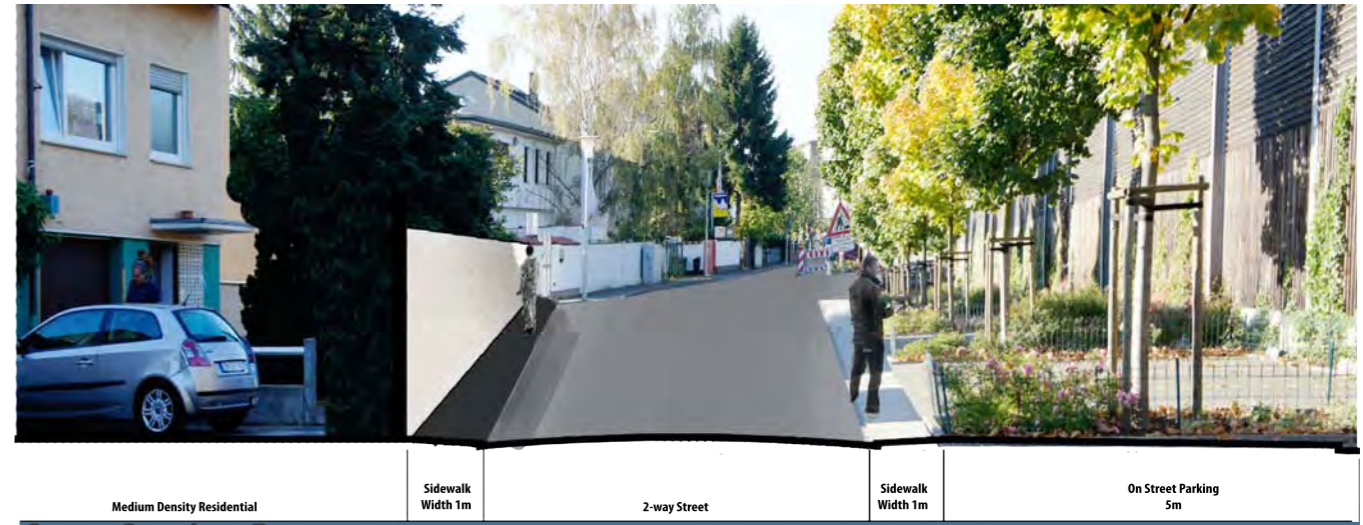
Cross-Section A



Cross-Section C



Cross-Section E



Cross-Section B



Cross-Section D

Cross-Section A
Simplified Riverfront Cross Section within area near Wastewater Treatment Facility. Limited river access with handrail and steep barrier slopes. Large jetty systems along riverfront. Western views obstructed by elevated slopes as well as trees and wastewater treatment plant facilities.

Cross-Section B
Simplified riverfront cross section within area near docks. No river access. Unappealing views of community. Disrupted bike and pedestrian system, making for dangerous connections as well as confused way-finding.

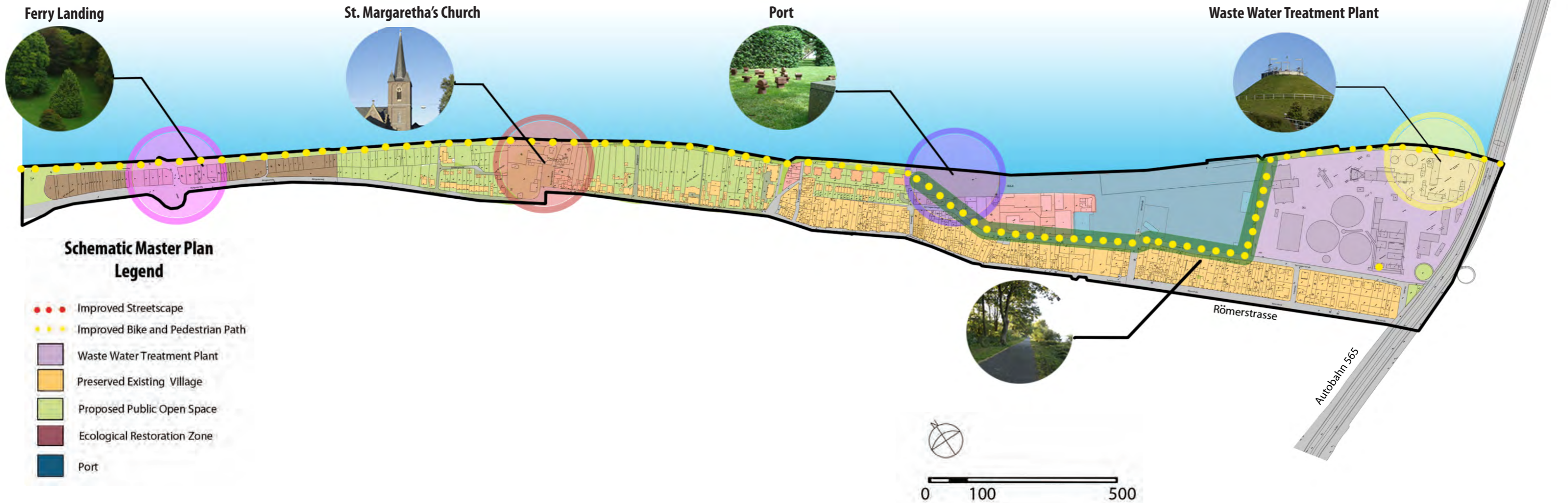
Cross-Section C
Simplified riverfront cross section within area near the new development. Limited river access. Without handrailing. Multiple path surfaces and steep barrier slopes.

Cross-Section D
Simplified riverfront cross section within area north of the new development. Limited river access with handrailing and steep barrier slopes. Large retaining wall blocks the view of the west. No lighting but

Cross-Section F
Simplified Riverfront Cross Section within area near auto-ferry crossing. Unlimited river access without handrail lighting or benches. Relatively undeveloped along the river front with many vacant lots within the northern most section.



Proposed Land-use Map



Ferry Landing

The ferry landing site provides the main access for ingress and egress of traffic of the citizens of Mondorf into the City of Bonn. Its current location on the northern section of site makes the landing area somewhat isolated from the surrounding village of Graurheindorf. The surrounding area is a riddled mass of vacant lots interspersed with overgrown grassland and wooded areas that serve as unregulated dumping ground. Also the site is located within the area designated as the "Green C". This project is a regional effort to connect the surrounding towns of Mondorf and Graurheindorf to the city center of Bonn. This area has great potential as a site that could provide better visual connection with the adjacent city Mondorf as well as providing a riverfront ecological corridor.

St. Margaretha's Church

The area surrounding St. Margaretha's Church consists of small agricultural lots with institutional buildings associated with the church. A small asphalt area composes the church parking lot and also creates an access point to the riverfront. However, this point of entry is seldom used due to its uninviting appearance as well as its hidden gateway to the river. This area does provide many advantages for the village surrounding the church. Its central location, identity with a public structure, and access-way to the river make it a premier area for development of multi-functioning public space.

Port

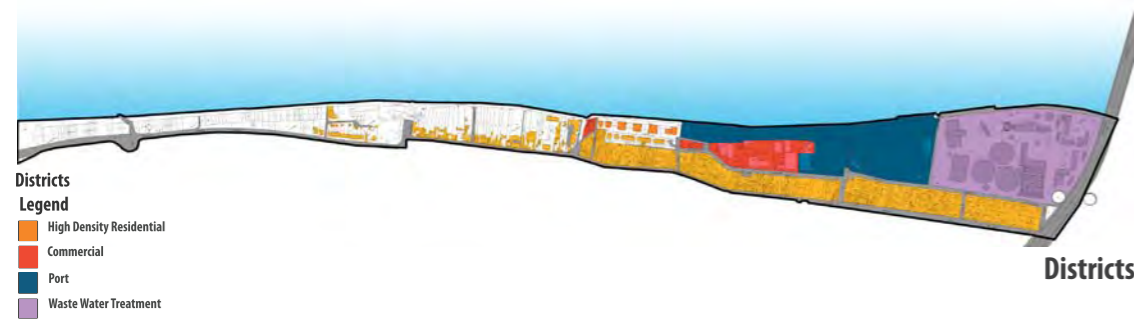
This riverfront plot of land has great potential for future development as a streamlined connection of the riverside bike and pedestrian path. It currently consists of a parking lot for large trucks within the dock, fire-station and residential block. Using the reclaimed space from the dock, this area can be made into a community park for the citizens of the surrounding area to enjoy as well as a focal point and destination for joggers and bikers using the riverside path. The current issues facing the site consist of harsh walls, underutilized riverfront property, lack of signage on riverside bike and pedestrian path, parking lot of the new high-end residential development creating unpleasant views, unsafe streetscape, and sparse green space with invasive vegetation establishing.

Waste Water Treatment Plant

The waste water treatment facility is located north of the autobahn bridge and is the largest single zoned area within the site. It is also the largest treatment facility within the city, treating millions of liters of effluent water per day before returning the treated water to the Rhine. This facility is also the most prominent landmark viewable from the autobahn. Its two large hills located adjacent to the river front provide much of the site's visual attractiveness. However, large fencing as well as dense vegetation and protection berms make viewing and interaction with the space virtually impossible, and help to portray hostility and danger to the site.



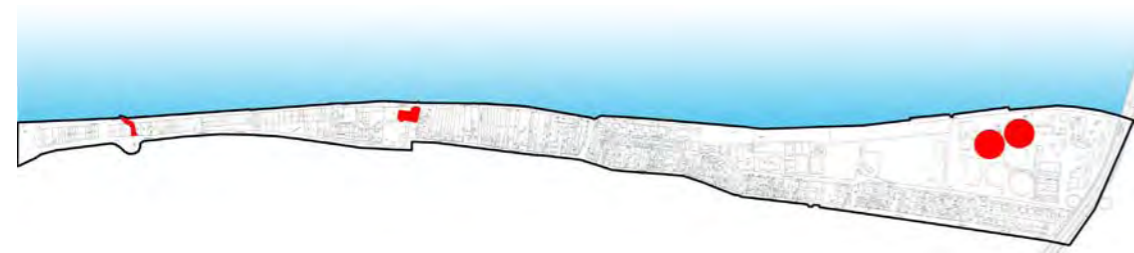
Plan Analysis



Districts



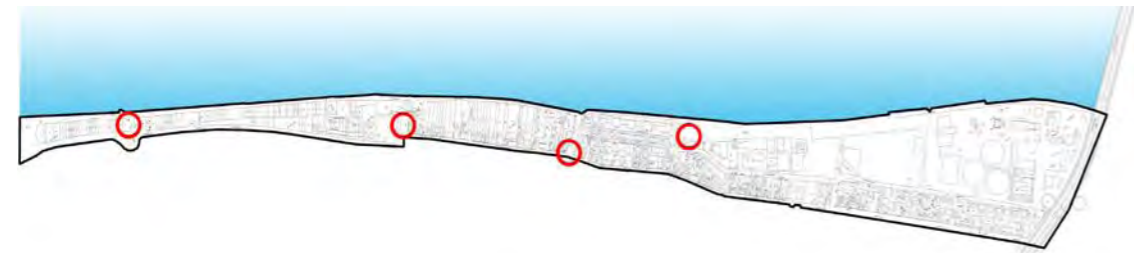
Bike Circulation



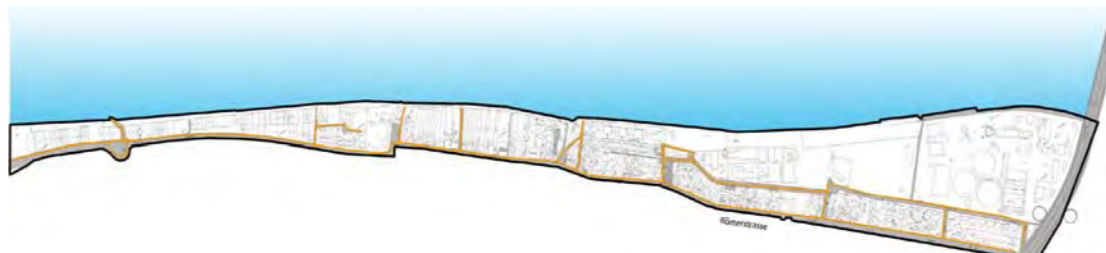
Landmarks



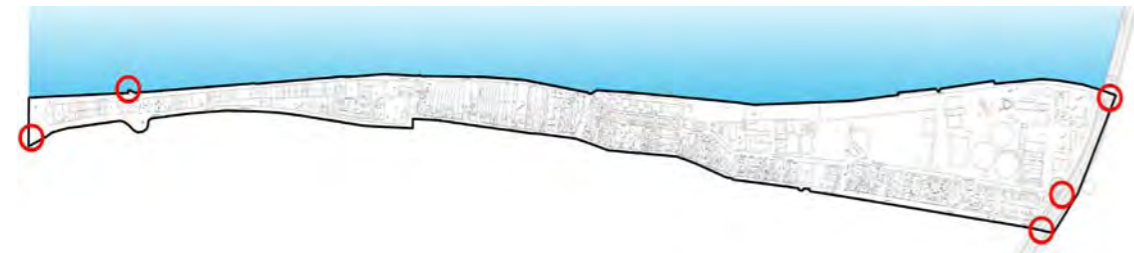
Pedestrian circulation



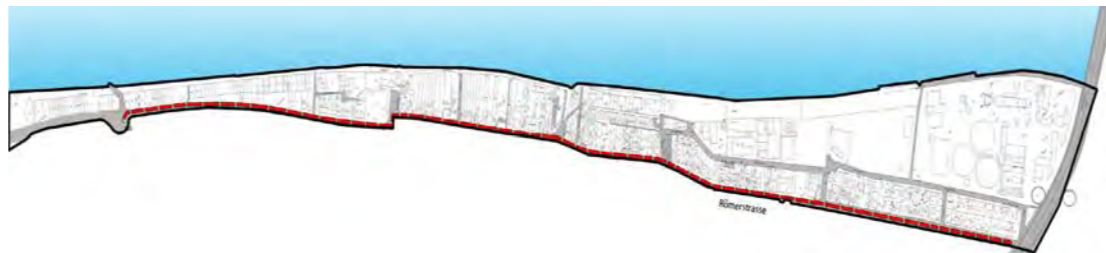
Nodes



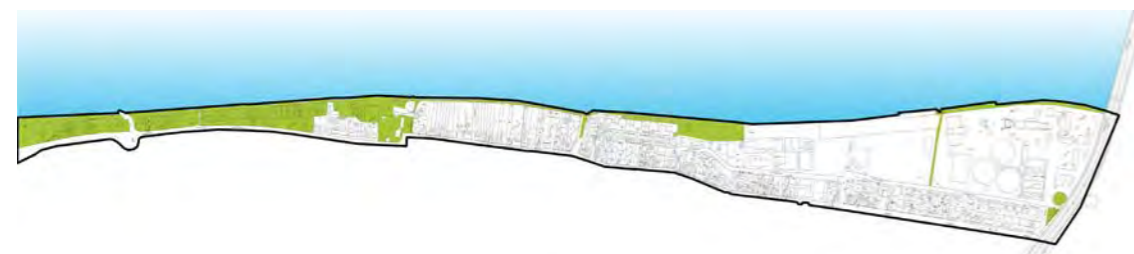
Vehicular Circulation



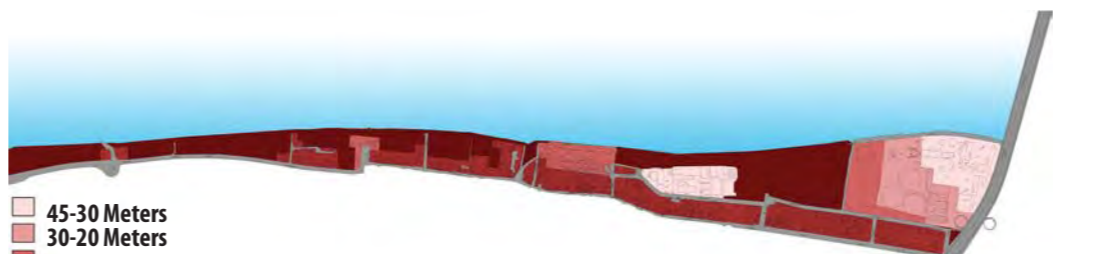
Portals



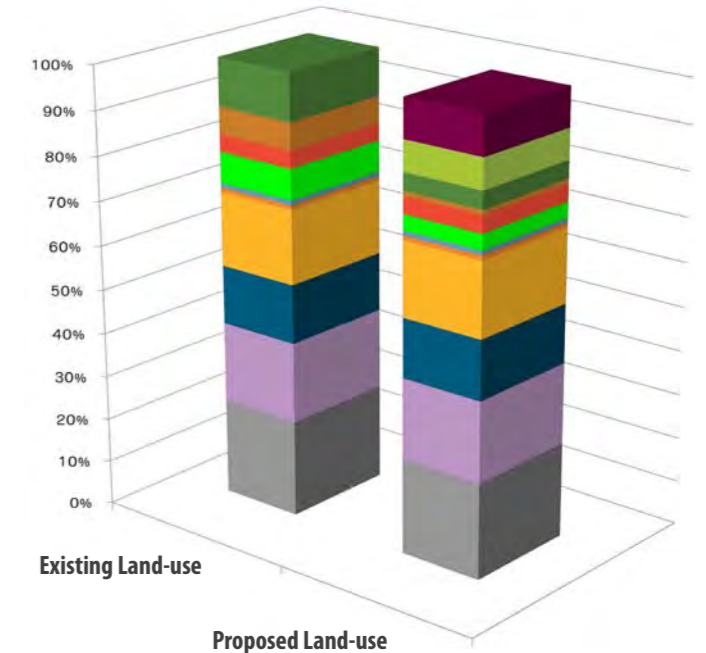
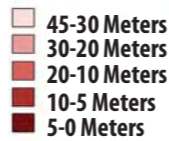
Bus Route



Public Open Space



Proposed Maximum Building Heights

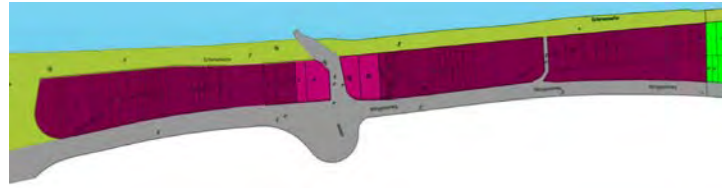


Land-use Comparison Graph

Existing Land Use	
	% of land use
Total Open Space	10.8
Vacant	6.1
Commercial	3.9
Agriculture	7.0
Institutional	1.0
High Density Residential	1.0
Low Density Residential	16.8
Port	13.3
Waste Water Treatment Facilities	18.3
Transportation	21.8
Proposed Land Use	
	% of land use
Ecosystem Restoration	8.8
Public Open Space	9.8
Private Open Space	4.0
Vacant	1.0
Commercial	3.9
Agriculture	3.5
Institutional	1.0
High Density Residential	1.0
Low Density Residential	16.8
Port	10.3
Waste Water Treatment Facilities	18.3
Transportation	21.6



Areas of Improvement



Ferry Landing Park

The ferry landing area has the potential to become a social and cultural hub for the village of Graurheindorf. The Mondorf landing, located on the east side of the Rhein River, is composed of a newly built community park, several restaurants and ice-cream parlors, as well as a mini golf course and entrances into the regional park of the Seig Nature Preserve. The western end can possibly hold these same amenities, but with the unique idiosyncrasies of Graurheindorf. By using the vacant and abandoned plots of land the area surrounding the ferry landing can become a corridor for wildlife and native vegetation to flourish and extend into the opposing Seig Nature Preserve directly across the river.



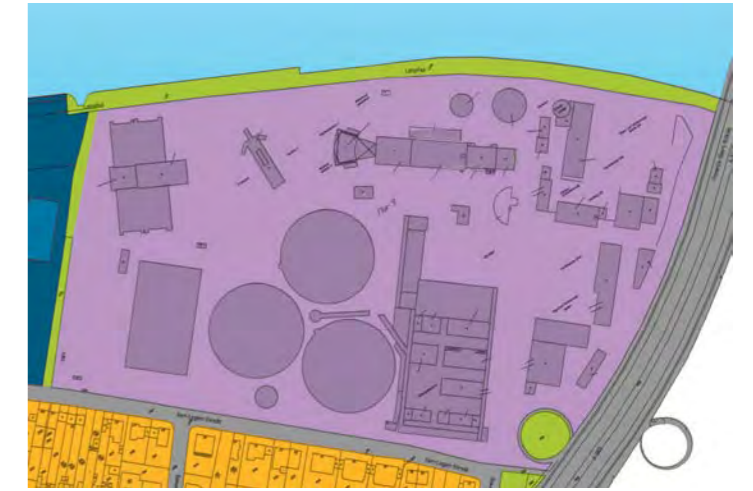
Graurheindorf Village Center

Graurheindorf lacks a central gathering space for public use. Capitalizing on the Rhine riverfront and a centralized location around St. Margaretha, this area would benefit the most by the creation of a public square. By converting the parking area and surrounding vegetated lots into a multi-use space, this newly created square can foster social interaction between members of the community, offer an area to host local events, encourage passive and active outdoor activities, and harbor a sense of pride and identity in the village.



Promenade Park

Promenade park is a large public open space created by annexing land previously used as a parking lot for the dock area, as well as changing a single road to function as pedestrian and cyclist area. This space serves to create a place for healthy community functions, develop areas of social interaction, as well as providing efficient connections for pedestrian and cyclist trafficking the riverfront by linking the adjacent street, Karl Legien Straße with the high promenade of the riverfront. This converted green space will be the only relief in the form of a large track of green parkland, for the citizens of Graurheindorf.



Klaranlage Education Park

The Waste Water Treatment Plant is one of the most prominent landmarks along the northern section of Bonn's riverfront, encompassing a large campus interplaced with many interesting buildings and two large mounds that are visible from most of the northern riverfront. Along with its prominent position the area performs an important tasks vital to the functioning of any city. Functioning spaces such as these are usually seen in a bad light because of the industrial feel of the area as well as their suspected harm on the environment. Creating an area that can effectively provide the public with education as to how these sites work will aid in demonstrating their necessity as well inspire thinking as to how these facilities could operated in a more sustainable fashion in the future.



Design Program

Bonn Castell, Site II

Introduction

The site of Bonn Castell is located on Romanstraße with the Northbridge being its northern boundary and Augustusring being the southern boundary. It contains the University of Bonn Institut für Genetik, the Romanian consulate, high-density housing, commercial area, public swimming pools, an historic Roman crane, and large open spaces. What sets this site apart is that most of it is fenced off for many reasons including privacy.



(Above) Figure 1.b Land Use Map
 (Below) Figure 1.c Goals, Objective, & Criteria Chart

Current Land Use

Current land use map consists of a mixed-use community combining residential, commercial, and institutions. The site contains three high-density complexes ranging from 10 to 15 stories high with a couple of medium-density medium-density townhouses distributed along Romerstraße. Also, all open space around the high-density apartments is reserved for private use for the people residing in the apartments. Commercial buildings are also located along Römerstraße and mainly consist of two supermarkets, a furniture sales building and other small businesses. Institutions include the College of Food Technology at the University of Bonn and a private daycare. Within these institutions lies public open space.

Mission Statement

Our Mission is to design an urban space that allows users to live, play and learn in an aesthetically pleasing, environmentally sustainable, and actively healthy environment thus giving the area a unique community identity.



Figure 1.a Live, Play, Learn Diagram

The “live, play, learn” ideas are important aspect of any community. We have defined them as the following:

- To Live: Enjoy day to day life and having the benefit of living in a pleasing environment.
- To Play: Encouraging humor, creativity, imagination and relaxation
- To Learn: Receiving educational value from daily activities, to work together to create a strong local culture and spiritual heritage

Goals

In order to obtain a better quality of life on this site we identified seven different goals. All the goals are interdependent and interrelated. Losing one goal would cause a domino effect and eventually lead to an unsuccessful quality of life. Figure 1.c shows the detailed list of goal, objectives and criteria.

Goals:	Objectives:	Criteria:
Access to River/Site	<ul style="list-style-type: none"> • To orientate people • To show the cultural & physical importance of the river • To allow more interaction with the city & the river 	<ul style="list-style-type: none"> • Create lines of sight towards the river • Provide well-lit paths for users • Reduce the number of fences & gates on the riverfront • Build areas to bring the users closer to the waterfront • Use signage & site lines to direct people towards Rhein
Health of Residents/ Users	<ul style="list-style-type: none"> • To create an active community • To develop habits that promote life-long well-being 	<ul style="list-style-type: none"> • Create bike & walkways that entice & encourage usage • Provide daily activities that residents can do without car (ex. walk to restaurant, go to grocery store, walk to friend’s or park)
Aesthetics	<ul style="list-style-type: none"> • To increase the quality of art, urban design, & landscape • To provide a more pleasurable experience while moving throughout the space 	<ul style="list-style-type: none"> • Design planted areas which will not overgrow the space • Remove & discourage graffiti
History	<ul style="list-style-type: none"> • To remember the influence of past uses on today • To identify the unique characteristic of the area • To educate tourist & locals on local history 	<ul style="list-style-type: none"> • Have historical markers • Develop a connection between the river & its past uses • Highlight significant events & locations on the site
Community Identity	<ul style="list-style-type: none"> • To identify residents as part of an active group • To unite people within the community 	<ul style="list-style-type: none"> • Using similar signage, paving, lighting, etc throughout the area • Provide public spaces for community meetings & involvement
Education	<ul style="list-style-type: none"> • To teach the users of the area continually • To promote active minds as well as active bodies 	<ul style="list-style-type: none"> • Provide information for historic sites & important buildings • Have community involvement with the universities & schools
Safety	<ul style="list-style-type: none"> • To increase lighting • To make more areas visible 	<ul style="list-style-type: none"> • Have lighting every 15 meter • Trim & maintain overgrown plants • Improve & add walking areas further from Roads
Quality of Life	<ul style="list-style-type: none"> • To improve the day to day events of users • To enhance amenities for users 	<ul style="list-style-type: none"> • Maintain safe level walking path surface • Increase the amount of maintained & designed vegetation • Build new areas for eating, retail & community usage • Create a meeting point for the community members



Composite Site Analysis

Bonn Castell, Site 2



Nordbrücke:
Many unused spaces like parking lots and gated areas



Fences:
Public open spaces are closed off, paths to river and through site are not clear, and paths terminate abruptly



Access Points:
There are paths to the river



Fishing Areas:
Many people use the areas along the Rhine for fishing.



Access to Rhine:
Lack of connection to water for fishing or other recreational activities and there is a lack of perceived safety



Activities:
Fishing, biking, walking, soccer, swimming, and there is lack of bike parking



Playgrounds:
Graffiti is abundant on the site. There is poor lighting in all park/path areas. Play areas have little variety of equipment



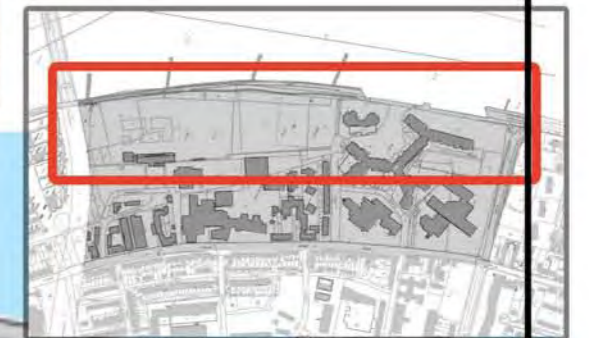
Schwimmbad:
Open space is unavailable to the public, all areas are unconnected with each other or with the Rhine



Soccer Fields:
Little/low activity, unclear if space is accessible to the public, people are kept out of green areas



Key Map



Location Map



0 50 100 200 300 400 m





Under Nordbrücke:

Lack of maintenance of landscape, planters, overgrown plants, uneven paving, poor lighting



University Grounds:

Lack of way-finding on university campus, lack of signage, no clear connection to Rhein

What Changes

- Unused Spaces
- Seasonally or partially used spaces
- Abandoned/uncared for areas
- Bike Parking
- Walking Areas
- Improve Landscape
- Quality of facades of buildings
- Community gardens, increase connections to surrounding area



Parking Lot:

Create multiple functions for seasonally used spaces like the swimming pool parking lot.



Ecosystems:

Increase local ecosystem services, provide biodiversity in public urban areas, protect lowland habits



Apartments:

Focus on community, increase awareness of local amenities



Bike Parking:

Some areas lack bike parking, signage is unclear for bike paths. Some areas have limited access to water from within the city.



Historic areas:

Teach visitors and locals about the history of the Rhein and area, Enhance the pedestrian circulation in the area

What Rearranges

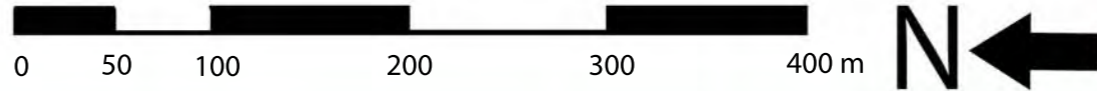
- Use of space around Uni Bonn
- Connections to the Waterfront
- Walking Areas (in City)
- Schwimmbad
- Under the bridge

What Stays

- Current areas of activity (Grocery, University, Restaurants, etc.)
- Catapult landmark
- Open Space
- Buildings
- Pool



Key Map



User Matrix

	ACTIVITIES	SPACES	ELEMENTS
RESIDENTS	• Living	• Housing	• Multifamily Housing
	• Shopping (leisurely)	• Mixed-use Areas	• Grocery, Pharmacy, etc.
	• Shopping (grocery, daily needs)	• Dining & Bar Areas	• Restaurants, Bars, Cafes
	• Entertainment	• Open Areas & Parks	• Lighting
	• Hobbies (fishing, gardening, bird watching, etc.)	• Trail Systems	• Waterfront District
	• Active Recreation (swimming, soccer, basketball, etc.)	• Areas to Relax/Picnic	• Fishing Piers
	• Passive Recreation (yoga, board games, table tennis, etc.)	• Community Areas	• Improved Swimming Area & Parks
	• Exercise (walking, biking, jogging, etc.)	• Gardens/Fishing Docks	• Schrebergartens
VISITORS	• Education for Children & Adults	• University Campus	• University & Kindergarten/day care
	• Parking (Bike & Car)	• Garage	• University-Community Event Spaces
	• Dining	• Mixed-use Areas	• Improved Swimming Area & Parks
	• Recreation (Active & Passive)	• Dining & Bar Areas	• Restaurants, Bars, Cafes
	• Historical Site-Seeing	• Open Areas & Parks	• Waterfront District
WORKERS	• Education for Students and Tourist	• Study areas for Students	• Fishing Piers
	• Parking (Bike & Car)	• Garage & Street Parking	• Historical Plaques & Monuments
	• Employment (on and off campus facilities)	• Mixed-use Areas	• See Visitors & Residents Sections
	• Dining	• Office & Retail Areas	• Public Transit
WILDLIFE	• Afterwork Activities (Restaurants, Cafes, Bars, etc.)	• Dining & Bar Areas	
	• Recreation (Active & Passive)	• Open Areas & Parks	
	• Parking (Bike & Car)	• Garage & Street Parking	
	• Living	• Lowland Habitats	• Lotic Ecosystem Protection
	• Finding Food	• Urban Green Space	• Canopy Protection
	• Ecosystem Services		• Biodiversity in Public Areas

Section and Elevation

Elevation A shows the site from the opposite river bank.
Section A illustrates the pedestrian path along Augustusring Straße.
Section B shows a typical path along the Rhine.
Section C Depicts the Remonstrat, the western boundary of the site.

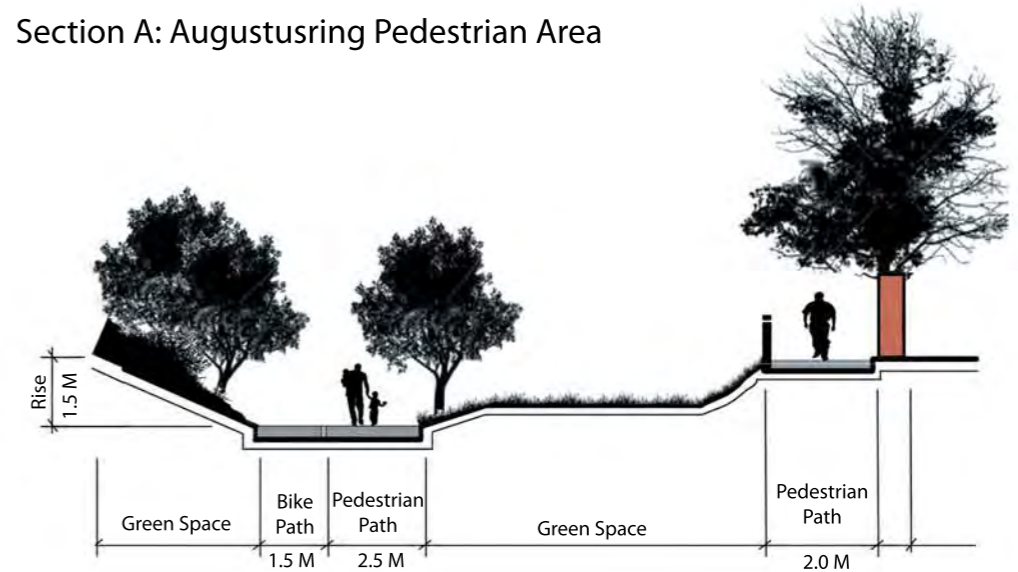
Sections and Elevation Key Map



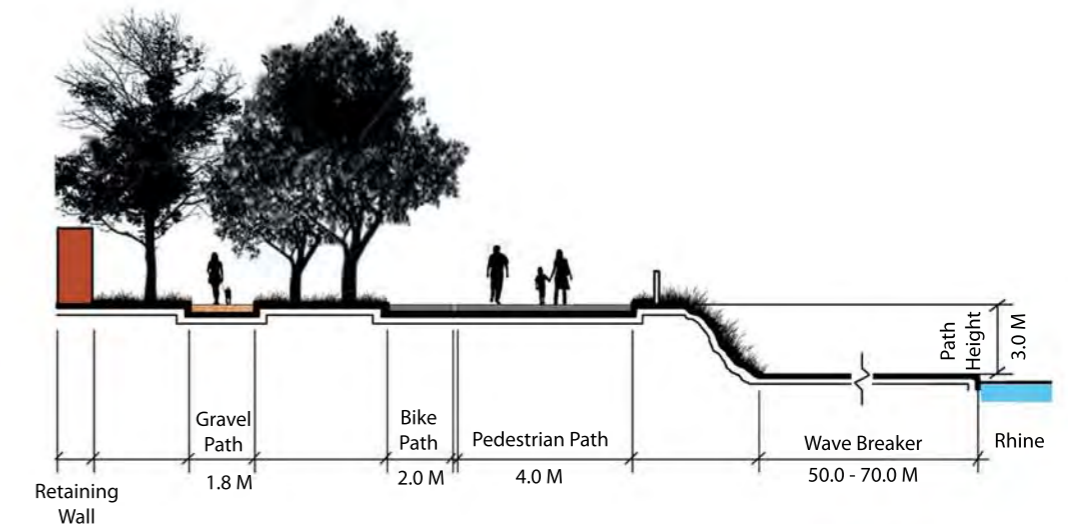
Elevation A: Rhine Elevation



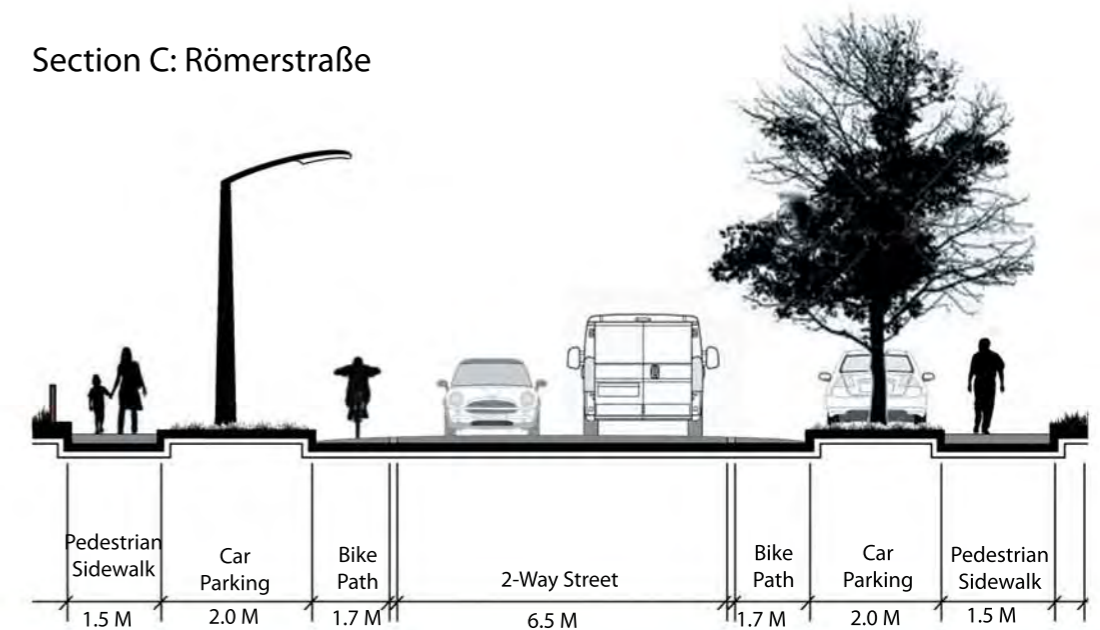
Section A: Augustusring Pedestrian Area



Section B: Southern Rhine Promenade



Section C: Römerstraße



Design Recommendations

Green Space within the Site

Purpose:

- Preserve areas for wildlife, vegetation, and water drainage
- Create more inviting areas for passive and active recreation
- Increase usage and value of open spaces to residents and visitors
- Provide opportunity for social interaction among residents

Requirements:

- Create better access to the public open spaces and to the Rhein
- Provide necessary trails and signage while enhancing the natural elements and processes



Streetscape

Purpose:

- To redesign the streetscape as public spaces that serve the needs and priorities of the neighborhood
- To improve the daily activities of the residents by providing an aesthetic and welcoming atmosphere
- To increase safety for the users

Requirements:

- Streetscape features should not be too overwhelming
- Street and path lighting on all routes of transportation
- Automobiles should always yield to pedestrian and bike users
- Streetscapes need to be well maintained
- Graffiti shall not be permitted

Waterfront

Purpose:

- Provide aesthetically pleasing connections towards the Rhine
- Develop interaction between the city and the river
- Increase the connectivity between the city and the river
- Protect the ecological functions of the river

Requirements:

- Emphasize on current connections by beautifying connections
- Creating lighting, signs, benches, walking & biking pathways



Commercial Quality

Purpose:

- To provide the surrounding neighborhood with good services without affecting the resident's everyday life activities

Requirements:

- Businesses should be of a close proximity to sidewalks and bus stops in order to promote a healthy community
- Shops should always be aesthetically pleasing
- Should not cause any type of congestion

Private Green Space by Rhine

Purpose:

- Create a friendly and safe environment between private owners and the public
- Decrease hostile environment created by bar-wired fences and gates

Requirements:

- Redesign current barb-wired fences and create a uniformed attractive fences
- Provide necessary safety, while enhancing attractiveness



Housing Quality

Purpose:

- Increase the connection between residential areas and the Rhein
- Create a more welcoming appearance around housing areas

Requirements:

- Lower perimeter fences
- Provide necessary trails, connections, and signage to and from residential zones
- Provide better maintenance that discourages graffiti

Walking/Biking Trails

Purpose:

- Create an active community
- Develop multiple systems of transportation

Requirements:

- Even paving, slope between 2% and 8%
- Separate trails area from roads when possible
- Scenic views and nature trails when possible
- Preserve natural environment and use sustainable building materials



Community Center

Purpose:

- Increase the involvement of local residents with the area
- Provide a space for residents to meet, have chance encounters, to learn, etc.

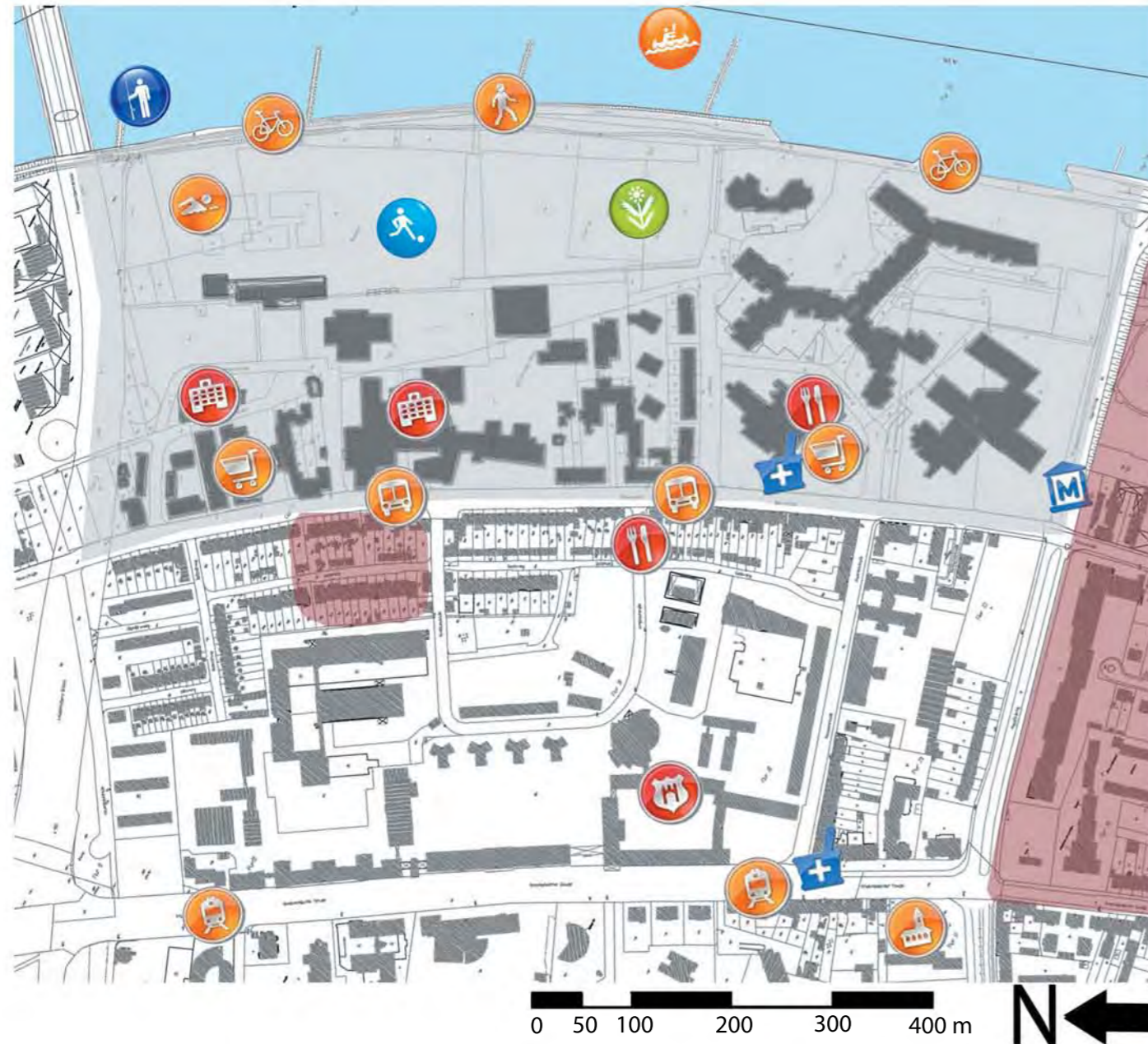
Requirements:

- Multiple types of activities at one location
- Near current nodes, paths, and landmarks
- Utilize under-used areas on the site



Design Program

Figure 3.a POI Map



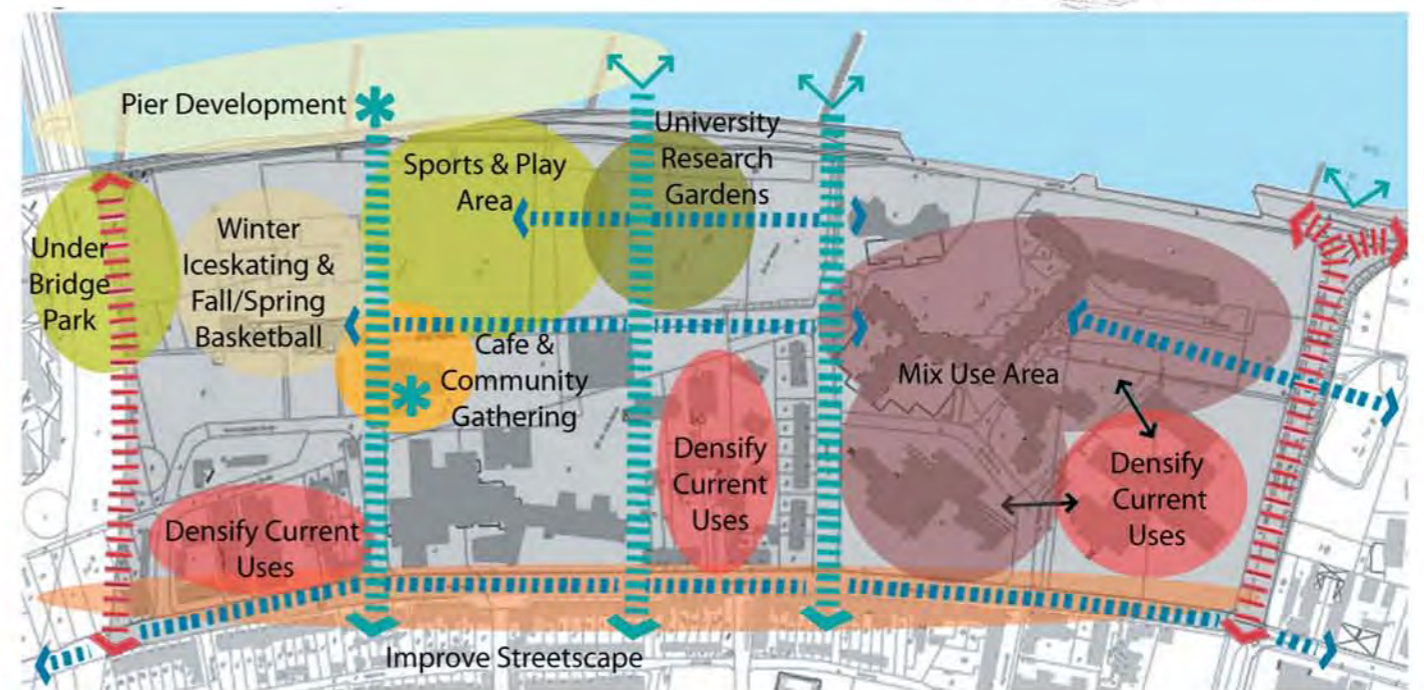
Point of Interest Map

Figure 3.a shows the points of interest within and around our site. Bicycle and pedestrian paths are located along the Rhine River. Also, recreational areas, such as a public swimming pool, basketball court and soccer field and a community garden are situated there. When walking east and away from the Rhine, you will find a Roman crane creating a landmark along the south boundary of the site. Along Römerstraße, there are two bus stops, a branch of the University of Bonn, a daycare, two supermarkets, a doctor's office, and restaurants. Outside the site boundary, governmental buildings make up the majority of the area. There are also two U-Bahn stops and a church. On the southern and west boundaries the old Roman settlements were located.

Concept Plan

Figure 3.b illustrates the conceptual master plan that shows a better usage of open space, a creation of accessible paths for better connectivity to the Rhine, improving existing streetscapes and a pier development. Currently all public and private open spaces within the site are gated and often use intimidating barbwire. The proposed plan is to replace all the gated open spaces with aesthetically pleasing fencing. This will lead to a better usage of open space by creating sports and play areas integrated with a community garden, café and community center. The streetscapes improvements will consist of making the streets more pedestrian and bike oriented and more aesthetically welcoming. An integral part of this conceptual plan is the creation of a community-gathering place where the local residents can socially interact and have more chance encounters. In addition, a pier development is also proposed, which will create a focal gather point along the Rhine. Lastly, the creation of pathways for better connectivity to the Rhine is important from Römerstraße. Currently on the site there are only two main paths, which are located on the north and south boundaries

Figure 3.b Concept Plan



Legend

- | | | | |
|-----------|--------------|----------------------|-------------------------|
| Canoe | Fishing | Community Gardens | Minor Access Route |
| Bike Path | Memorial | Walking Path | Major Access Route |
| Bus Stop | Train Stop | Government Buildings | View Points |
| Church | School | Supermarket | Focal Point |
| Pool | Soccer Field | Roman Settlement | Secondary & Minor Paths |
| Food/Cafe | Pharmacy | | No Change |



Master Plan



Legend

- | | | | |
|--|-------------------------|--|------------------------------|
| | Private Gardens | | University Education Gardens |
| | Public Open Space | | Mixed-Use |
| | Medium Density Housing | | Commercial |
| | Large Playground Area | | Paths |
| | Institutional Buildings | | Roads |
| | Daycare | | |

Master Plan

Starting from Augustusing Straße (southeast), it is proposed that the high-density residential apartments be changed to a mixed-use building where the first floor level will consist of various types of business ranging from restaurants to shopping center. From there on, the rest of the buildings will include a mixture of affordable and high-end residential housing for any type of age group or family. West of the high-density residential building lays a mix-used building of which it is planned to incorporate other uses for

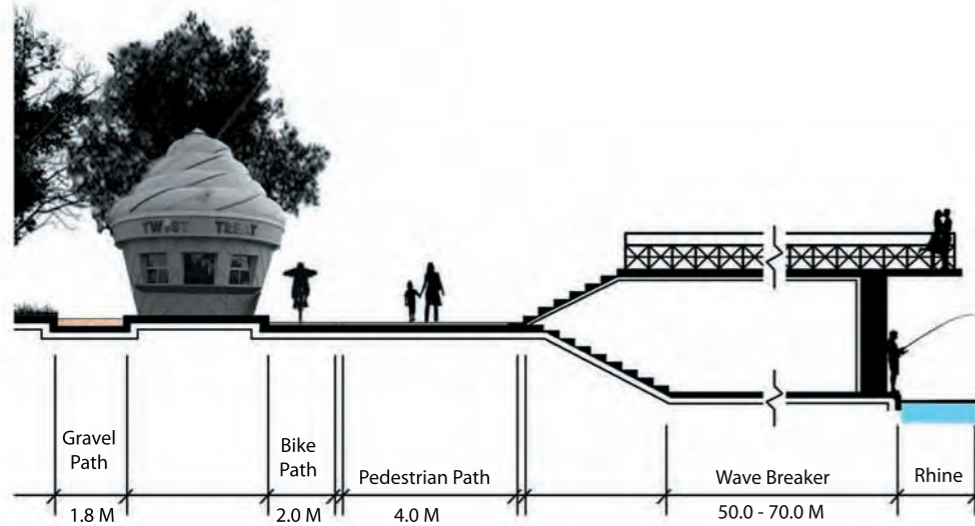
the benefit of the community. Another proposed idea is to create more accessibility towards the Rhine due to the fact that all private, public and institutional open space areas are either fenced or blocked. Within all these blocked areas lies a community garden, which is intended to be used as a learning garden through an affiliation of the University of Bonn. Next to this garden lies an open soccer field that has the potential of becoming a combined space of a garden and soccer field to generate usage. Besides this field is a recreational area that has an outdoor seasonal swimming pool.

The area should have other uses like a basketball court or an ice skating ring. At the end of our site there is a portion along the wave breakers where it is proposed to have a fishing pier with other amenities thus creating a social point. Now looking from north to south along Romerstraße the proposed idea is to make the kindergarten schools into a K-5th school, to increase the building density of the supermarket area by having other business uses, and to have the south end of the site increase its mixed-use density.



Master Plan Analysis












Section A: Proposed Pier Development



Section A on Plan



Legend

 Private Gardens	 University Education Gardens
 Public Open Space	 Mixed-Use
 Medium Density Housing	 Commercial
 Large Playground Area	 Paths
 Institutional Buildings	 Roads
 Daycare	

Circulation Plan

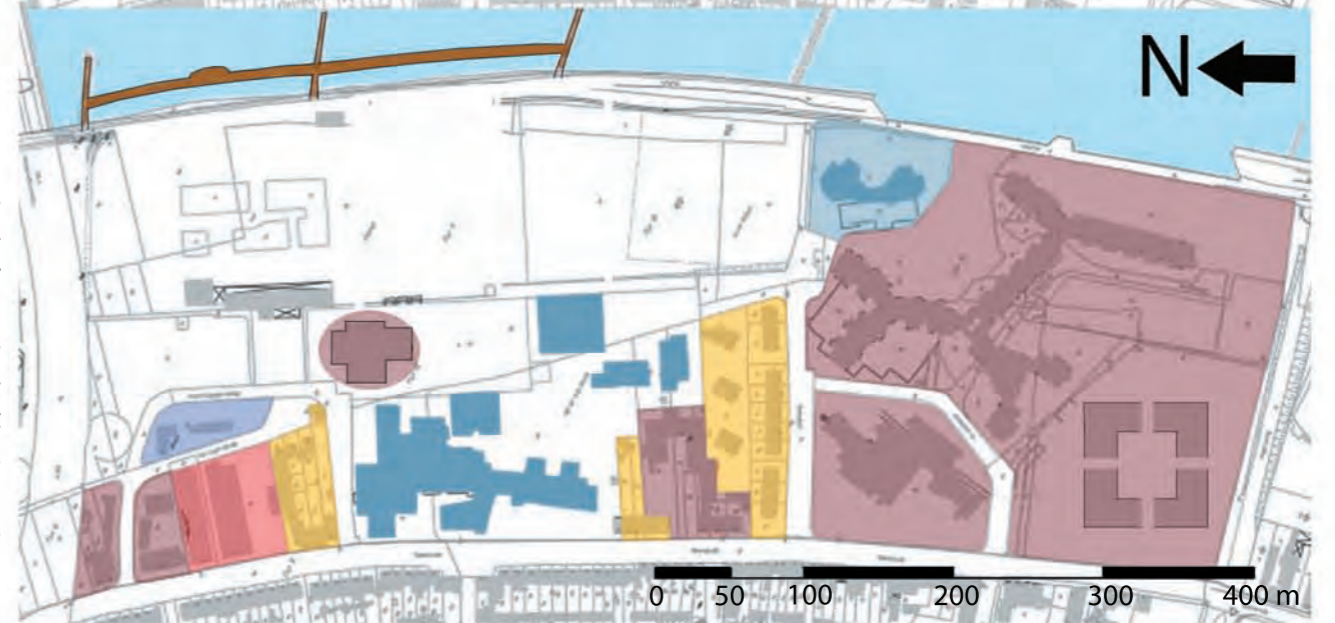
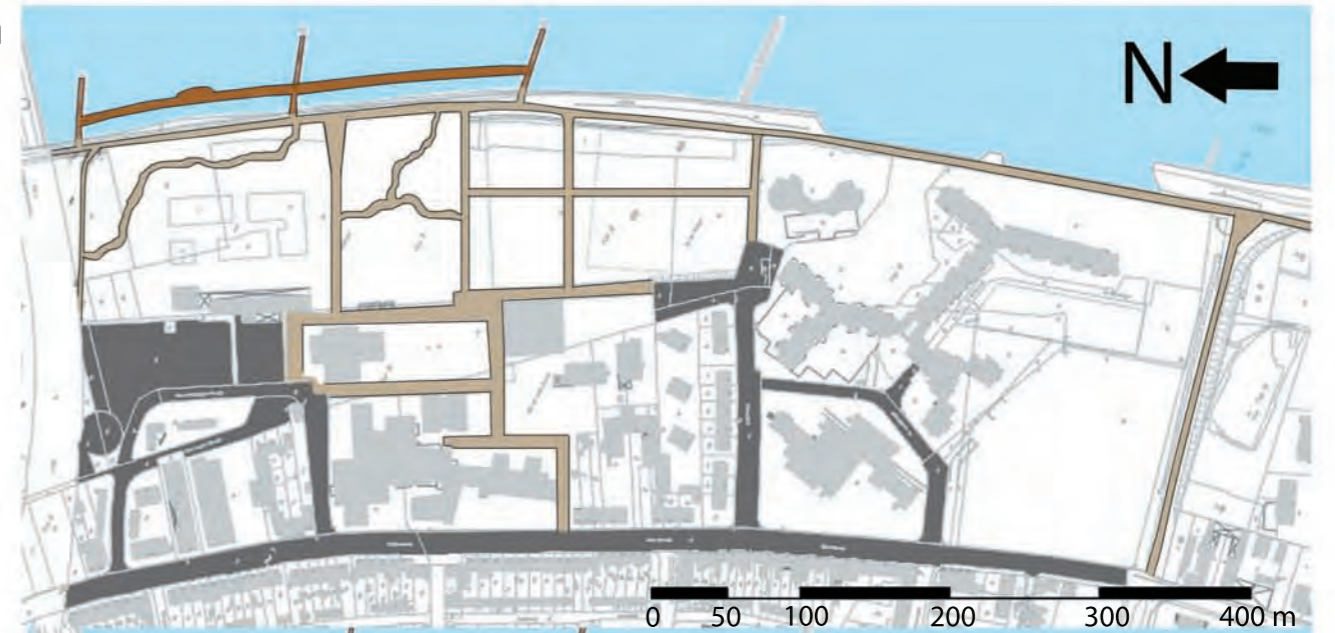
The circulation paths are a network of small paths for residents and visitors to walk within the site and the new park areas. Other circulation includes the major and minor roads for pedestrians, bikes, and cars.

Green Open Space Plan & Public Space System

The areas that are public open space are open year round for residents to use. The large green space by the path along the Rhine is a mixed-use play area that has soccer and playgrounds. The university gardens are for use by faculty and students as research and learning areas. They are open to the public for educational purposes as well. The private gardens are for residents only but there are throughfare paths for the public

Building Height Control Zoning

The building heights in the future should not exceed the current building heights. It is suggested that any future development on the high density housing areas remain at the same heights. Medium density housing and mixed-use should not exceed five stories within the site. University buildings should remain at their current height as well.



INTRODUCTION

The segment of the riverfront between the Kennedy Bridge and the Roman Crane is a vital part of the corridor that runs the length of the river through the city of Bonn. Important features of this site include the Beethoven Symphony Hall, The Hilton Hotel, some important landmarks, and a few plazas. Commercial and mixed use buildings and a large number of residential buildings characterize the majority of the surrounding space. The Beethoven Symphony hall stands out as the most important feature of this segment of the riverfront.



View of Kennedy Bridge



Path along Rhine

Existing Problems

Overall this space is mostly successful. It is currently being used for both passive and active recreation, and its scenic qualities cannot be denied. There are some areas that do have room for improvement. The space in front of the Beethoven Hall from the building towards the river does not display the building properly, and downplays its importance. The plaza also seems to be underutilized. The railing along the river's edge also has the potential to be a major design factor, but currently it is insignificant and purely utilitarian. Lighting along the path currently exists, but a more uniform installation could help bring cohesion to the river front as a whole.



Beethoven Hall facing the Rhine

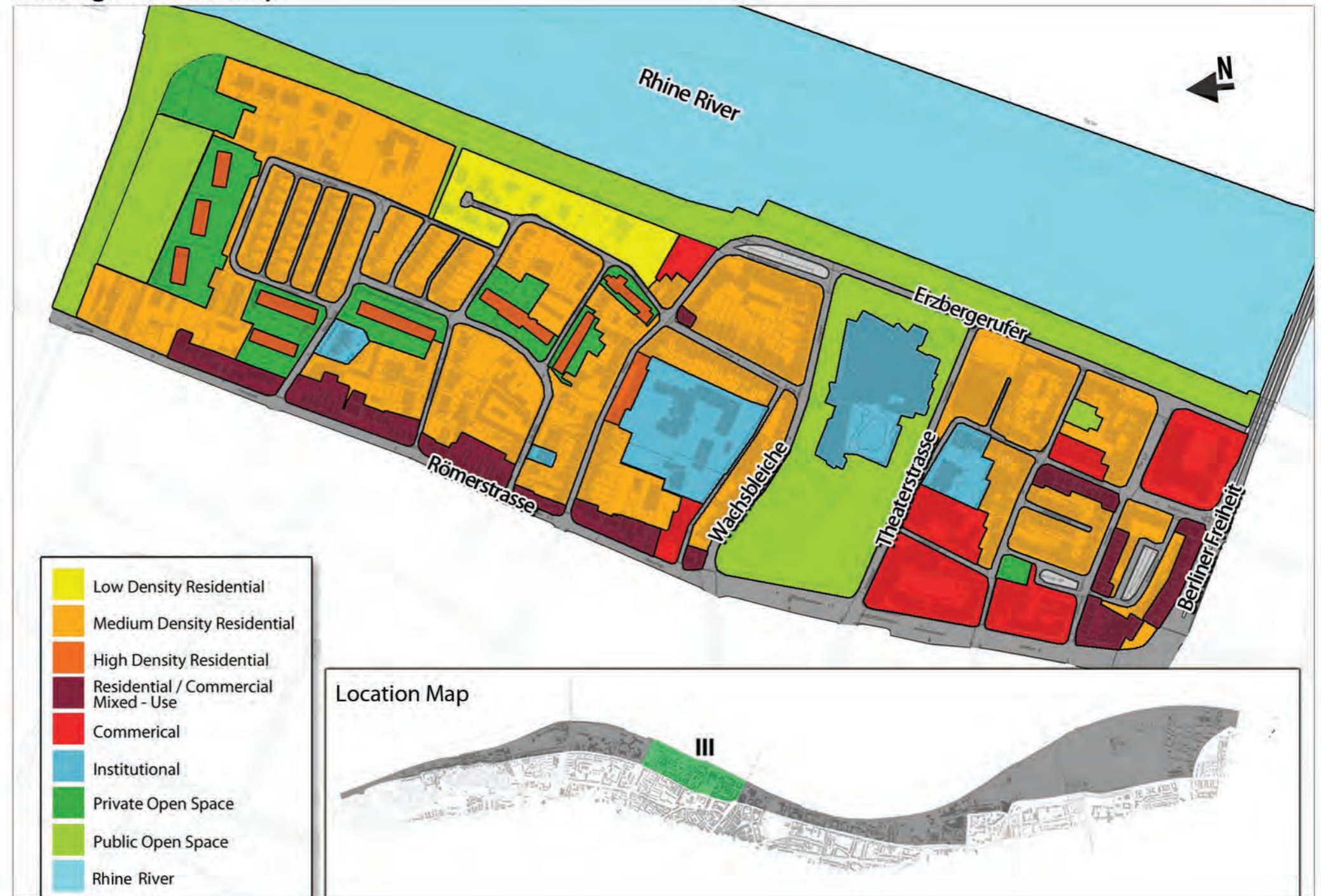


Railing along the Rhine



Lights

Existing Land Use Map



Opportunities

The most important change that needs to occur in this area is increasing the level of awareness that potential users have of the space. While residents of Bonn may be aware of the space, it is not highlighted to visitors and tourists. The city needs greater connections to the river, both physically and visually. A stronger way finding system to the river and along the river should be put in place, and new connections, especially green corridors, should be considered.



DESIGN PROGRAM MATRIX

	ACTIVITIES	SPACES	ELEMENTS	
RESIDENTS	Entertainment Dining Education Passive/Active Rec Pets Shopping Night Life	Residential Area Commercial Area Schools Open Space & Parks Natural Environment	Outdoor Spaces Restaurants Safety Public Transit Nature Way-Finding Waterfront	
VISITORS	Tourism-sites Shopping Dining Business Lodging Entertainment Passive/Active Rec	Cultural Area & Tours Commercial Area Parking Open Space/Parks Hotels	Landmarks Outdoor Spaces Public Transit Way-finding Safety Waterfront	
WORKERS	Business Dining Parking Shopping	Offices Dining Facilities Shared Parking Commercial Area Open Space & Parks	Public Transit Restaurants Way-finding Safety Outdoor Spaces Waterfront	
WILDLIFE	Nature Habitat Foraging Ecosystem Services	Natural Habitat Area	Native Vegetation Canopy Cover Waterfront	

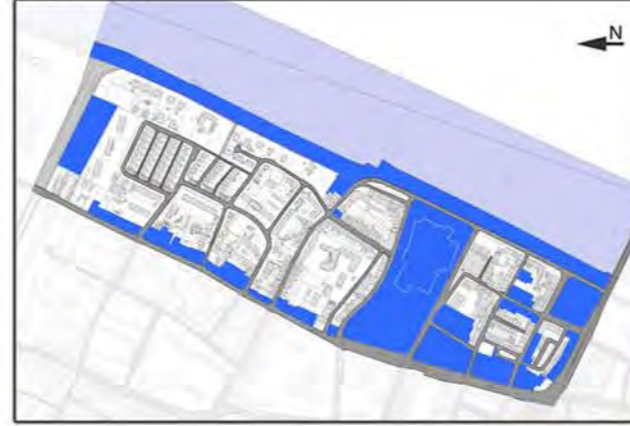


USER LOCATION MAPS

Residents



Visitors



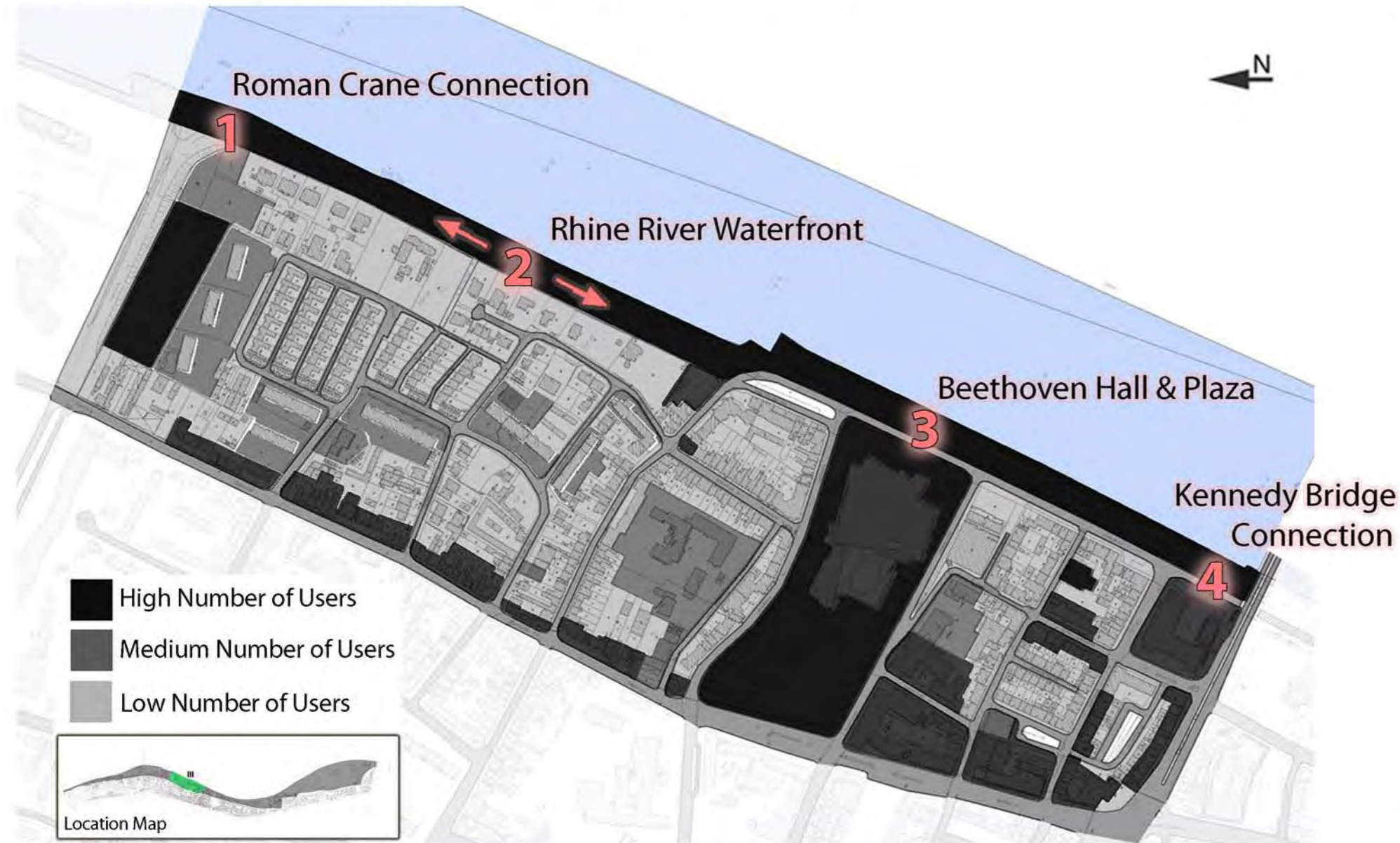
Workers



Wildlife



USER INTENSITY & DESIGN FOCUS AREAS MAP

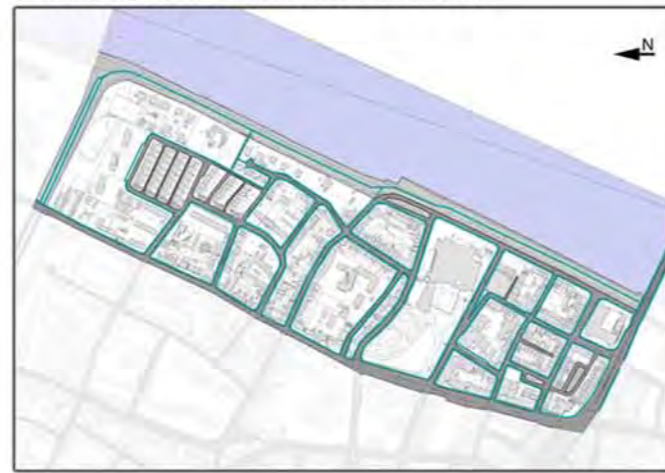


SITE ANALYSIS MAPS

Automobile Path Circulation



Pedestrian Path Circulation



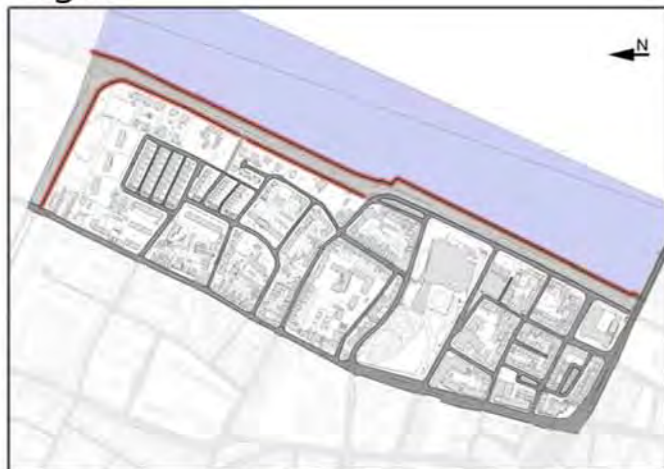
Bike Path Circulation



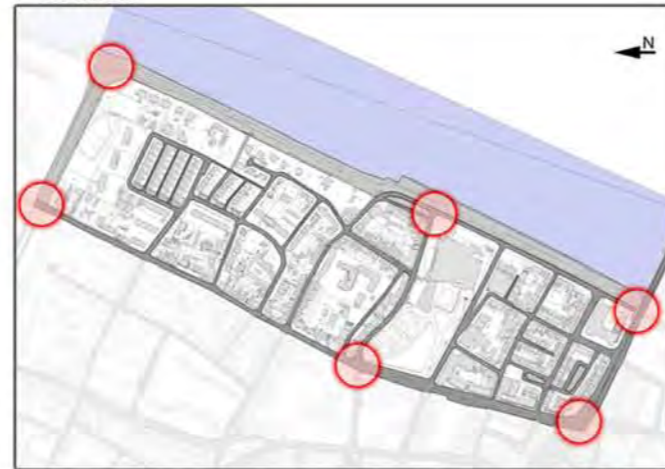
Crosswalks



Edges



Portals



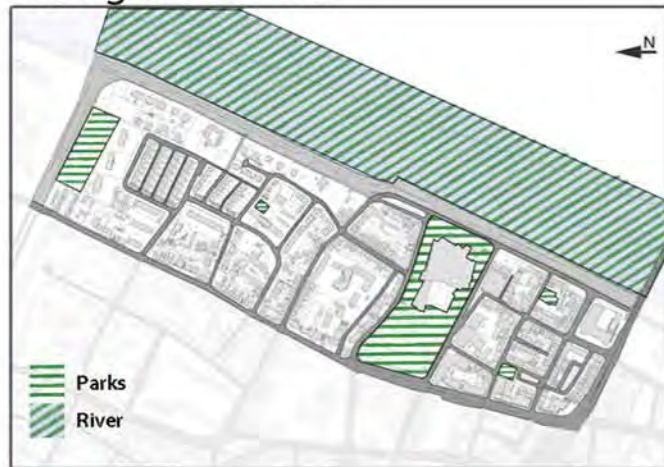
Nodes



Landmarks



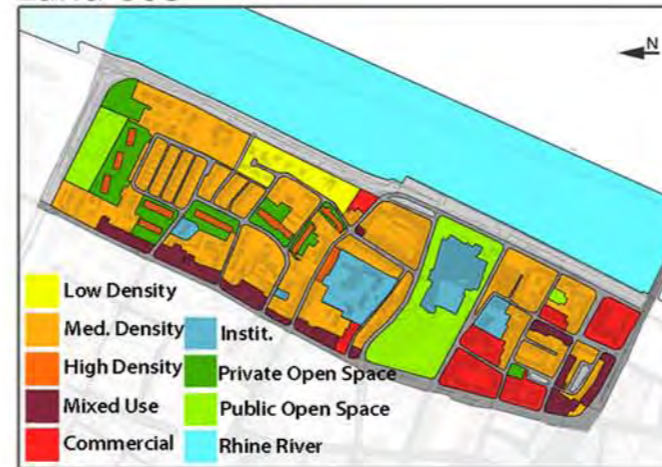
Ecological Corridor



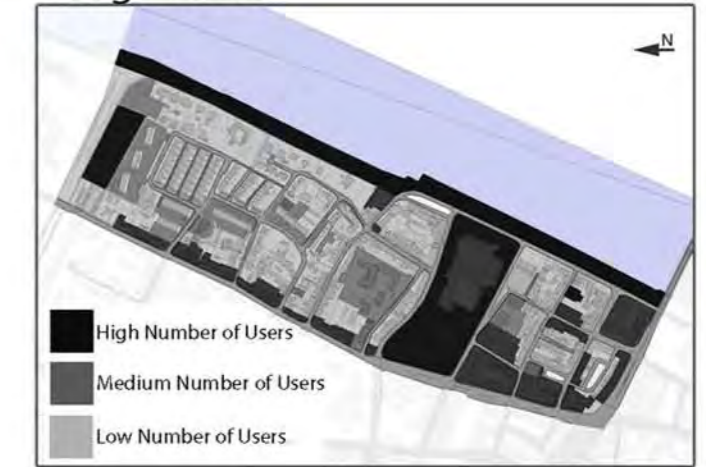
Districts



Land Use

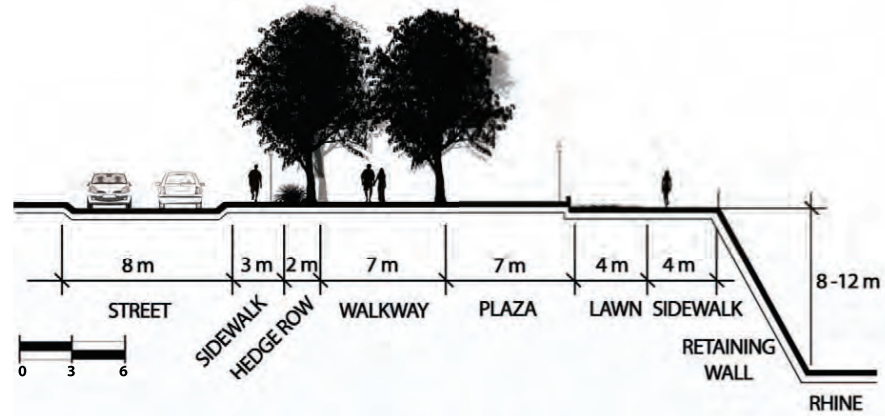


Design Focus

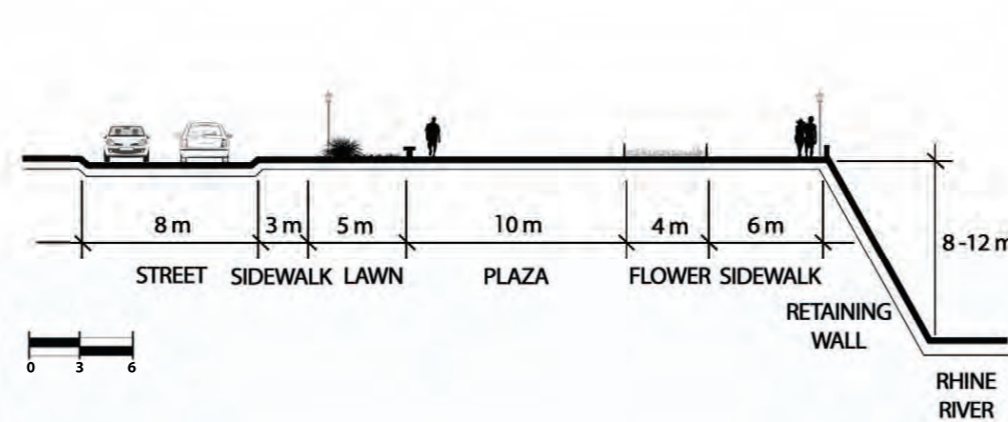


SECTIONS OF EXISTING PATHS

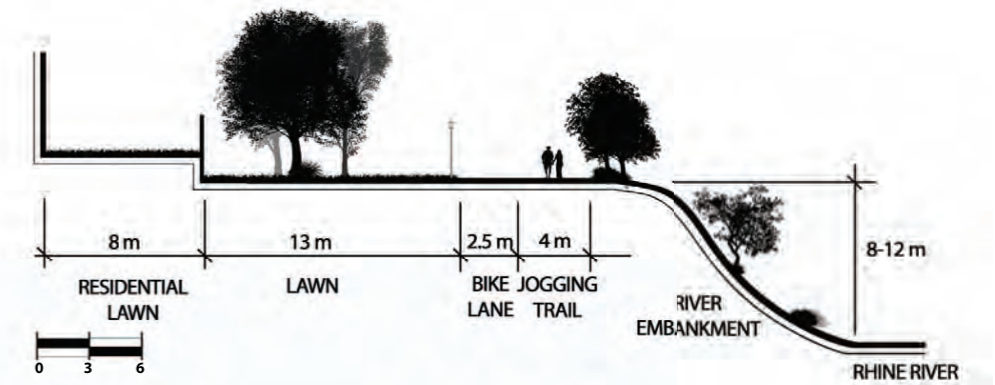
Section A - Southern Riverside



Section B - Beethoven Platz



Section C - Northern Riverside



DESIGN FOCUS AREAS



1 The area around the Kennedy Bridge serves as an important connection to the southern riverfront area. The connection here back to the city is a fairly weak connection due to the location of the Hilton, and the Elevation of the bridge above the actual riverfront.

2 This space is currently characterized by huge tree lined paths, and pleasant views of the river for passive recreation. With changes to the furniture here, and the structural rail along the river, the aesthetic experience and the safety of the site could be greatly improved.

3 The space in front of Beethoven Hall should serve as a cultural center for the city of Bonn. This space should not only display the Beethoven Hall, but serve as a significant place of activity in and of itself. The aesthetic experience here should be one that is completely unique and reflect the connections the space has with history and music.

4 This pedestrian entrance connects the residents, in the directly surrounding areas, to the riverfront area. Even though this connection does not serve the whole city, it is still important to a significant group of users.

5 Currently there is open lawn between the pedestrian path along the river, and the large retaining wall to the west that is not utilized to its full potential. The implementation of a park here would be used to attract nearby residents. The park would reflect the art and music culture of this specific area.

6 The area near the Roman Crane has the potential to be one of the strongest connections points to the river for the northern part of the city. With additional lighting and furniture this simple path can be transformed into a notable promenade.

Site Elevation



MISSION STATEMENT

To create a strong connection between the city of Bonn and the Rhine River frontage while promoting safety, community identity, increased aesthetics, plus a healthy and active lifestyle for the citizens and visitors of Bonn.



Walkway path along the Rhine



Tree-lined path along the Rhine



Open space



Community Playground



Beethoven Hall



Jewish Synagogue Memorial



View from across the bridge

GOALS & OBJECTIVES



Beethoven Hall

Create a unique identity for the culturally and historically significant area around Beethoven Hall.

- Emphasize the importance of Beethoven Hall, and provide a display area for the structure
- Create a sense of place for the area surrounding Beethoven Hall
- Create a connection between Beethoven Hall and the waterfront plaza along the Rhine



Connection to the river

Improve existing connections and create new connections between the riverfront and the city so it becomes an integrated asset to the city.

- Identify existing connections and provide way finding methods for easy access
- Create new connections where possible, both physical and visual
- Use similar paving patterns, lighting, furniture, and materials to visually link the town to the riverfront



Active users

Maintain a healthy and active community for the users.

- Preserve the existing pedestrian and bicycle corridors
- Enhance public awareness of the riverfront
- Encourage walkability and exercise by improving access to the riverfront



Walking Corridor between the river and pedestrian walkway

Uphold and improve the safety conditions for users.

- Provide adequate lighting and signage for way finding and safety
- Provide a barrier, either natural or engineered, between the water and the pedestrian corridor
- Clearly define separate areas for specific uses such as walking, biking, and sitting



Pedestrian walkway along the Rhine

Create a space that enhances the aesthetic experience of the users.

- Preserve natural vegetation where possible
- Supplement natural vegetation where needed
- Keep site lines to the river open

Bring value to the site to encourage investment.

- Improve infrastructure
- Create a better connectivity within the areas
- Provide a better way finding methods
- Provide better advertisement



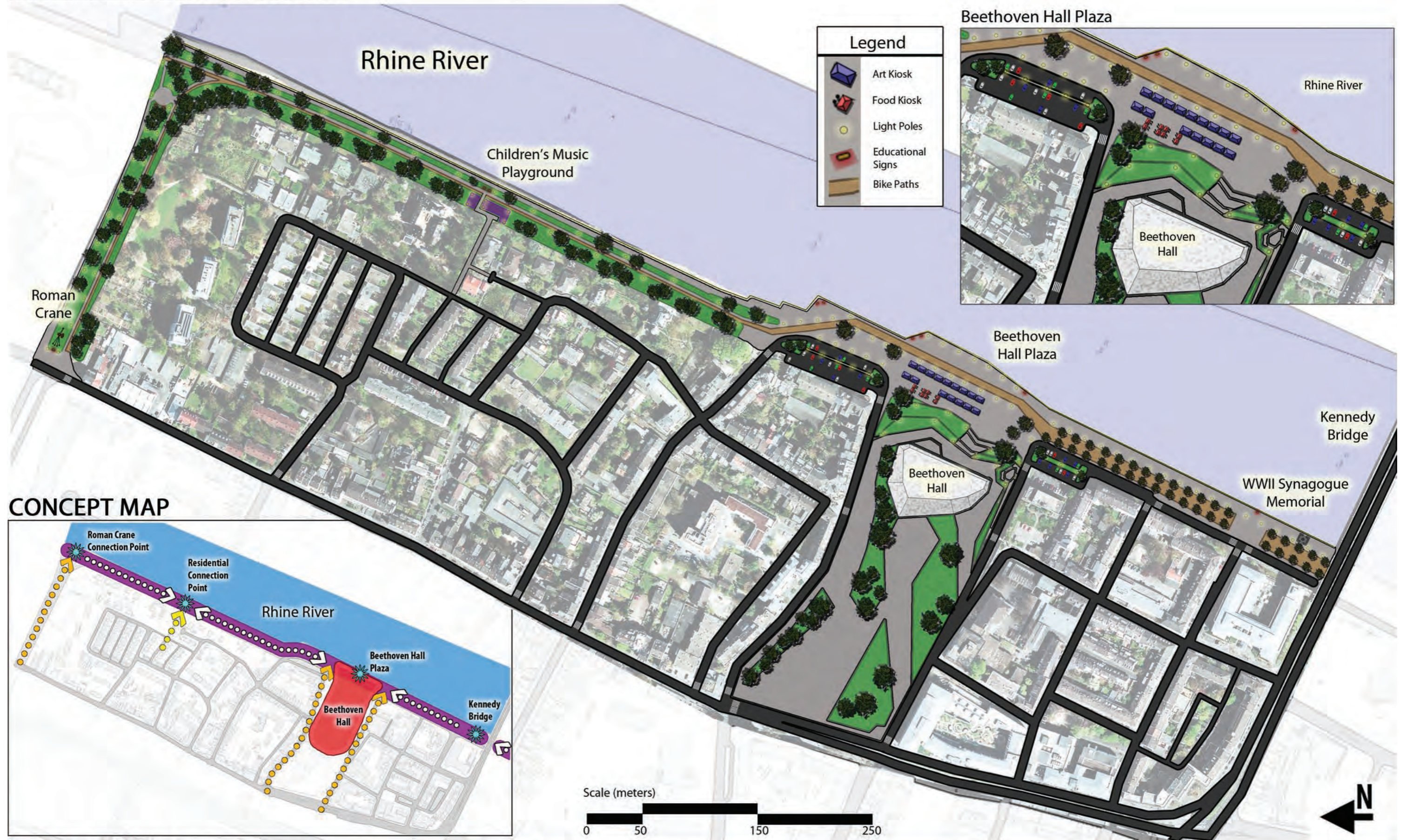
Hilton Hotel

Emphasize Bonn's title as one of the world most sustainable cities.

- Preserve existing natural vegetation
- Use sustainable construction materials for future development
- Prevent disruption of natural system as much as possible



SCHEMATIC MASTER PLAN



Proposed Design Elements and Plan Analysis



Green Space System

Purpose

- To maintain ecological corridors to encourage a healthy community and a higher quality of life.
- To reduce problems such as excess urban runoff, heat island effect, and pollution/contamination to continue Bonn's reputation as a sustainable city as well as a healthier city.
- To provide places for passive and active recreation encouraging healthy lifestyles and aesthetics.
- To increase the overall quality of life for users and provide them with a space that is unique and successful in meeting their needs.

Requirements

- Keep as much existing green space as possible.
- Create new green spaces where possible.
- Use of materials that manage storm water runoff.



Plazas

Purpose

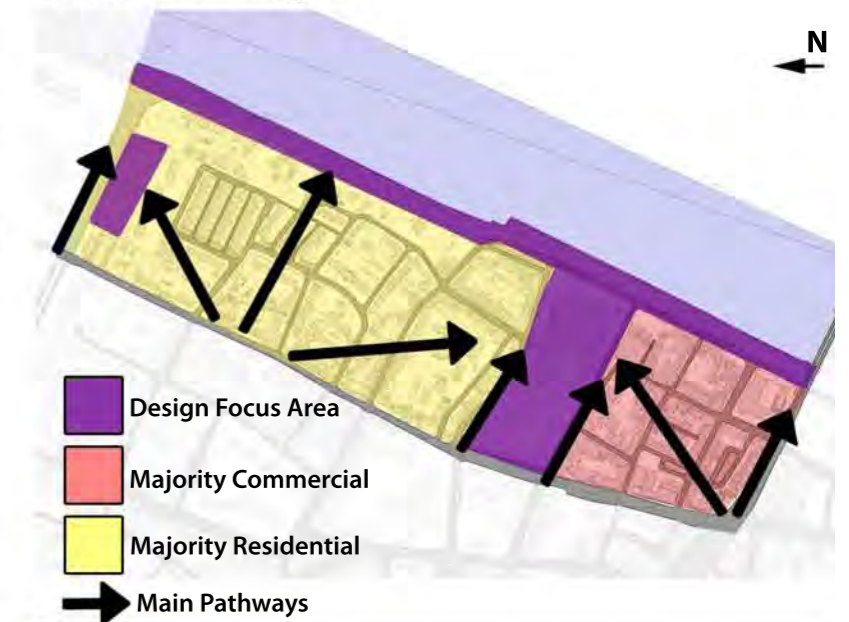
- To provide a gathering space for users, improving quality of life.
- To host events such as "Art Markets" to enhance the unique identity of the space and encourage investment.
- To act as a setting for kiosks or mobile merchants to allow for further encouragement of investment as well as providing users with the service.
- To increase the economic viability of the area.

Requirements

- Accommodate various users and activities.
- Create an outdoor room atmosphere.
- Create a unique sense of place and identity based on surrounding.



Basic Use Diagram



Art and Cultural Elements

Purpose

- Contribute to the unique identity in culturally significant areas.
- Create spaces that add value to the area and encourage investment.
- Enhance the experience along the river.
- Provide additional way finding.

Requirements

- Identify key locations for placing elements where they will be effective.
- Must tie into the cultural significance of the area, especially The Beethoven Symphony Hall.



Site Furnishings

Purpose

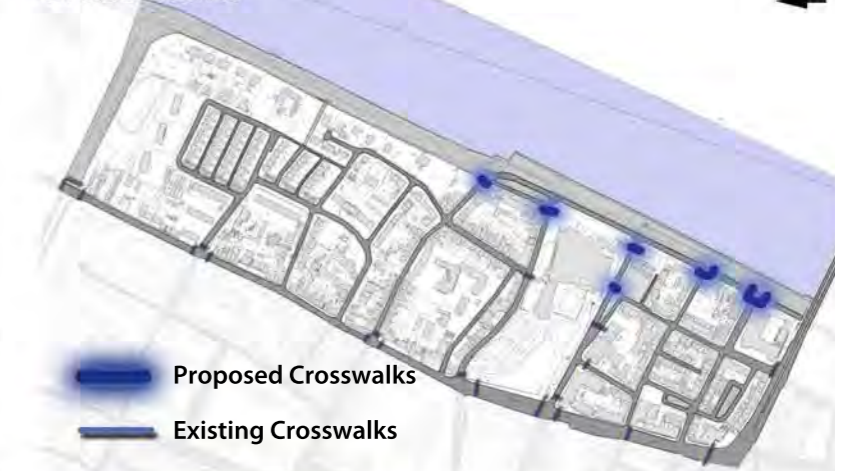
- To provide additional function to the existing space and enhancing the aesthetic quality.
- To visually unify the space and create a stronger sense of place and quality of life.
- To make the space comfortable and inviting. Create a safer environment for users.

Requirements

- Find a style and material that is appropriate for the setting and climate of the space.
- Locate furnishing at functional and desirable increments.



Crosswalks



Pathways:

Purpose

- To enhance existing connections and create new ones.
- To separate and designate uses in an aesthetic and functional way.
- To encourage safety for the users. To direct traffic to and around the site.

Requirements

- Choose materials that are appropriate for uses.
- Create new or enhance existing paths leading to the space to establish a stronger connection.
- Add crosswalks to encourage safer connections as well as providing access.



Signage

Purpose

- To create a greater awareness of the riverfront area.
- To aid in directing traffic to and around the site.
- To orient users and provide them with easy access.
- To encourage safety.

Requirements

- Place signage and maps not only along the river front, but at points within the city that guide people to the river.
- Create a consistent appearance that is easy to recognize and aesthetically valid to associate with the river.

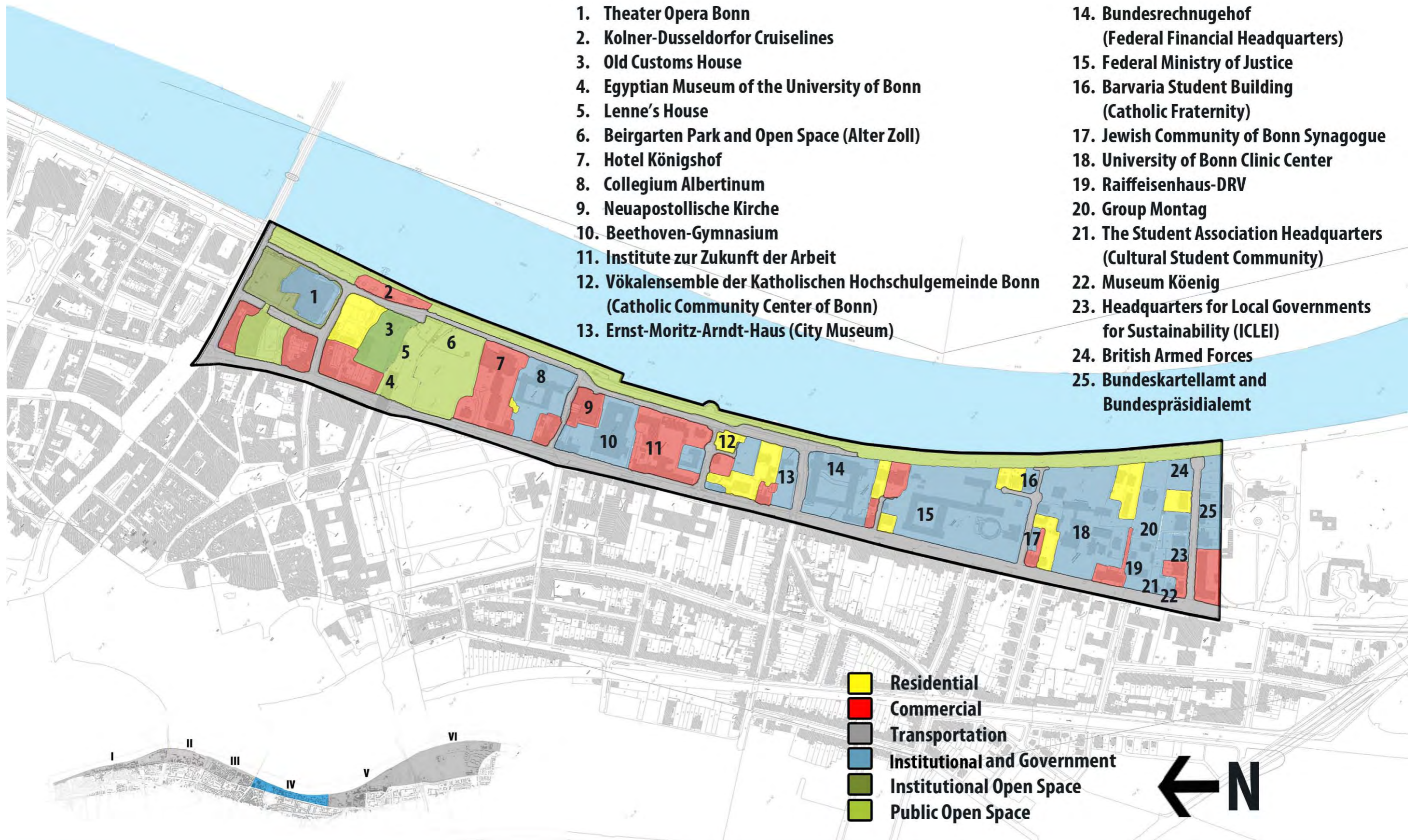


Landmarks



SITE IV: EXISTING LAND USE

1. Theater Opera Bonn
2. Kolner-Dusseldorf for Cruiselines
3. Old Customs House
4. Egyptian Museum of the University of Bonn
5. Lenne's House
6. Beirgarten Park and Open Space (Alter Zoll)
7. Hotel Königshof
8. Collegium Albertinum
9. Neuapostollische Kirche
10. Beethoven-Gymnasium
11. Institute zur Zukunft der Arbeit
12. Vökalensemble der Katholischen Hochschulgemeinde Bonn (Catholic Community Center of Bonn)
13. Ernst-Moritz-Arndt-Haus (City Museum)
14. Bundesrechnugehof (Federal Financial Headquarters)
15. Federal Ministry of Justice
16. Barvaria Student Building (Catholic Fraternity)
17. Jewish Community of Bonn Synagogue
18. University of Bonn Clinic Center
19. Raiffeisenhaus-DRV
20. Group Montag
21. The Student Association Headquarters (Cultural Student Community)
22. Museum Köenig
23. Headquarters for Local Governments for Sustainability (ICLEI)
24. British Armed Forces
25. Bundeskartellamt and Bundespräsidialemt



SITE ANALYSIS



EDGES



NODES



PEDESTRIAN & CROSSWALKS



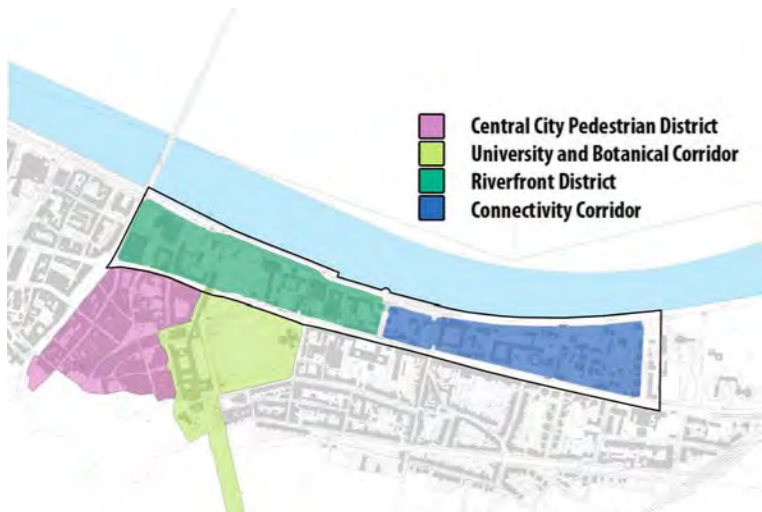
OPEN SPACE



BIKEWAY



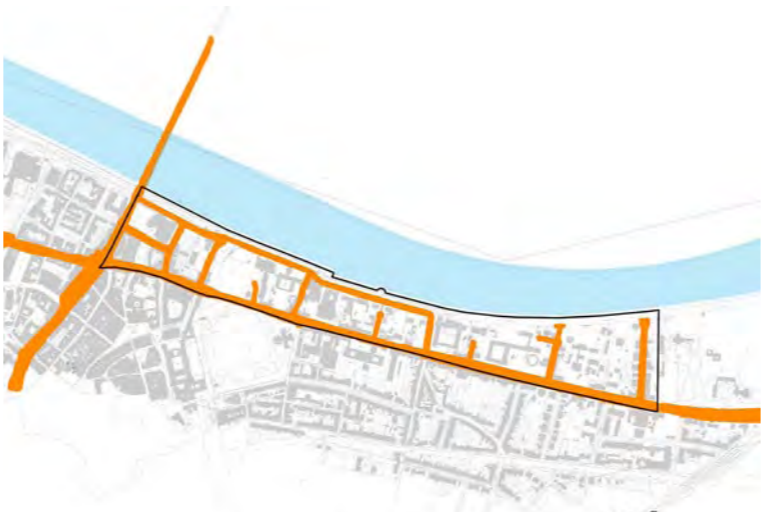
LANDMARKS



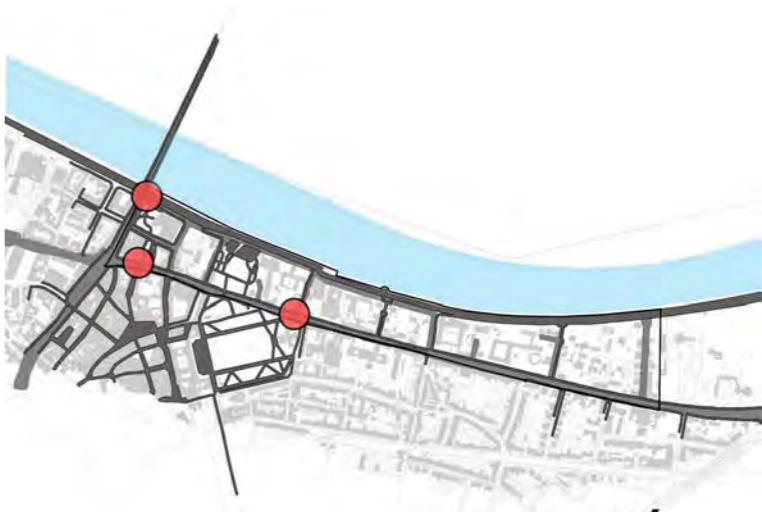
DISTRICTS



- Central City Pedestrian District
- University and Botanical Corridor
- Riverfront District
- Connectivity Corridor



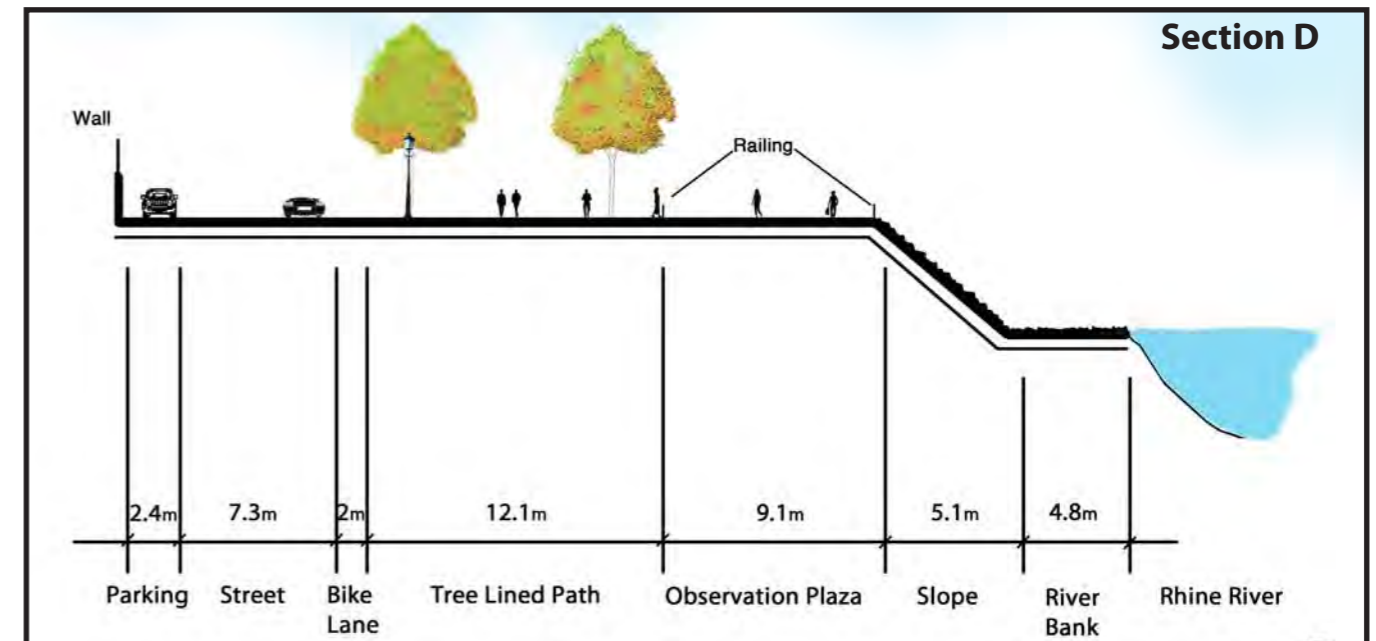
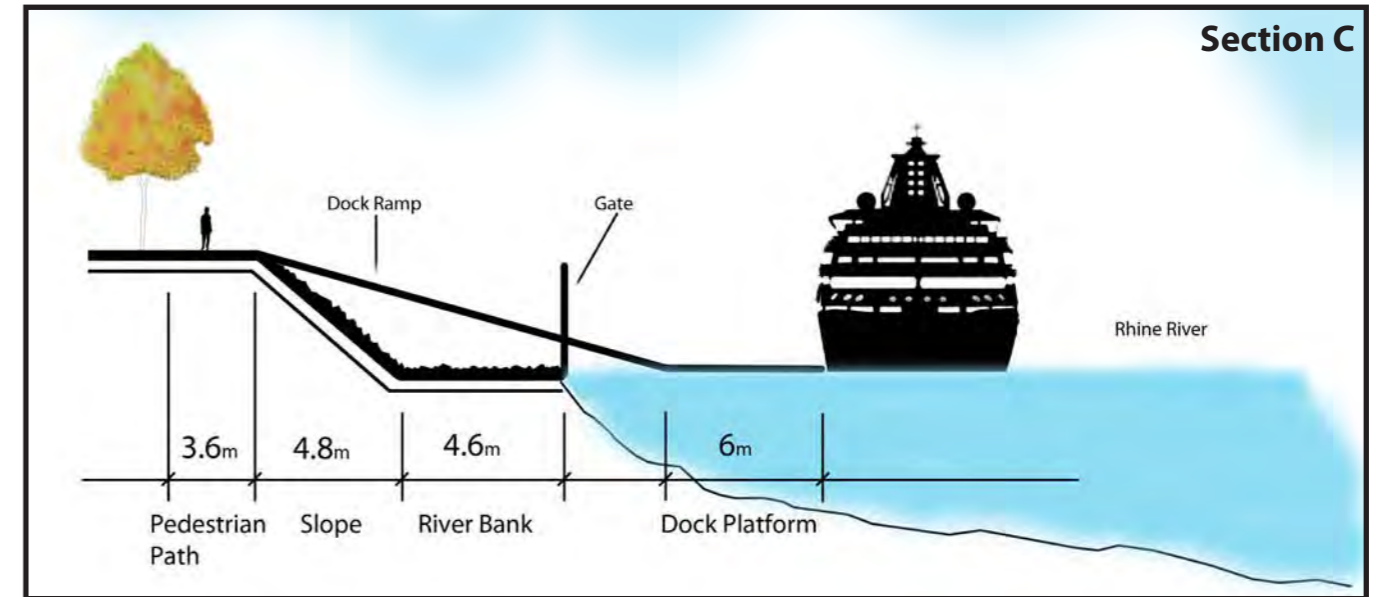
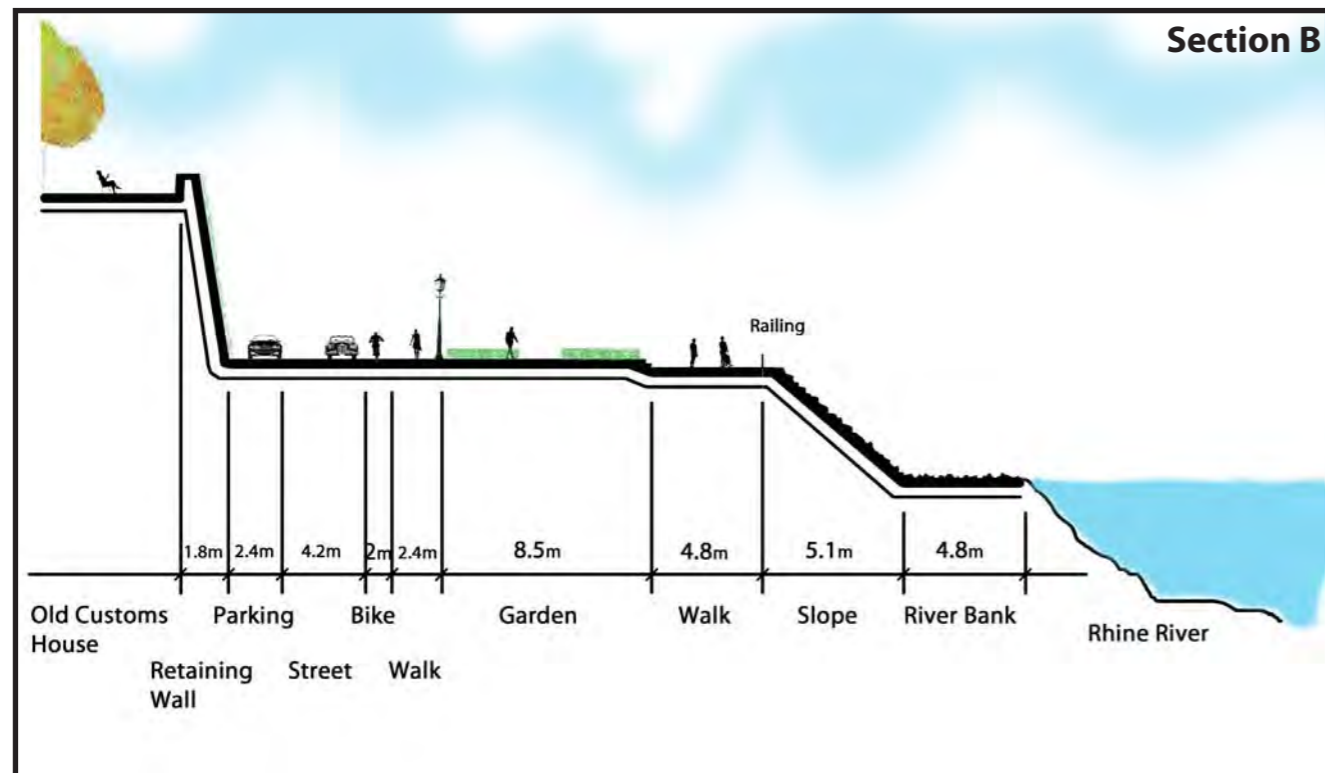
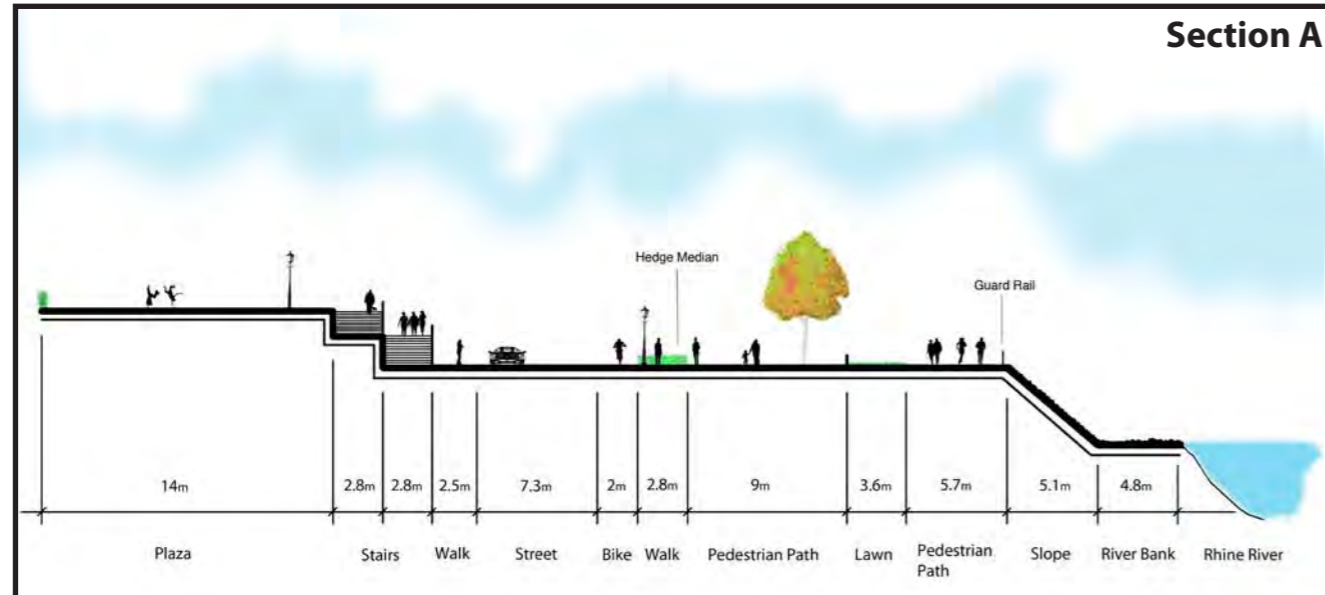
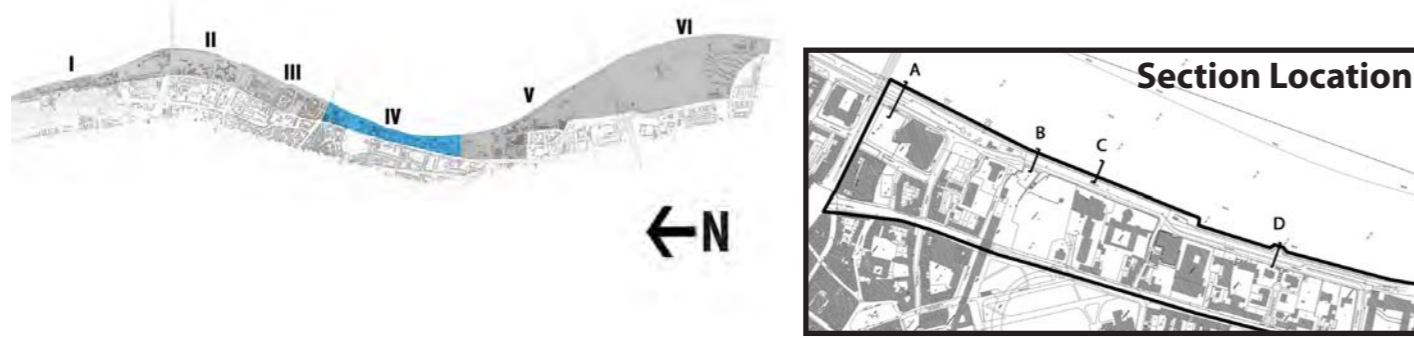
TRANSPORTATION



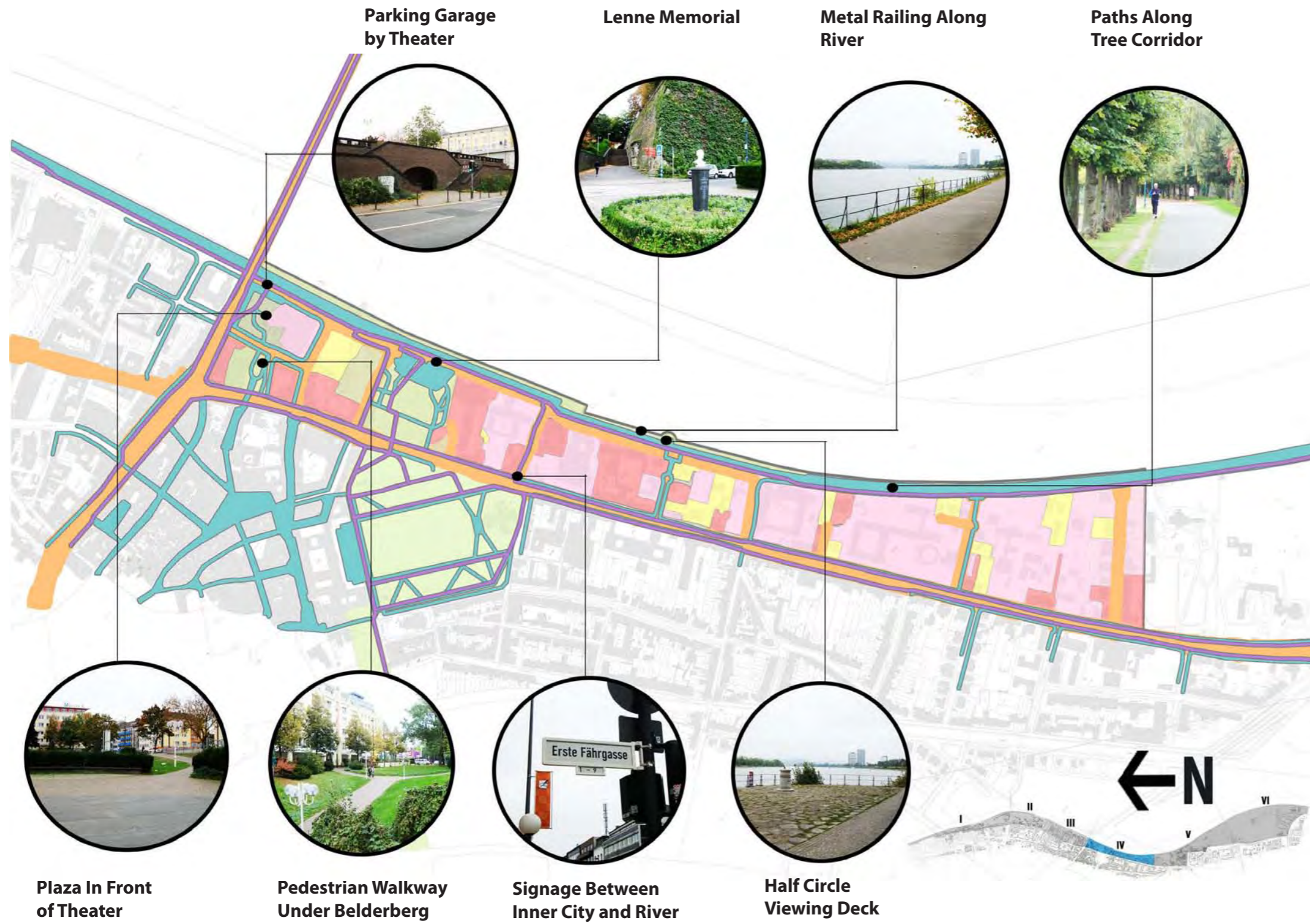
PORTALS



SECTIONS



EXISTING SPACES



Potentials

Connectivity

- Connections to green/open spaces
- Major connections from inner city to Rhine
 - Theater at Kennedy Bridge
 - Pedestrian walkway under Beldeberg
 - Lenne memorial

City

- Nice views of the bridges and Siebengebirge
 - Circular viewing deck
 - Street-level viewing platform over grotto
- Beer garden along Rhine River
- Hotels

Culture

- Lenne memorial garden area
- Theater
- River Cruises
- Roman ruins

Issues

Connectivity

- Poor bike and handicapped access from upper street level to lower riverfront level
 - Circular viewing deck
 - Street-level viewing platform over grotto

City

- Poor maintenance
 - Some walkways littered with trash
 - Graffiti
 - Crumbling walls
 - Parking garage beneath theater is dark and dirty

Safety

- Poor night lighting
- Confusion of intended use of paths

Aesthetics

- Lacks visual continuity
 - Site elements are inconsistent
- Metal railing along river edge is unattractive
- Multiple construction sites are eyesores
- Railing improperly used as bike rack

Culture

The past and present uses and importance of historical and cultural buildings and landmarks are not indicated.

The historical importance of the Rhine River is not addressed



CONNECTING CITY AND CULTURE

SITE FOUR

Mission Statement

To create a vivacious **CONNECTION** between Inner **CITY** Bonn and the Rhine River waterfront through the preservation and promotion of culturally significant and aesthetically pleasing sites and to emphasize the **CULTURE** of passive and active use along the waterfront .

Goals and Objectives

Goal 1: Establish visual continuity throughout the site.

Objective: Matching site design elements (ex. trash cans, lamp posts, benches)

Criteria: Implement entry features, such as gates or signs

Criteria: Entry features should not detract from the character or significance of the site

Goal 2: Emphasize the importance/use of historic buildings.

Objective: Signs to designate names and uses of important buildings

Criteria: Place signs on both East and West sides of buildings, to be viewed from upper and lower street levels

Goal 3: Draw attention to the historic and cultural significance of the Rhine River.

Objective: Include signage to provide visitors with information about Bonn's relationship with the Rhine

Criteria: Place several signs along the riverfront promenade

Goal 4: Establish visual continuity throughout site.

Objective: Implement matching site design elements

Criteria: Trash cans, lamp posts, and benches should be of the same design

Objective: Pathway materials should be consistent throughout the site

Criteria: Pathways of different intended uses should be made of different materials

Goal 5: Improve safety.

Objective: Improve lighting for night safety

Criteria: Use brighter lights

Criteria: Place lights at set intervals to avoid dark spaces

Objective: Clarify intended usage of pathways

Criteria: Use different materials for paths of different usage

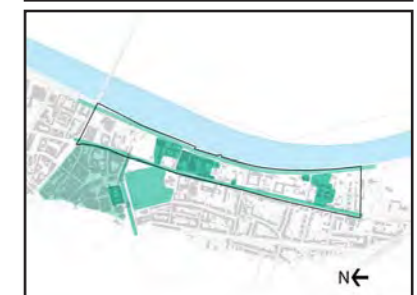
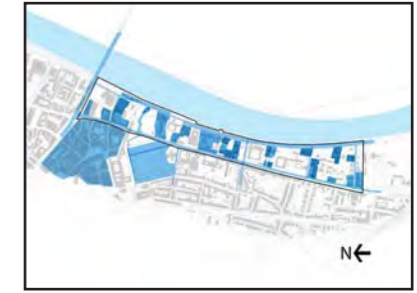
Criteria: Materials should be appropriate for use

Criteria: Materials should be consistent

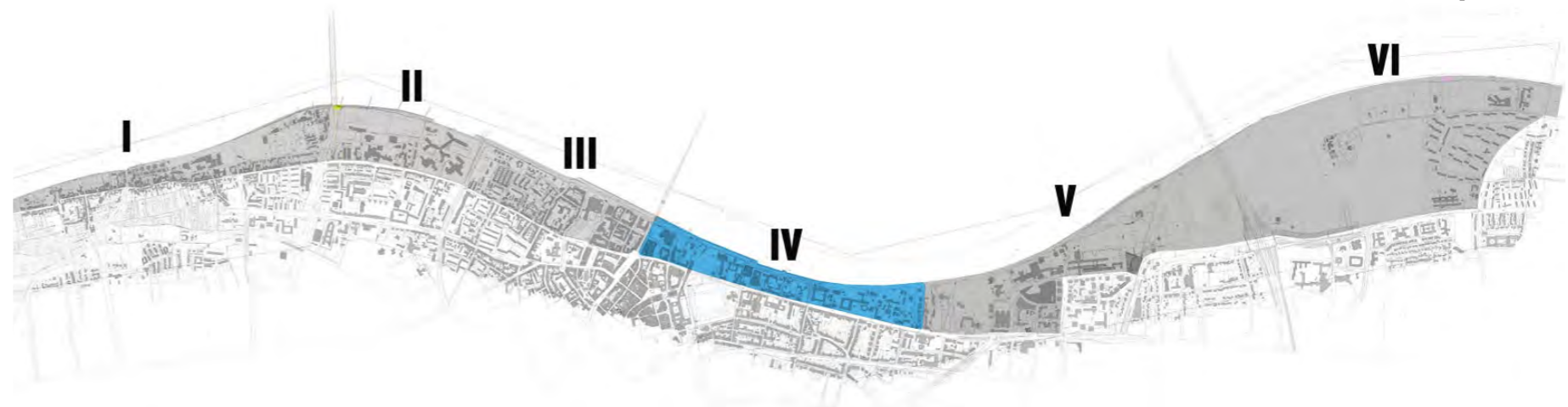
Criteria: Place signs indicating use at shorter intervals

User Analysis

	Activities	Spaces	Elements	
Residents	Dining	Restaurants	Family Dining Pubs/Beer Gardens Outdoor Cafes	
	Entertainment	Performing Arts	Theater	
	Transportation	Parking Areas Public Transit Stops	Parking Signs Transit Stop Designations	
	Events	Open Spaces	Easy Access	
	Living	Housing	Single Family Apartments/Condos	
Passive/Active Recreation	Picnic Areas	Tables/Seating Open Grass Spaces		
	Open Spaces/Parks	Walking/Biking Trail Skate Park Open Grass Spaces		
Visitors/Tourists	Dining	Restaurants	Pubs/Beer Gardens Outdoor Cafes	
	Entertainment	Performing Arts	Theater	
	Transportation	Parking Areas Public Transit Stops	Parking Signs Transit Stop Designations	
	Stay Overnight	Hotels		
	Sightseeing/Tourism	Rhine Cruises Plazas/Parks	Cruise Docks Historic Buildings Landmarks	
Workers	Dining	Restaurants	Pubs/Beer Gardens Outdoor Cafes	
	Transportation	Parking Areas Public Transit Stops	Parking Signs Transit Stop Designations	
	Working	Offices	Government Buildings Restaurants Commercial Shops	
Students	Dining	Restaurant	Pubs/Beer Gardens Outdoor Cafes	
	Transportation	Parking Areas Public Transit Stops	Parking Signs Transit Stop Designations	
	Passive/Active Recreation	Open Spaces	Tables/Seating Open Grass Spaces	
		Picnic Areas	Walking/Biking Trail Skate Park Open Grass Spaces	
	Attending School	Schools		



Location Map



DESIGN ELEMENTS

Plazas

Purpose

- Public gathering spaces for visitors, residents, workers and students to interact

Requirements

- Emphasize aesthetic views along Rhine River
- Improve placement of site furnishings to promote social interaction
- Maintain suitable space for festivals and events



Landmarks

Purpose

- Allow users to orient themselves within the site and city
- Promote the historic, cultural and aesthetic character of the city
- For the use, education, or viewing of the public

Requirements

- Create spaces that emphasize existing landmarks
- Provide links to the culture and history of Bonn and the Rhine River



Gateway Features

Purpose

- Provide a sense of arrival for users
- Provide a recognizable transition between spaces

Requirements

- Features should support the historical and cultural character of the city
- Features should not be overwhelming or detract from city



Open Space Systems

Purpose

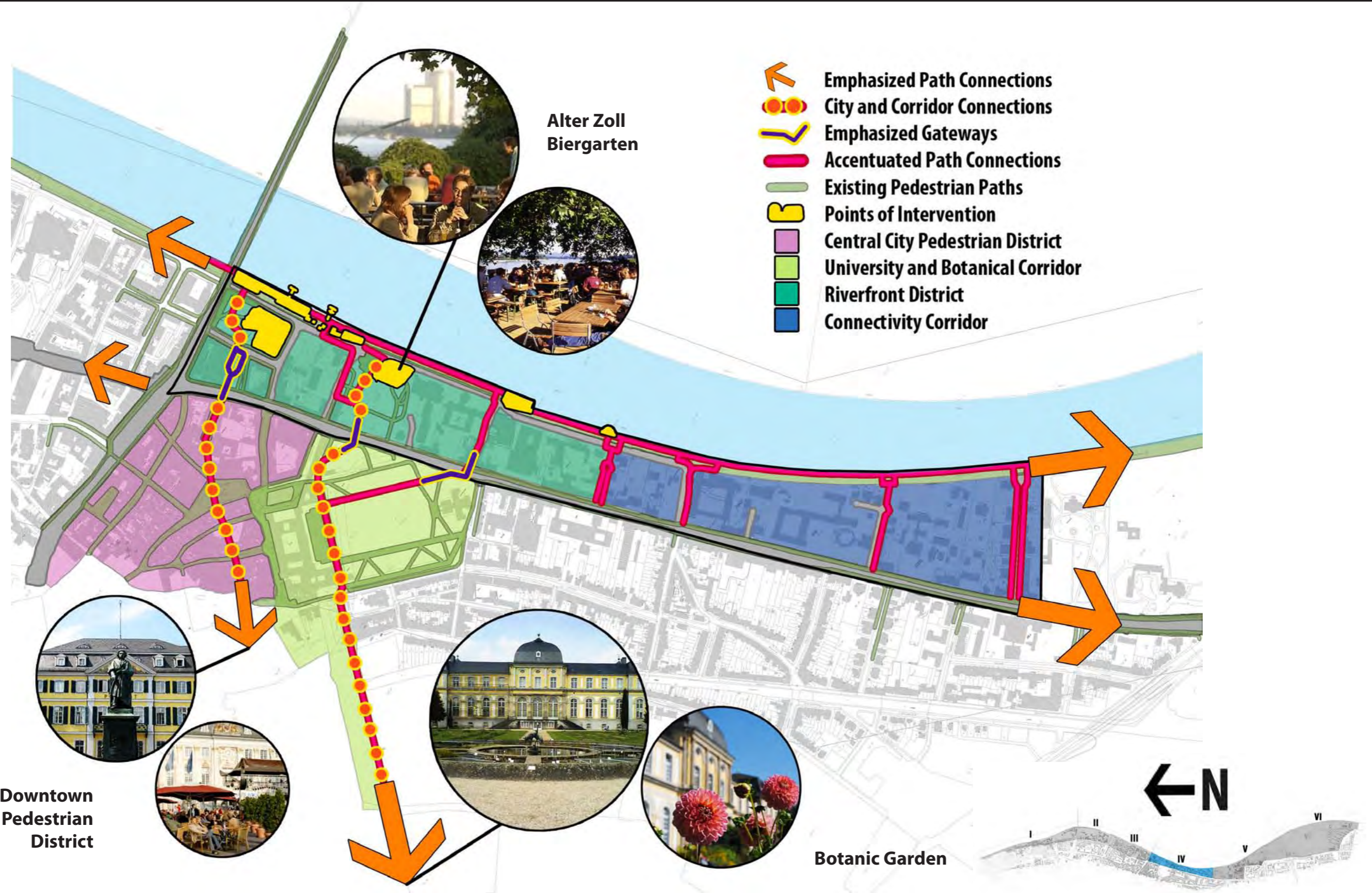
- Areas for active/passive recreation
- Increase personal value of the site for residents to promote touristic off-season use

Requirements

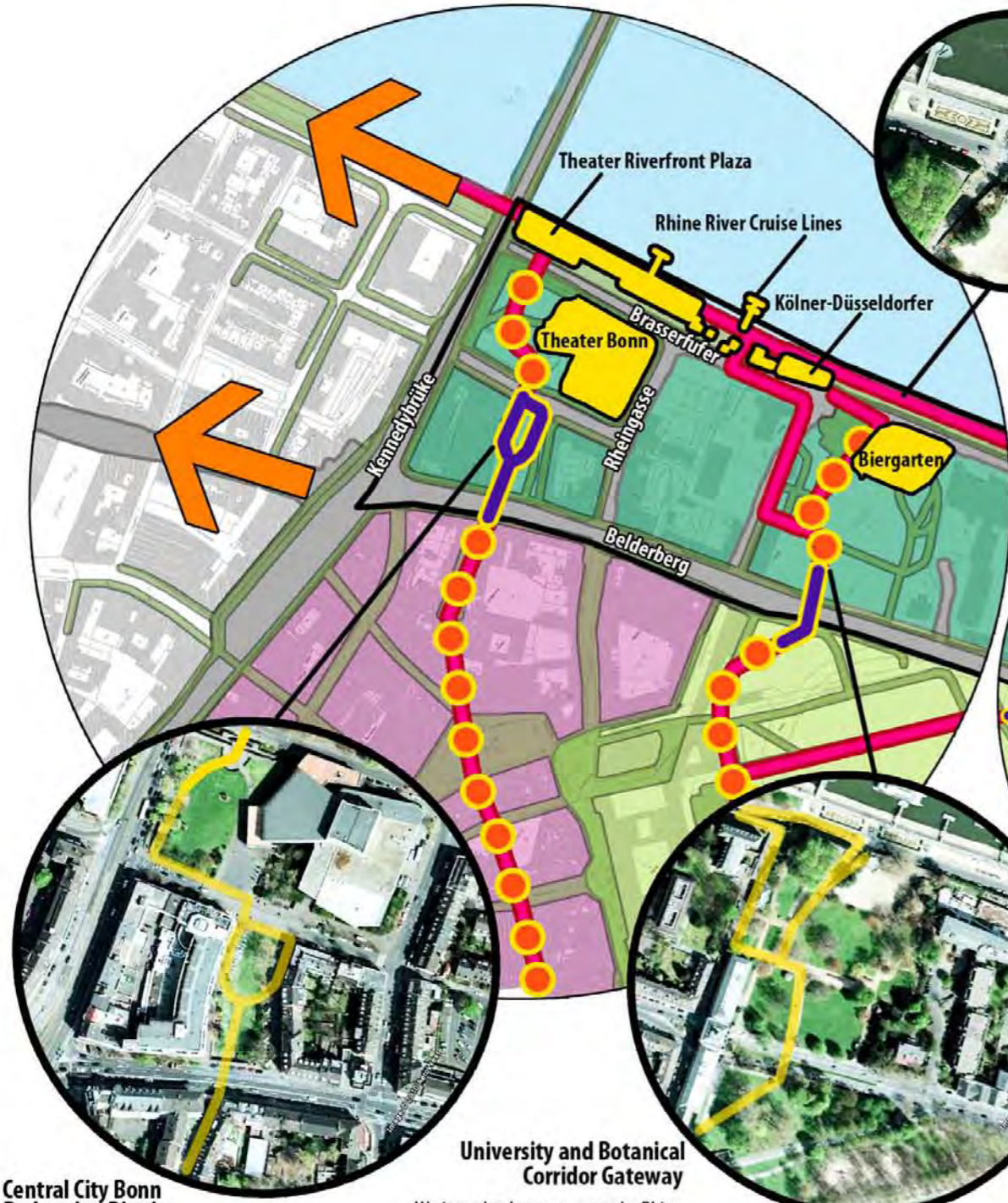
- Provide and distinguish trails (walking, jogging, biking, and skating)
- Provide benches and picnic tables for passive recreation
- Emphasize existing viewpoints to better frame views
- Provide/emphasize access to and connections between landmarks, gateways, and plazas



SCHEMATIC MASTER PLAN



SCHEMATIC MASTER PLAN ANALYSIS



Lenne Memorial and Alter Zoll Connection

Through the redevelopment of the existing crosswalk intersecting Brasserrufer and the Rhine Riverfront, we intend to emphasize the cultural and city connection between the Biergarten at Alter Zoll and The Lenne Memorial.



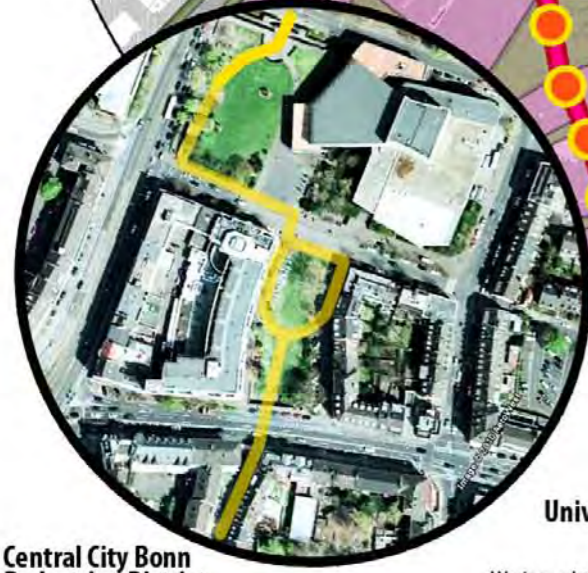
Rheinpavillon

Encourage passive recreational use of the Rhine Riverfront through the redevelopment and expansion of the Rheinpavillon by better incorporating it into the Riverfront system.



Kaiser-Friedrich-Strasse Connection

Encourage better city access to the Rhine Riverfront through the implementation of proper on-street signage along Adenauerallee.



Central City Bonn Pedestrian District Gateway

We intend to preserve and emphasize the connection between the Rhine and City Center through the use of the existing pedestrian tunnel between the Theater Green Space and downtown street of Brüdergasse.

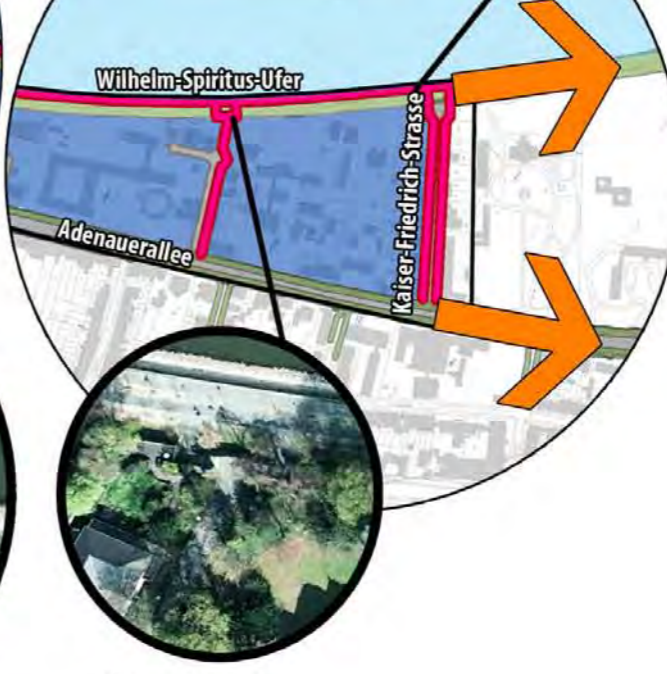
University and Botanical Corridor Gateway

We intend to better connect the Rhine to the culturally rich Green Corridor of Poppelsdorfer Allee that extends to Bonn's Botanical Garden.



Rhein River Viewing Deck

Through the redevelopment of this existing viewing deck we intend to better frame views of the Kennedy Bridge and Seven Mountains while encouraging passive recreational use along the Rhine.



Tempelstrasse Tower

Through the preservation and enhancement of the existing pedestrian access to the Rhine, we intend to encourage the pedestrian and Riverfront interaction.

Conclusion

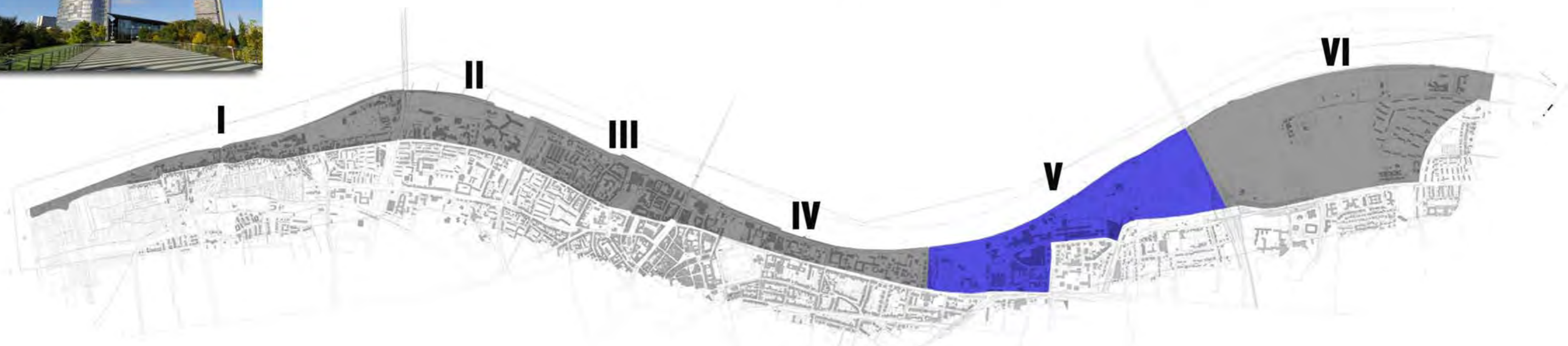
This segment of the project site is the historical and cultural heart of the City of Bonn. It provides unique opportunities for a variety of users and serves as the central connection point from the historic downtown district to the cultural Rhine riverfront. Due to the dense

infrastructure within our site there are limited opportunities for new development. Much of our proposals include the preservation and enhancement of existing sites within the open space system. These sites serve as a cultural, historical, and educational elements that enhance the character of the city. By creating visual links and strengthening the physical connections, we intend to improve the function, connectivity, and experience of the site.



Site V

Site V is located along the Rhine River between Kaiser-Friedrich-Straße and the 562 bridge and runs 1,900 meters in length. It includes multiple land uses including corporate and institutional areas, as well as a section of Rheinaue Park. This is the former site of the capitol where the German Parliament met before it was moved to Berlin. Today there are many influential groups and buildings that occupy this site including the United Nation's World Conference Center, The Deutsche Post/ DHL, Deutsche Welle, and Villa Hammerschmidt. Businessmen, political figures, international visitors, and residents of Bonn can all be found using this area.



Site Analysis

Issues:

- No connectivity from the city to the river.
- No underlying theme of the site. (Figure 1-3)
- No suitable transition between the institutional area and park area.
- No solid representation of site's history.
- A more sustainable design needs to be implemented.

Problems:

- Lack of attractive and unifying materials along the site. (Figure 2)
- Lack of lighting in some spaces including Rheinauenpark (Figure 3)
- Lack of bicycle racks
- Lack of tables
- Lack of trashcans



Figure 1

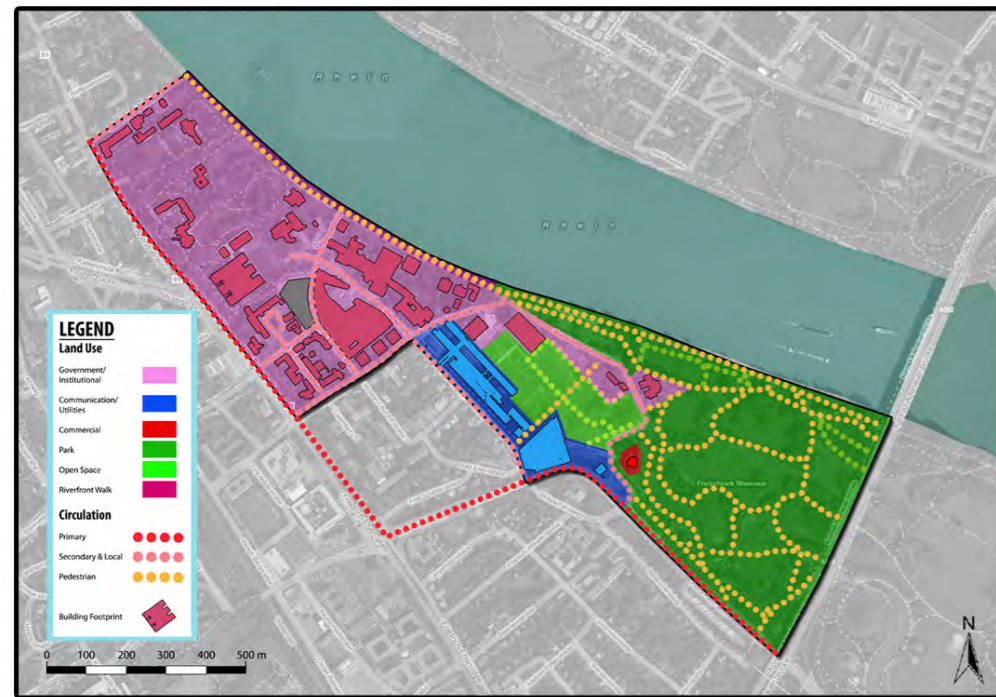


Figure 2



Figure 3

Composite Analysis Map



Opportunities:

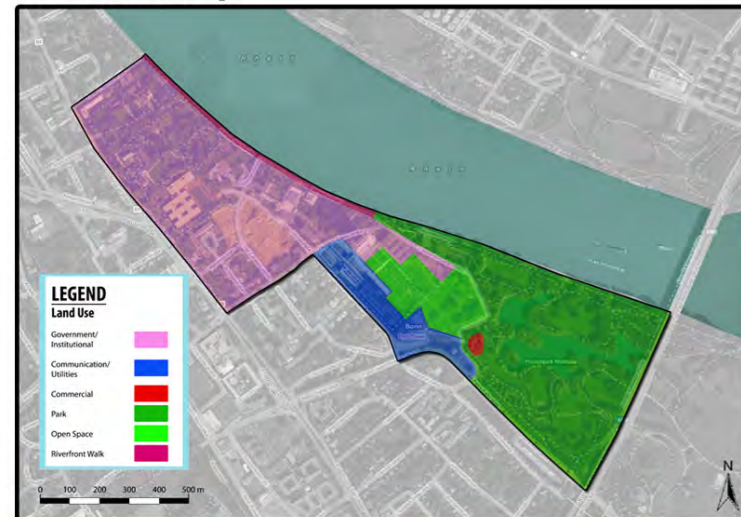
- Potential to incorporate several important institutional buildings.
- Potential to create a connection to the Rhine River in a grand style.
- Potential to represent the unique history of this area.
- Potential to create social meeting places for a variety of users.
- Potential to utilize the existing amphitheaters as stages for activity and entertainment.
- Potential to incorporate surrounding landmarks such as museums and skyscrapers.
- A number of large lawns exist on the site which can be converted into hubs for activity.
- The site consists of ample parking which can be used for future needs.
- The site consists of a mixed-use area that provides different users and needs.

Conclusions:

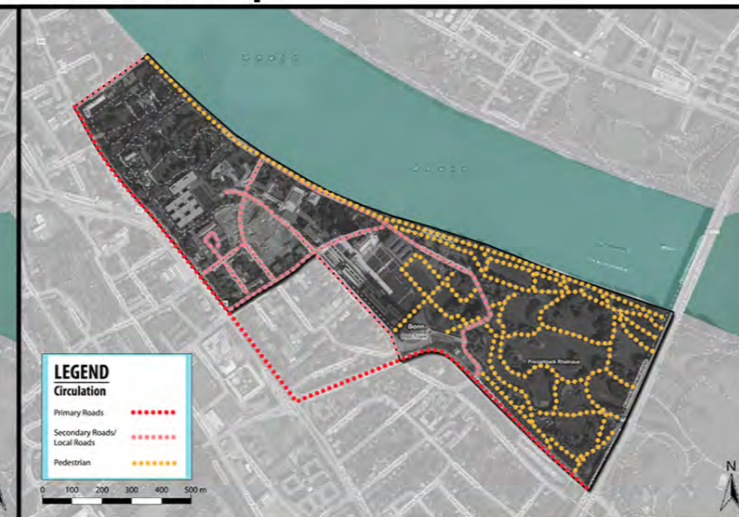
After observing the site, the conclusions are as follows:

- There should be a unification of the site using an overall theme and similar materials throughout the area.
- Areas of activity should be established such as restaurants and nightlife.
- Lighting should be implemented into the area in order to bring more attention to the site.
- Existing streets should be utilized as distinct axes to the river.
- Elements such as lighting and sculptures should be applied using sustainable practices in order to express the surrounding institution's vision of a sustainable future.
- Elements along the river should also represent this institutional area's unique history as a story.

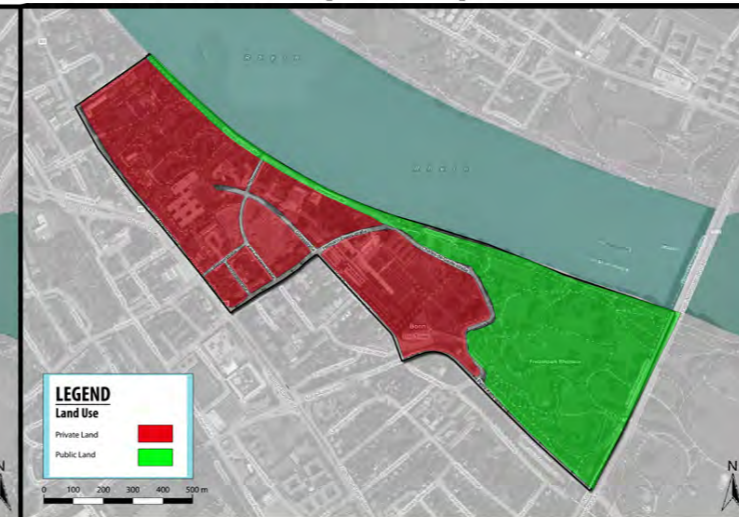
Land Use Map



Circulation Map



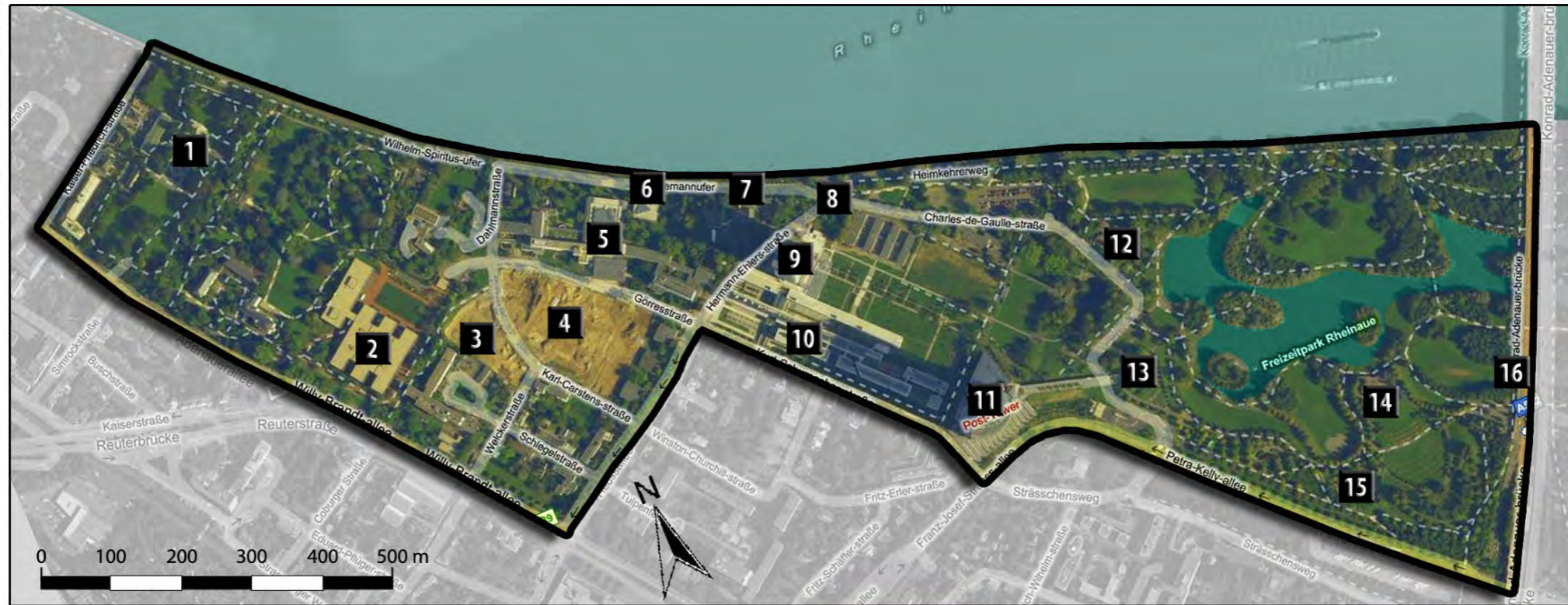
Private vs. Public Space Map



Green Space Map



Site Analysis Cont.



1 Villa Hammerschmidt
Private Residence
Extent of grounds is closed off from public.



5 World Conference Center
Former meeting place of the German Parliament before the capital was moved to Berlin. Conferences and conventions are held here now.



9 Langer Eugen
Former offices of the German Parliament
Current center of the United Nations Campus



13 Rheingarten
Located between Rheinauenpark and Post Tower.
Only restaurant within site.
Potential to be implemented elsewhere.



2 Governmental Buildings
Bonn's Former Government Quarter
Former capitol buildings now used for other institutional uses.
Many government employees work in this district.



6 Sculptures
Scattered throughout the site. Represent different themes within the site.
Lack of unity overall.
Potential to be utilized more fully.



10 Deutsche Welle
International Media Broadcaster



14 Rheinauenpark
Inadequate lighting.
Contains large lawns along with 2 amphitheatres which can serve as stages for entertainment.
Need for more sustainable elements.



3 Parking
Parking garage being constructed.
Adequate parking for current uses.



7 River Promenade
Runs the extent of the river until the park.
Unattractive Materials (Railing, Seating, Lighting, etc.)
Need for more sustainable elements



11 Post Tower
Corporate center of the site.
Many corporate employees work here.
Provides one of the main user groups.



15 Japanese Garden
Important area in Rheinauenpark.
Areas like this represent diversity within the park.
Can serve as focal points.



4 New Construction
Extension of the World Conference Center
Large Hall and Small Hall
Integrates the use of a green roof.
Can be implemented elsewhere.



8 Under-utilized Spaces
Pieces of left over space.
Potential areas for new activity.
Can serve as transitional spaces.



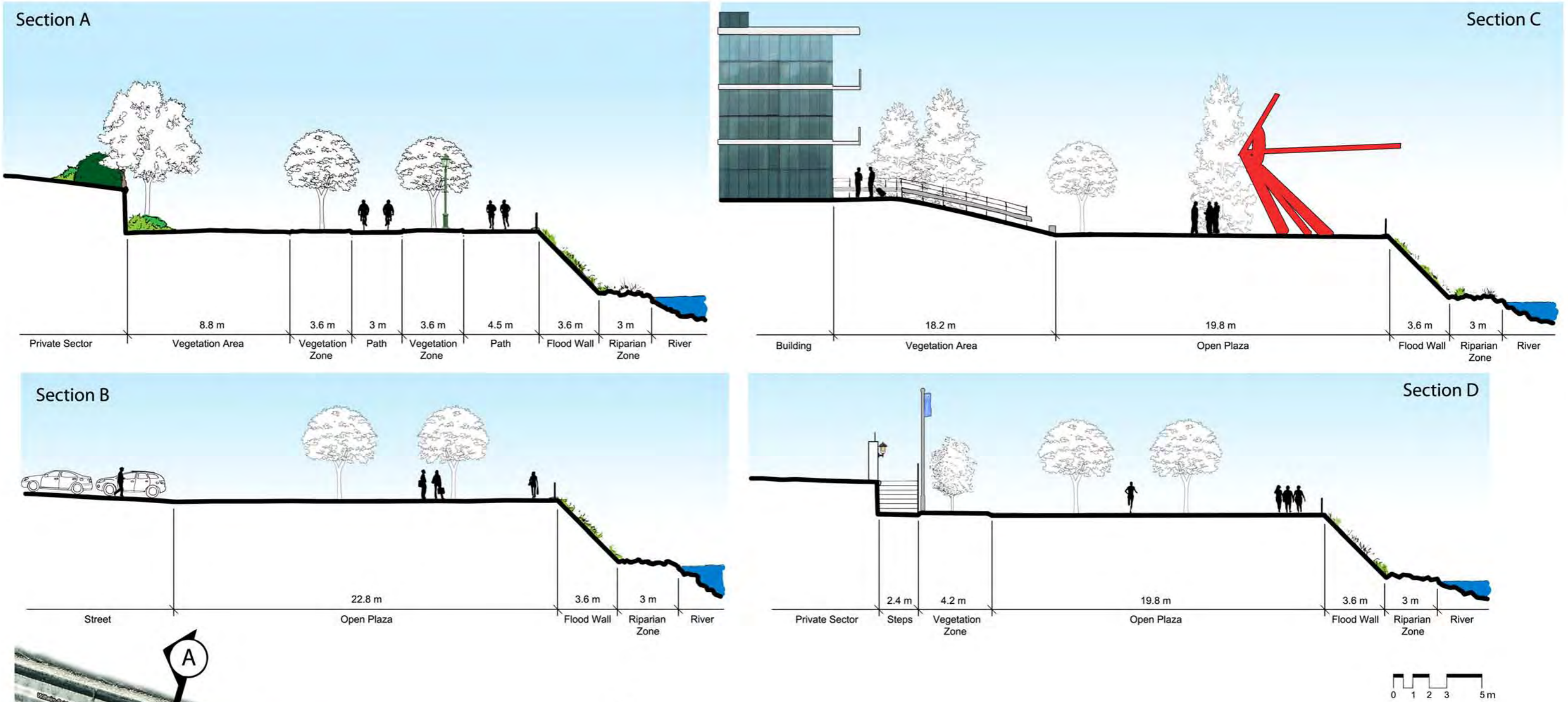
12 Sustainable Institutions
A number of organizations devoted to the development of sustainable energy are located within the site.
Potential to incorporate principles into the design.



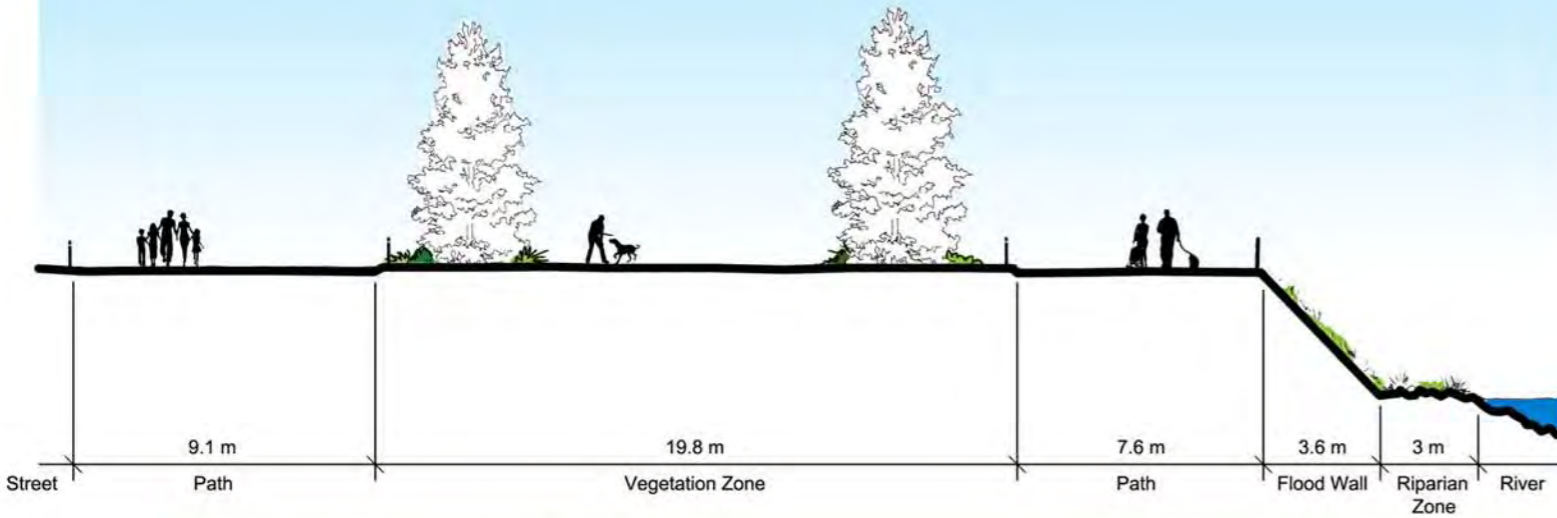
16 Bridge
Unattractive
Inadequate Lighting
Can serve as transitional space to both sides of Rheinauenpark.



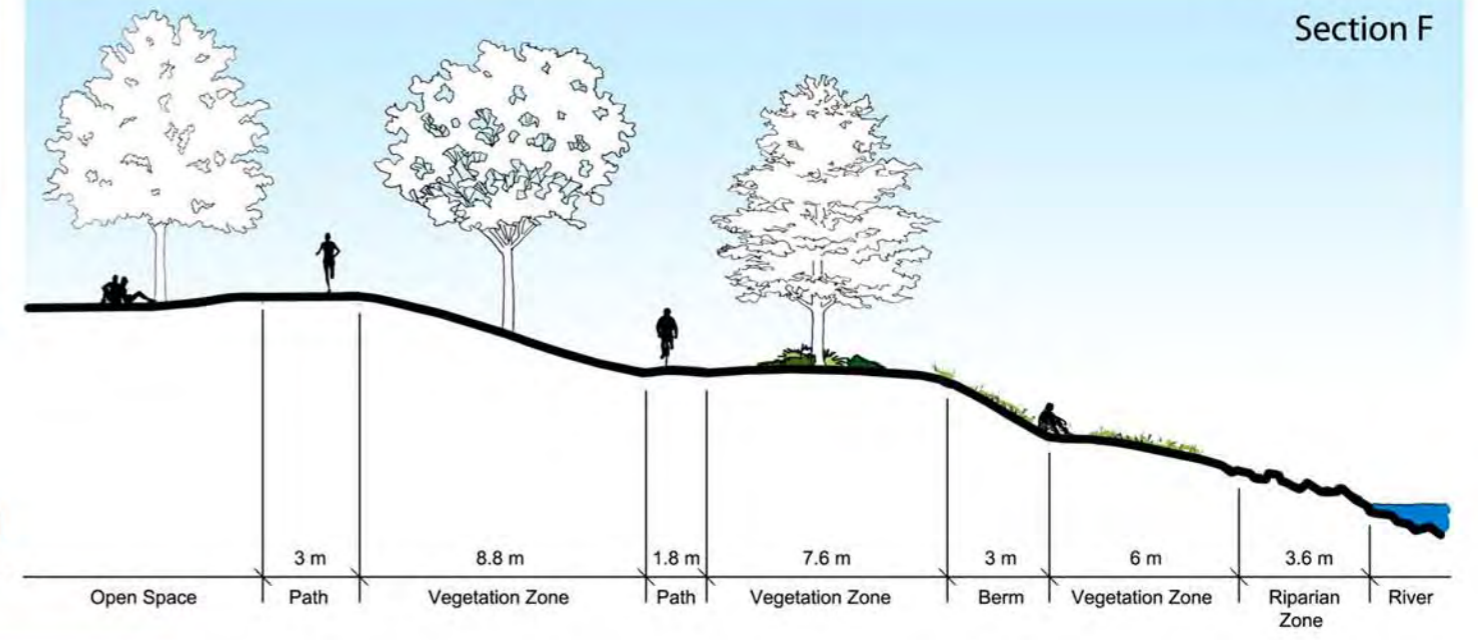
Sections



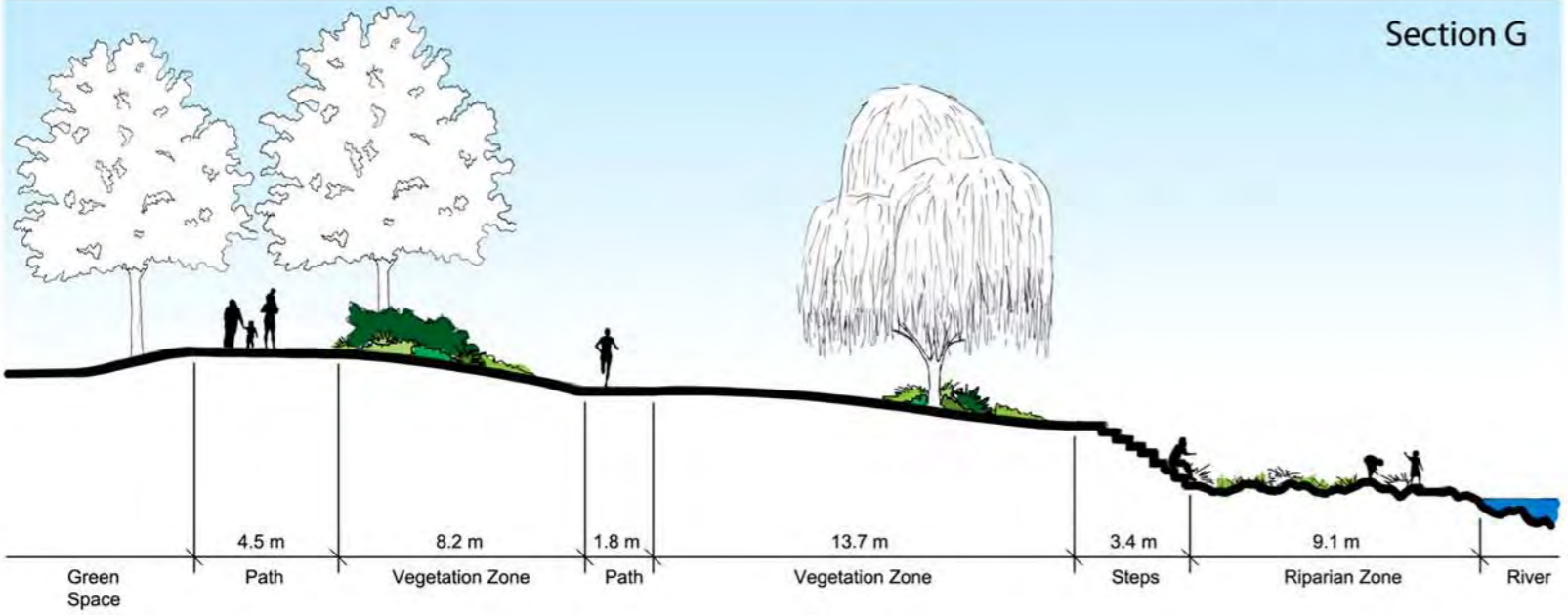
Section E



Section F



Section G



Design Program

Mission Statement: Unify corporate, park and riverfront areas of site through physical representation of Bonn's identity as an international and sustainable city.



Rhine River



Corporate



Institutional



Park

Site Map



Goals:

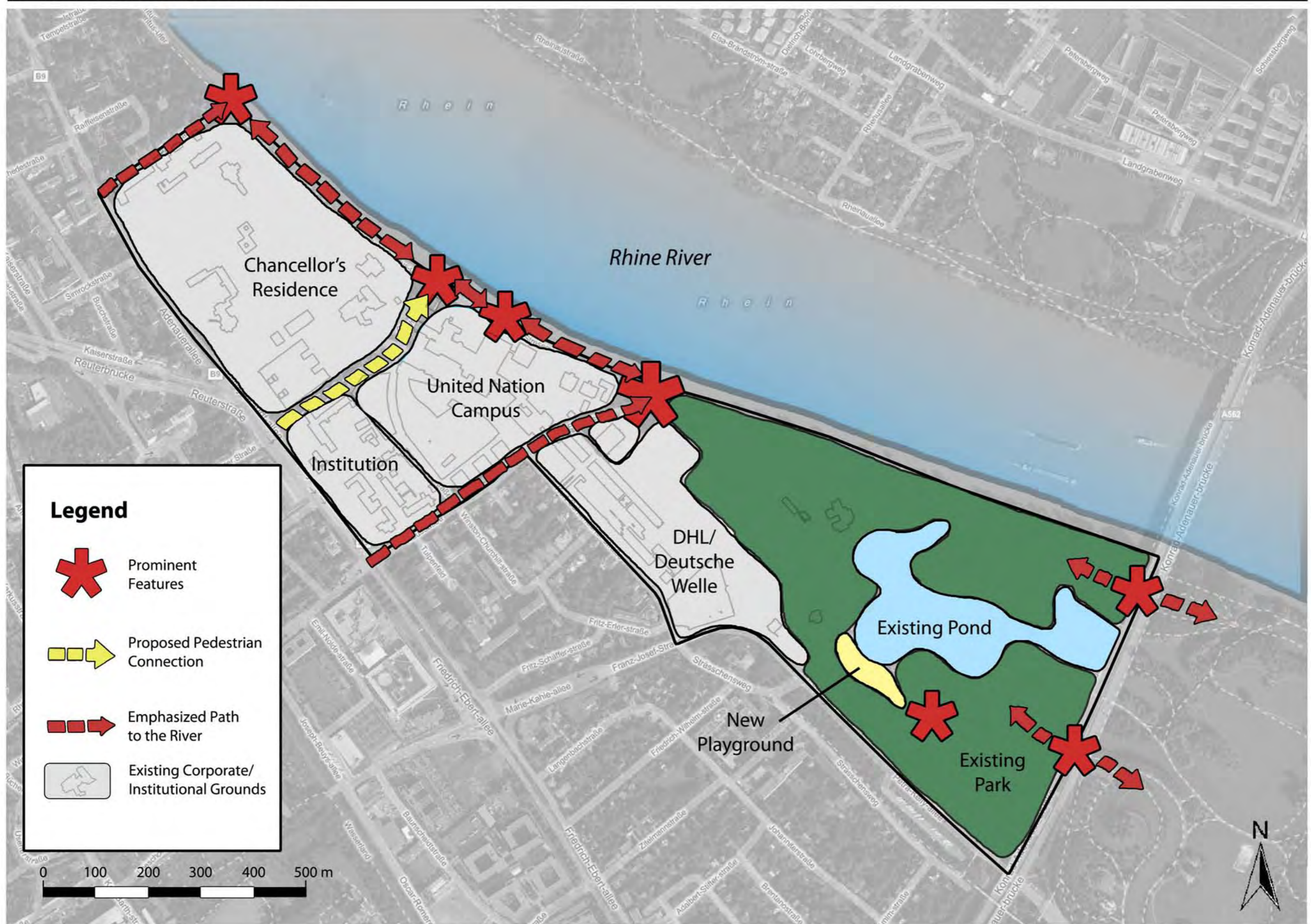
- **Create Sense of Place**
 - o Promote identity of Bonn
 - o Elements representative of the Peoples Park
 - o Representation of diverse users and cultures
 - o Repetitive themes and patterns
- **Sustainable Design**
 - o Minimize negative environmental impacts
 - o Respect current river ordinances
 - o Preserve natural environments and species diversity
 - o Educate public
- **Promote Safety and Health**
 - o Efficient lighting
 - o Encourage safe interaction between bikers and pedestrians
 - o Encourage fitness
- **Honor the Rhine River**
 - o Create points of interest along river
 - o Use of way finding to create access to river
- **Promote Unity**
 - o More seamless transition between park space and infrastructure
 - o Unifying visual components
 - o Common themed spaces
 - o Social interaction between a variety of people
 - o Interactive elements
- **Maximize potential of area**
 - o Develop underutilized areas
 - o Enhance problem areas

Design Program Matrix:

	ACTIVITIES	SPACES	ELEMENTS
RESIDENTS	Walking/Jogging Biking Dog Walking Passive & Active Rec Dining Talking Entertainment Events	Waterfront Parks Plazas Open Areas	Pathways Lighting Seating Tables Trashcans Ampitheater Playground Community Garden Sustainable Features
VISITORS	Dining Entertainment Events Tourism Business	Open Areas Plazas Waterfront Cultural Areas Parks	Transportation Lighting Gathering place Sculptures and Art Dining Areas
WORKERS	Meeting Dining Walking Post Work Activities	Open Areas Plazas Waterfront	Seating Tables Dining Places Gathering places
WILDLIFE	Living Foraging Ecosystem	Vegetated Areas Open Grassland Water	Canopy Cover Native Plants Wetlands



Schematic Master Plan



Design Elements

Sculptures and Art

Purpose

- Add visual interest throughout site
- Method of highlighting important areas of site
- Recurring element to unify site through common cultural theme

Requirements

- Locate at points of interest, along pathways for continuous experience
- Pieces must relate to city identity



http://upload.wikimedia.org/wikipedia/en/5/5f/Copped_version_of_Zwickau_Solar_Panel_Installation.PNG



http://www.nickbrownarch.com/strugglingarchitecture/wp-content/uploads/2010/07/ClaesOldenberg_BicycleWheel1.jpg



Site Furnishings

Purpose

- Accommodate user needs as necessary
- Increase site safety and functionality
- Recurring element to unify site through common cultural theme

Requirement

- Choose a style or template for each element
- Space consistently for regular and reliable use throughout site



http://farm3.static.flickr.com/2454/3660113592_7e94582f7d.jpg?v=0



http://www.jiyuanguroup.com/Upload/PicFiles/2009.7.2_8.52.19_4771.jpg



http://upload.wikimedia.org/wikipedia/commons/thumb/2/2e/Pier_benches.jpg/800px-Pier_benches.jpg

Pathways

Purpose

- Connect the different areas and features of the site
- Accommodate passive and active users of the site
- Create visual harmony through uniform appearance trails

Requirements

- Enhance existing trails of the site through widening and paving
- Create new paths to for better connection between city and river front



http://media.northjersey.com/images/0902510_OutMainSquare.jpg



<http://www.about-bicycles.com/fox-river-trail-pics/For-River-Trail-74.jpg>

Sustainable Design

Purpose

- Exemplify the sustainable systems, components, and way of life that Bonn promotes
- Create low impact, self sustaining features to the site

Requirements

- Choose visible locations for components to be seen without interfering with function of site



<http://greensolutionshelp.com/wp-content/uploads/2009/08/Solar-Panel-Step-By-Step.jpg>



<http://image.made-in-china.com/4f0j008betyQhWYra/10KW-VAWT-Vertical-Axis-Wind-Turbine-.jpg>



http://www.designspongeonline.com/wp-content/uploads/2009/11/j05.03_stormdrain01.JPG



Design Elements

Plazas

Purpose

- Public space for community gathering and interaction
- Key points for viewing site
- Serve as transition points between trail, park, and corporate grounds

Requirements

- Create overhangs at key view points locations along Rhine trail
- Build above Rhine fllood line



http://wpcontent.answcdn.com/wikipedia/en/thumb/b/b6/Allegan_Michigan_Riverfront_walk.jpg/300px-Allegan_Michigan_Riverfront_walk.jpg



http://lh5.ggpht.com/_l66vkyFDra/THL8KA238I/AAAAAAAAAGE/G_hOCvnY8J4/s12/Rivard%20Plaza%20AFTER1.JPG



http://www.carlyeandassociates.com/work/public_improvements/louise_mckiney/gallery/img1.jpg

Dining Facilities

Purpose

- Provide access to refreshments for users
- Serve as interaction environment for users
- Attract users and keep them within site

Requirements

- Location should highlight the various features of the site
- Provide different sized facilities according to anticipated use



http://graphics8.nytimes.com/images/2008/09/05/travel/v_bryantparkout_395.jpg



<http://archinspire.com/wp-content/uploads/2009/07/transparent-glass-house-steel-concrete-design11-500x333.jpg>



<http://www.centralparknyc.org/visit/things-to-see/images/merchants-gate-cafe-1.jpg>

Entertainment Areas

Purpose

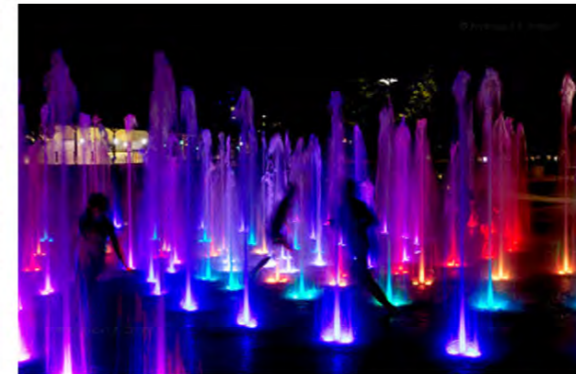
- Attract users to park day and night
- Allow new ways for users to interact with space

Requirements

- Establish at key points of site
- Create spaces that allows greatest range of activities to occur



http://wirednewyork.com/parks/central_park/images/central_park_concert.jpg



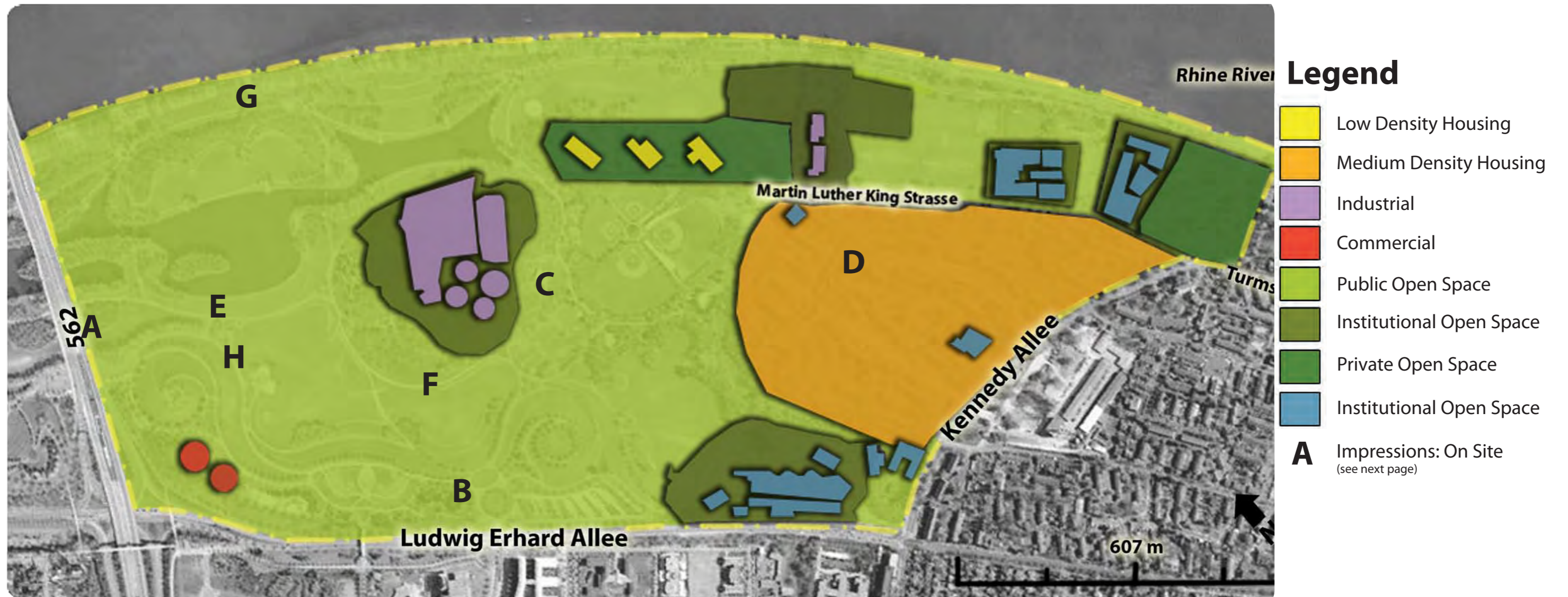
http://images.afximages.com/Other/Liz-Carpenter-Fountain/FountainPark-2008-08-16-17-wm/412606288_ZQt8y-S.jpg



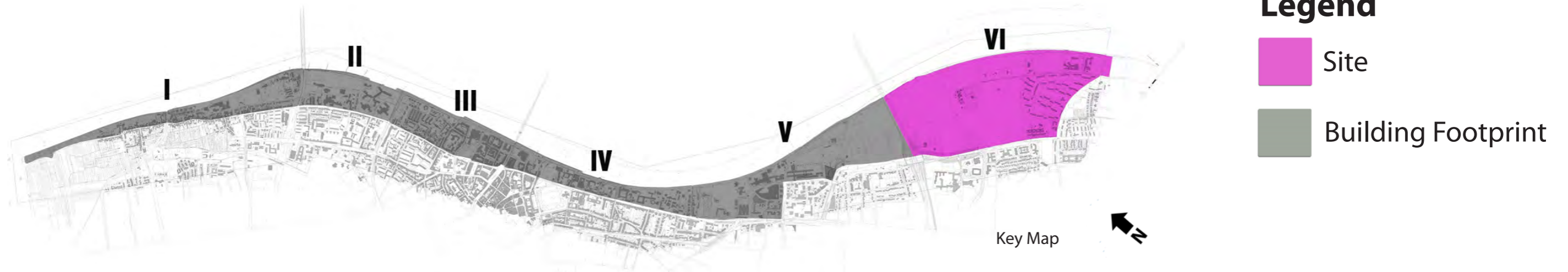
http://www.standardhotels.com/upload/Miami_events_outdoor.jpg



Existing Land Use Map



Site Location Map



Impressions: On Site



Site Issues: A-D

A Area under South bridge (562)
 Unpleasant graffiti
 Disconnected from park
 Not utilized
 Dark

C Torn down skateboarding area
 Unsafe
 Aesthetically unpleasing

B Main entrance to park
 Cars parked around the roundabout
 No clear signage

D American Village
 Outdated and underutilized playground
 Outdated furnishings
 American culture not shown

Site Potentials: E-H

E Beautiful landscapes
 Pond, bridges, wildlife, vegetation

G Access to river shore
 Pathways
 Education

F Large open lawn areas
 Kite flying, picnics, etc.
 New playgrounds

H Recreational opportunities
 Caged soccer
 Basketball court
 Sand Volleyball courts
 Fishing

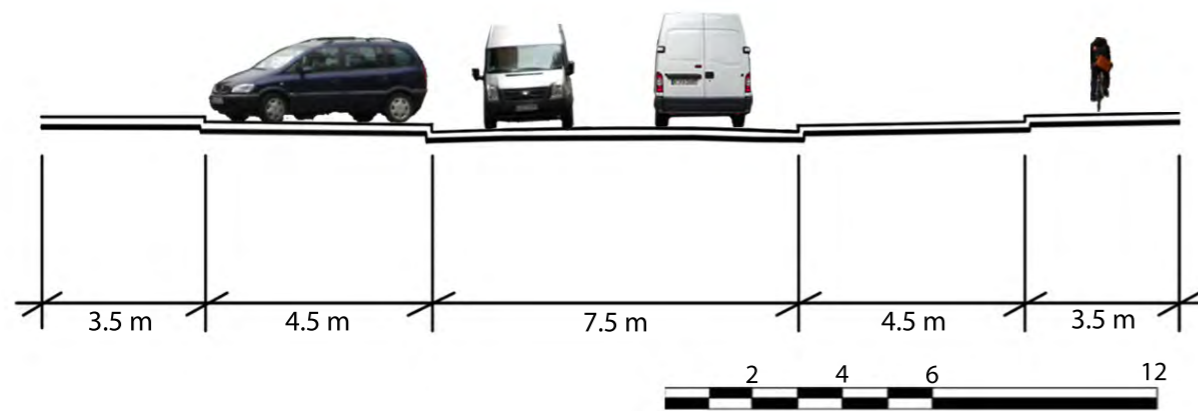


Sections and Elevations

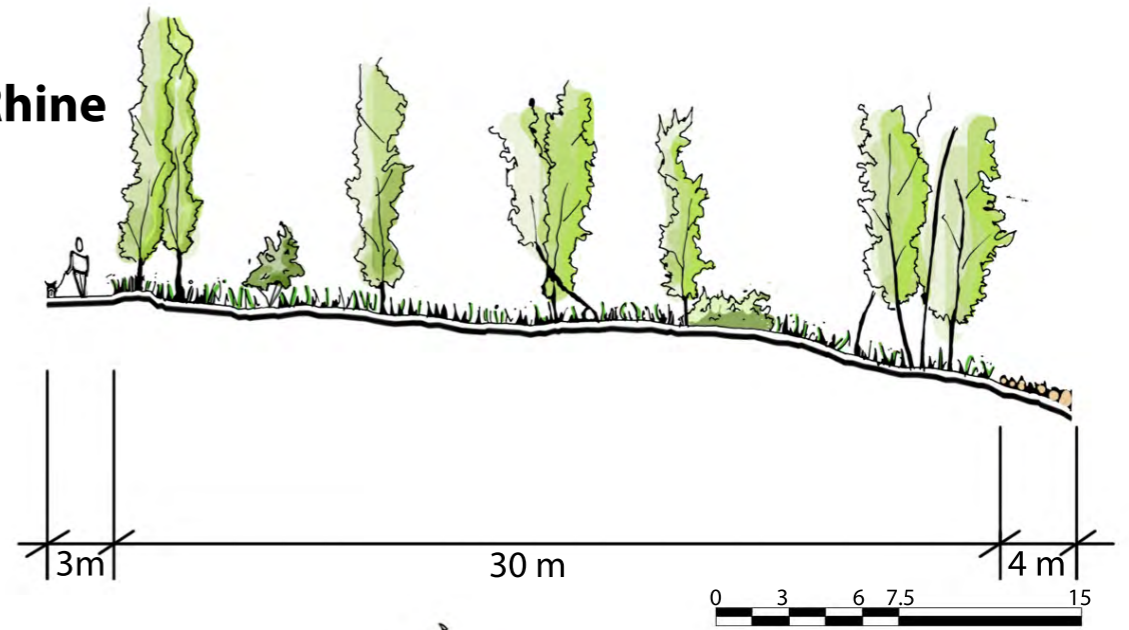


Section Locations

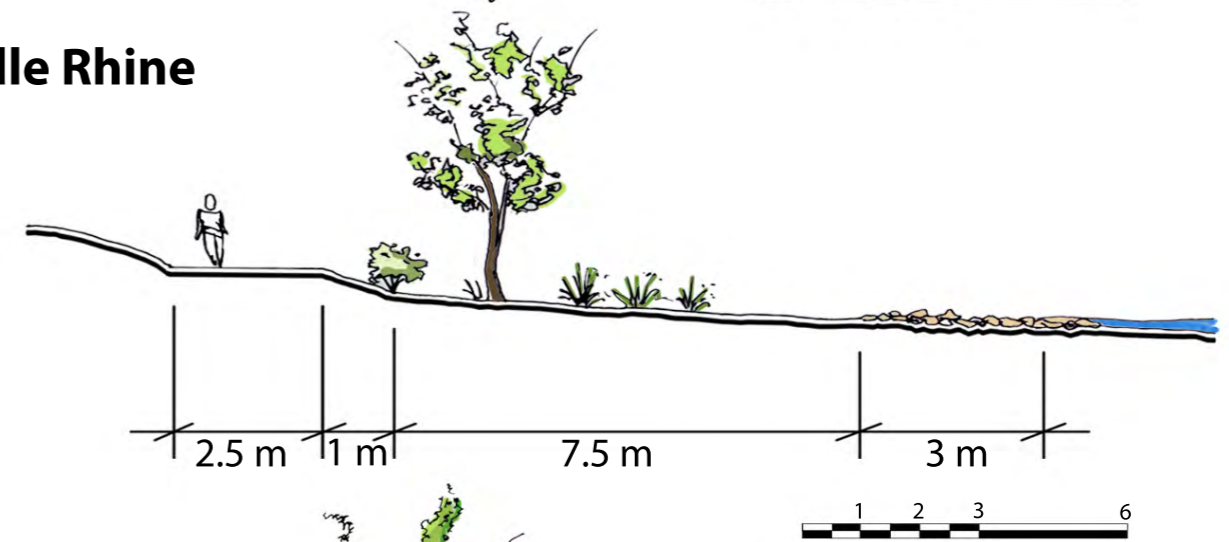
① Europastrasse



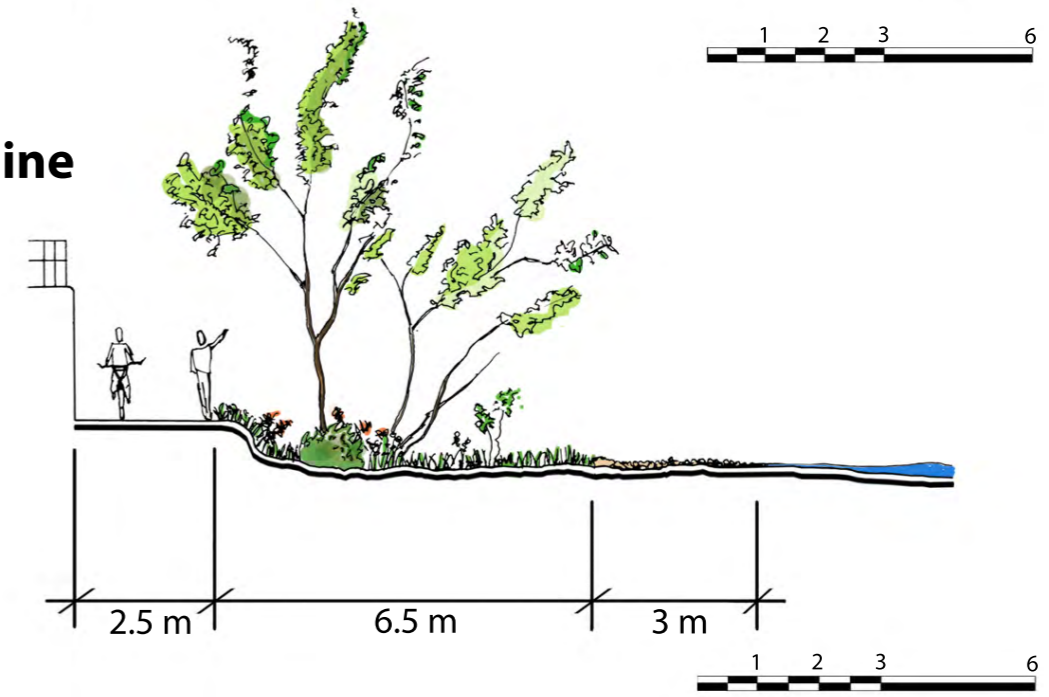
② North Rhine



③ Middle Rhine



④ South Rhine



Design Program

Mission Statement

- To maintain a city-wide amenity through the enhancement of decaying elements as well as provide additional recreation facilities and an expanded international experience.

Themes

- American Culture
- Recreation

Goals and Objectives

- **Improve accessibility**
 - to the Rhine River
 - provide paths down to the riverbank
 - address entrance condition
- **Address the American Village**
 - add mixed-use level to current buildings
 - change the first floor into shops and restaurants
 - create a nice plaza
 - bring in historical elements
- **Address the areas under the South Bridge**
 - lighting improvement
 - fix skylight leakage
 - incorporate theme
- **Address the sports facilities**
 - redesign/rebuild the old skate park
 - redesign the soccer court
 - add new indoor and outdoor sports facility



Design Program Matrix

	ACTIVITIES	SPACES	ELEMENTS
RESIDENTS	<ul style="list-style-type: none"> - living - education - parking 	<ul style="list-style-type: none"> - housing - school - surface 	<ul style="list-style-type: none"> - flats - playgrounds - sidewalks
VISITORS	<ul style="list-style-type: none"> - individual & team sports - feed wildlife - relax - outdoor activities - parking - dining - pets 	<ul style="list-style-type: none"> - sports facilities - lake - seating - open fields - surface, shared transit - restaurant 	<ul style="list-style-type: none"> - putt putt course, soccer/ baseball/football fields - ducks, geese, swans - park benches, water features, vegetation - public transportation, sidewalks
WORKERS	<ul style="list-style-type: none"> - work - parking - dining 	<ul style="list-style-type: none"> - research, schools, water treatment plant, park maintenance - surface shared transit - restaurant 	<ul style="list-style-type: none"> - public transportation, sidewalk
WILDLIFE	<ul style="list-style-type: none"> - living - foraging - ecosystem services 	<ul style="list-style-type: none"> - habitat 	<ul style="list-style-type: none"> - lake - tree canopy - open grasslands



Design Elements

Recreation

To allow Rheinaue Park the opportunity to serve multiple functions and users. Encouragement of healthy lifestyle through play and exercise. Promote both passive and active recreation.

Requirements

Renovate existing facilities that have become worn due to use and time. Increase the area of recreation to accommodate activities for all ages.

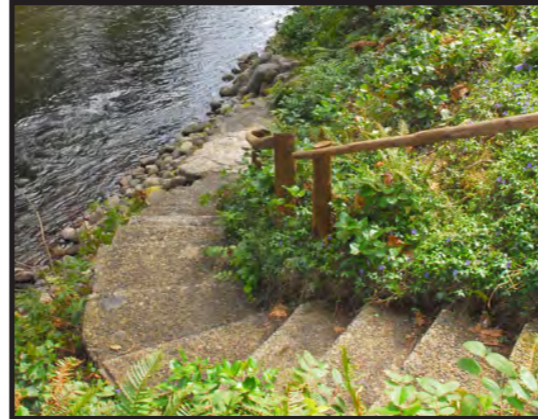


Accessibility

Provide connection between Rheinaue Park and Rhine River. Allow all users to more readily access the park.

Requirements

Create paths to the river bank. Increase connectivity between Rheinaue Park and The American Village.



History

Increase the vitality of The American Village. Offer an opportunity for citizens to reflect on the international history of Bonn. Provide activities capable of economic viability.

Requirements

Change the land use of The American Village from residential to mixed-use. Incorporate decades of American History into The American Village.



Culture

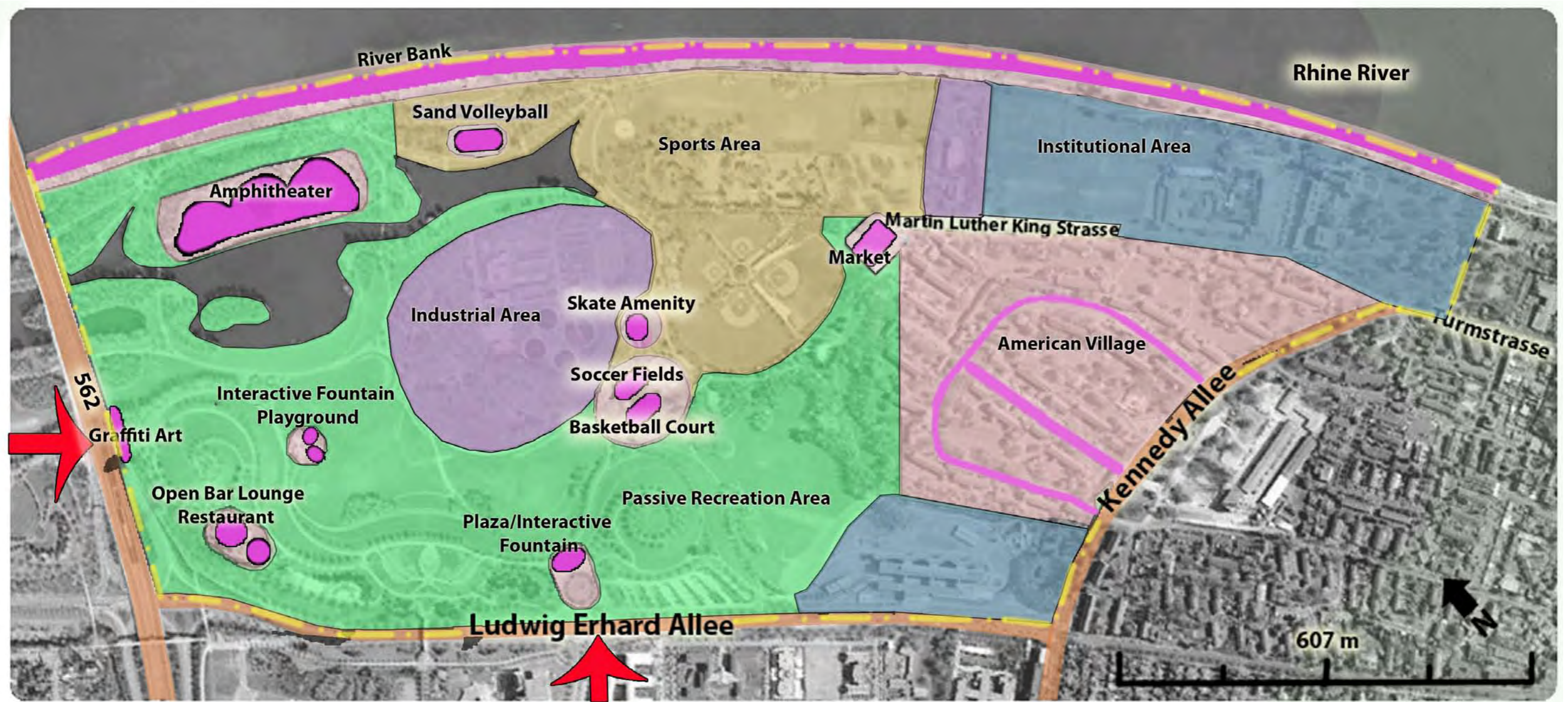
Provide the citizens of Bonn with an international experience. Create a unique destination that concludes at the south end of Rheinaue Park.

Requirements

Establish commercial development that specializes in American goods and products. Instill cultural elements such as music, food, and fashion.

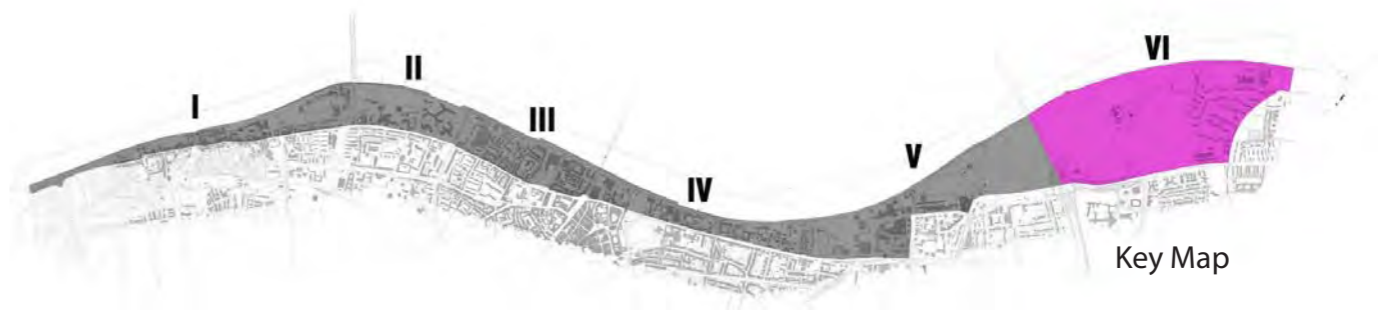


Schematic Master Plan



Legend

 New	 Institutional Area	 Major Circulation
 Improvements	 Industrial Area	 Main Entrances
 Passive Recreation Area	 Sports Area	 Border



Plan Analysis

Land Use Plan



Legend

- Low Density Housing
- Medium Density Housing
- Industrial
- Commercial
- Public Open Space
- Institutional Open Space
- Private Open Space
- Institutional Buildings

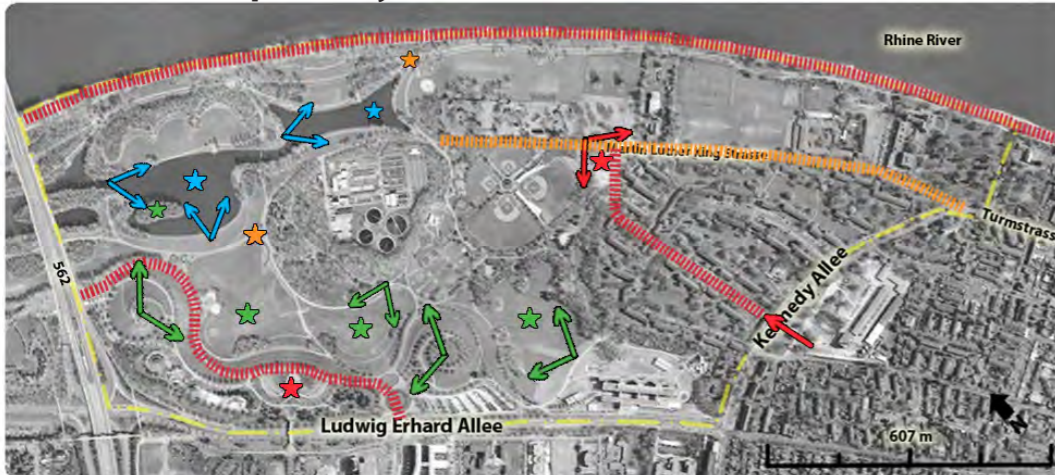
Circulation Plan



Legend

- Pedestrian Path
- Bike Path
- Automobile
- Bus Path
- Train Path
- Bus Stop
- U Subway Stop

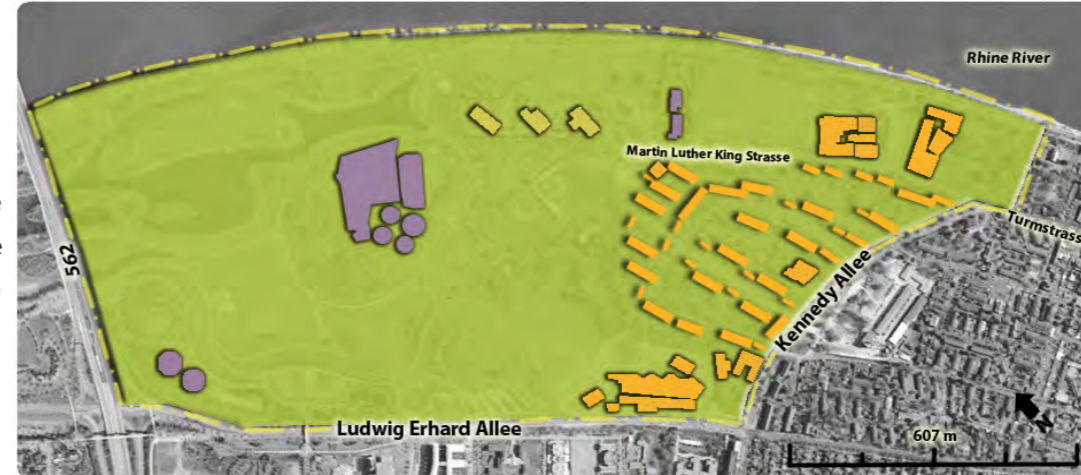
Visual Landscape Analysis Plan



Legend

- Major Axis
- Minor Axis
- Major Focal Point/Node
- Minor Focal Point/Node
- Green Focal Point/Node
- Water Focal Point/Node
- Urban Vista
- Green Vista
- Water Vista
- Border

Building Height Control Zoning Plan



Legend

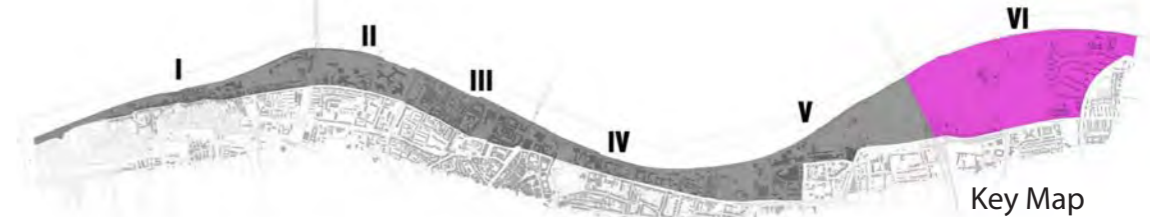
- 25 Meters Height
- 15 Meters Height
- 10 Meters Height
- No structures
- Border

Combined Open Space Plan



Legend

- Park
- Sports Park
- Playground
- Private
- American Village
- Meadow
- Themed Garden
- Wetland
- Urban Plaza
- Border



Key Map



Schematic Site Design



Planning and Design for the Waterfront
Redevelopment of the West Bank of the
Rhine River, Bonn, Germany



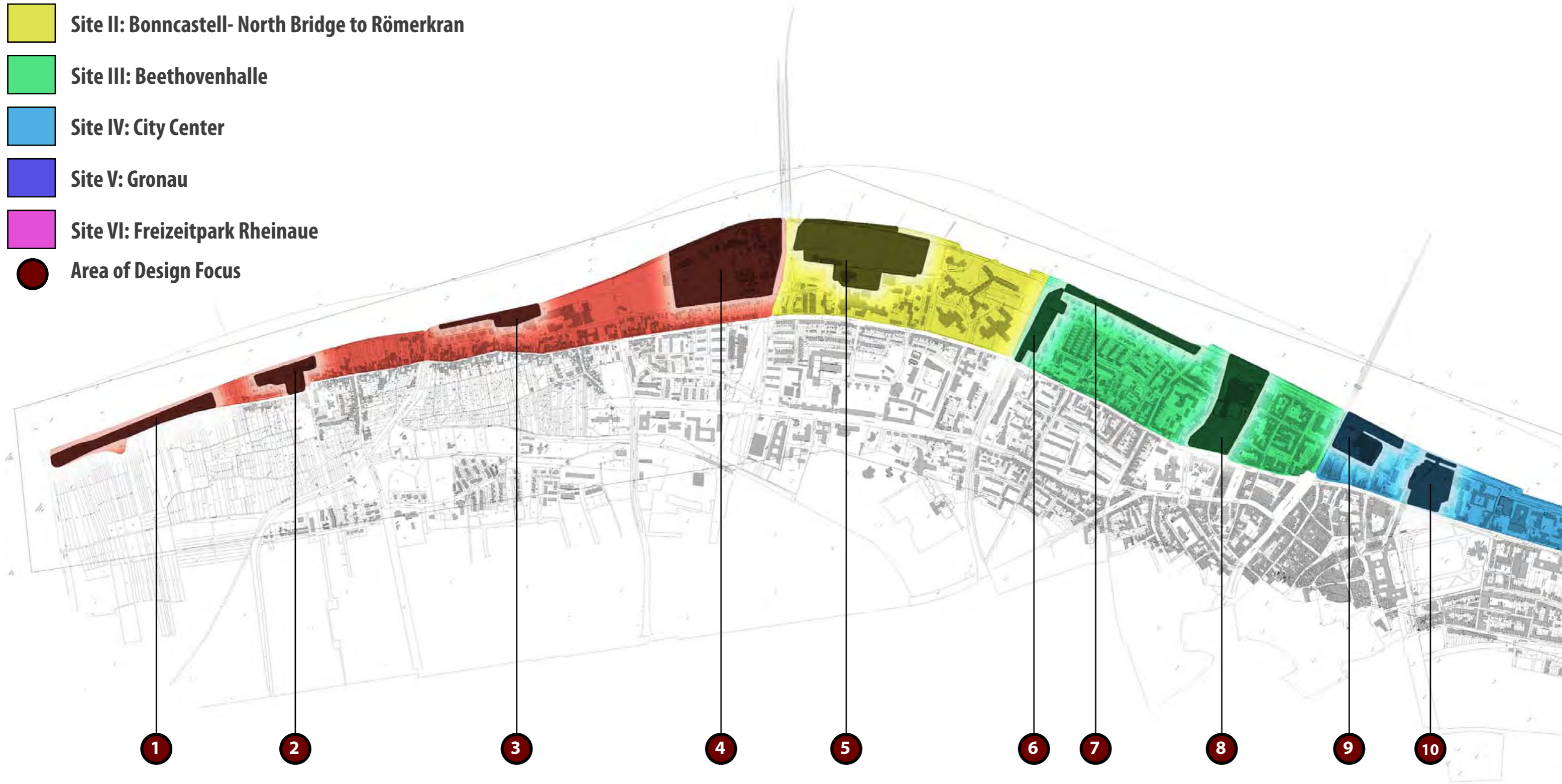
Department of Landscape Architecture and Urban Planning,
College of Architecture, Texas A&M University
CARC 301 Study Abroad Design Studio, Fall 2010

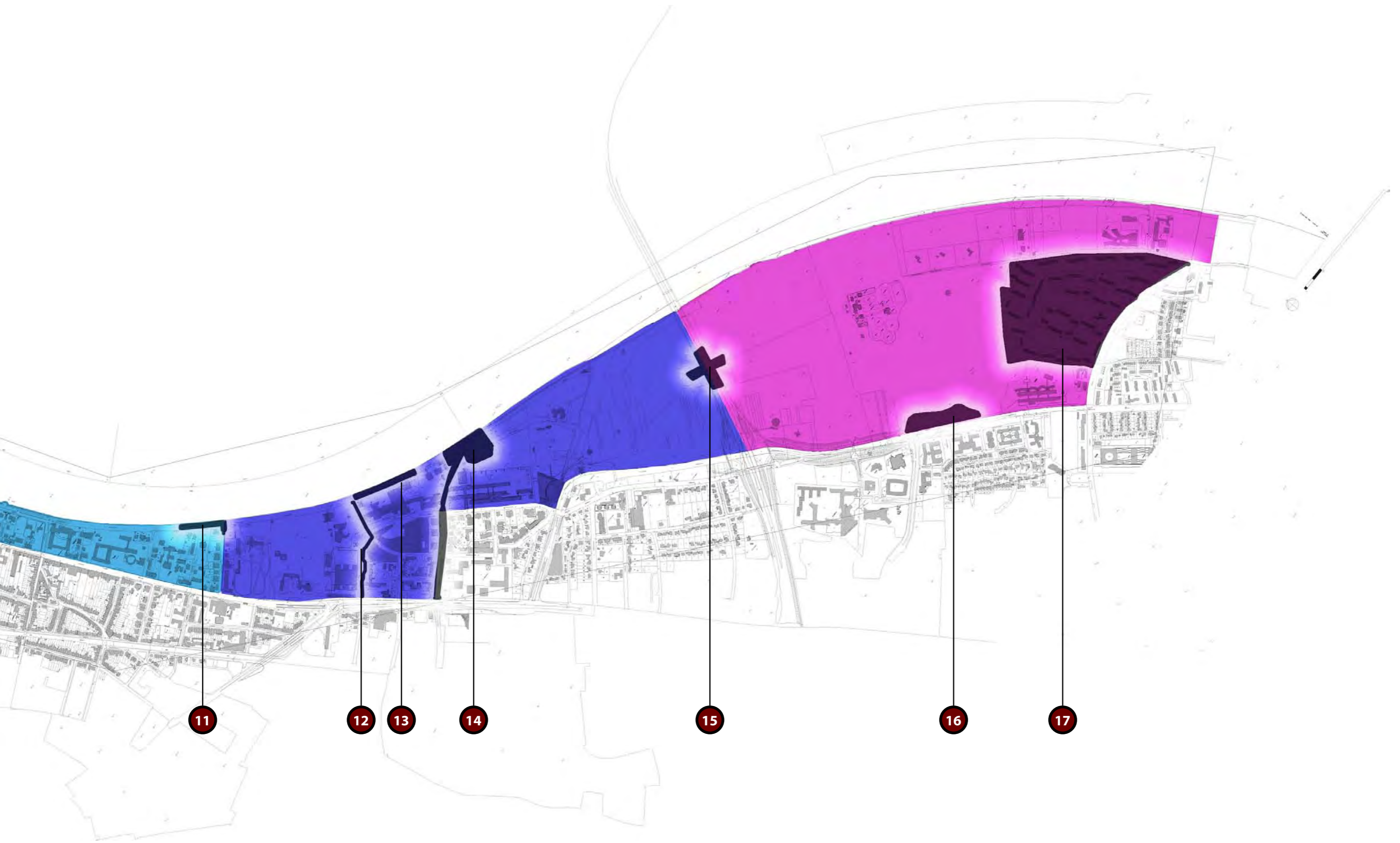
Schematic Site Design

Texas A&M University

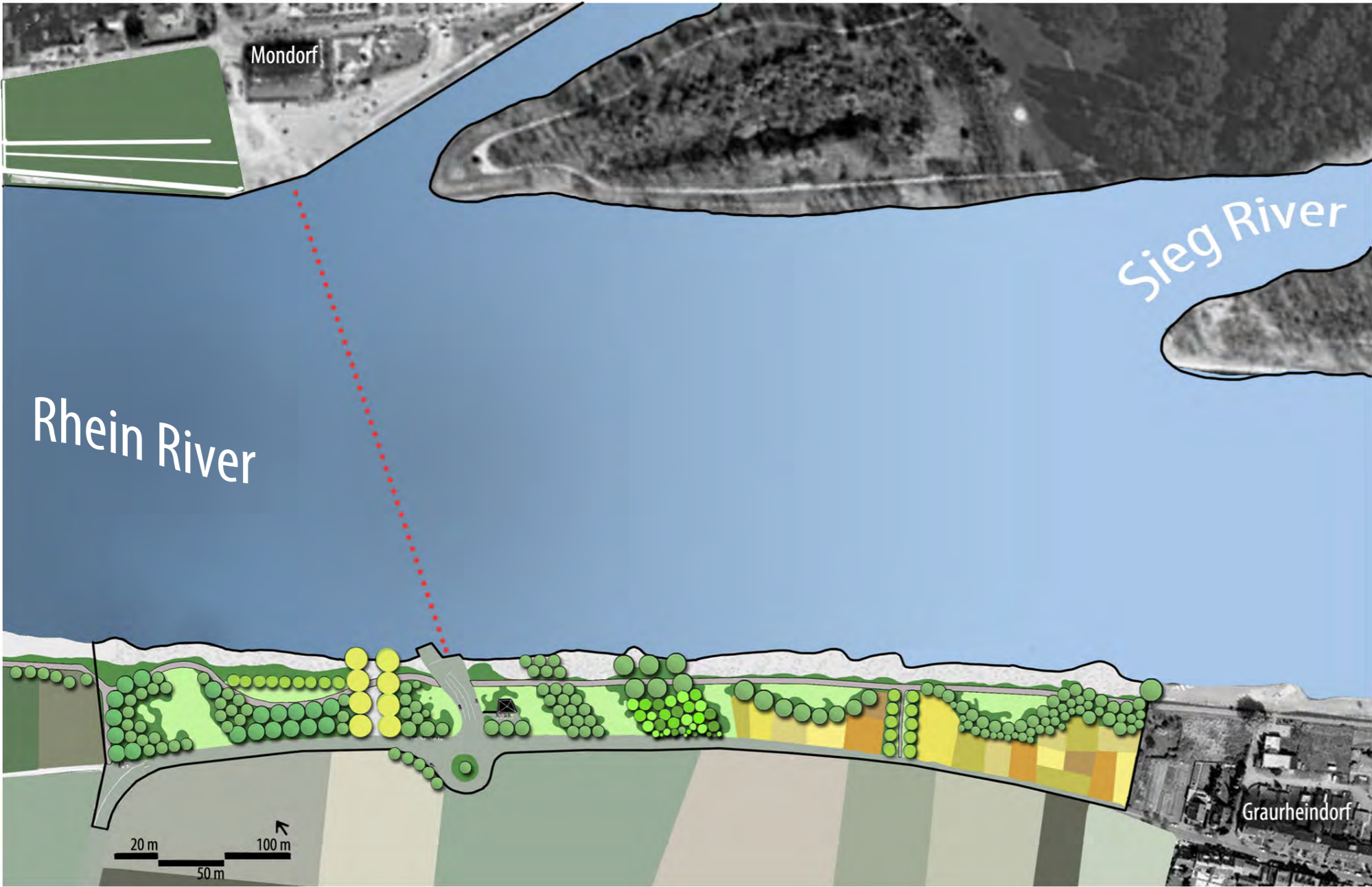
D-1

- Site I: Graurheindorf- Auto Ferry to North Bridge
- Site II: Bonncastell- North Bridge to Römerkran
- Site III: Beethovenhalle
- Site IV: City Center
- Site V: Gronau
- Site VI: Freizeitpark Rheinaue
- Area of Design Focus

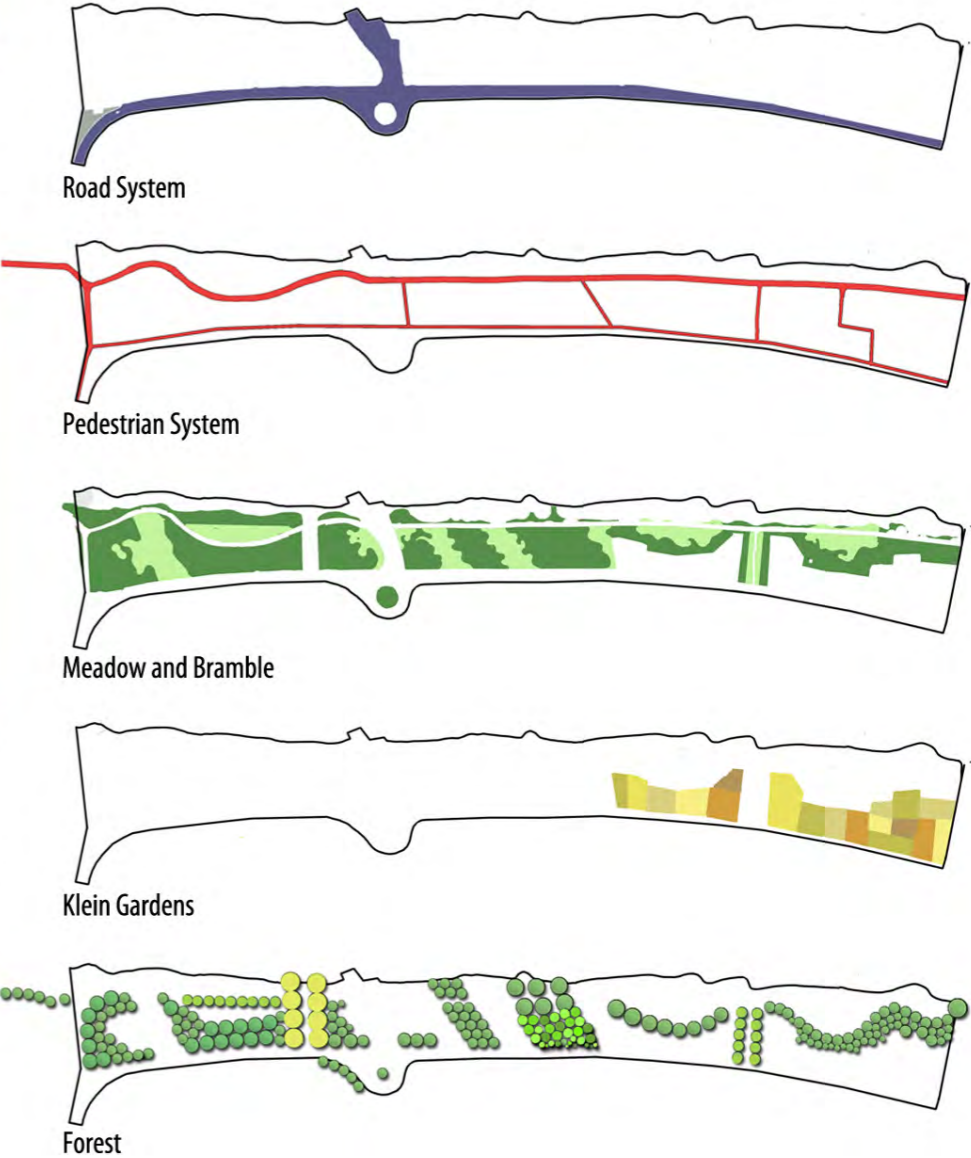




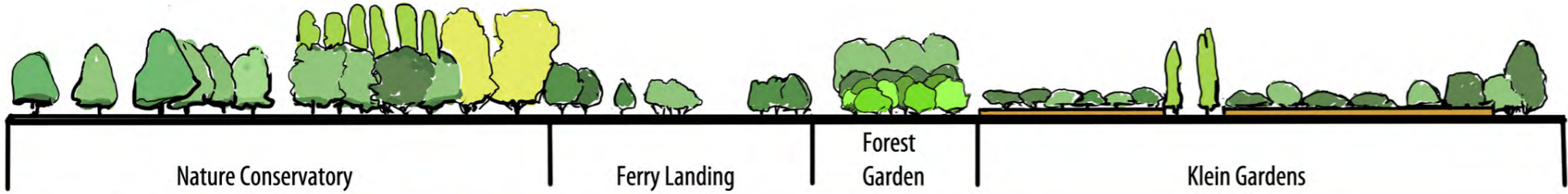
Graurheindorf Rhein Park Ferry Landing



The potentials Graurheindorf are: Ideal destination tourist seeking the countryside, close to the Bonn city center, economic boost from B&B business bracket, undeveloped open space near river and city center, small village atmosphere, cultural identity within village, large tracts of viable cropland near site. Goals 1. Develop an environment which encourages public health 2. Enhance the viability of the ferry landing.



Elevation from Graurheindorf





Perspective #1
 This image offer insight to some of the potential uses of this section of the Rhein park. A casual break from the daily office schedule taking place in a meadow hidden from the noise of the near-by road, but still offering dazzling views of the Rhein River and spring wildflowers.



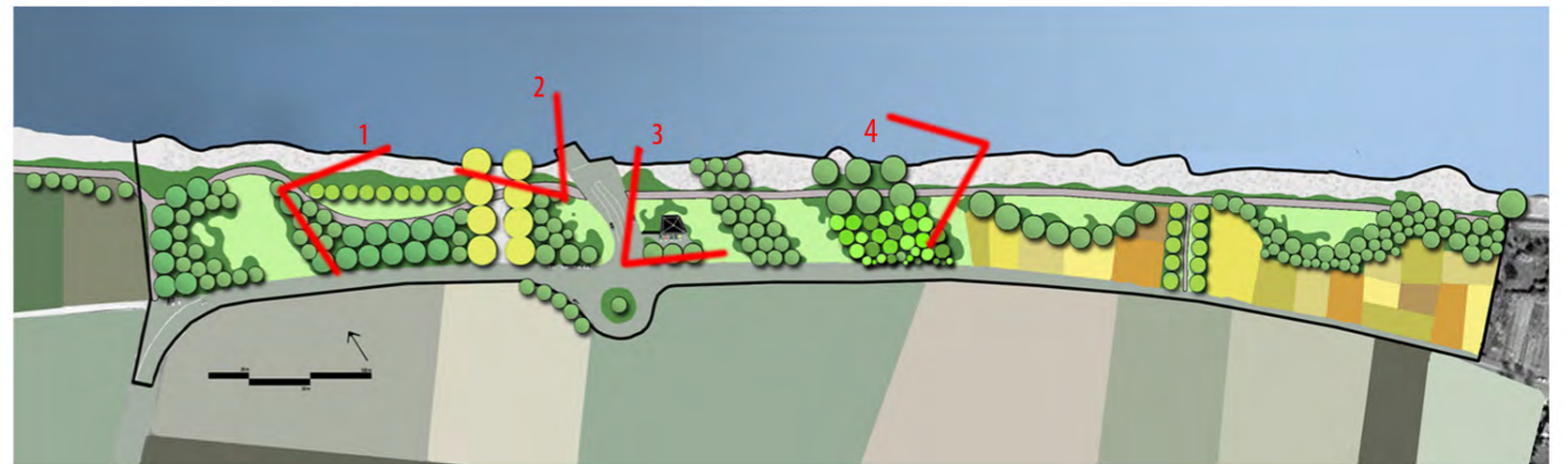
Perspective #4
 Here is a view of the main pedestrian path as you are heading toward the ferry landing. Clusters of trees placed along the banks of the Rhein River create a subtle gateway for the daily joggers a they breal through the line of trees to find a riparian meadow coupled with the kiosk serving fresh beverages and snacks to the commuters waiting for the ferry.

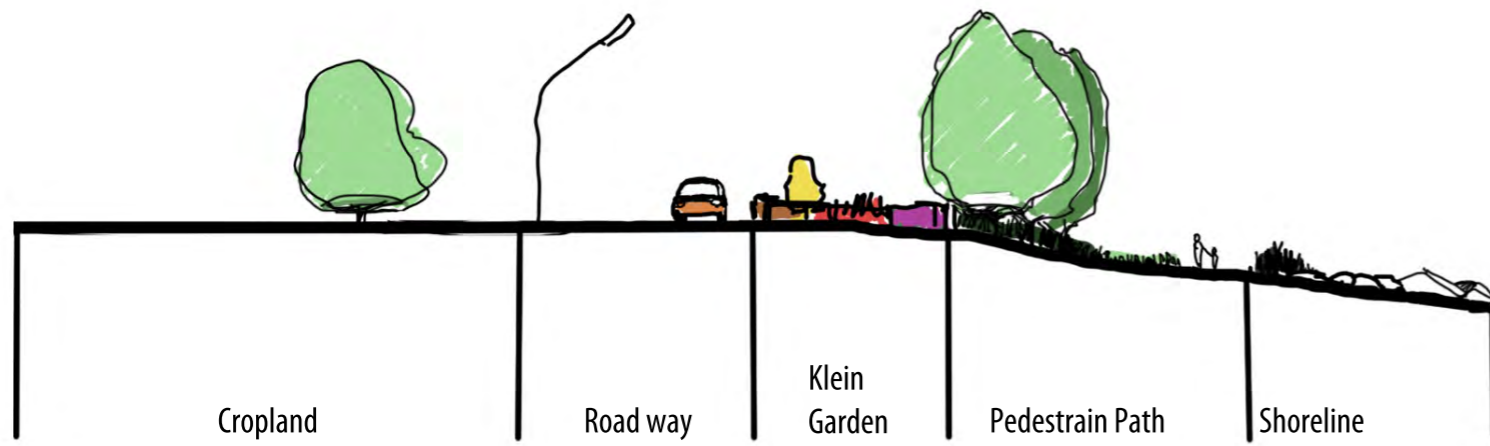


Perspective #2 An Autumn scene, from the shore on the Bonn side of the Rhein looking across the River toward Mondorf.

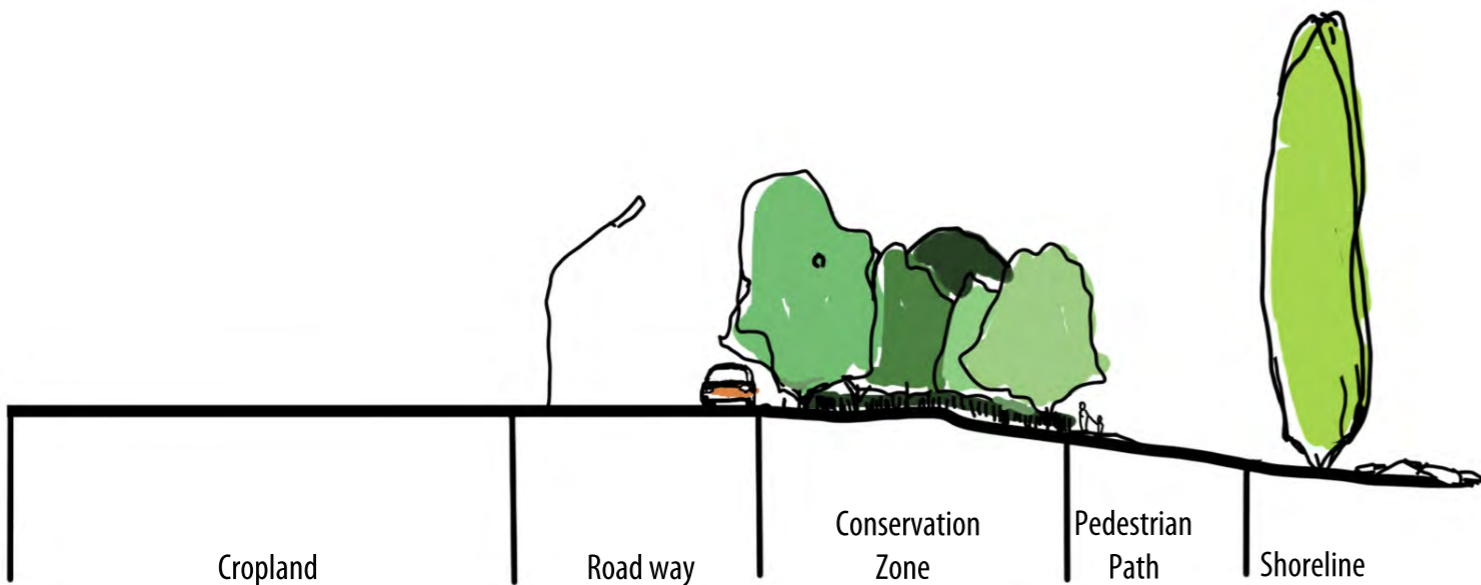


Perspective #3 A view of the kiosk, this quaint shop would act a gathering point for park and ferry users to enjoy view if the Rhein River.

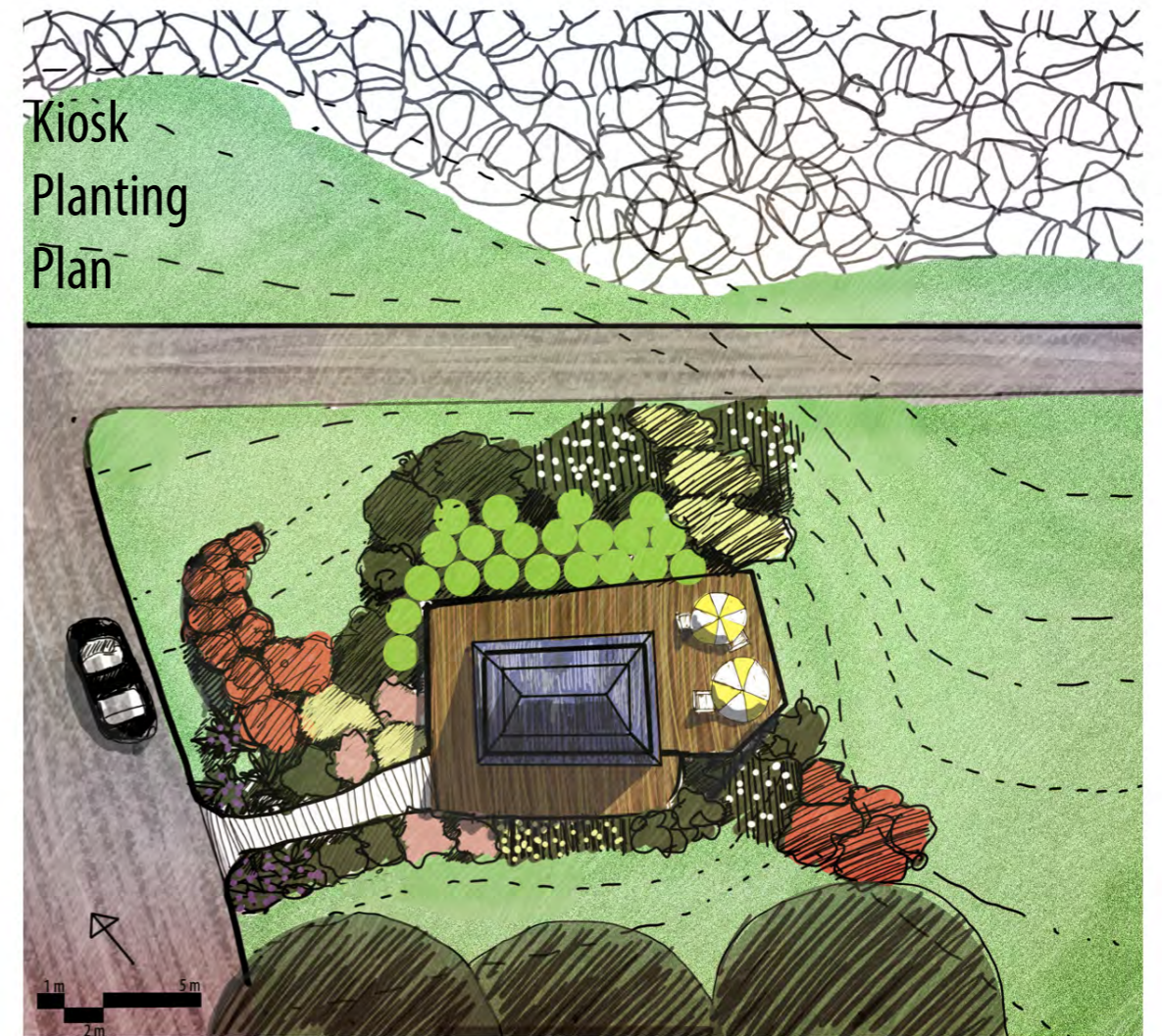
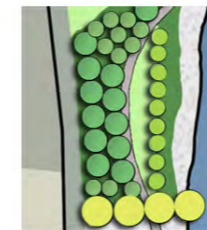
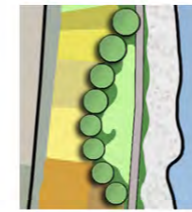
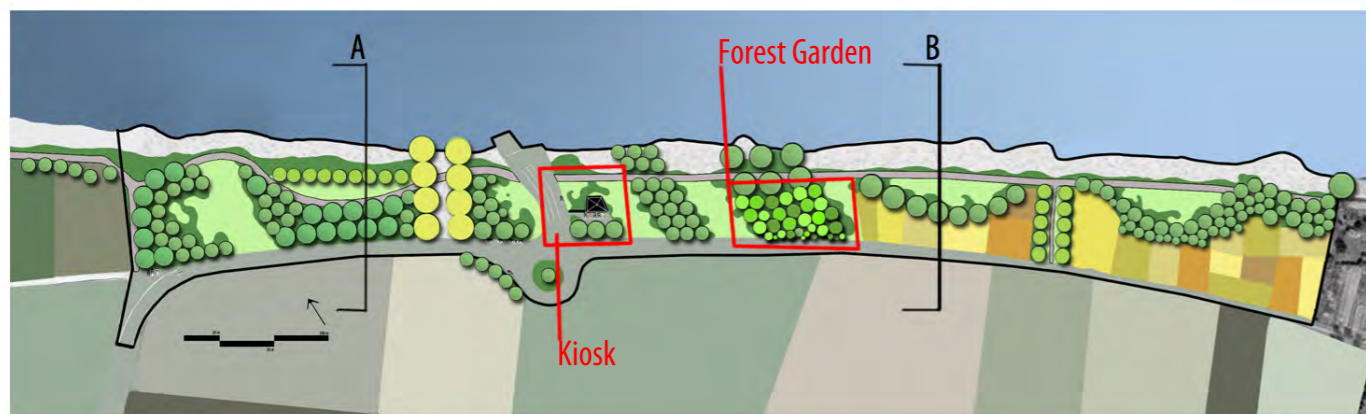




Section A



Section B



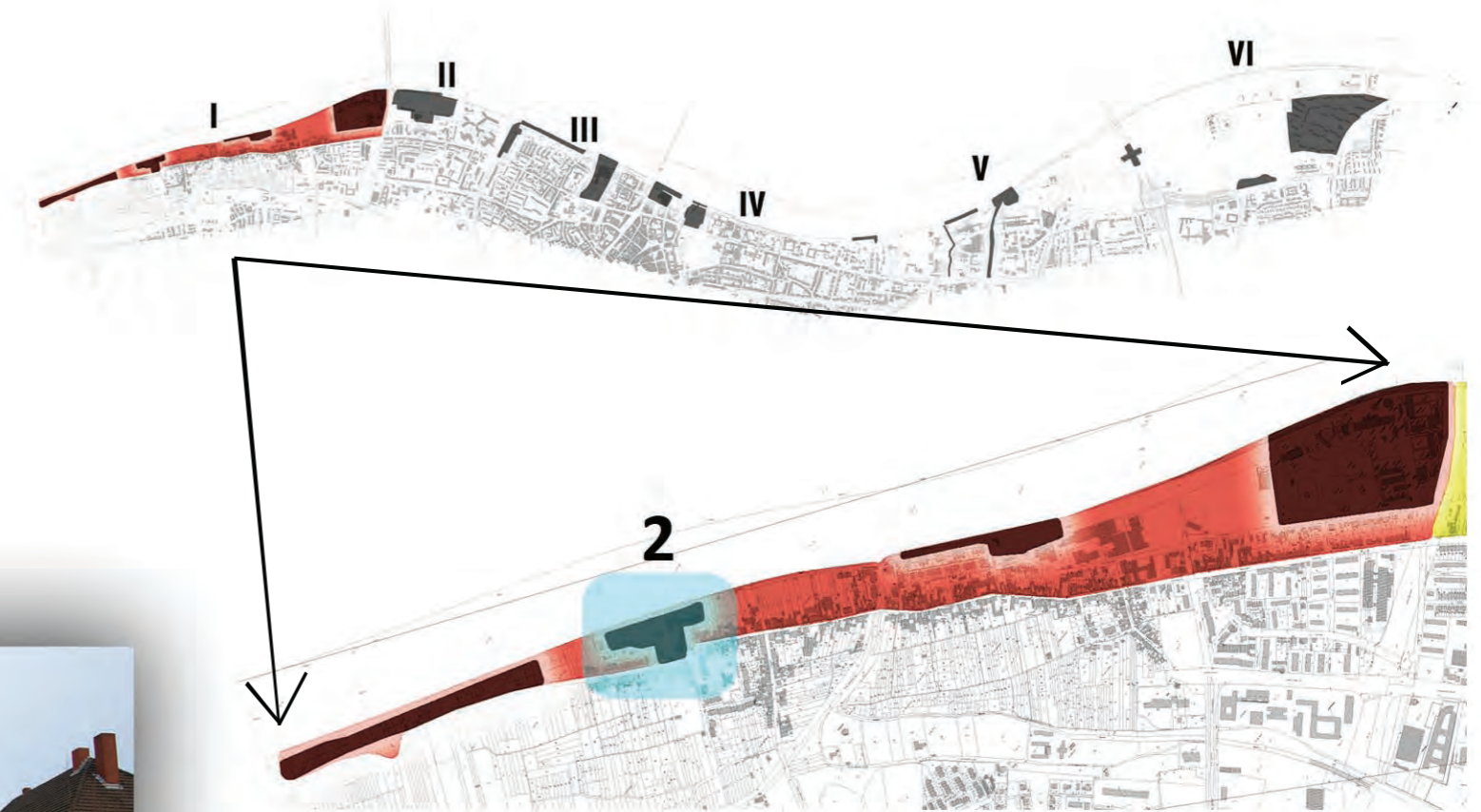
Forest Garden Dynamic System
 The forest garden works in concession with the season and how the three layers of the forest take advantage of amount of sun available. The bulbs and herbs set flower and seed in early spring. This is followed by the larger shrubs: towards the end of April, hazel, hawthorn and wild rose take their turn to use the sunlight before the canopy leafs-up. The canopy will usually close in May, depending on the type of trees forming the highest layer. As the shade deepens, some of the herb layer plants, like the wild garlic, give up trying to catch any sunlight at all. After this, their leaves degenerate and all the energy they manufactured during spring is passed underground to the bulbs and to the eventual seed. The plants must wait

First, the vegetable layer comes into leaf, then the soft fruit and finally the top fruit. Some extra light coming in through the side of this system is also needed. Having at least one of the layers in full leaf throughout the growing season means the garden can make maximum use of the available sunlight in a manner in which a conventional vegetable garden or single story orchard cannot. In this system the growing season starts much earlier in spring, due to the use of perennial vegetables, which have overwintered as mature plants or rootstocks. These mature plants can put on rapid growth early in the spring when annual vegetables are still in seed packets, or at best seedlings in a tray. Taking the idea of stacking different types of plants together to make a use of more space.



Margarethenplatz

Graurheindorf, Bonn, Germany



Location Map

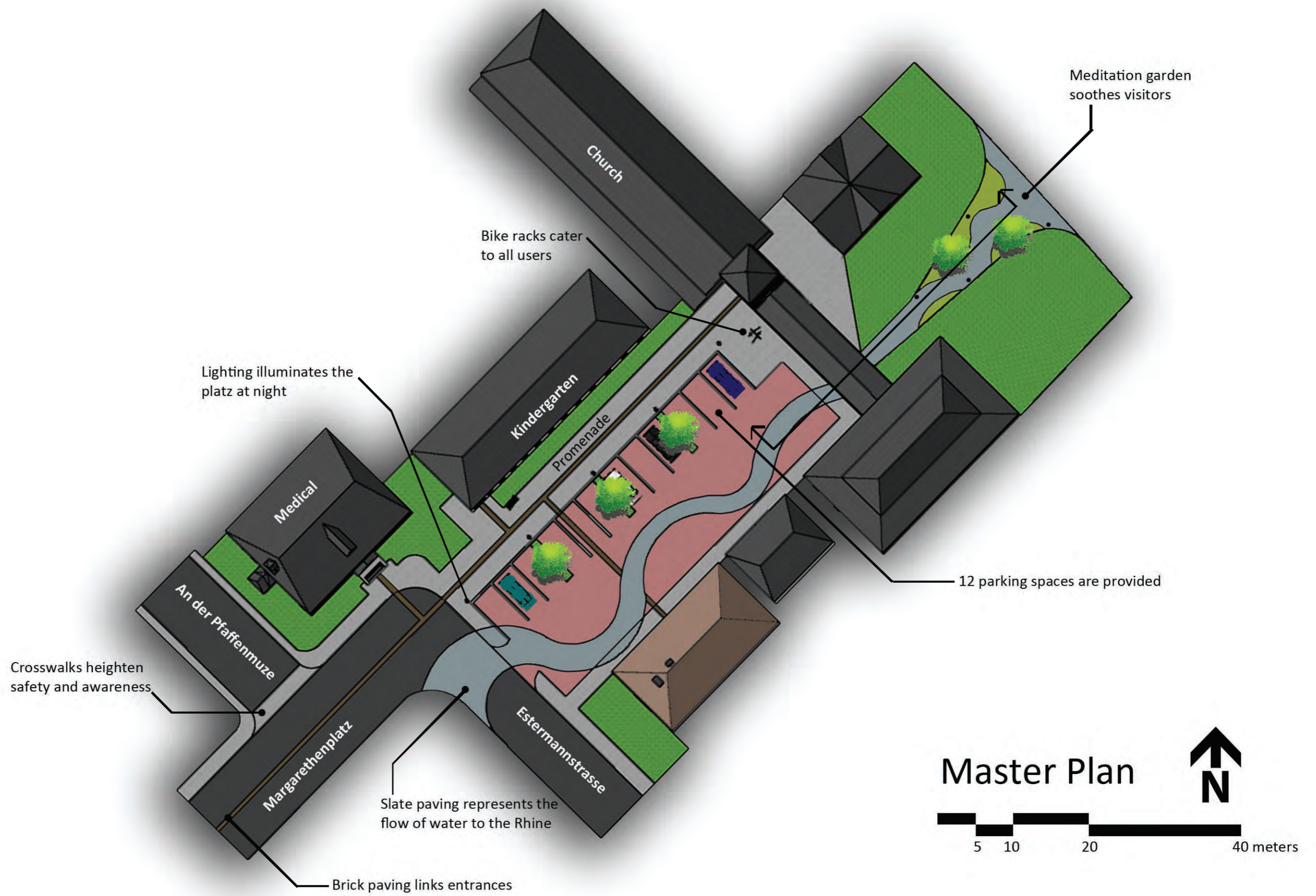
Existing Conditions

The village of Graurheindorf currently lacks a proper town square. A town square, or platz as it's known in German, is vital to the health of a community. A public space such as a platz fosters social interaction, outdoor recreation, and local pride.

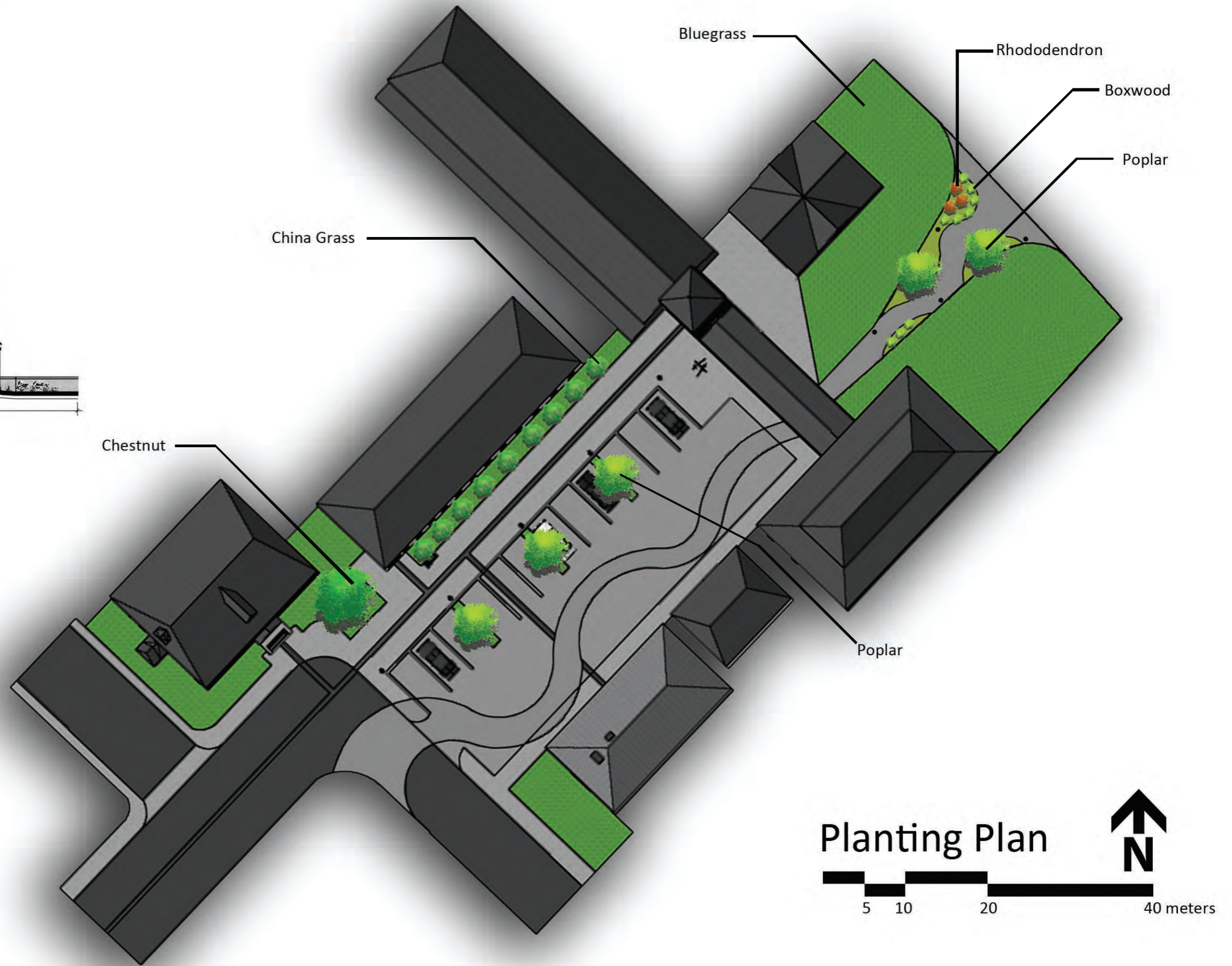
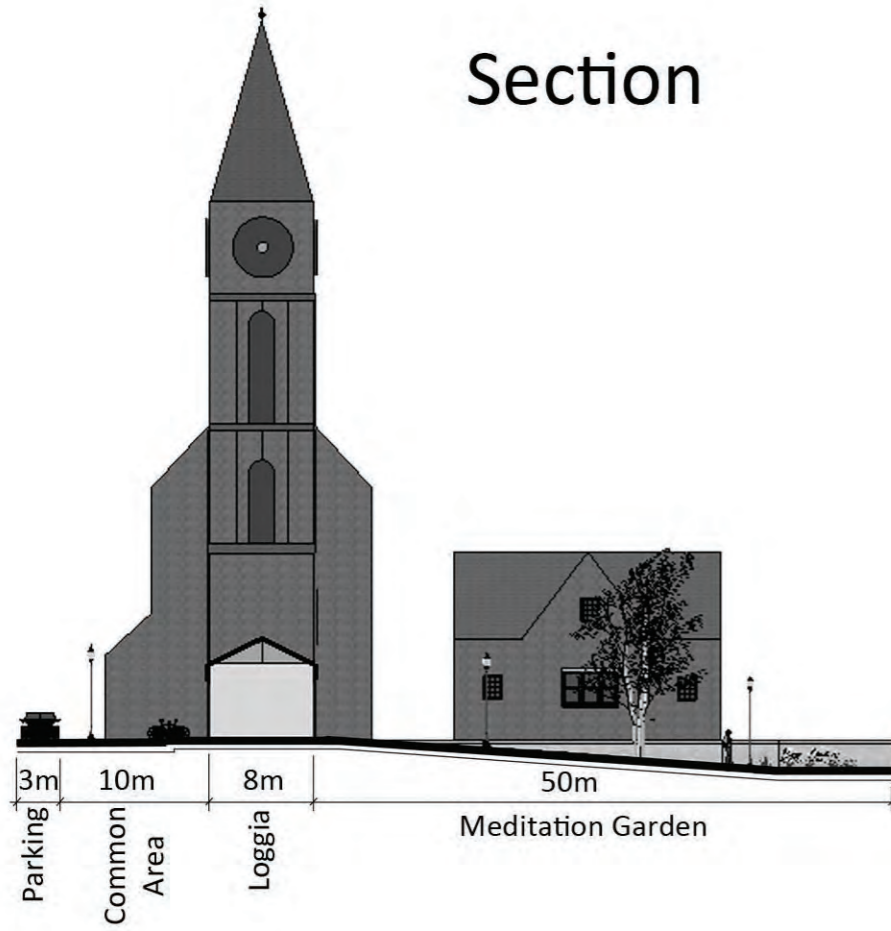
A primary landmark within the community is the church of St. Margaretha. Outside of this beautiful structure is an open space used as a parking lot. When attempting to access the Rhine River, users must pass through this parking lot. There is no clear distinction indicating the primary route to the river. Additionally, there is no public space to hold local events and festivals. Accessibility for all is of high priority because of the close proximity to a kindergarten and a mental health facility.

By renovating Margarethenplatz, the village of Graurheindorf can have a distinct gateway to the Rhine River, a public space to host cultural events and outdoor activities, and a social gathering area that fosters public health by encouraging interaction with other residents and visitors while promoting accessibility for all.





Section



Planting Plan



Promenade Perspective



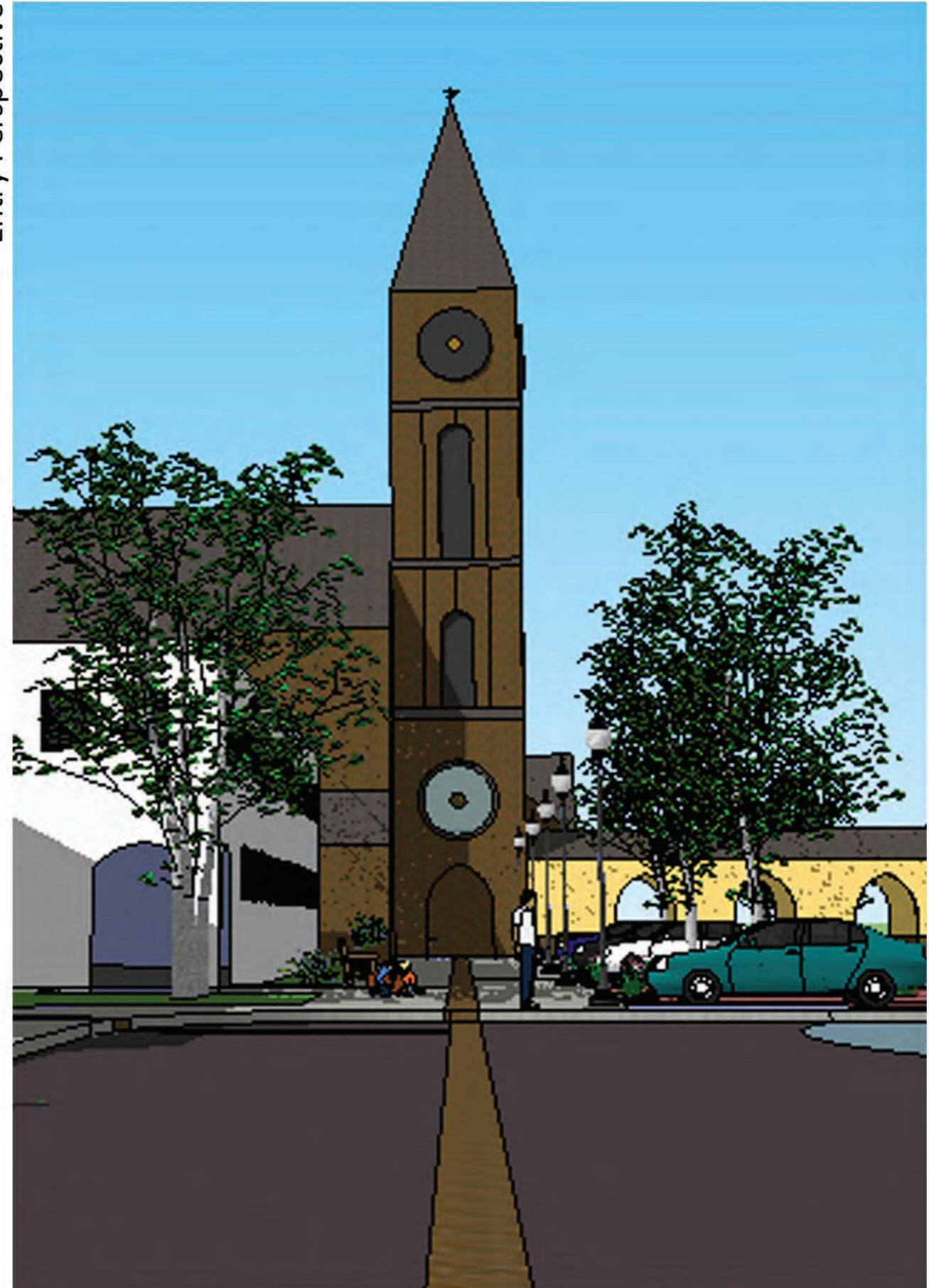
Aerial Perspective



Meditation Garden Perspective



Entry Perspective



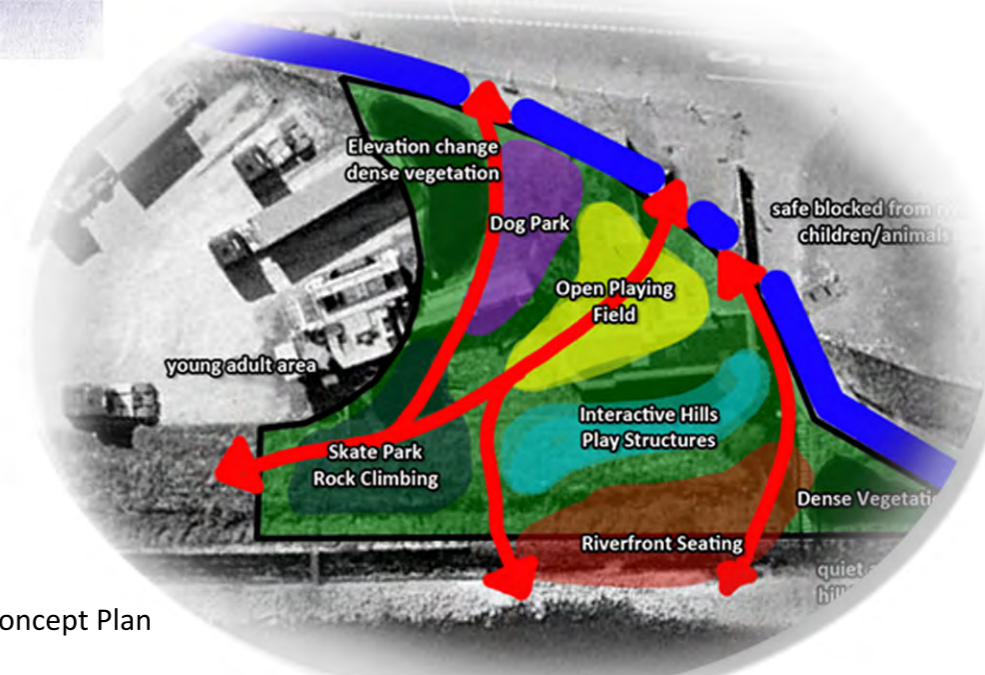
Rheindorf Park



Rheindorf Park is a riverfront green space for the residents of Graurhinedorf as well as the rest of Bonn. Here people of all ages can interact with the landscape and enjoy the scenery. This park is located where the industrial port and residential village meet. The use of harsh and soft materials such as concrete and vegetation create a symbolic transition between these two zones. This park is very unique to Graurhinedorf as it is the only green, open space park located along the river.

Goals:

- Establish space for all ages to interact with the landscape
- Create transition space from industrial to village zones
- Provide views of surrounding landscape
- Create opportunities for physical activity and curiosity



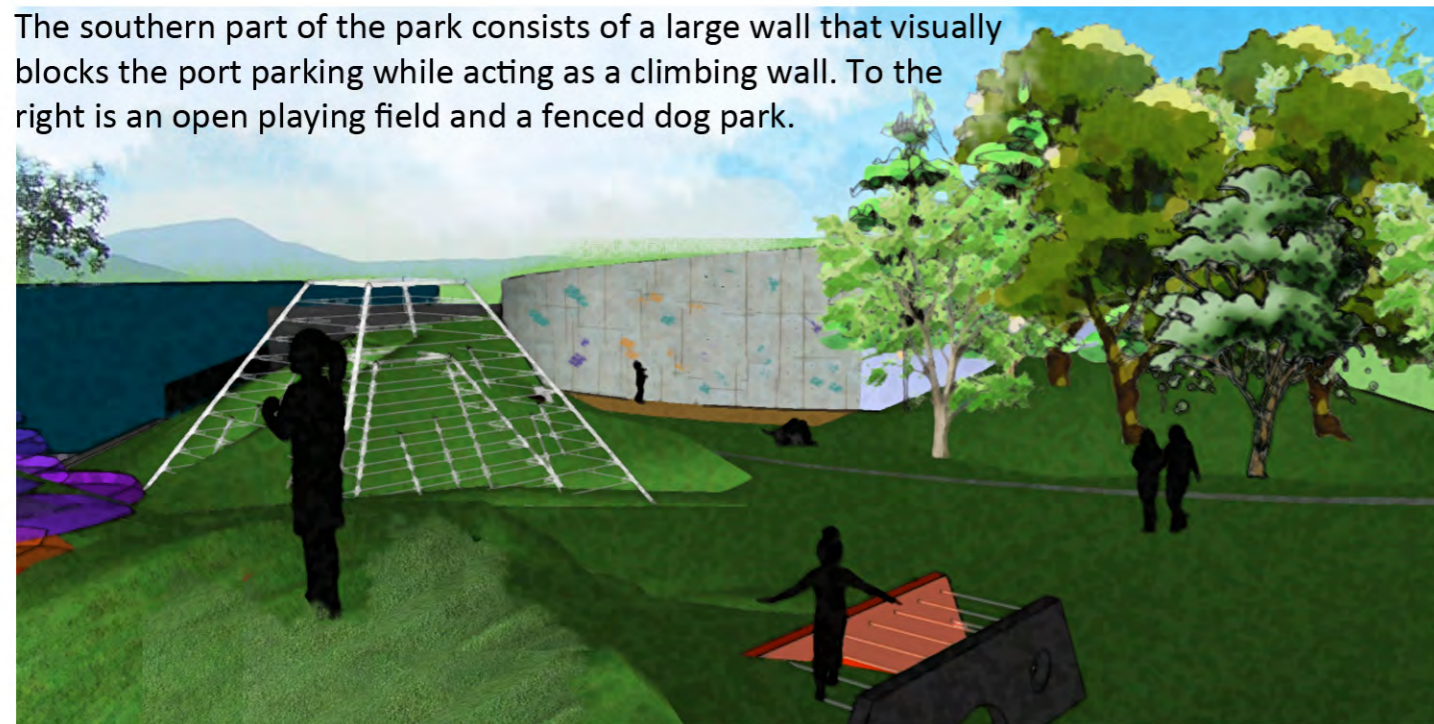


The hills act as a barrier from the river and quiet adult sitting space. For the children, it is an interactive landscape. Built-in play structures allow for climbing and closer interaction. Short in length tunnels allow them to crawl through the hills safely.

The skate course and climbing wall is a space for young adults. It is spaced away from the children's playground and riverfront seating.



The southern part of the park consists of a large wall that visually blocks the port parking while acting as a climbing wall. To the right is an open playing field and a fenced dog park.

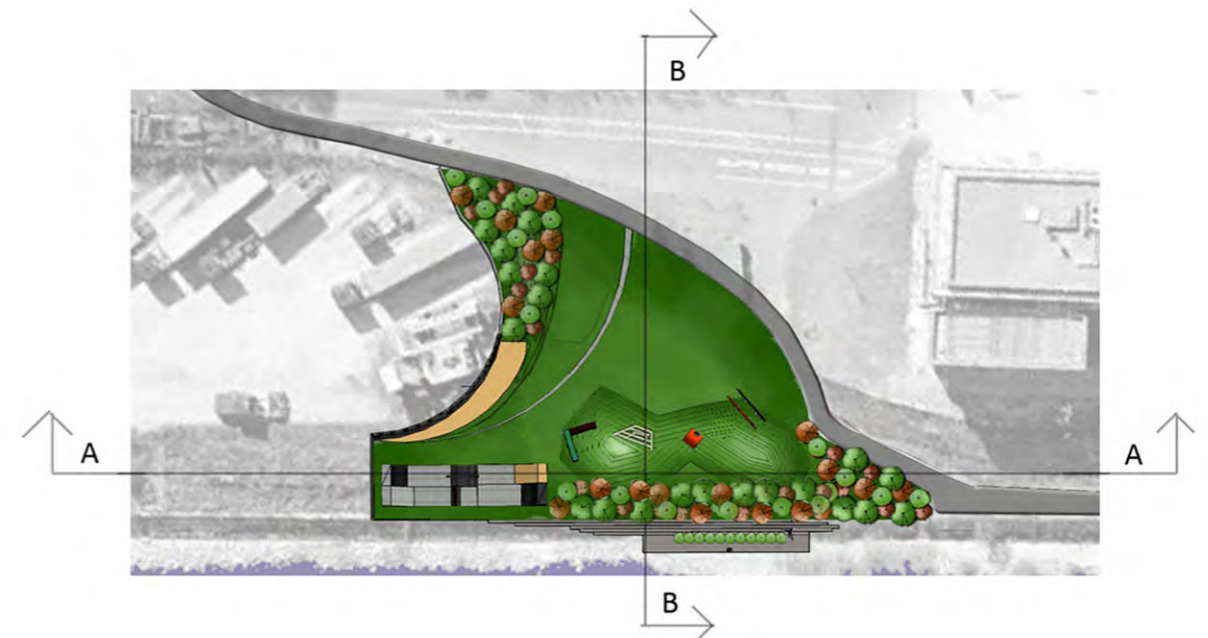


The riverfront seating is a space for relaxation and scenery viewing. Parents can sit here while their children play. It is also spaced far away from the young adult space.



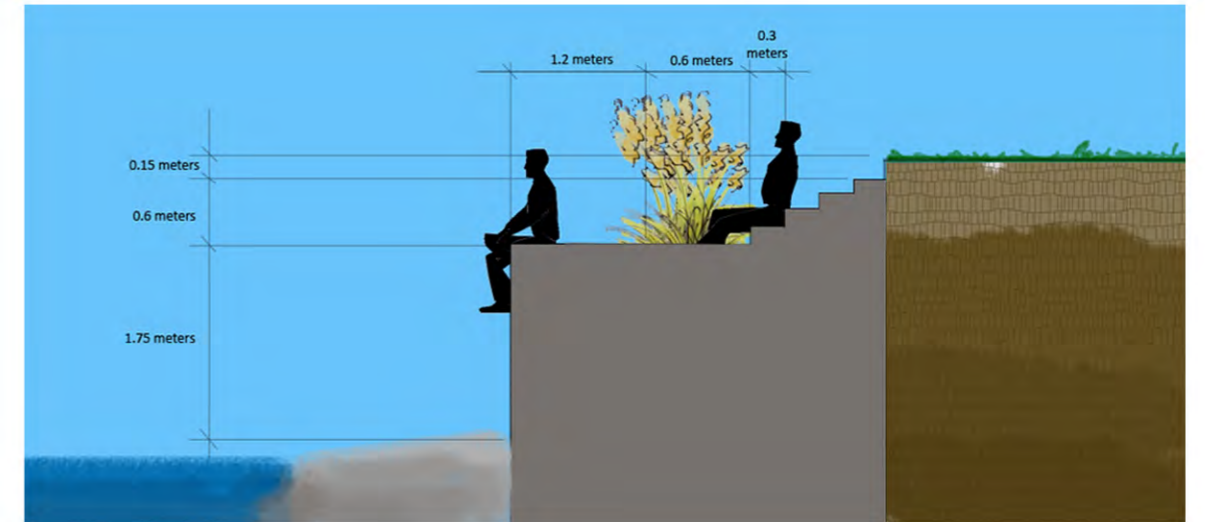


Section AA
NTS

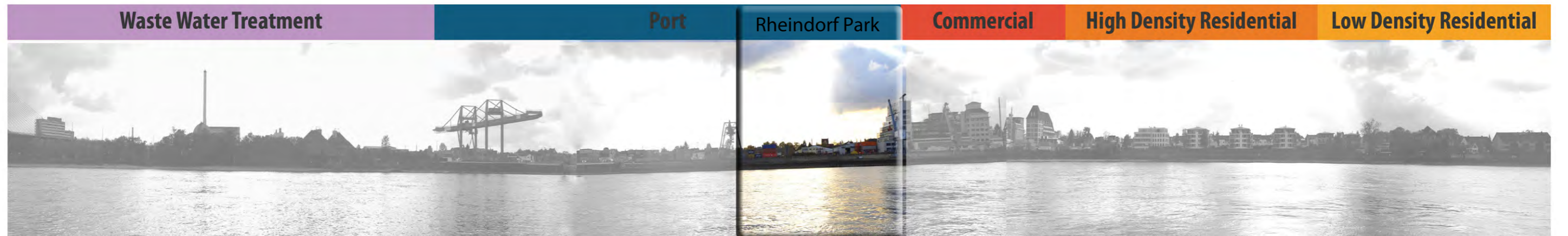


Section BB
NTS

The elevation changes provide breathtaking views of the river, Graurheindorf, Mondorf, the nature preserve and the hills across the river. The steps shown below allow the user to be closer to the water, while keeping a safe distance.



Riverfront Seating Detail





Location Map



Four Hills Kläranlage Education Center

The Saierweg Waste Water Treatment Plant is the largest of Bonn's four treatment plants, processing over 45,000 cubic meters of water daily. The site was extensively designed by RVW Landscape Architects, to include low maintenance vegetation green roofing and two large cone hills that form the focus of the landscape.

The entire plant can be separated into two separate groups of facilities: Those associated with waste water treatment and those dealing with disposal of waste material from the treatment process.

The plant currently hosts several groups of students per month, educating groups from kindergartens to professional engineers.





Childrens' Education Path

The Childrens' Education Path highlights the facilities associated with water treatment, beginning at the Information Center on Salierweg and climaxing at the pinnacle of the hill, then going downhill to the exit.



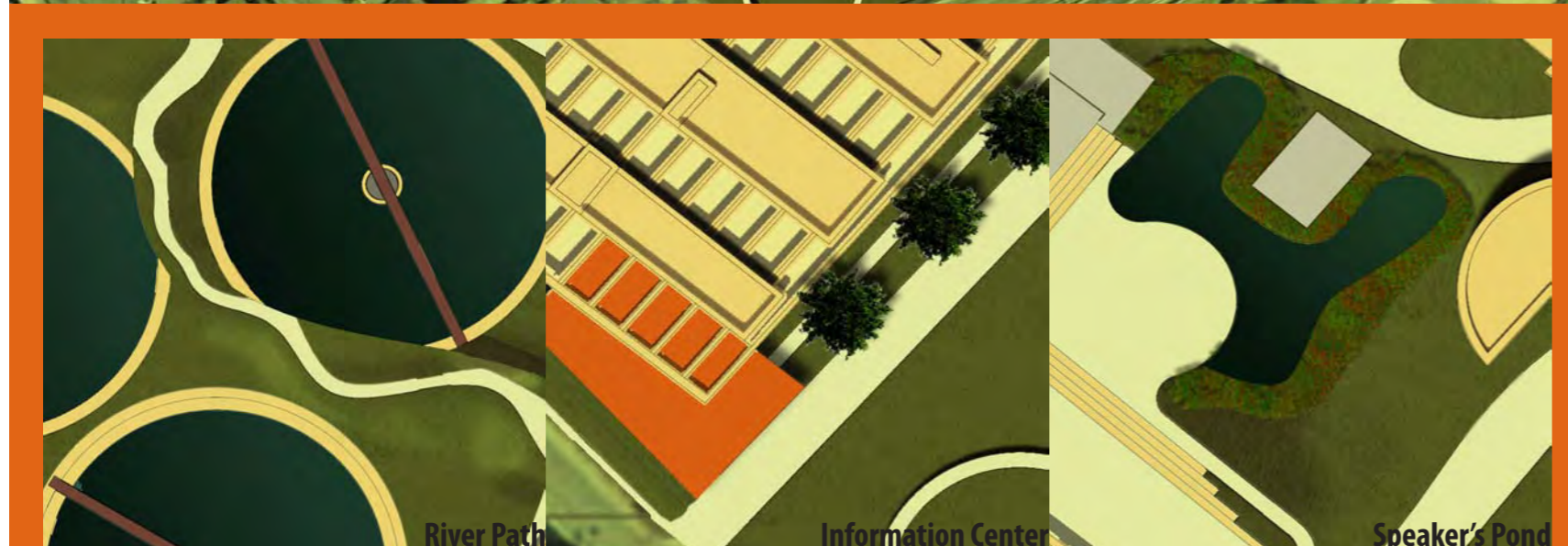
Adults' Education Path

The Adults' Education Path highlights the facilities associated with water treatment as well as the waste disposal facilities beginning at the Information Center on Salierweg, continuing to the pinnacle of the hill, and then following the path to the incineration facilities before exiting.



Buffering

The facilities necessary for waste water treatment are not the easiest on the eyes. However the Salierweg facility has a particularly interesting landscape. Therefore, by strategically buffering portions of the site, views into the site can be enhanced by framing areas that are of higher aesthetic value while blocking the less attractive features.

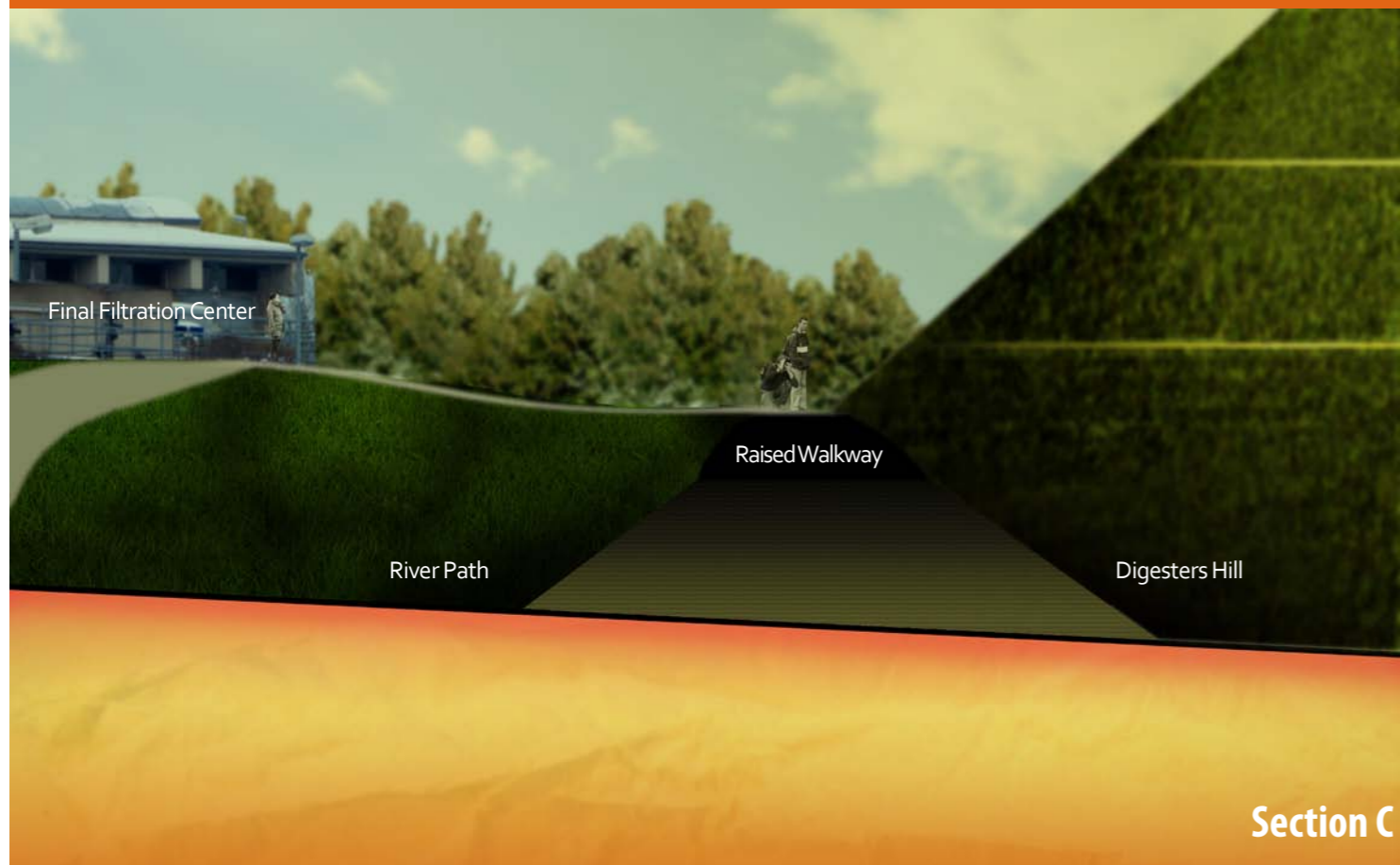


Entrance





Section B



Section C

Information Center

The Information Center serves as the starting point for all tours of the site as well as a multi-functional center that can showcase research pertaining to the field of waste water management. The use of glass or another clear material shows that the site, while dangerous, is very transparent.

Speaker's Pond

The area of Speaker's Pond is currently used as a gathering point in case of fire in the plant. The space now serves as a first stopping point along the tours, for introducing the site. By lowering the area surrounding the speaker's pond, a small room can be created to focus attention on the guide of the tour. Also, this area can be used by plant workers for breaks and gathering.

River Path

The River Path raises the point of view on the site to help explain from a birds-eye the processes of the site, rising from 2.5 meters at the bioreactor to over 4 meters above grade at the final filtration center. The river path also buffers the view from the outside of the site, highlighting the hills and landscape as well as hiding most of the functions of the site.



Site II: Bonn Castell

Detail Design

Introduction

The site design of Bonn Castell focuses on the multi-use function of the area. This particular site was chosen due to the lack of connectivity between the different areas of land use even though they are all open public spaces. The design also focused trying to meet the needs of the current users: fisherman, dog owners, university students and faculty, and local residents.

The design removes the fences that surround the individual sites, opening the land to the river and to the users. Additionally, each of the five major spaces meets a specific user need while connecting to its surrounding functions. All the park areas work together to create a space as multipurpose and as multifunctional as the surrounding city area. Every user will find activities to easily meet his or hers interest and needs.

- 1 Pier Development
- 2 Dog Park
- 3 Healing Garden
- 4 Soccer Field
- 5 Educational Gardens

Ledgend

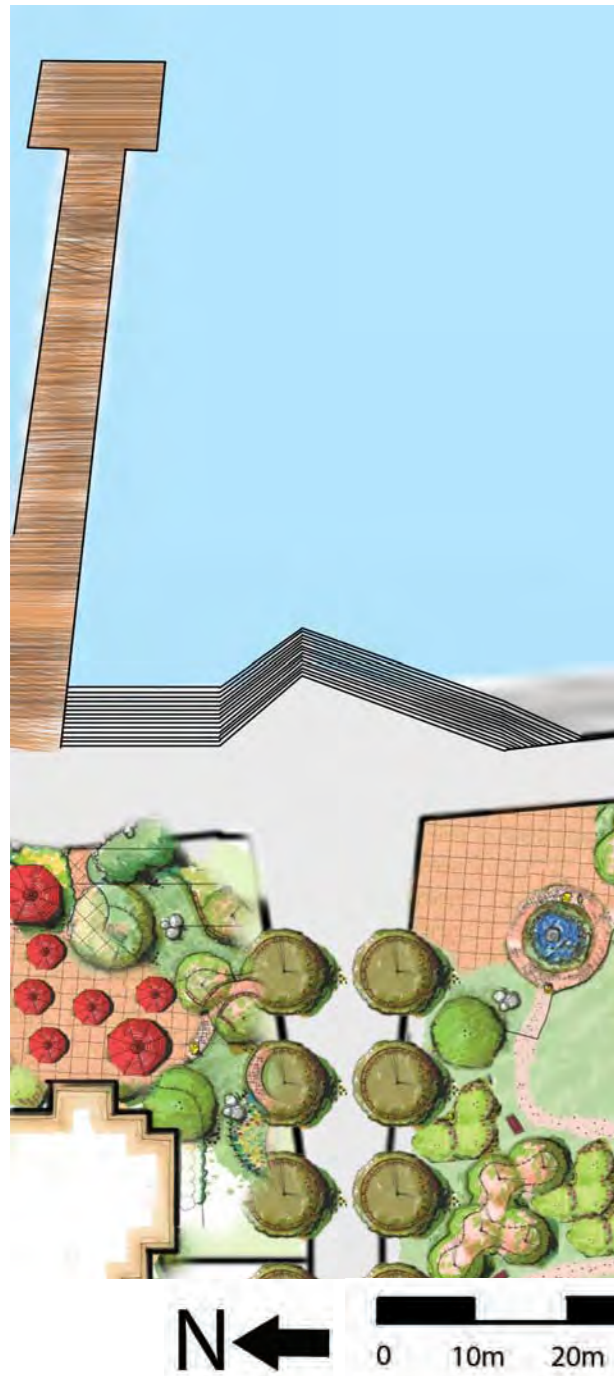
Large Tree	Flower Beds	Fishing Pier	Rock Sculpture
Medium Tree	Water Fountain	Brick Pavers	Test Gardens
Pine Tree	Pond	Stamped Concrete	Existing Trees
Large Shrub	Covered Seating	Gravel Path	Proposed Buildings
Flowering Shrub	Bench	Grass Areas	Stairs to Water

Site Location Map



Master Plan





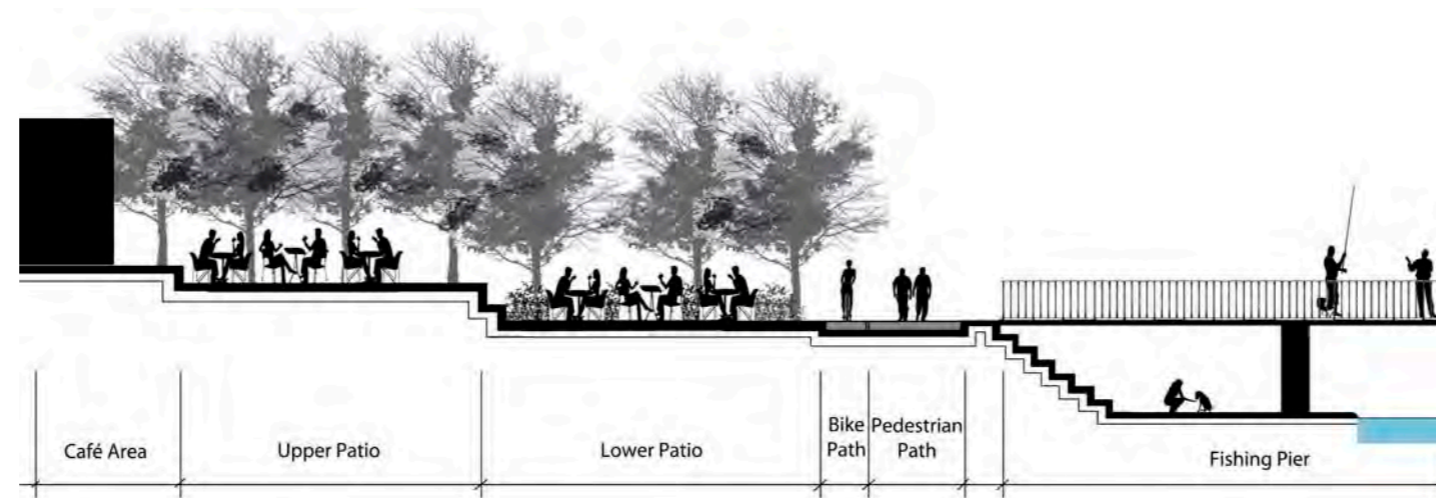
1 Pier Development & Cafe

Waterfront Areas

The waterfront is a very important feature for daily users along the Rhine river. In the Bonn Castell region, there are few people who take advantage of the current amenities along the Rhine. The proposed changes will encourage more usage and provide unique adminties along this section of the Rhine. These features are designed specifically for the local users.

The changes include adding reinforced concrete stairs with a ramp to access the Rhine's shore, building a pier over a current wave breaker to allow better fishing and views for the users and, lastly, adding a small café where people can enjoy a cup of coffee after a long day of outdoor activities. The larger, site-wide, changes to the area include adding allées through the site to increase the access to the river and removing tall, forboding fences and barbed wire.

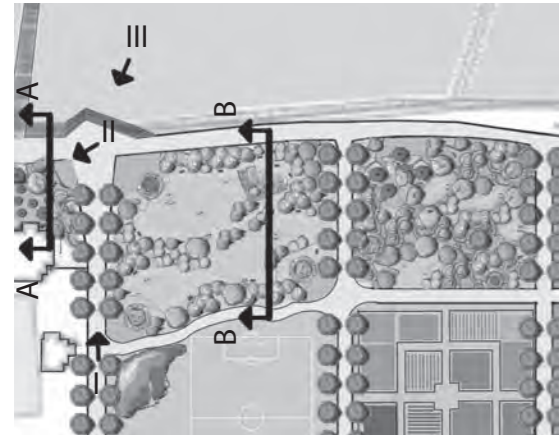
Section A Café to Rhine



Ledgend

	Large Tree		Flower Beds		Fishing Pier		Rock Sculpture
	Medium Tree		Water Fountain		Brick Pavers		Test Gardens
	Pine Tree		Pond		Stamped Concrete		Existing Trees
	Large Shrub		Covered Seating		Gravel Path		Proposed Buildings
	Flowering Shrub		Bench		Grass Areas		Stairs to Water

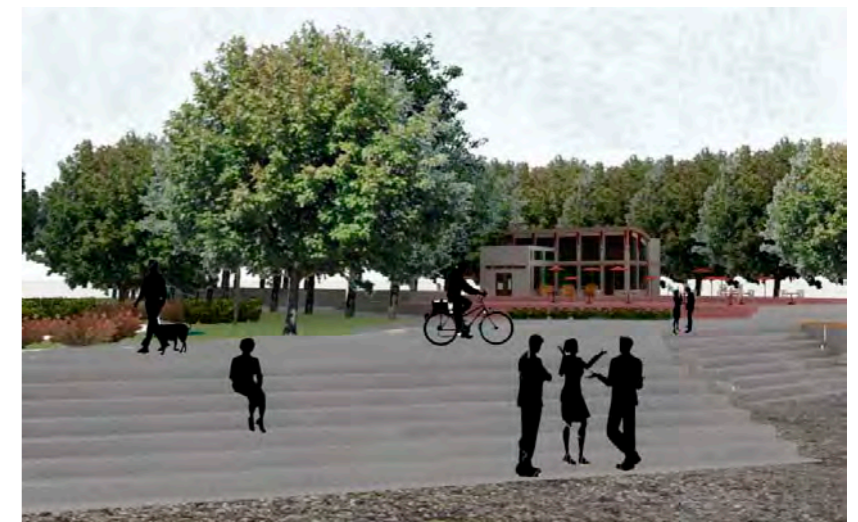
Location Map

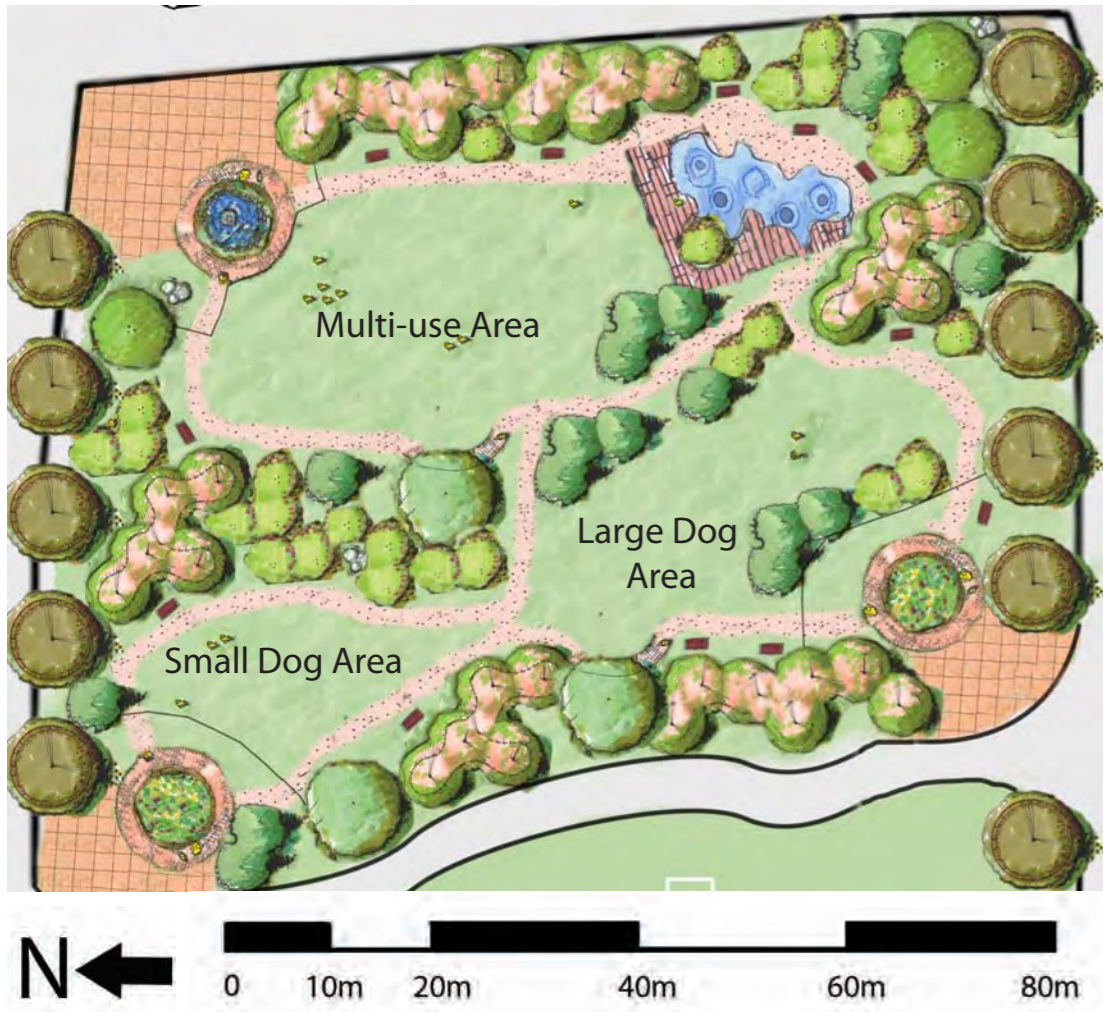


Presecitve II: The Café



Presecitve III: Waterfont





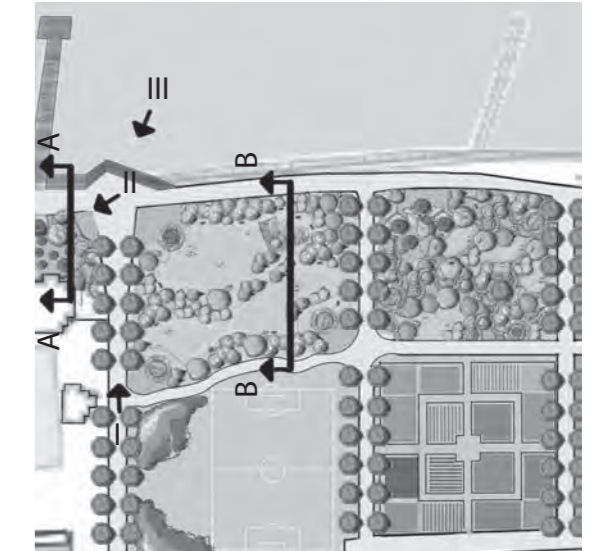
Bringing People and Animals Together

Currently, dogs are not allowed in many of the green spaces near and along the Rhine river even though there are many dog owners in the area. To include the forgotten users, a dog park is the perfect solution. Dog Parks allow owners and dogs to socialize. The proposed design has three double-gated entrances, which allow dogs to relax in an unleashed environment before entering the larger park. Additionally, the park has three spaces: Multi-use, Large Dog, and Small Dog. Each space opens into another, yet is separated by a tree and shrub barrier. Each space allows dogs to exercise and play without the worry of creating trouble for non-dog owners. Some of the site features include, a dog drinking fountain, dog bathing area, pond, and canine feces disposal bins regularly placed throughout the park.

Ledgend

- | | | | | | | | |
|--|-----------------|--|-----------------|--|------------------|--|--------------------|
| | Large Tree | | Flower Beds | | Fishing Pier | | Rock Sculpture |
| | Medium Tree | | Water Fountain | | Brick Pavers | | Test Gardens |
| | Pine Tree | | Pond | | Stamped Concrete | | Existing Trees |
| | Large Shrub | | Covered Seating | | Gravel Path | | Proposed Buildings |
| | Flowering Shrub | | Bench | | Grass Areas | | Stairs to Water |

Location Map



Section B Dog Park























3 Healing Garden

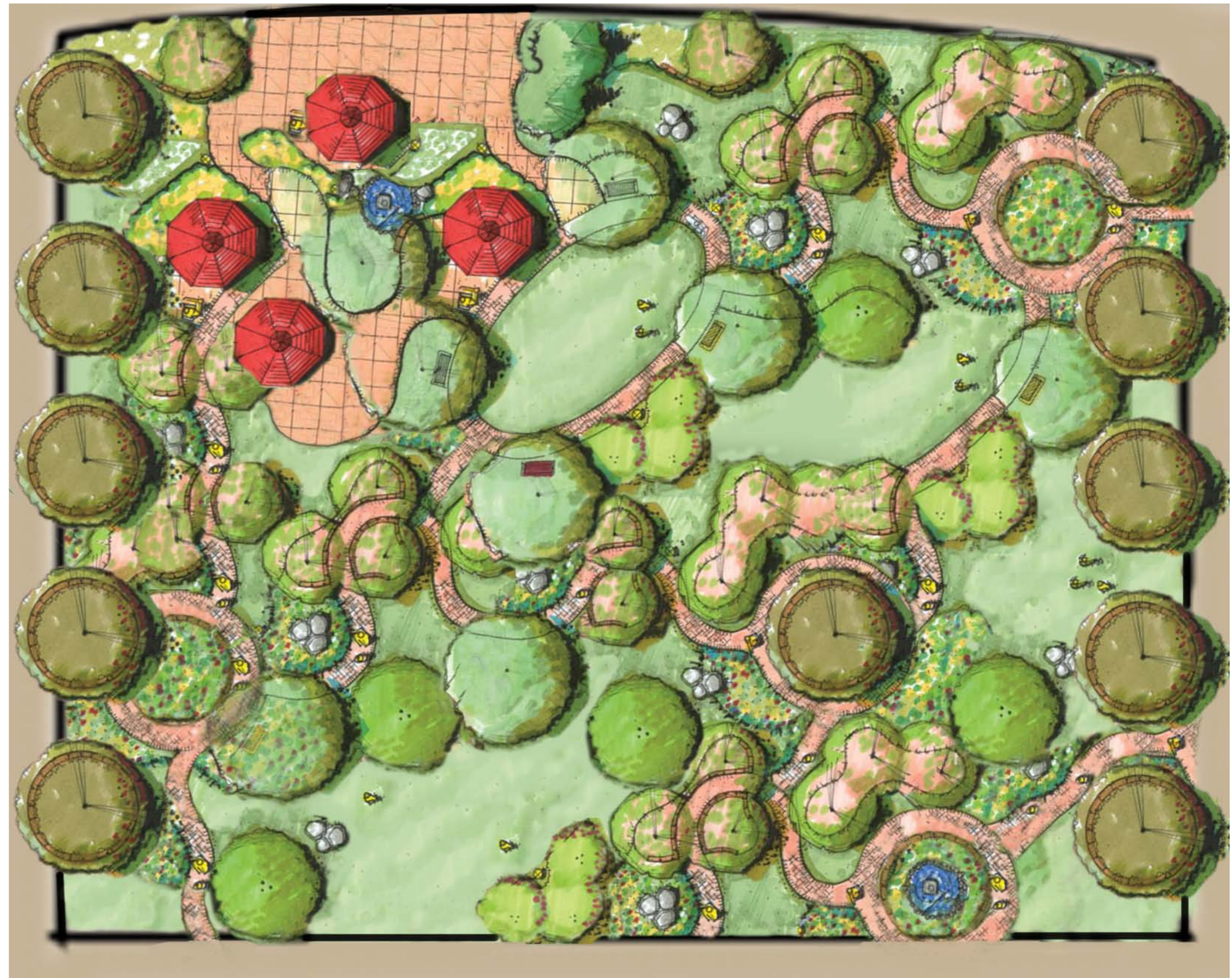
Health Everyday

The Healing Garden is designed with the desire of health and relaxation in mind. The plan includes winding paths for meditation, a variety of flower and plant types to create tranquility and comfortable seating for contemplation. Over all the healing garden can relieve stress by providing an exscape from everyday woes.

The proposed Healing Garden further infiltrates the idea of a multi-use space for the residents of the area by allowing a fourth component to enter the total site design. In all, the master plan includes active and passive recreation, education, social benefits and healing.

Ledgend

- | | | | |
|---|------------------|---|--------------------|
|  | Large Tree |  | Flower Beds |
|  | Medium Tree |  | Water Fountain |
|  | Pine Tree |  | Pond |
|  | Large Shrub |  | Covered Seating |
|  | Flowering Shrub |  | Bench |
|  | Fishing Pier |  | Rock Sculpture |
|  | Brick Pavers |  | Test Gardens |
|  | Stamped Concrete |  | Existing Trees |
|  | Gravel Path |  | Proposed Buildings |
|  | Grass Areas |  | Stairs to Water |



Roman Alleé and Park

Goals

Improve connections between the riverfront and the city of Bonn by:

- Opening up site lines visually and physically
- Creating nodes and attractions

Emphasize Bonn's title as one of the worlds most sustainable cities by

- The use of materials and ecological considerations

Maintain a healthy and active community by:

- providing space and means for both active and passive recreation

Create a space that enhances the aesthetic experience:

- Through landscape and design features appropriate to the site

Uphold and improve the safety conditions

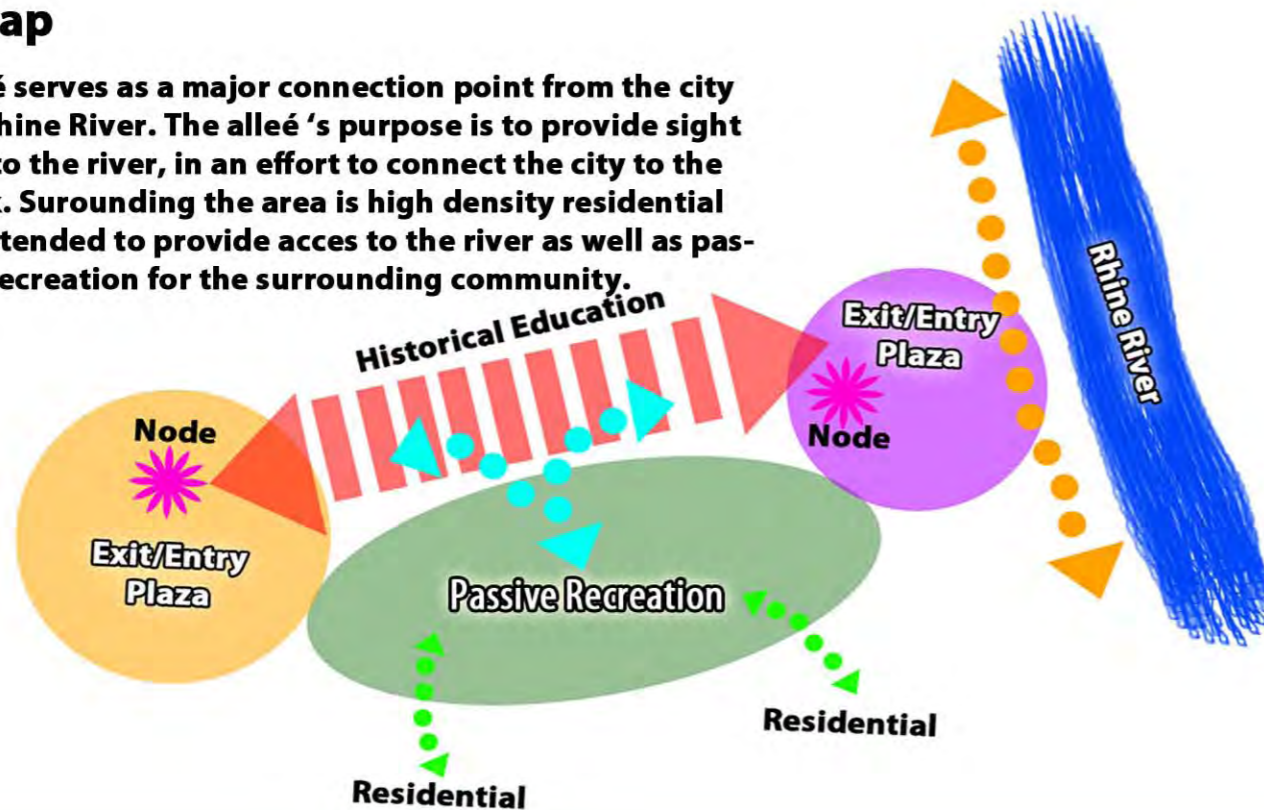
- With lighting, ramps, and materials

Create a unique Identity for the culturally and historically significant area by:

- Emphasizing the Roman History that surrounds the area of the site.
- Creating a link to the river front park and Beethoven Hall

Concept Map

The Roman Alleé serves as a major connection point from the city of Bonn to the Rhine River. The alleé's purpose is to provide sight lines and views to the river, in an effort to connect the city to the Rhine River park. Surrounding the area is high density residential and the site is intended to provide acces to the river as well as pas-sive and active recreation for the surrounding community.



Existing Site



•Currently the Roman Alleé and Park are underutilized and the design is not adequate.

•The connection from the city to the Rhine, which is the most important function of the site, is very weak and lacks in character.

•The park situated to the South is highly underutilized, yet has the potential to serve as a community space for the residents of the area.

•Trees, shrubs and other overgrown forms of vegetation block the site line to the river and inhibit the intended function of this corridor.

Safety is also a concern in this area, especially in the evenings because of inadequate lighting.

Context Map

The Roman Alleé and Park is located on the North side of the Beethoven Hall and spans from Romerstraße to the Rhine River.



Masterplan



The plan has three distinct uses:

The Alleé functions as a large linear space that draws people from the city towards the river. It is meant to provide an open, uninterrupted, site line towards the Rhine.

The wall along the north side of the Alleé features a Roman arcade, reminiscent of the areas past, that is intended to showcase the history of Roman technology through stone reliefs.

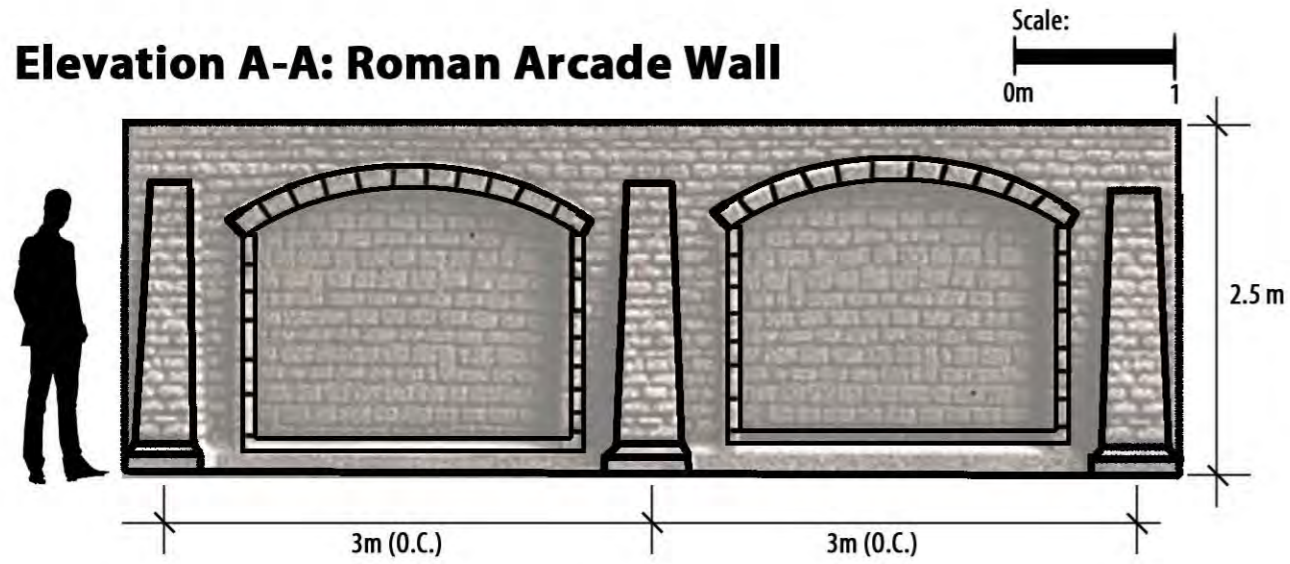
The park provides a space for passive recreation and gathering. Unlike many of the other public spaces near the Rhine, the park here is much more secluded and personal. The nearby residents of a high-density housing complex are most likely to take advantage of this open space, allowing it to serve as a lawn.

The plazas at the east and west ends of the site serve as multi-use areas that are intended to be gathering spaces, entry/exit points to the city, and well known nodes.

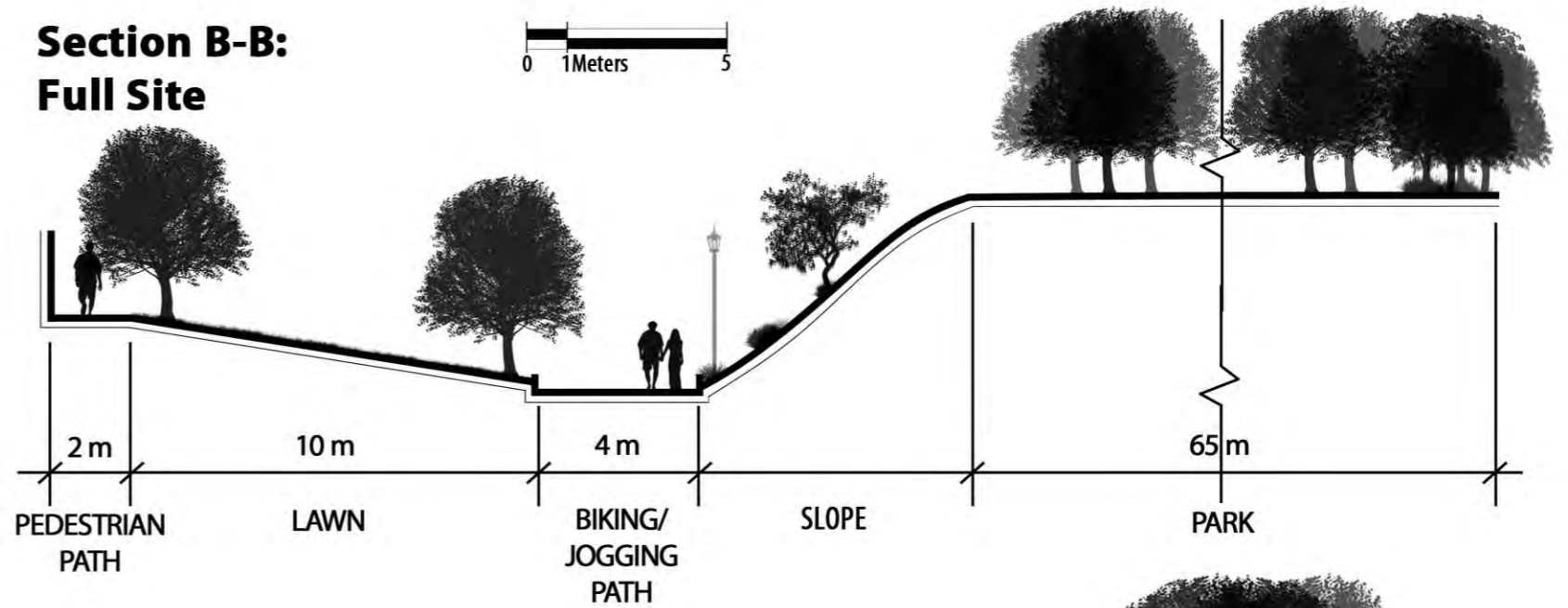


Sections and Elevations

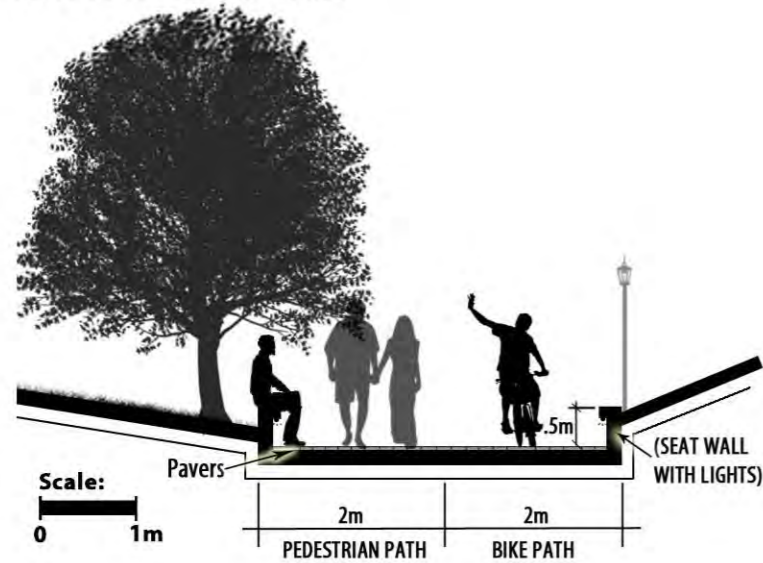
Elevation A-A: Roman Arcade Wall



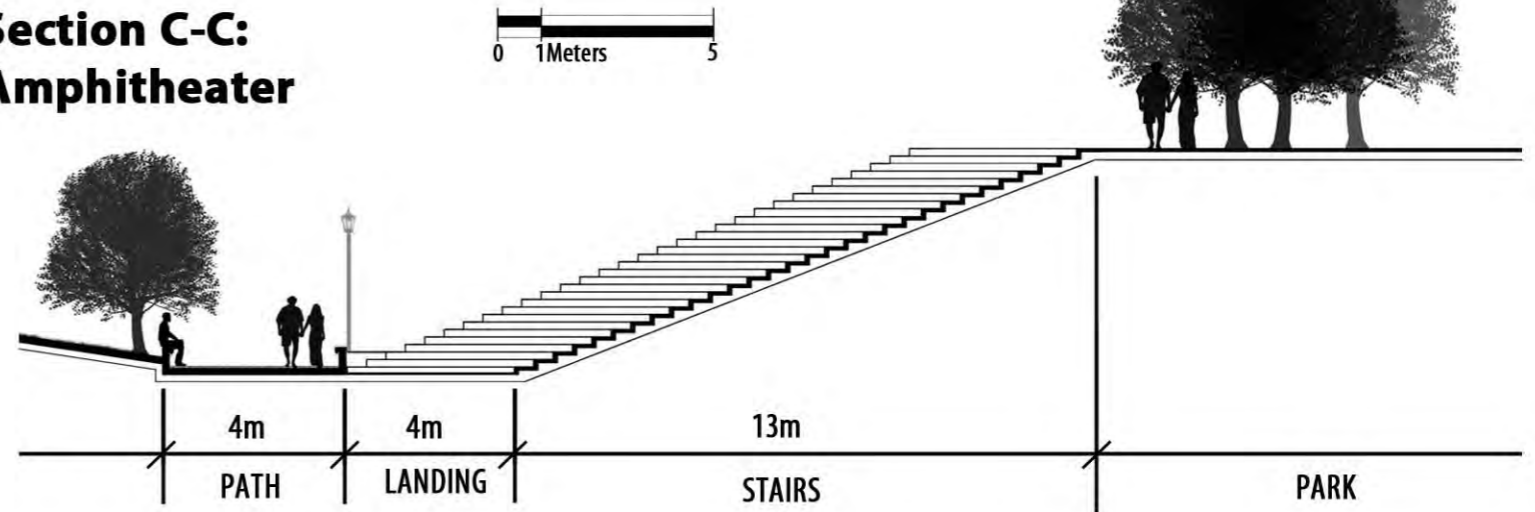
Section B-B: Full Site



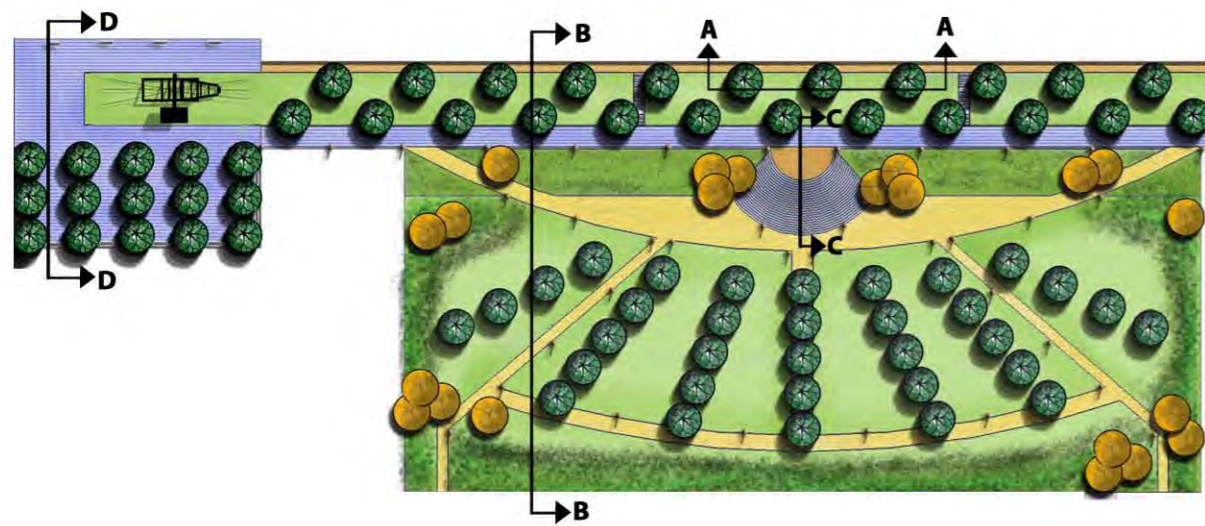
Detailed Section B-B : Path



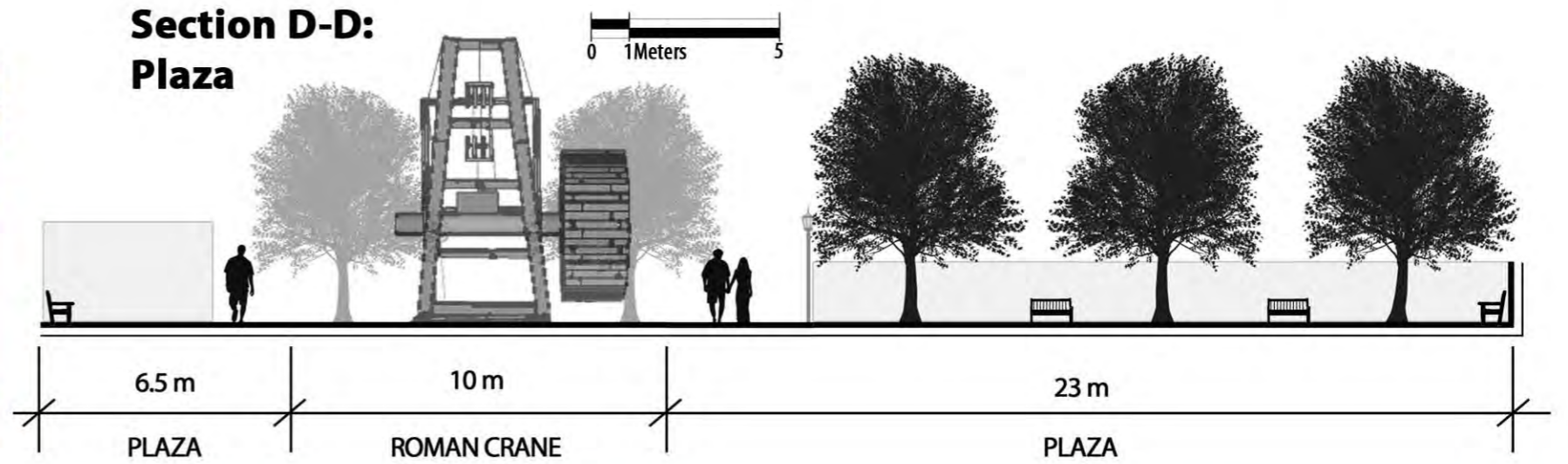
Section C-C: Amphitheater



Plan



Section D-D: Plaza



Perspectives



View of Alleé, with the Roman Crane, from the West Plaza.



View of the West Plaza



View of the Amphitheater from the Alleé.



View of the Alleé towards the Rhine.

Key Plan:



- Perspectives A and D emphasize the ability of the space to draw users towards the river, strengthening the connection between Bonn and the Rhine.
- Perspectives B and C demonstrate the various uses the site has. In addition to being a vital connection, the space features various important destinations of its own.





Mission Statement:

To create a strong connection between the city of Bonn and the Rhine River frontage while promoting safety, community identity, increased aesthetics, plus a healthy and active lifestyle for the residents and visitors of Bonn.

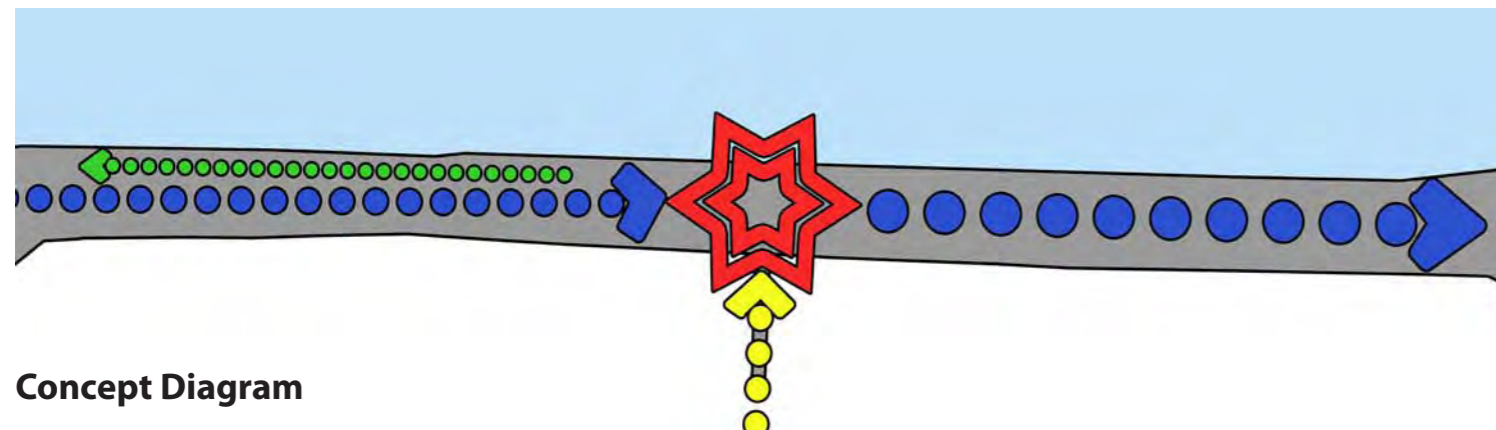
Existing Conditions:

The path system along the Rhine currently provides a very effective route for travelling by foot or bike along the river. Effective transportation is also accompanied by some mature trees and decently sized plots of turf grass. These qualities are essential building blocks to creating a space that is effective and enjoyable. One thing that the space is lacking is a sense of place. There are no destinations along the path that might entice people to use it more often. Rather than being used strictly as a route from point A to point B, its utility and allure should be enhanced so that the experience draws people to the Rhine River.



Concept:

To connect residents and visitors to the Rhine River with the allure of a rich musical tradition that resides within Bonn. Users will be able to experience music in a fun, educational, and interactive way. The presence of soft music and playful lights will soothe and inspire people as they walk, bike, or sit in a place that is inherently rich in culture. While providing appeal for recreational walkers and families, this area is still serving as a major corridor for travel along the Rhine for bikers, walkers, and joggers alike. A separate place for each use, and a new experience in every place. The Bonn Music Park will provide enjoyment and fulfillment for a diverse community by offering so many unique experiences.



Concept Diagram

Goals & Objectives:

Create a unique identity for the culturally and historically significant area around Beethoven Hall.

- Create a sense of place for the areas surrounding Beethoven Hall.
- Create connections to Beethoven Hall along the Rhein River.

Improve and create connections between the riverfront and the city.

- Create new connections, both physical and visual.
- Use design elements and site characteristics to link users to the riverfront.

Maintain a healthy and active community for the users.

- Preserve the existing pedestrian and bicycle corridors.
- Encourage walkability and exercise by improving access to the riverfront.

Uphold and improve the safety conditions for users.

- Provide adequate lighting and signage for wayfinding and safety.
- Provide a barrier, either natural or engineered, between the water and pedestrian / bike corridors.
- Clearly define separate areas for specific uses such as walking, biking, and sitting.

Create a space that enhances the aesthetic experience of the users.

- Preserve and supplement natural vegetation where possible.
- Keep site lines to the river open.

Bring value to the site to encourage investment.

- Create a better connectivity within the areas.
- Provide better wayfinding methods.
- Potential for advertisements.

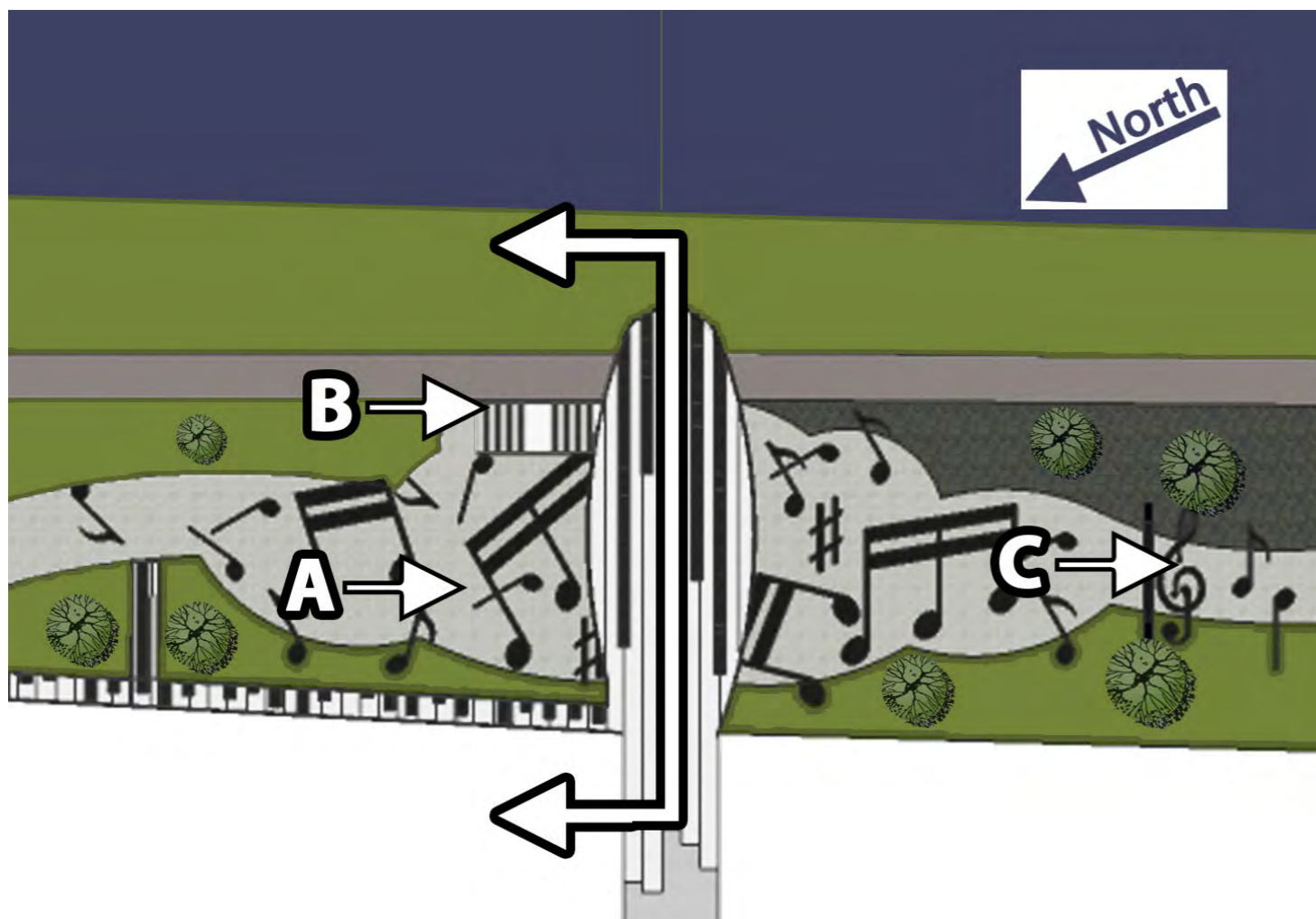
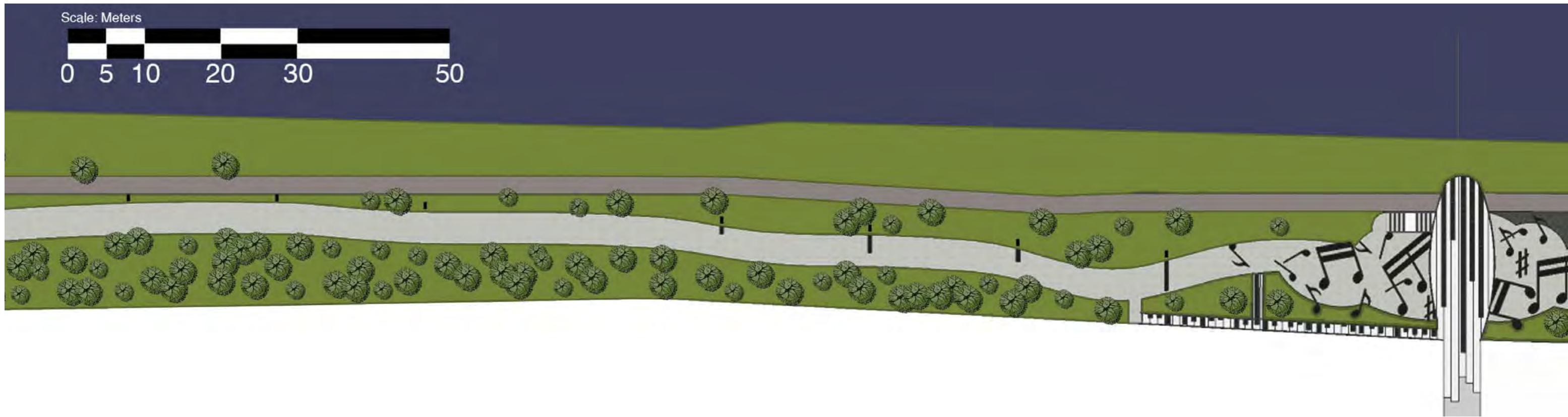
Emphasize Bonn's reputation as one of the world's most sustainable cities.

- Preserve existing natural vegetation.
- Use sustainable construction materials for future development.
- Prevent excessive disruption of natural systems.



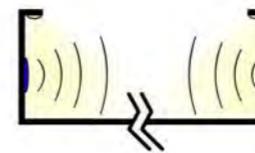
Location Map:





Musical Light Poles

- Light post that hangs 4 meters above the ground.
- Built in speaker system to project musical compositions from local composers.

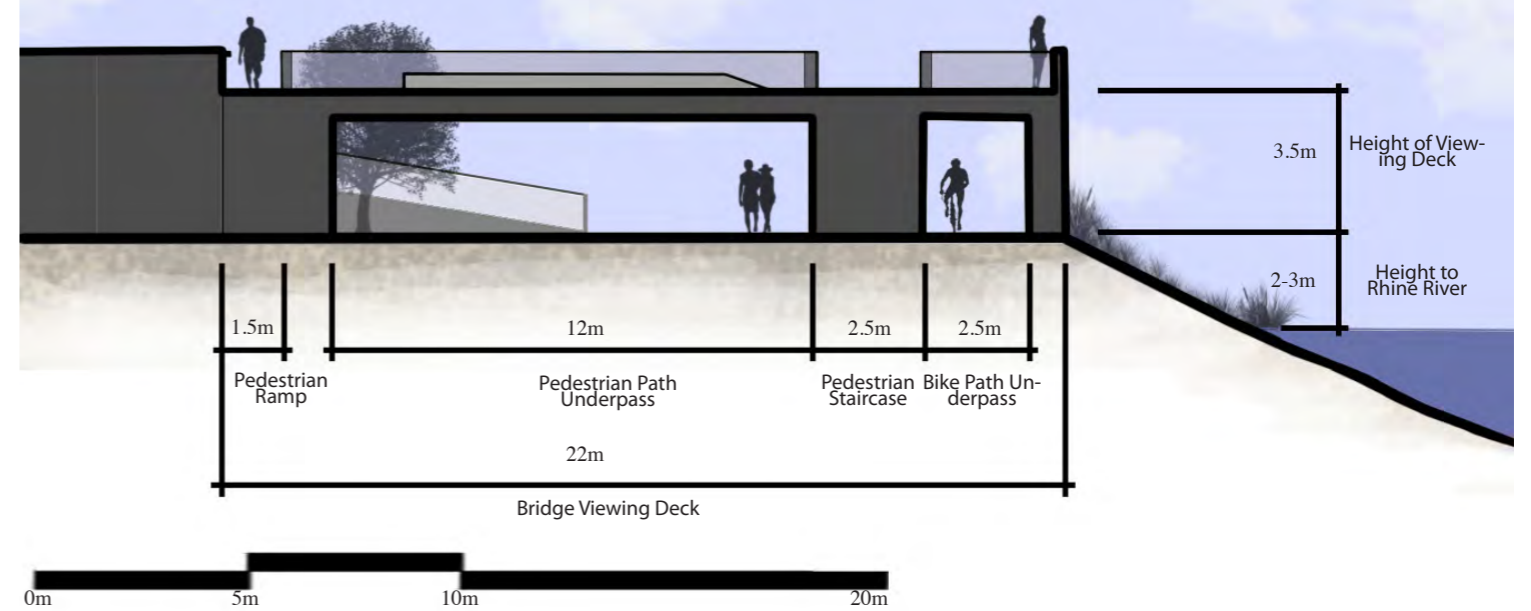


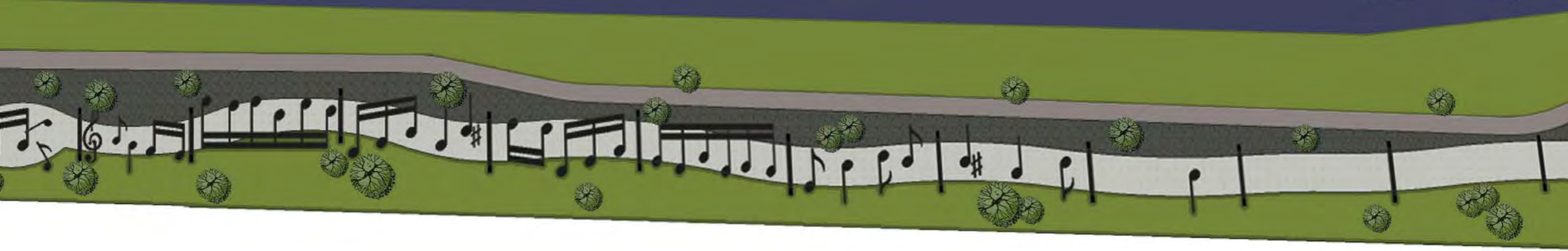
Luminous Musical Notes



- Color LED lights that illuminate the musical note at night.
- During the day the lights remain off to conserve energy.

Section: Bridge Viewing Deck





Perspective A: Bridge Viewing Deck

View the interaction of people with the new Bridge Viewing Deck. This landscape feature serves functional and aesthetic purposes. The bridge connects a large residential area with the Rhine River. This is an important aspect of the design because a better connection to the local residents equates to increased use in the site and also provides a newfound respect for the area by all users.



Perspective B: Night Life

This location is not just intended for use during the daytime hours. A place that can be utilized during the night as well as the day can attract more diverse users and promote diverse activities. Night time activities can only be encouraged by provided a safe and interesting environment. Between the use of musical lamp posts and luminous musical notes, this site meets both requirements.



Perspective C: Musical Journey

The musical plaza at the residential connection point to the Rhine is not the only area of interest. The path leading to Beethoven Hall is decorated with musical notes that are attractive during the day and night. Musical lamp posts also help to set the musical tone by serenading the users with compositions from local composers in and around Bonn. Showcasing local artists will increase citizens' pride in the City.



Location Map



Problems and Potentials

The city of Bonn is the birthplace of the famous composer Ludwig van Beethoven, making it Beethoven's City. Beethoven Hall is a very important landmark for this city yet its current condition falls short of emphasizing this key importance. The orientation of the existing Beethoven Hall and the layout of the space is not focused in the most beneficial way. There should be a clear emphasis from the Rhine River side of the hall in order to continue the city's strides to bring more value to the area along the river. Creating a unique space on the Rhine River side of Beethoven Hall, in addition to redesigning the area along Wachsbleiche St., will attract visitors and resident to a space that is clearly a key landmark in the city.



Goals and Objectives

Create a unique identity for the culturally and historically significant area around Beethoven Hall

- Create a sense of place by emphasizing the importance of Beethoven Hall
- Create a connection between Beethoven Hall and the waterfront plaza along the Rhine
- Adequately display a building that is attractive and enticing
- Similar paving patterns, lighting, and furniture within the site

Maintain a healthy and active community for the users

- Create a bicycle and pedestrian corridors
- Bring people to use the plaza by providing a space for multiple purposes to meet the people's needs

Uphold and improve the safety condition for users

- Provide adequate lighting and signage
- Address the road in the back along the Rhine
- Redesign an aesthetically pleasing and functional barrier along river edge to accommodate heavy visitor traffic in the space during events and festivals

Create a space that enhances the aesthetic experiences of the user

- Keep sightlines to the river open and bring more focus to both sides of Beethoven Hall
- Remove bus parking along the street to prevent segregation between Beethoven Hall and the Rhine
- Create a multifunctional space

Bring value to the site to encourage investment

- Improve infrastructure and clean up where needed and provide unique signage opportunities
- Create a greater connectivity between the building and the Rhine
- Make the space a cohesive space/landmark that has a purpose

Priority of Issues

1	Building is oriented toward the Wachsbleiche St (opposite side of the Rhine) <ul style="list-style-type: none"> • Emphasis on the hall needs to be stronger from the Rhine • Currently, levels of hierarchy are lacking
2	Existing street is separating the Beethoven Hall and the Rhine <ul style="list-style-type: none"> • Change the road circulation to create a better connectivity between the Beethoven Hall and the Rhine (Fritz-schroeder-Uter Street divides the space in two)
3	Lack of major attraction node between the Beethoven Hall and the Rhine <ul style="list-style-type: none"> • Need connectivity between the Beethoven Hall and the Rhine River • Create a plaza as a multi-purpose, interactive place for the visitors
4	Lack of attention on the entrances of the Beethoven Hall <ul style="list-style-type: none"> • Create a grand entrance to the hall for the pedestrians and make it more noticeable • The current bus parking blocks the view of the hall along the Rhine • Existing signage lacks hierarchy and is unorganized

Potentials

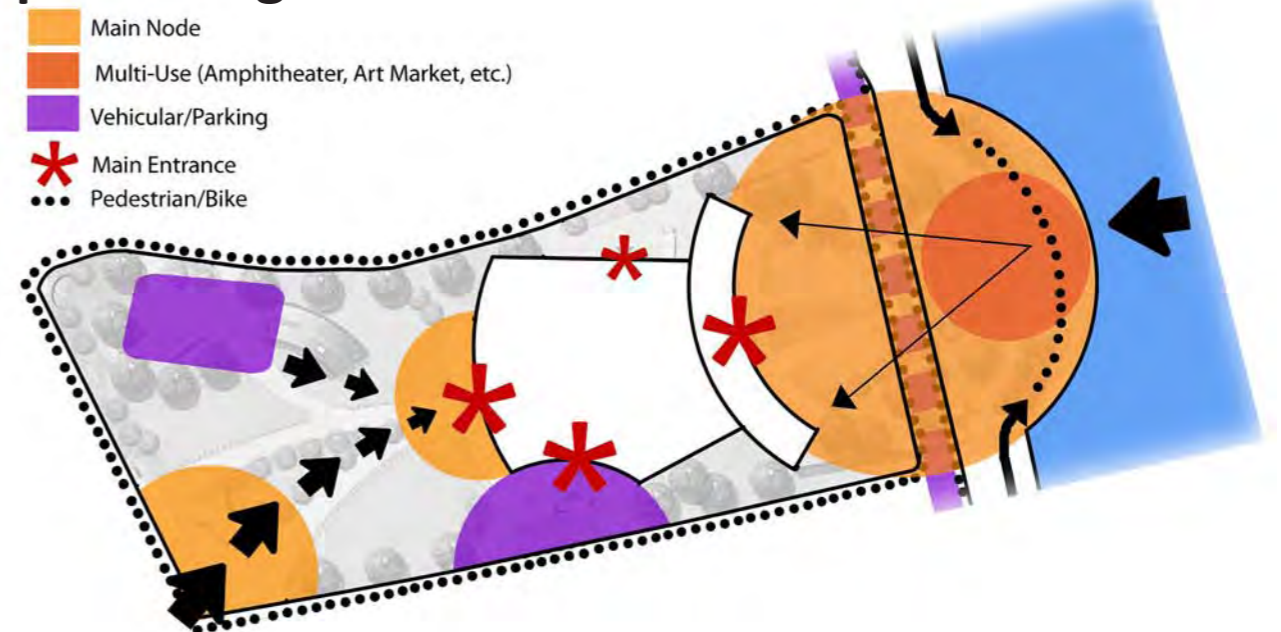
Visibility

- Make Beethoven Hall visible from across the Rhine during both day and night
- Make it more visible from Wachsbleiche St.
- Focus on the Beethoven Hall with connectivity to the Rhine
- Provide visibility through 24 hour access lighting

Elevation change

- Create an underground parking lot for the visitors
- Create a tunnel for vehicles on Fritz-Schroeder-Uter Strasse to eliminate the division of space
- Provide a more interactive space for the area facing the Rhine

Conceptual Diagram



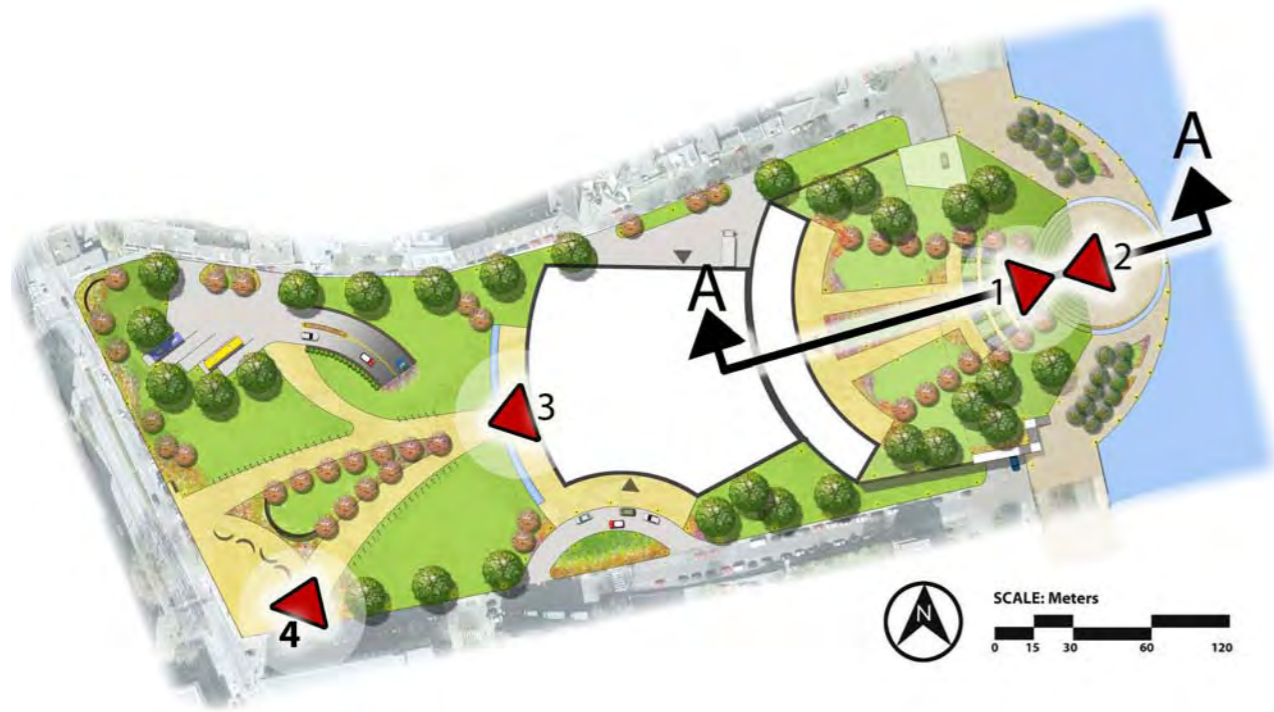
Master Plan & Description

The purpose of the design for Beethoven Hall is to bring a more distinguished focus on such a significant landmark within the city of Bonn. The plan focuses on balancing the spaces of the site and eliminating the "front and back" idea, creating important areas on both sides of the hall. The entire site becomes a stage to showcase the theater in a more functional and focused manner. The water feature on the western side of the hall adds an interactive touch for visitors. This water feature is a series of water jets representing visual equalizer bars that will be timed to music and lit up at night. The design relocates the mass of Beethoven flags to line the main pathways. The Beethoven sculpture has been moved to the river side of the hall, centered in the open lawn to act as a focal anchor viewed from the river. An overhang protruding out over the Rhine was designed to create visual interest in the space and emphasize its importance. This space becomes an area for outdoor performances in the built in amphitheater.

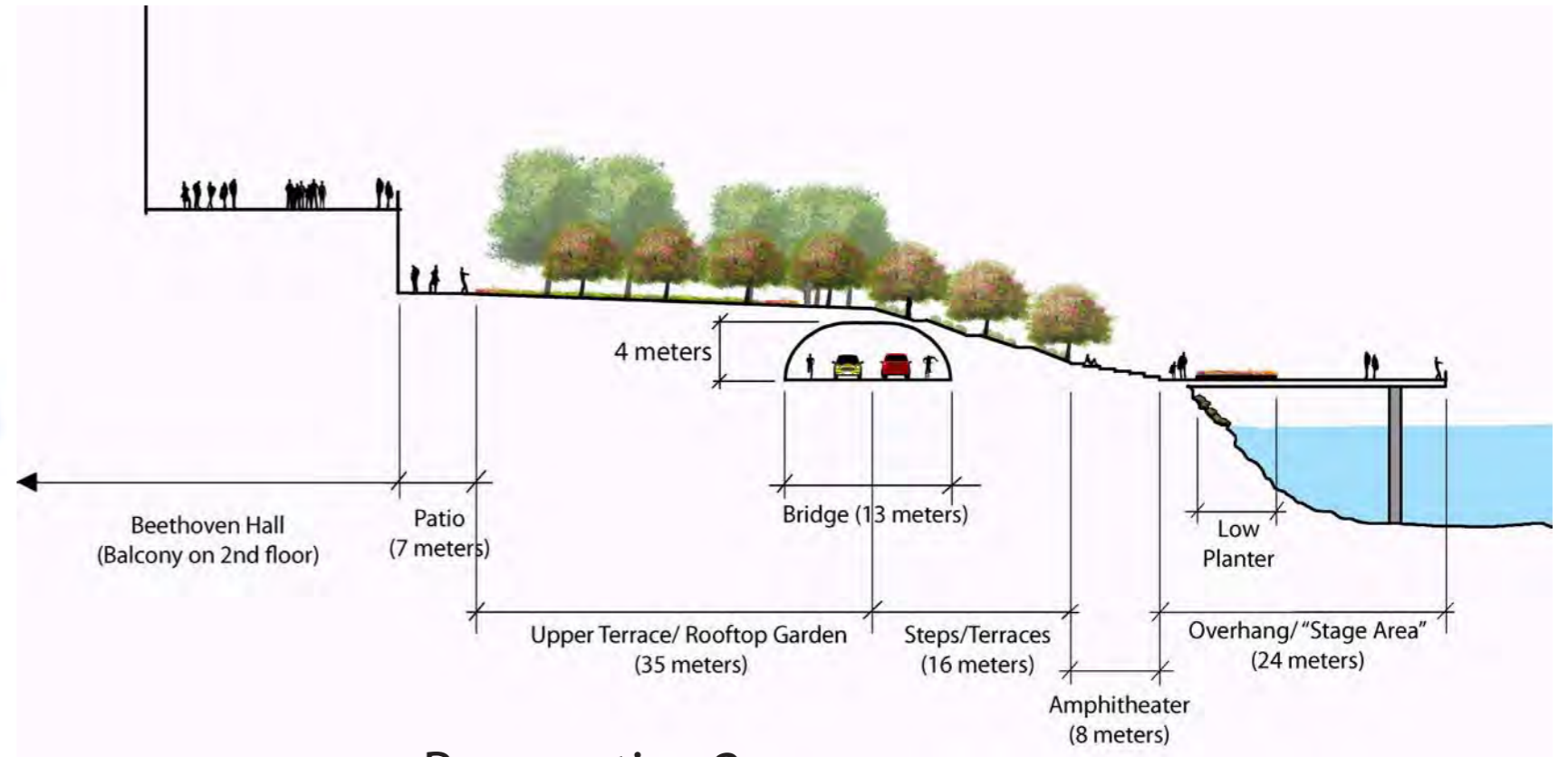
Fritz-Schroeder-Uter street now runs under a bridge in order to create a cohesive site that was not segmented by a road. The bridge allows for two lanes of traffic and sidewalks on both side. A circle drive drop off has been added to allow for easy entry to the building as well as a place for taxis to pick up and drop off. The plan addresses the issue of bus parking by removing the bus parking along the Rhine, which takes away from the view of the hall from the river side, and has moved it to the western corner. The design deals with visitor parking by locating it in an underground parking lot as to not subtract from the valuable land on the site. The delivery parking lot remained in the same spot due to it having easy access while still being out of the way in a hidden pocket of the building.



Location Map



Section A

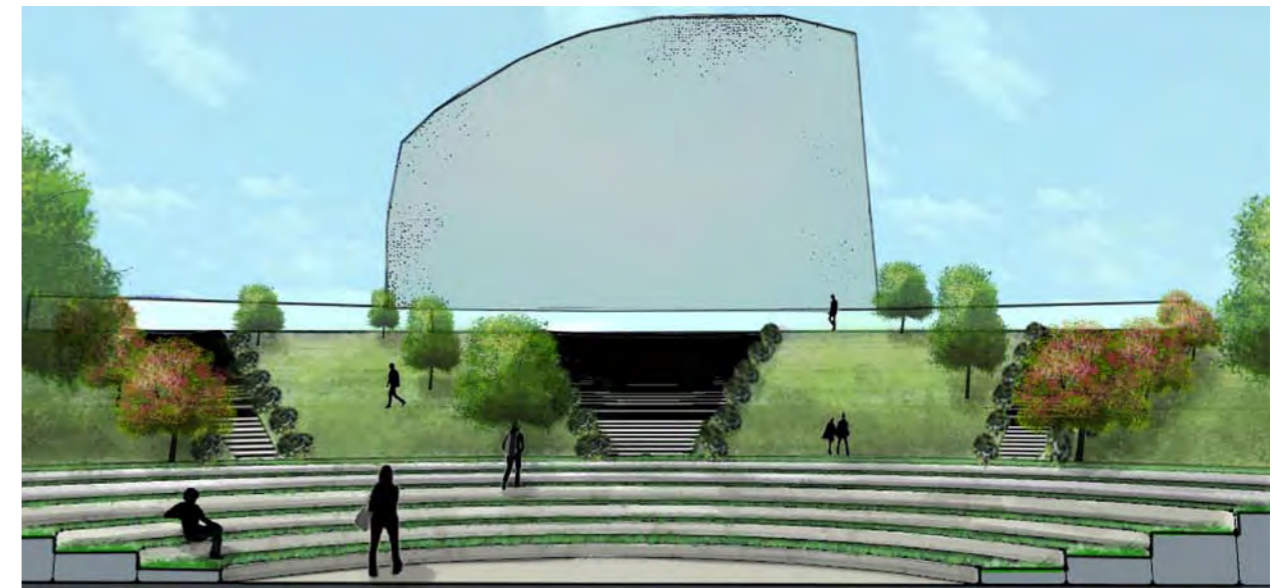


Perspective 1



This perspective demonstrates the view of the Rhine River from the stairway of the plaza. The plaza acts as a multifunctional space; it allows kiosks to set up during events (such as art markets) and street artists to perform. The plaza allows for interaction among visitors and allows 24 hours access for both locals and visitors. You can see the grassy steps of the amphitheater, which provides people with a place to rest and enjoy the Rhine view during the regularly. A variety of paving patterns and materials can be used in this spot to define various uses, while maintaining a flat space for bikers and other users to easily maneuver in. This spot provides for a great view across the Rhine River.

Perspective 2



This perspective shows the grass-covered steps of the amphitheater, looking up to Beethoven Hall. When there are event/festivals, the grass-covered steps create a seating area providing a great overview of the lower-level plaza. The various pathways and vegetation leading up to Beethoven Hall help provide a line of sight, leading the eye up to the focal point that is Beethoven Hall. In this design, it provides Beethoven Hall with great visibility from across the Rhine and allows the hall to become significantly more noticeable.

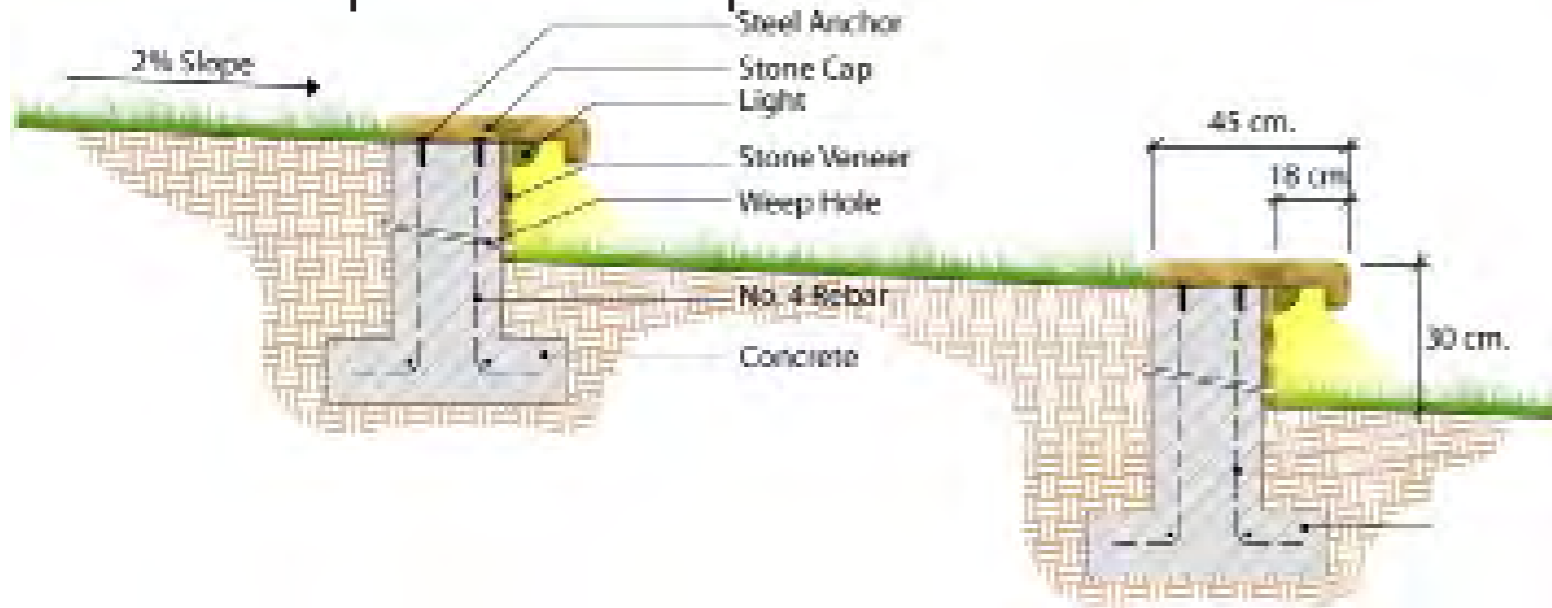


Enlarged view fo the plaza facing the Rhine

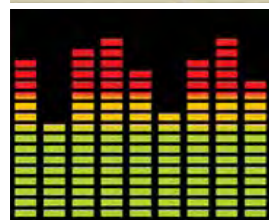


The design purpose of this plaza is to connect Beethoven Hall to the Rhine, creating a cohesive space that provides a unique area of interest. The site is set on a main axis with vanishing points in both directions to lead people from the Rhine to Beethoven Hall and vice versa. One of the main attractions of this plaza is the multipurpose amphitheater and stage space. This plaza can be used for performances of various sizes, art markets, laying in the grass overlooking the Rhine, and other social gatherings. The use of different paving materials and lighting methods are used to delinate the uses in the space.

Detail of Amphitheater Steps

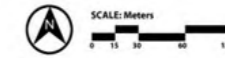
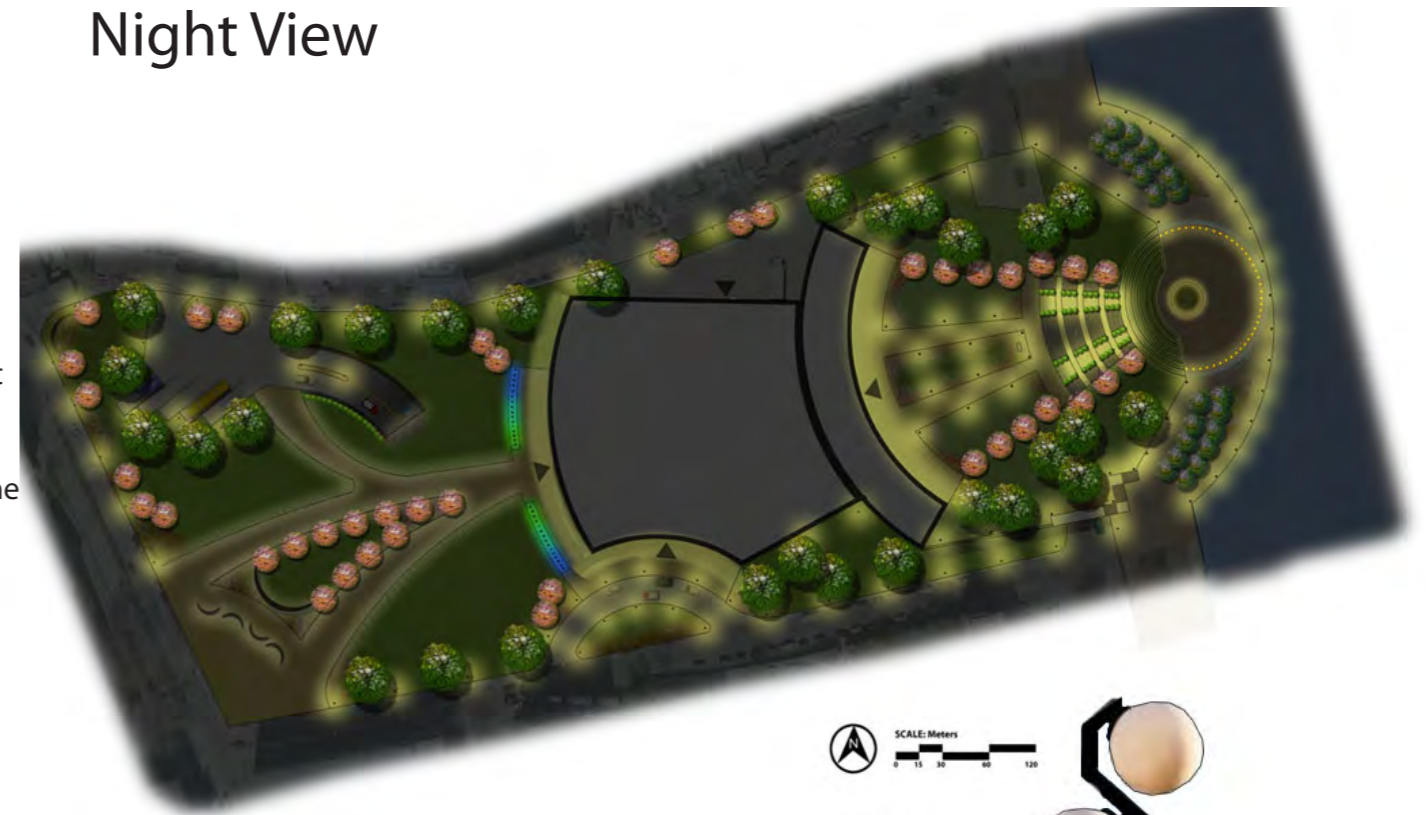


Perspective 3



Beethoven was a true musical savant; he composed 9 symphonies, 7 concertos, 17 string quartets, and 42 sonatas. This water feature acts as a remembrance for all the great music Beethoven has created. The water moves with music's rhythm, projecting at different heights in response. The color of the water jets vary ar it runs through cycles. This fountain creates a focal point in the East side entrance to the concert hall adding interest to draw people in.

Night View



Lighting is an important design element. Beethoven hall is well lit at night to improve its visibility at night and provide a safer environment for the visitors. All of the pathways on the site have adequate lighting; the pathways on the east side entrance have ground lighting along the walking paths and the pathway facing the Rhine has light pole along the path ways. The grass-covered terraces are lighted from beneath an overhang step to create an unique environment. The trees on site utilize various forms of canopy lighting as well.

This light pole symbolizes the music Clef note. It adds more characteristic to the site and makes this stand out from others.

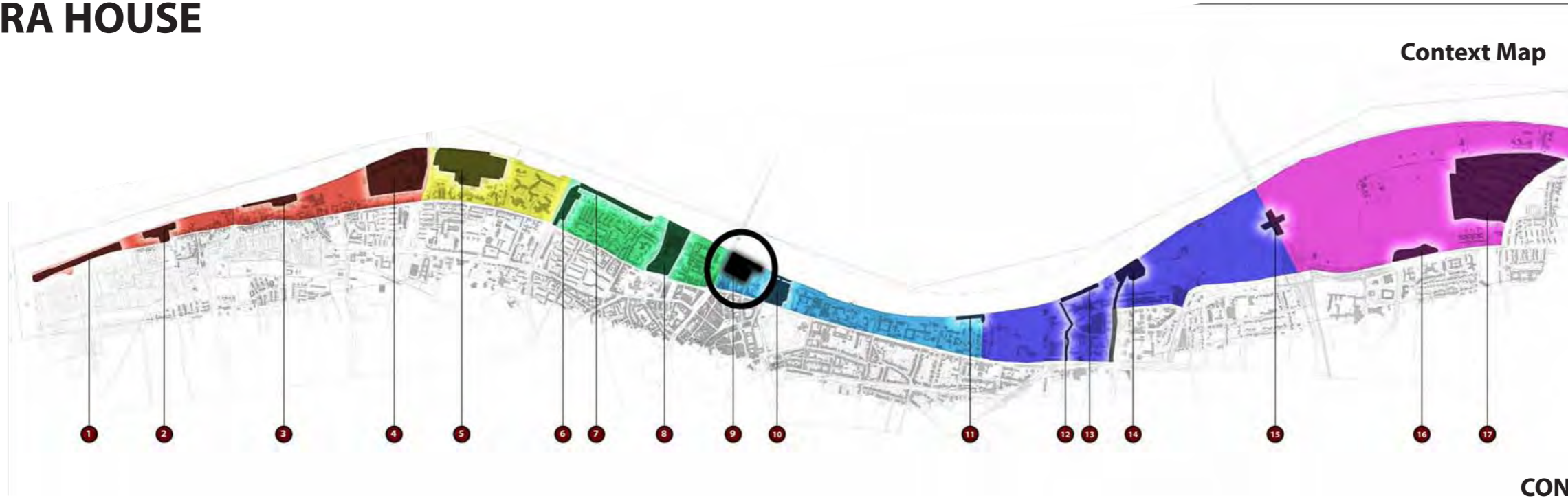
Perspective 4



This perspective shows the main entrance path on the East side of Beethoven hall. The path is lined with ornamental trees with flowerbeds on the left side and event flags on the right side. In the front of the entrance, there are advertisement boards for business and Beethoven hall to promote their business and upcoming events. Moreover, in the center green space, there is a Beethoven hall sign, placed directly in the middle to attract attentions from the street.



SITE IV: OPERA HOUSE

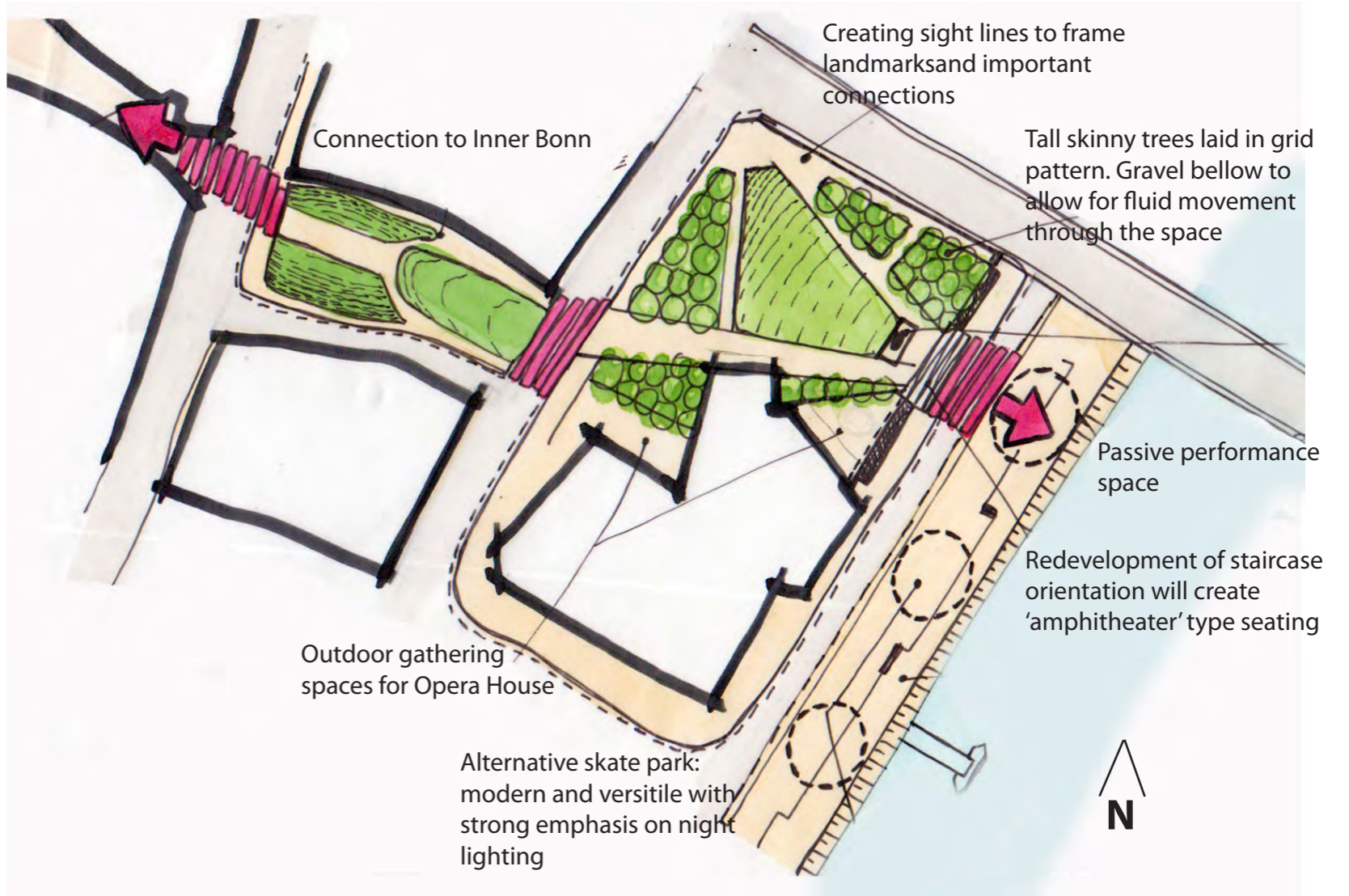


MISSION

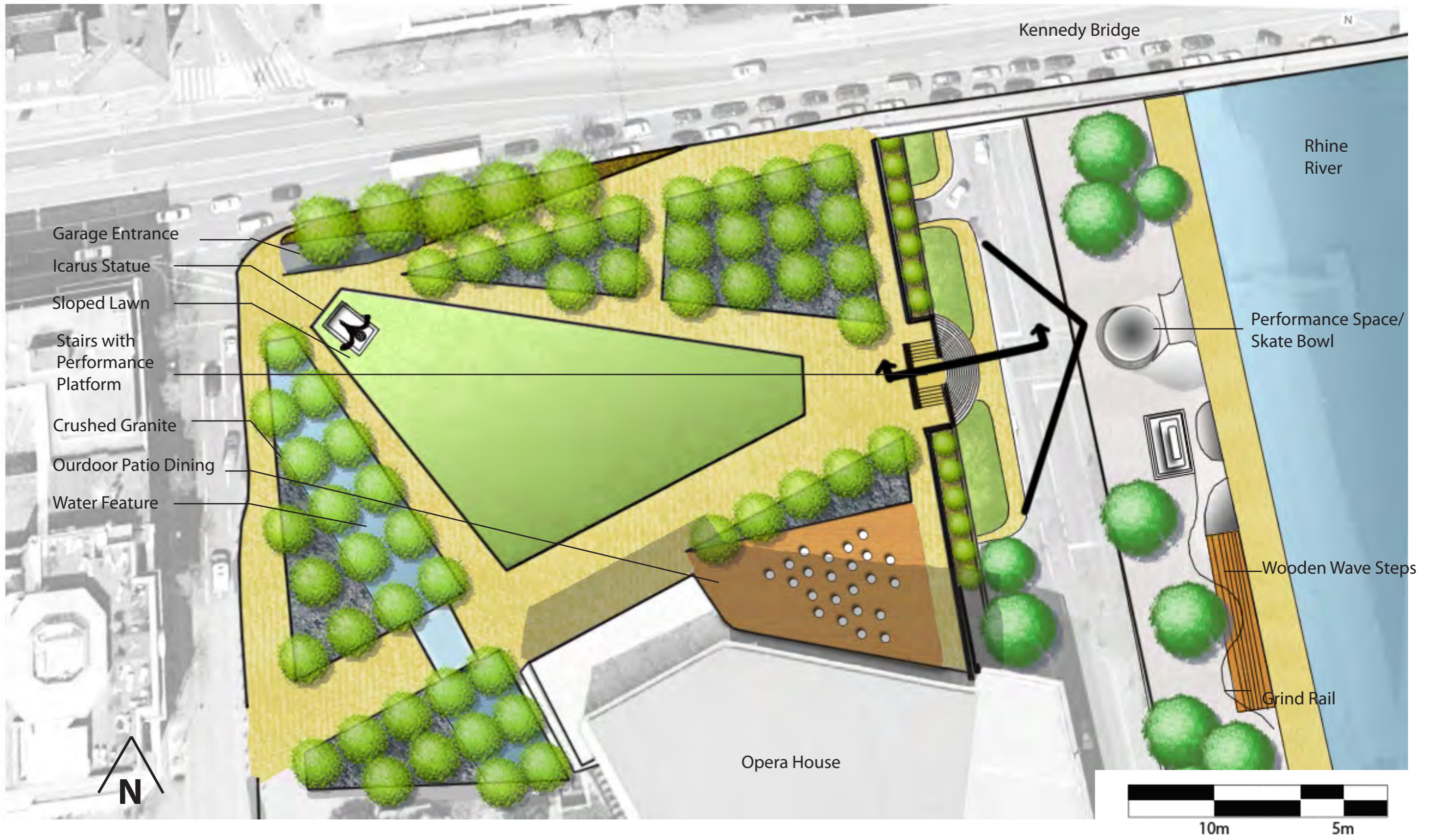
To create a vivacious **CONNECTION** between Inner **CITY** Bonn and the Rhine River waterfront through the preservation and promotion of the culturally significant Opera House and to emphasize the **CULTURE** of passive and active use along the waterfront.

GOALS AND OBJECTIVES

- Goal 1:** Emphasize the importance of the Opera House.
OBJECTIVE: Reflect the architectural style of the Opera House in the landscape.
- Goal 2:** Create gathering spaces for active and passive recreation.
OBJECTIVE: Clearly define spaces with different uses.
OBJECTIVE: Create points of interest to attract people.
OBJECTIVE: Use architectural lighting to create interest at night.
- Goal 3:** Draw attention to the historic and cultural significance of the Rhine River.
OBJECTIVE: Reflect the river in the landscape.
- Goal 4:** Improve safety.
OBJECTIVE: Improve lighting for night safety
- Goal 5:** Promote alternative recreation, like skating
OBJECTIVE: Provide dynamic structure with multiple uses.
OBJECTIVE: Use durable materials.



MASTER PLAN

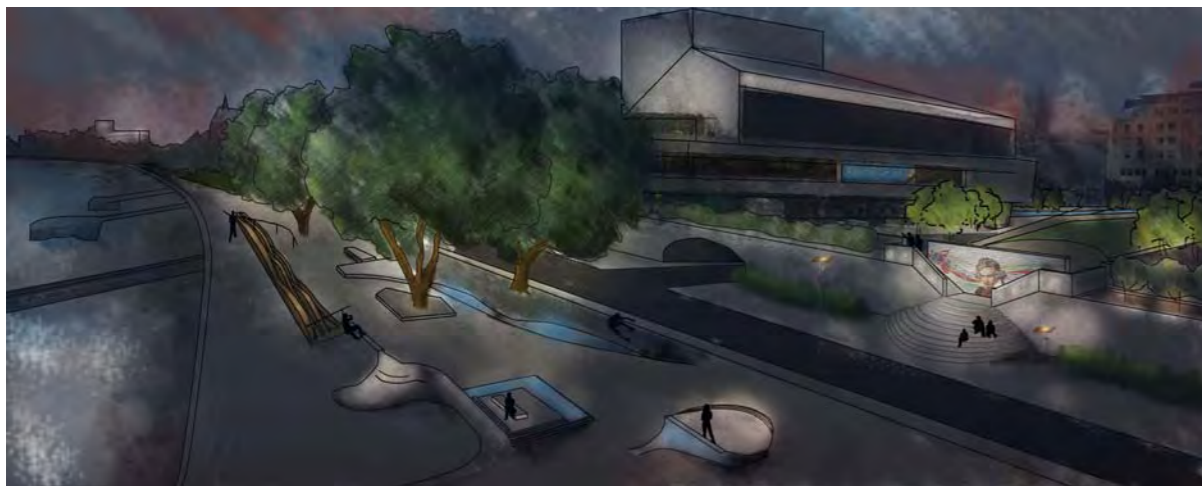




Perspective of Skate Riverfront
Before



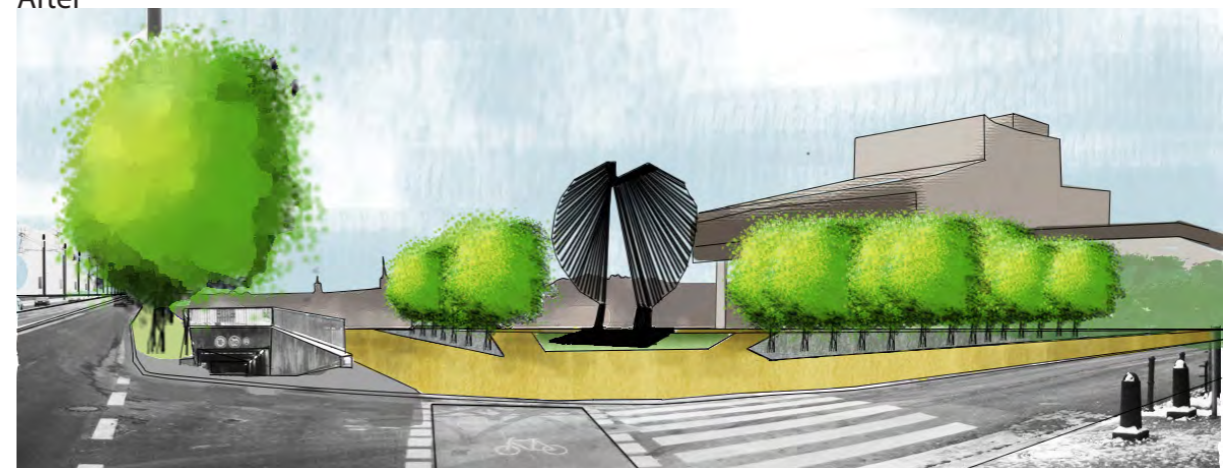
After



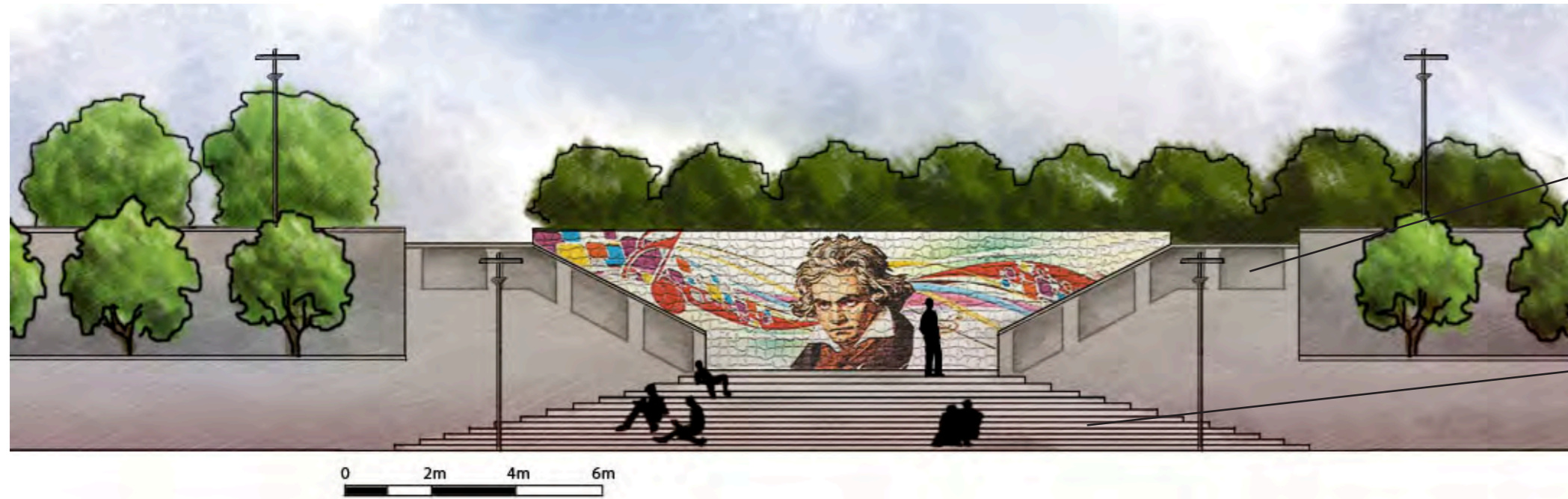
Perspective Facing the Opera House from Oxfordstrasse
Before



After



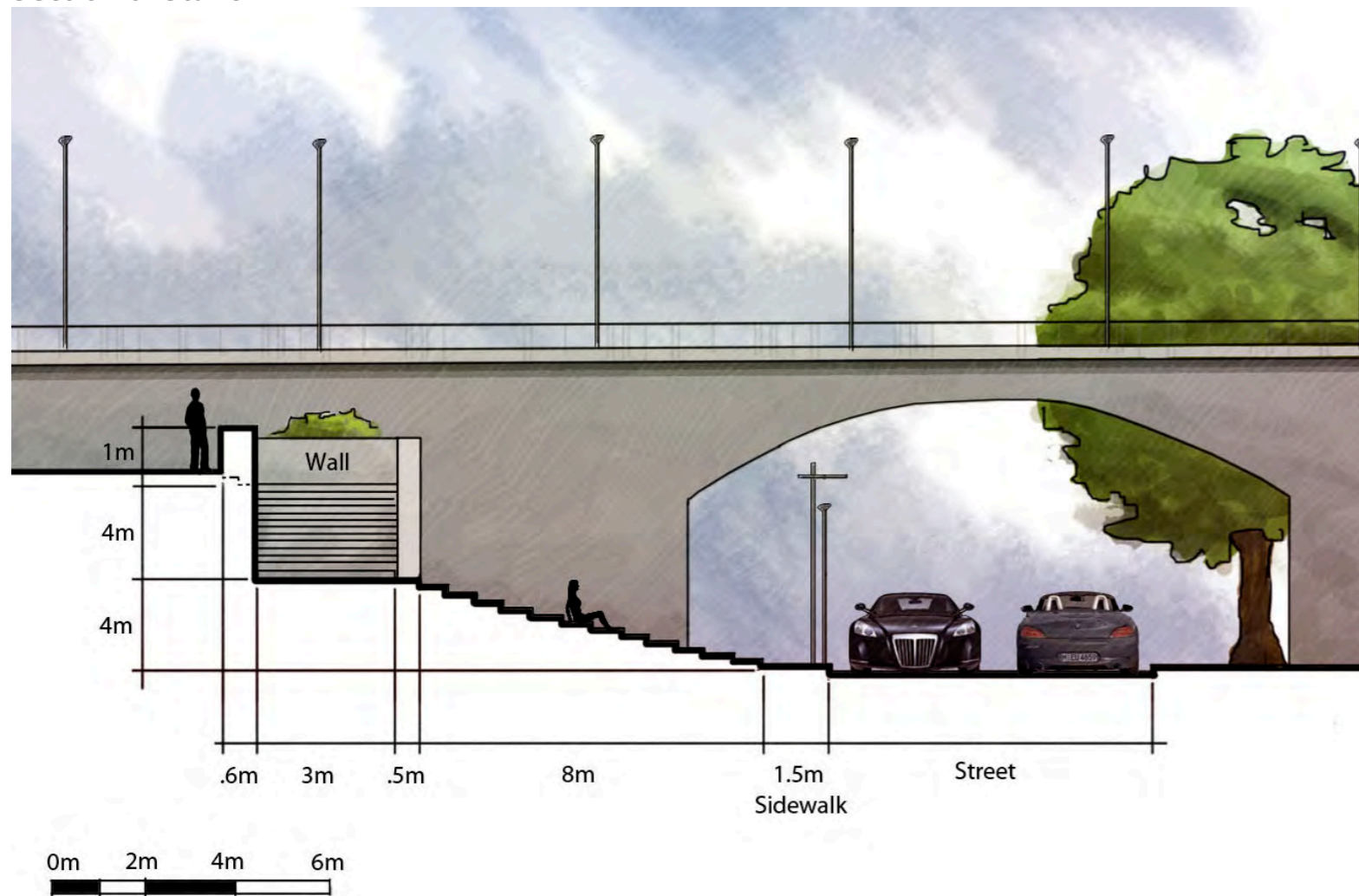
Elevation of Stairs



Transparent Concrete:
Used on the risers of the stair steps and in sections of the wall along the stairs to allow for illumination at night.



Section of Stairs



Bonn Art and Culture Park

Current Site Conditions

This site is situated in a prime location in the cultural heart of the City of Bonn (Figures 1-2).



Figure 1. Site Location.
Source: Mike Droske.



Figure 2. Aerial view of existing site.
Source: Google Earth.

Some of its features include:

- Alter Zoll (Old Customs House),
- Peter Joseph Lenné's house and memorial garden,
- statues and sculptures related to several important historical figures associated with Bonn,
- nice views of Rhine River (Figure 3),
- a biergarten,
- a stage,
- an open dirt area for sports and
- a large green space.



Figure 3. View from park across Rhine.
Source: Darcy Gustafson.

However, the current design of this area is not taking advantage of its potential. Some of the current drawbacks of the site include:

- a lack of attention to history of site and detailed recognition of prominent cultural figures,

- a lack of connection between the Lenné memorial garden and his history and house (Figure 4),
- little attention to possible sightlines, and
- underutilization by people.



Figure 4. Current design of Lenné memorial garden does not reflect his work.
Source: Darcy Gustafson.

Plan for a New Art and Culture Park

Many of the prominent historical characters associated with Bonn are best known for their artistic contributions during their lives. The most well known of these include:

- Peter Joseph Lenné (landscape designer),
- Ludwig van Beethoven (composer),
- Lajos Barta (sculptor),
- Ernst Moritz Arndt (author, poet) and
- Heinrich Heine (poet, journalist, essayist).

The idea for this project is to create a park that recognizes these locally significant figures while highlighting new talents (Figure 5). In addition to the large open green space, the park also includes an outdoor museum devoted to Lenné's work, formerly the Lenné memorial garden along the Rhine (Figure 6).

Layout of the Park

The new overall layout of the park is intended to reflect Lenné's work. While not mimicking his designs directly, interpretations of common themes and elements of his designs are used.

Lenné commonly used two layers of paths superimposed upon one another: a formal direct system of paths and a more informal meandering set of paths. In the park, the straightened paths lead directly to main entrances and exits of the park, as well as to the areas devoted to the established cultural icons. The sculptures that are presently located in the park are lined up along an axis that runs through a circular plaza situated at the intersection of these paths. These concrete paths can be engraved with quotes from the famous writers featured in the park. A wandering path of crushed granite also runs through the park, serving as an Art Walk for local artists to display their art.

Lenné also made use of sightlines in his designs. Sightlines are created and maximized in this new park. As visitors move along the curvilinear Art Walk, new sightlines emerge around each corner. The Lenné statue along the Rhine has been enlarged and shifted slightly southward to maximize its potential as a focal point at the bottom of the stairs that lead from the upper park area.

Lenné frequently used large expanses of lawn in his designs. The existing turf grass in the park is kept, with additions of a variety of ornamental grasses.



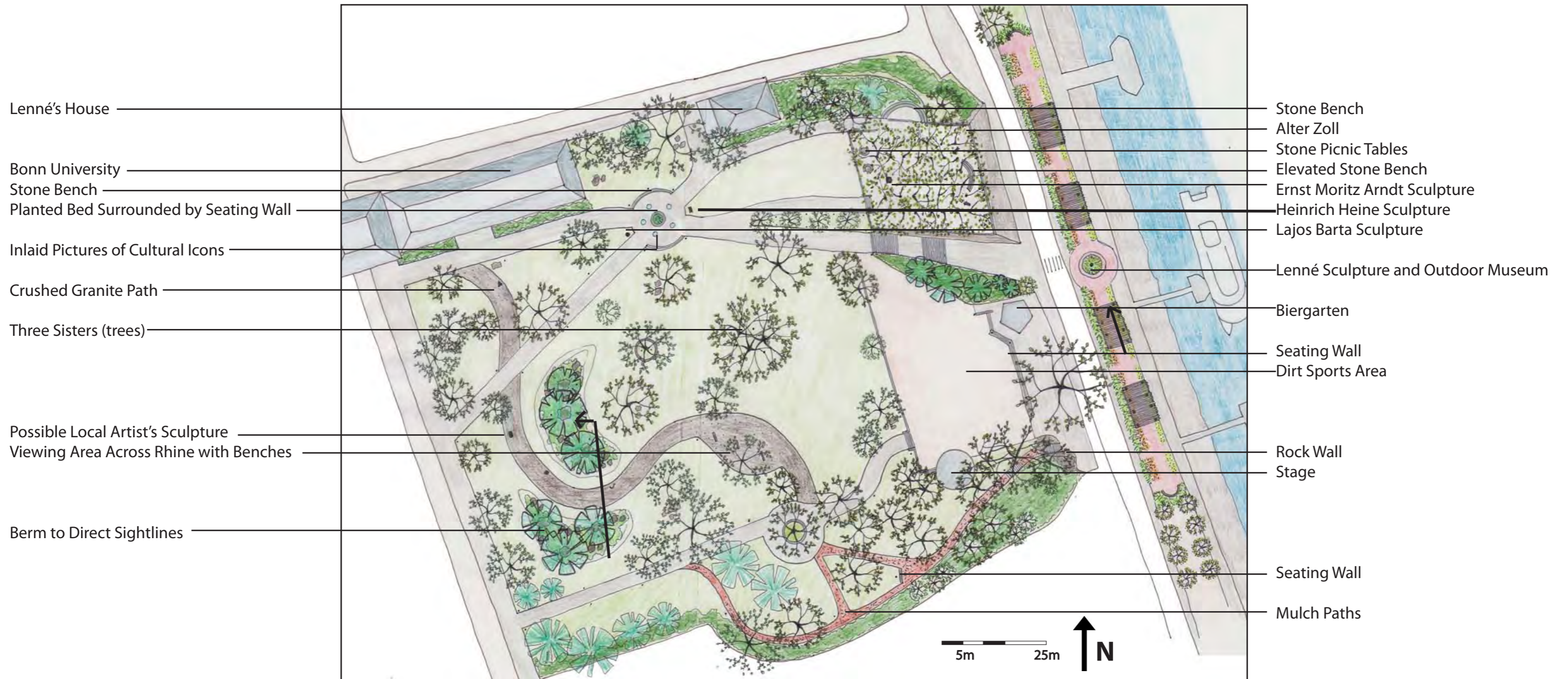


Figure 5. Site plan of Art and Culture Park.
 Source: Darcy Gustafson.



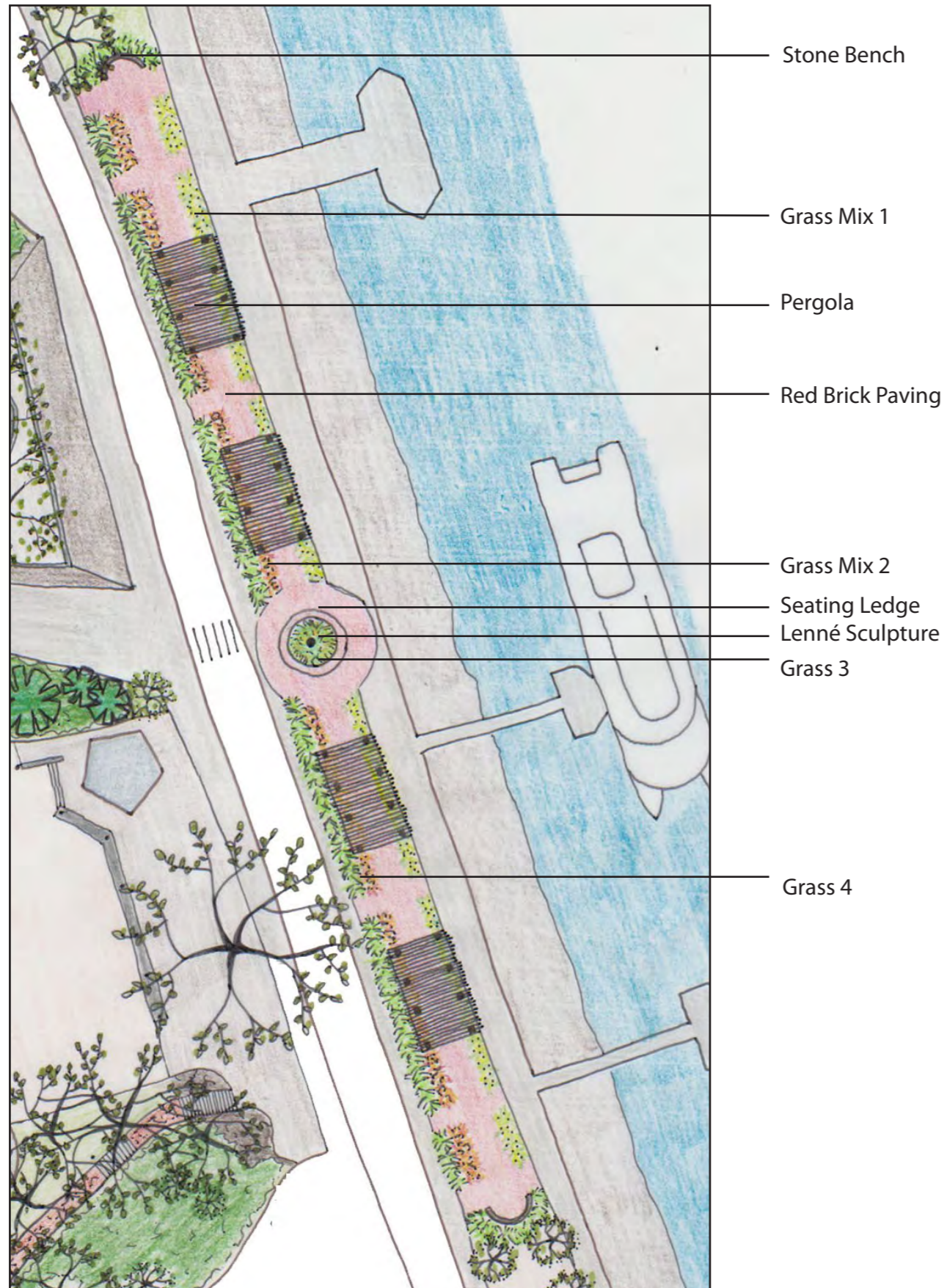


Figure 6. Enlarged Site Plan of Outdoor Museum.
Source: Darcy Gustafson.

Grasses

Grass Mix One:

Festuca mairei (Atlas Fescue)

Schizachyrium scoparium (Little Bluestem)

Grass Mix Two:

Tripsacum dactyloides (Eastern Gamagrass)

Panicum virgatum 'Ruby Ribbons' (Switchgrass)

Panicum virgatum 'Prairie Fire' ('Prairie Fire' Red Switchgrass)

Grass Three:

Sporobolus heterolepis (Prairie Dropseed)

Grass Four:

Miscanthus sinensis 'Gracillimus' (Maiden Grass)



Figure 7. Perspective walking through outdoor museum.
Source: Darcy Gustafson.

This outdoor museum is used as a display of Lenné's life and works. Photos and information can be posted on the concrete posts of the pergolas. The transition from shorter to taller grasses moving away from the Rhine and the central statue area are meant to reflect Lenné's style of contrasting use of formal areas and "wilderness".



Additional Supporting Images

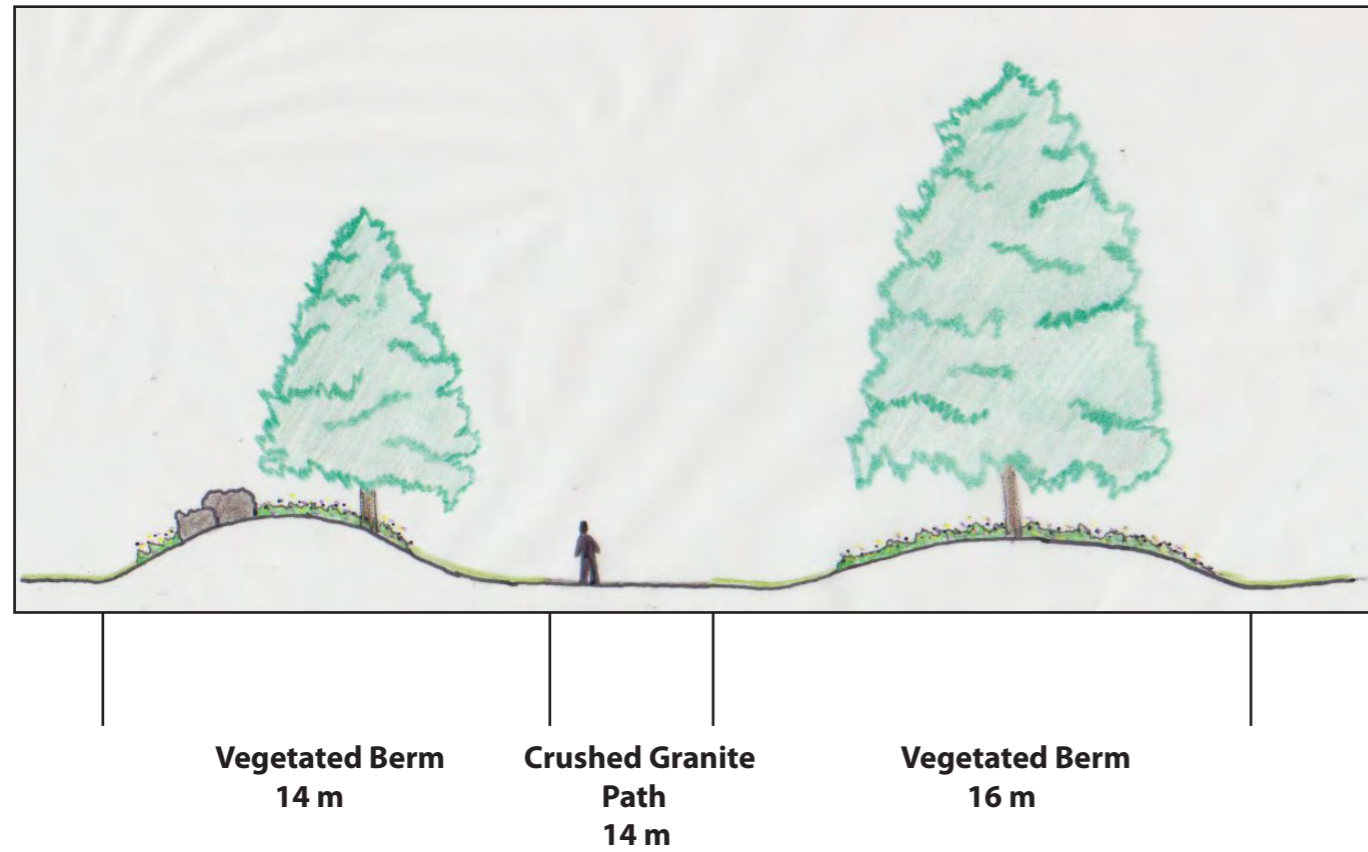


Figure 8. Section of Art Walk.
Source: Darcy Gustafson.

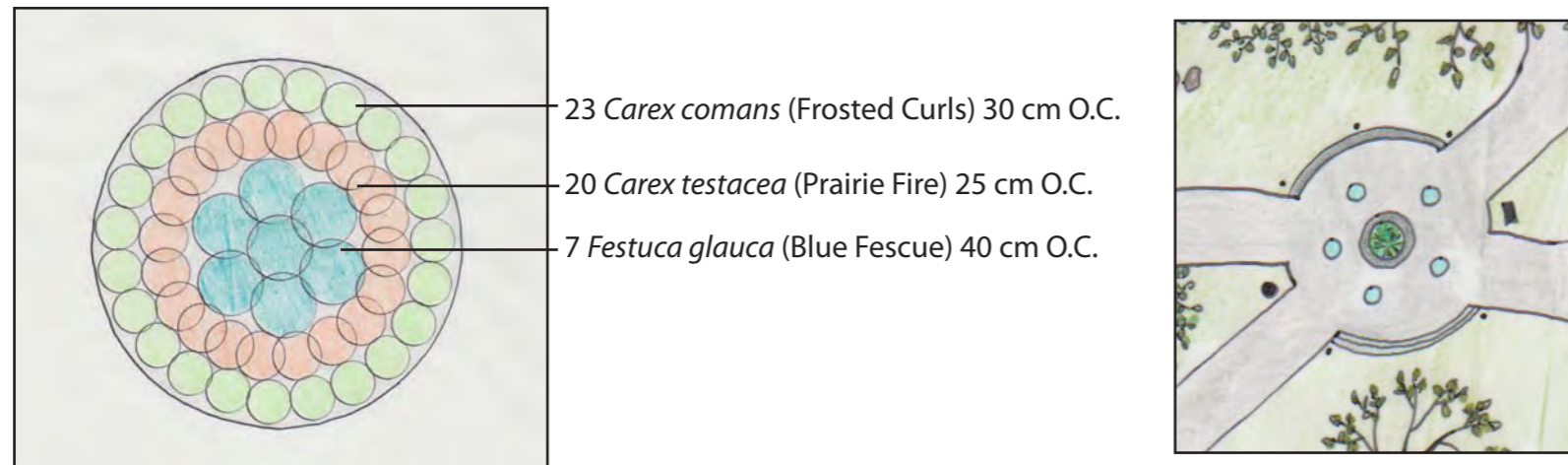


Figure 9. Planting plan of plaza intersection, location map included.
Source: Darcy Gustafson.

Conclusions

This park will help to solidify this segment of the Rhine riverfront as the cultural center of Bonn. It may increase usage of the area by both residents and visitors by providing both an attractive outdoor space and links to the city's cultural history.



Goals

1. Provide connectivity to the Rhine River front.
2. Create Gathering Spaces
3. Promote and connect the Montag Foundation for Visual Arts With visitors and citizens of Bonn.

Objectives and Concept

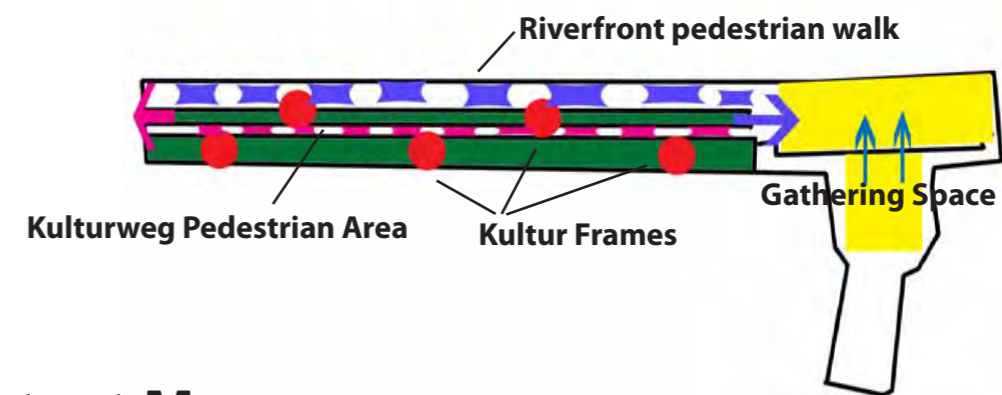
Currently, this site is near culturally rich institutions that are very important to tourists and citizens of Bonn. To connect these people to the river front, it is important to create a defined space that people will be drawn to. By matching the paving patterns of the sidewalk with the cul-du-sak, this defines the space as being pedestrian oriented and will help draw people to the river front. Signage is also important in defining a space and can help direct people where to go.

Gathering spaces are important for active and passive recreation. By creating these spaces, we invite many different types of people to the area. The Kultur Caves, located underneath the staircases, will provide spaces where people can socialize or relax in a semi-sheltered area.

The Montag Foundations are an important asset to the city of Bonn. The mission of the Foundation for the Visual Arts is to “make encounters with contemporary visual arts more accessible”. From this idea, Kulturweg was inspired. The length of the path will stretch for nearly 200 meters and feature Kultur Frames where public art can be displayed temporarily.

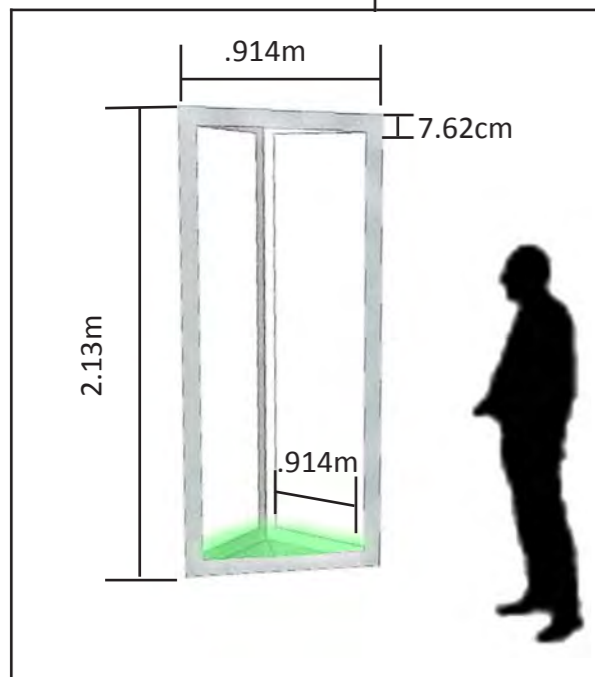


Concept Map

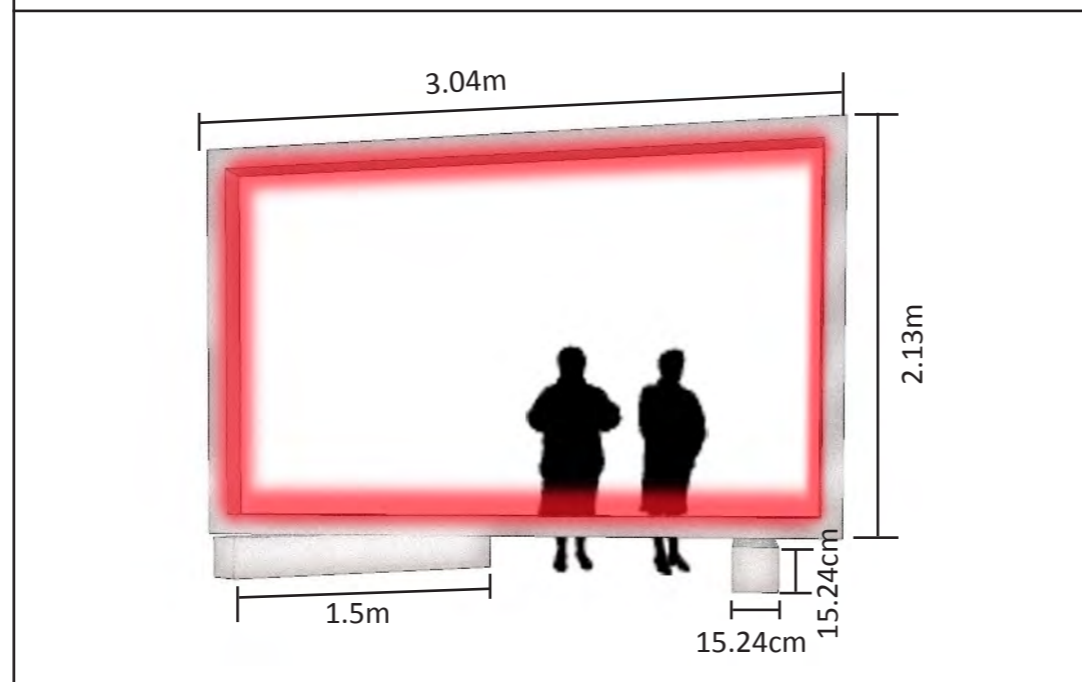
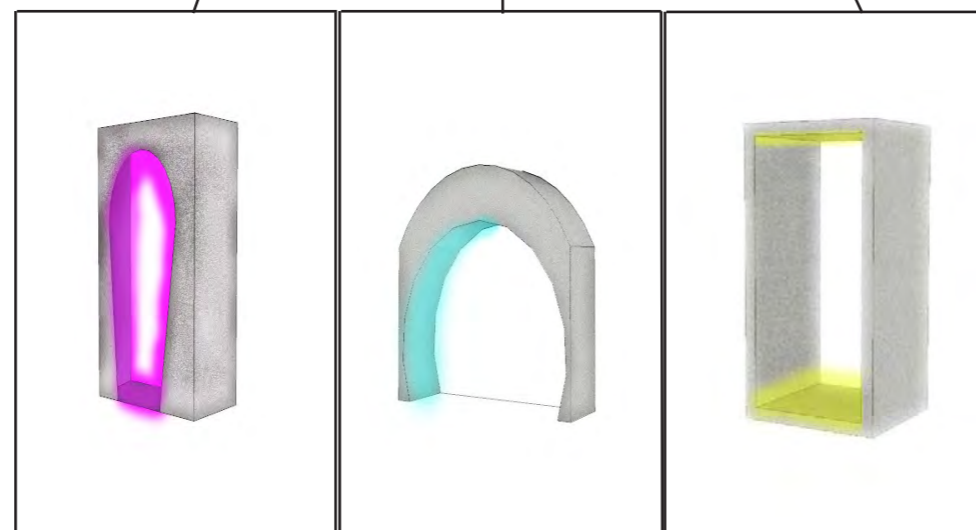


Context Map





KULTUR FRAMES are sculptural display areas for temporary displays of public art. Made of concrete, the five frames are multifunctional, and can be used as areas for sitting, standing or laying. Embedded within the frames are florecent lights for visability at night. The main function of the frames are to promote the Montag Foundation for the Visual Arts and to create oppurtunities for visitors to interact and enjoy during their visit to the Rhine riverfront.

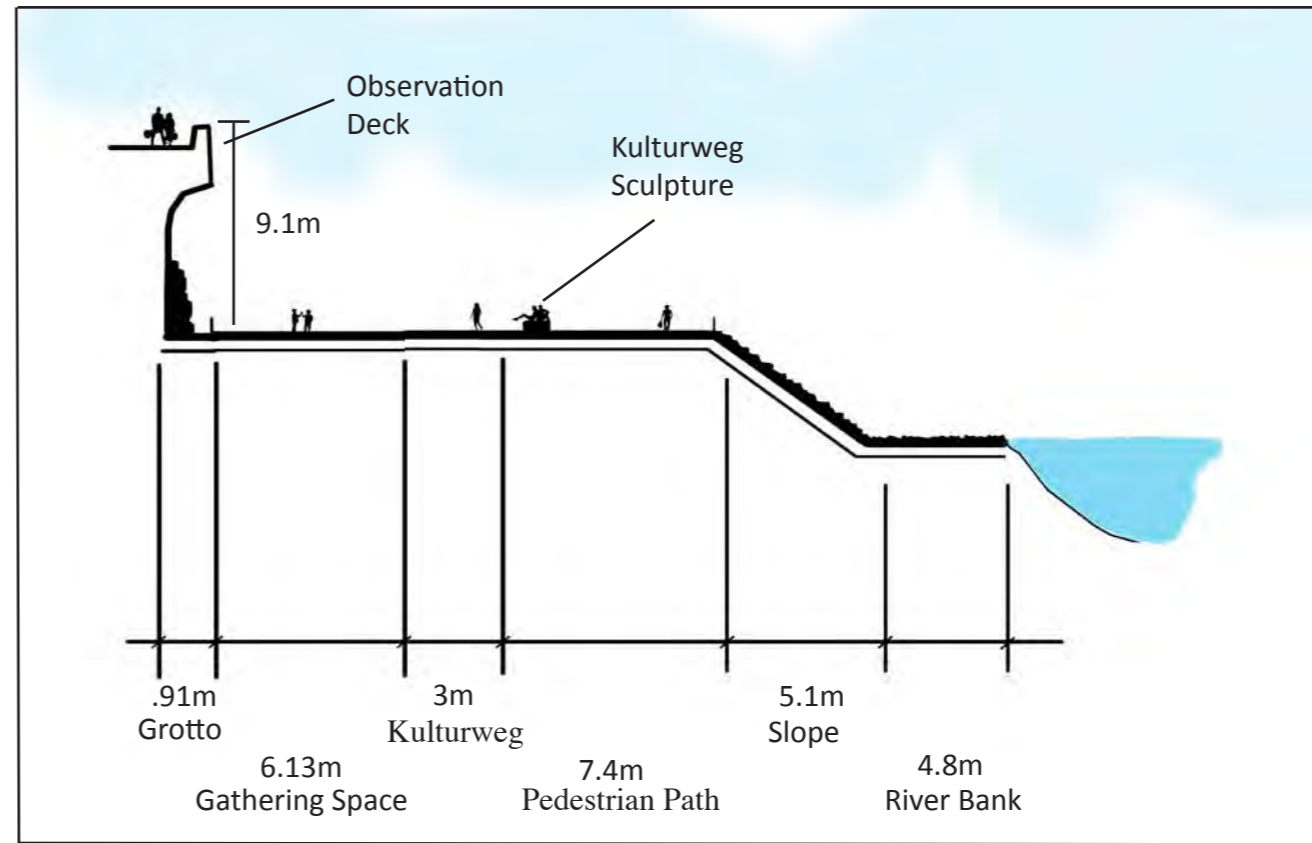


Kulturweg Sculpture is .6 meters tall allowing for people to sit or stand on any of the letters. It features the Montag Foundations symbol, colored in teal, pointing toward the Kulturweg pedestrian area.

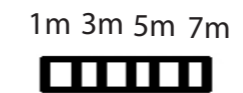




Perspective of Grotto, observation deck, gathering space, Kultur Caves.

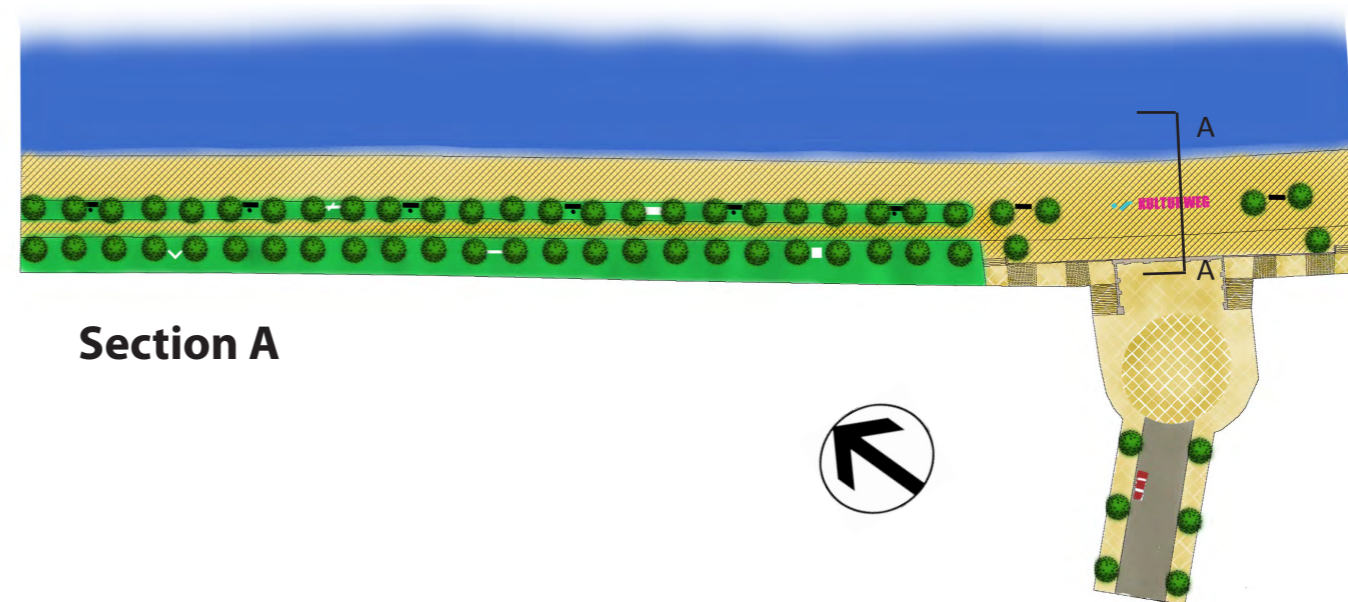


Section A- Grotto and Gathering Space



The Kultur Caves are located beneath the double staircases. They occupy the area where two “out-of-service” restrooms are currently located. By transforming the old restrooms into usable space, people will be able to gather, play board games on provided game tables, or listen to music provided by inlaid speakers.

The Montag Foundation for Visual Arts can also use this space to promote the arts and their foundations. The space at night will be well lit, inviting users of all hours, and insuring their safety. The historic Grotto will be preserved and untouched, framed by two areas of cultural engagement.



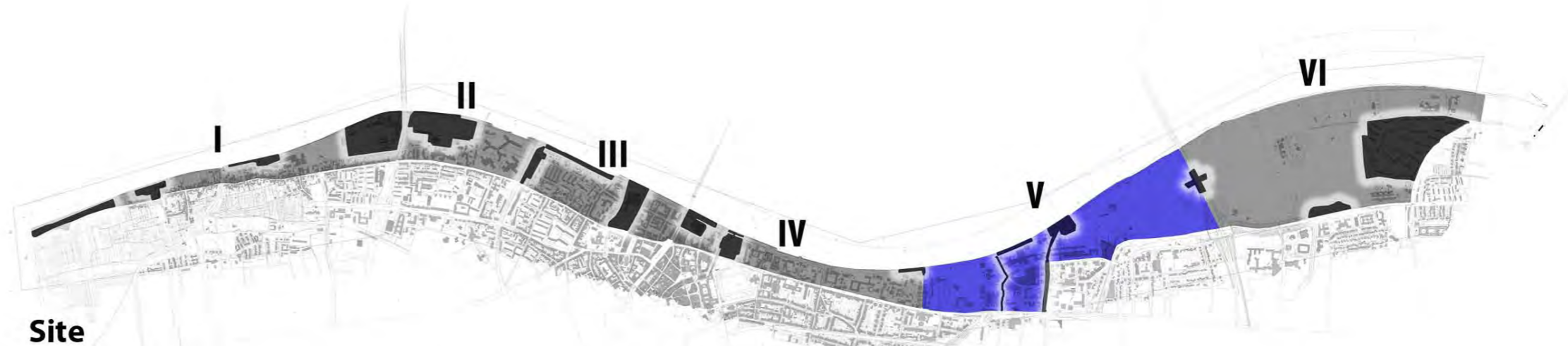
Section A



Rhine River Access

Goals

- Create a stronger connection to the river.
- Create a more intimate walk that connects to the river.
- Tie in Bonn's significant history to the site.
- Make the place more accessible for vehicles and pedestrians.



Site

This site holds significance because of its location close to the United Nations Campus and the Bonn History Museum across the street. Two Streets make up this particular site and each have very unique needs. Both of these streets were chosen because of their prime location and availability of river access.

Site 1

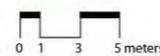
This is the first area located on the pedestrian only access area. Before, this space seemed very narrow and unattractive. The object was to open this area up to draw people in and create a more tranquil stroll to the river. This area includes a water feature to drown out the noise from the traffic from the Willy-Brandt Allee. This space also includes a variety of plants and flowers to create a pleasant walk to the river.



Existing Site Conditions



Site Plan for Site 1



Site Plan for Site 2



Site 2

Site 2 consists of the area at the end of this pedestrian path, which has a small coffee shop right outside of the UN Campus. By opening up the area outside of the coffee shop it allows room for outside seating. A wider pedestrian path away from the road makes it safer for users to gain access to the river. A seat wall and a small lawn area creates alternative spaces for users to choose from.



Existing Site Conditions



Site 4 Heussallee Strasse



Existing Site Conditions



Parking will continue to be allowed on the left side of the street but will be blocked off after the last driveway access.

This street has recently undergone major changes in which 2 lanes were closed for pedestrian only access. This recent development allows an added feature which contributes to Bonn's, unique history and culture. This feature will consist of bronze plaques that note different years with their corresponding significant milestones. These plaques are arranged in a meandering pattern which carry a tie to the Rhine River. These plaques that make up the Historical Timewalk also light up blue around their border making for an interesting and playful display at night. Paving patterns are changed at major intersections to caution drivers at crosswalks.



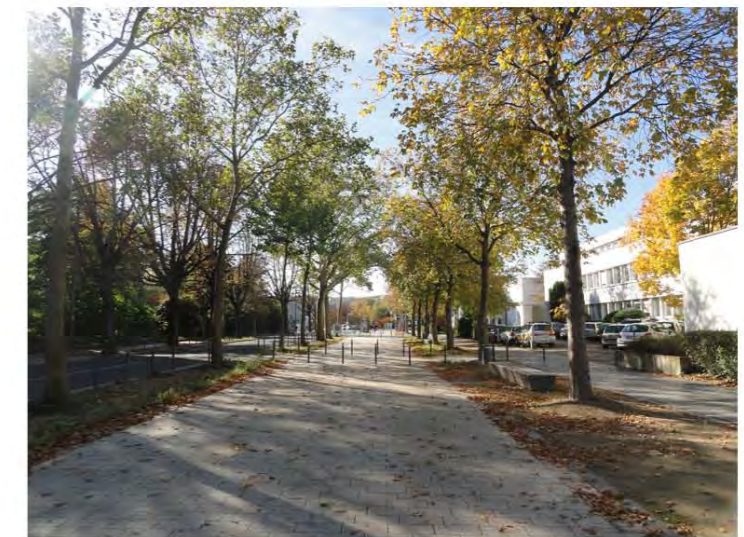
Existing Site Conditions

Site 3

This part of the site is a continuation from site 2. Previously this street had full vehicular access to the river. In this design, access is limited to deliveries and emergency vehicles which are controlled by a set of pop-up bollards which are controlled by UN Security.



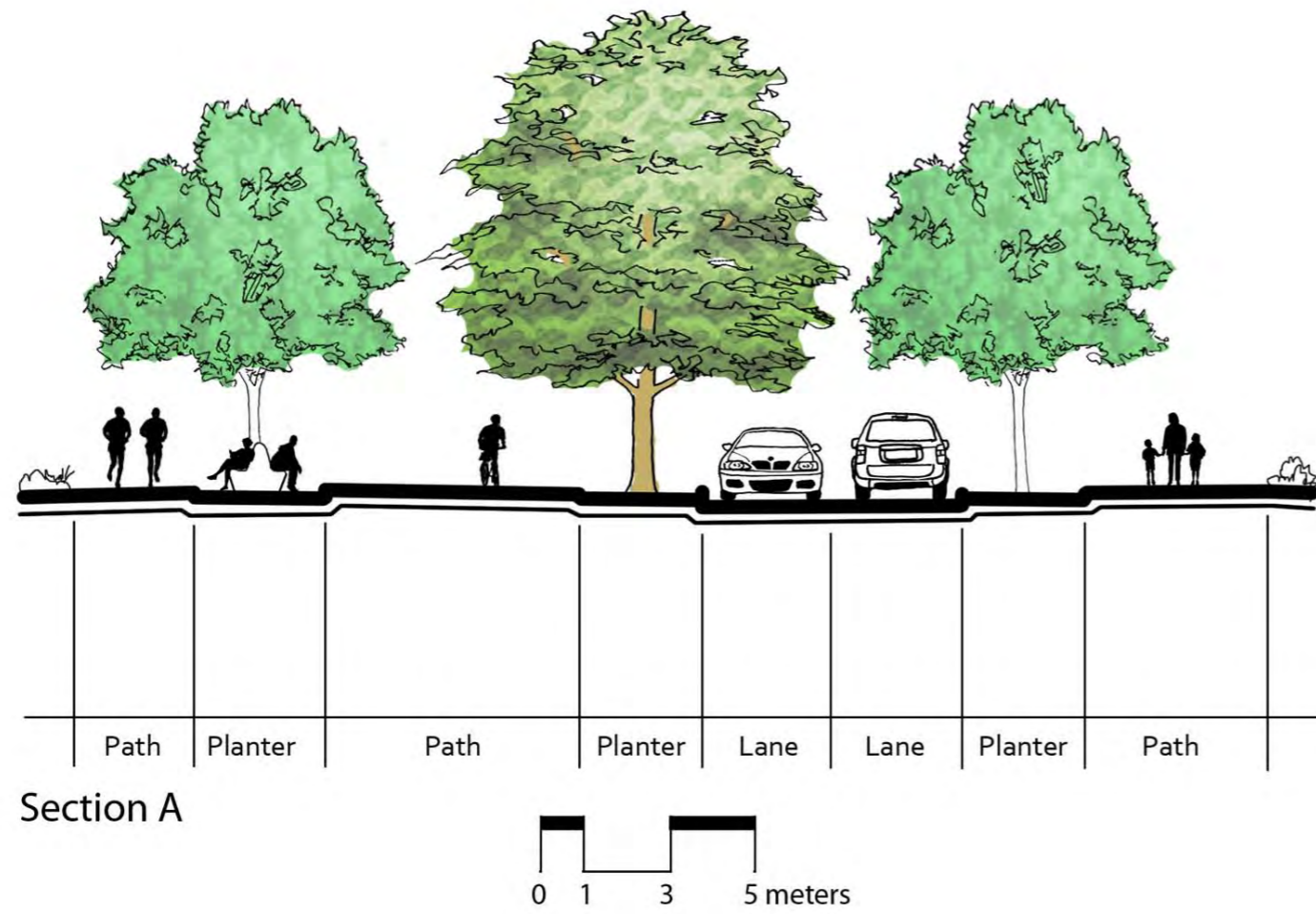
Site 5 United Nations Campus



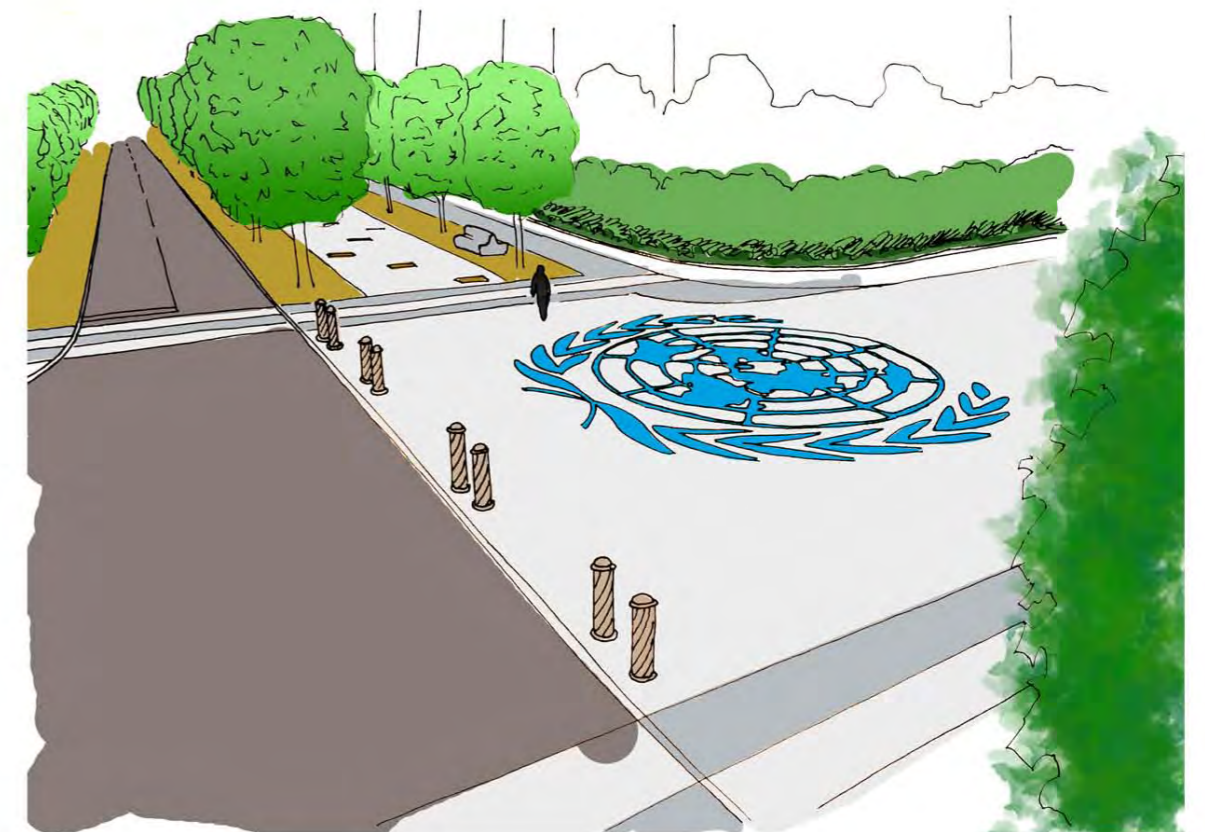
Existing Site Conditions

Site 5 is located at the intersection of the UN Campus. This is where the Historical Timewalk ends and is ended with a paved United Nations symbol. This massive paving pattern creates a node for a meeting place as well as visual interest for visitors. Much like the Timewalk plaques, this paving pattern is also lit up at night creating a spectacular sight. Since this plaza in front of the UN Campus is designated for pedestrians only, bollards are placed at the end of the road to restrict vehicles from entering the site. However, these bollards are spaced far enough apart to allow vehicular access if it is necessary. The street leading down to the river allows vehicular access as well as pedestrian access and provides parallel parking spaces in between the trees.

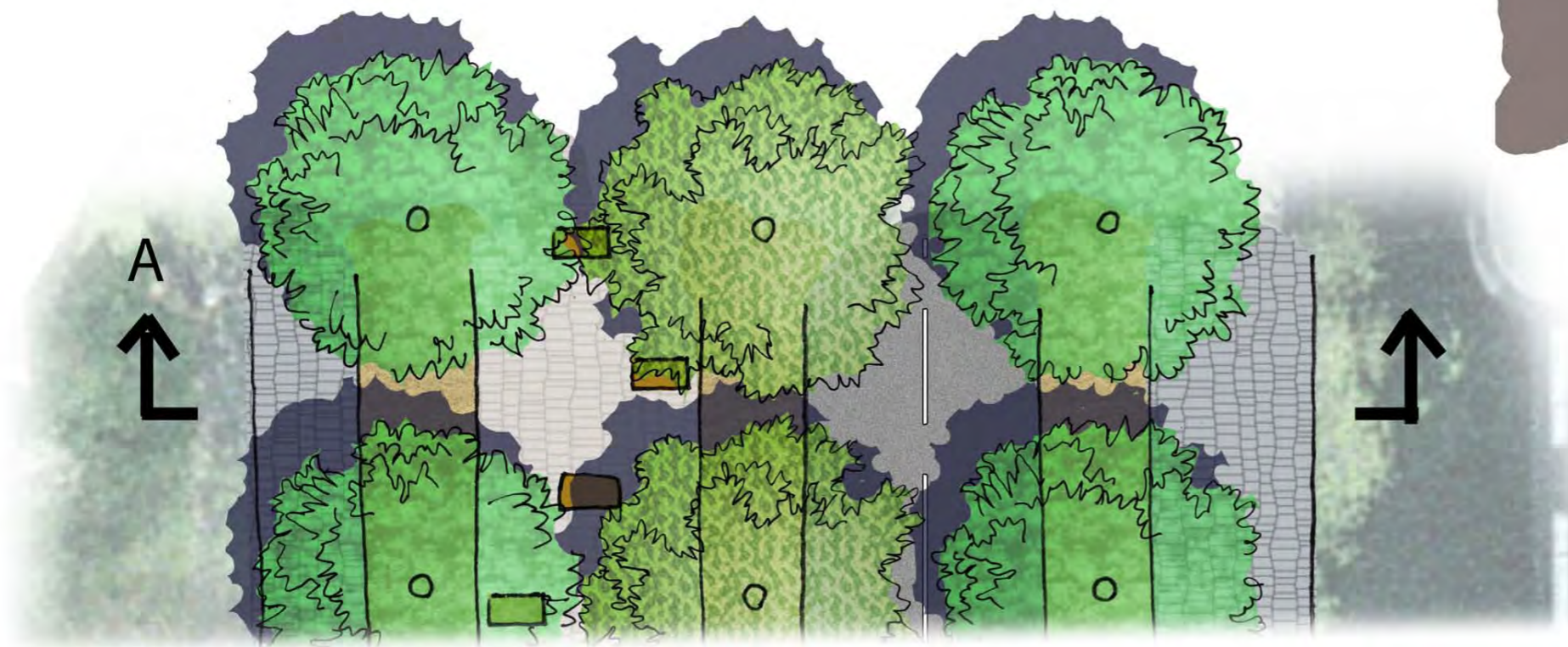




The section shows how Heussalee Strasse is broken down into a large pedestrian part, and two lanes of traffic. Double sided benches on the pedestrian side allow the users to face either direction to enjoy their activities. The paths are wide enough to accommodate many users at one time that will end up opening up into a large pedestrian zone.



This is a proposed sketch of what the large pedestrian zone outside of the UN Campus will look like.



Bonn Institutional Walk



Introduction

The project site is located on the Rhine River front in between the end of Dahlmanstrasse and the front of the World Conference Center. The site stretches approximately 190 m. in length.

Existing Conditions

The surrounding area of this site is used for institutional purposes whether it be for the residing United Nations Campus adjacent to the site or for the corporate power of DHL. For it's current use, the site is not very powerful in terms of design. It blends in with the surrounding area with no representation of the history and importance of the area such as being the former meeting place of the German Parliament as well as being home to the United Nations campus with it's current progression towards a sustainable future.

These are the current conditions currently within the site:

- Large areas of space in front of Duhlmannstrasse and the World Conference Center
- Long section of River Walk
- Lack of seating
- Lack of Lighting
- Current street that runs within the site
- Large Monument
- Unattractive fencing
- Not visibly strong



Design Program

Goals

- To promote the historical importance of the site.
- To promote the surrounding the institutional users of the site.
- To reflect the United Nation's idea of a sustainable future.
- To promote international unity.
- To create a recreational and reflective area for citizens and visitors of Bonn.

Objectives

- Provide better street furniture such as lighting, seating, trash bins and fencing.
- Provide street furniture that reflects the image of the site's surrounding institutions.
- Design the site to stand out in a unique way.
- Add symbols of the surrounding users of the site.
- Provide a sustainable design.



Proposed Site Materials

With the current trend of unattractive street furniture with the site, there is a need to use more attractive, visually grabbing and, most importantly, sustainable materials. This will hopefully add more interest to the area as people from around the world come to visit this culturally unique place.

This types of adequate materials to achieve this criteria is as follows:

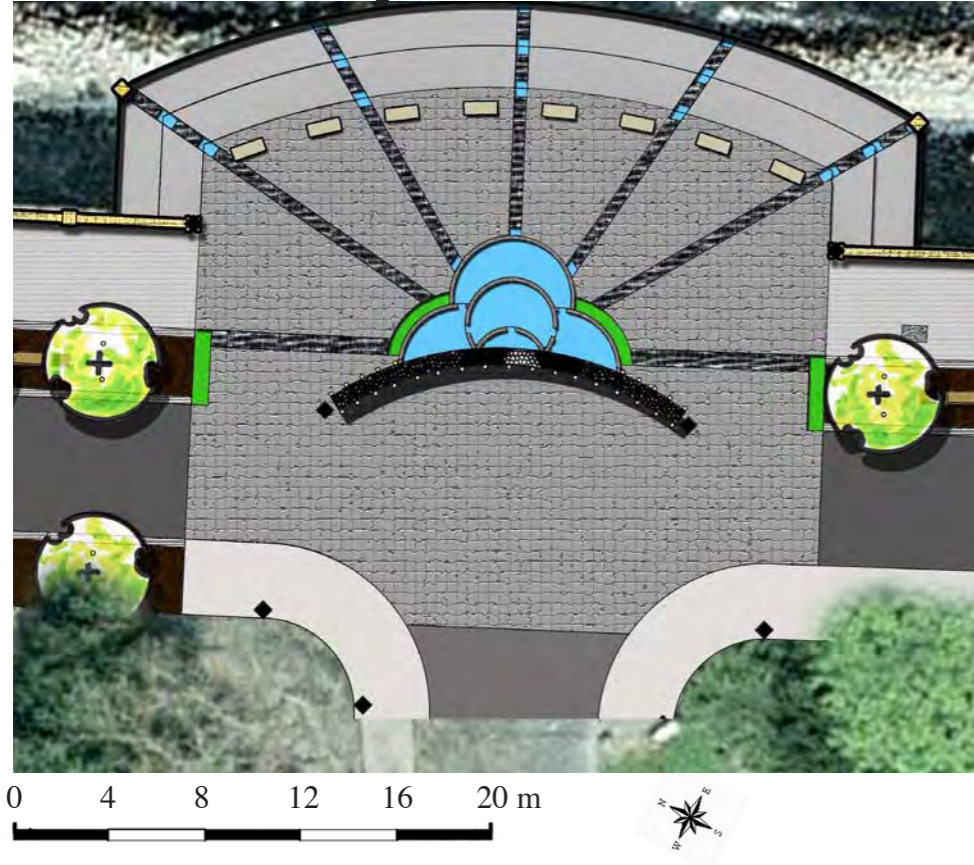
- Existing paving of the pedestrian and bike path.
- Mosaic tiling for plaza areas.
- Solar powered lighting
- Recycling bins
- Swales and bioswales
- Recycled water
- Stone and steel fencing
- Accent lighting



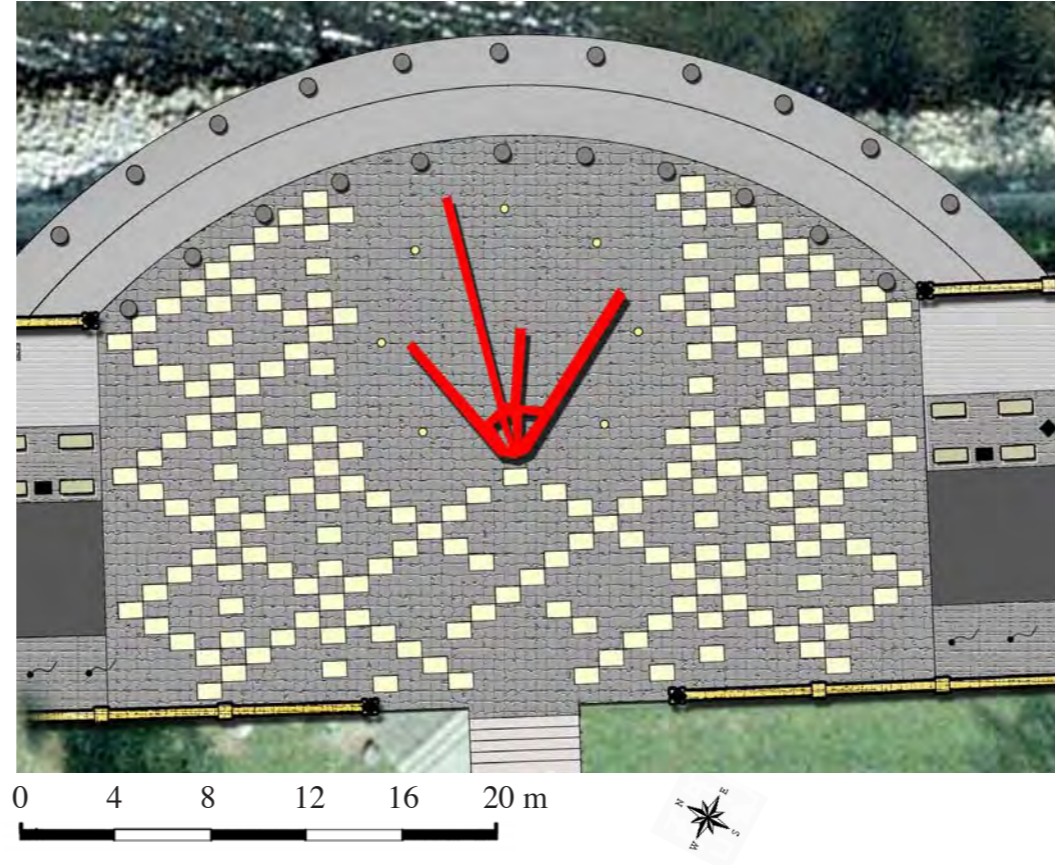
Master Plan



Sustainability Plaza



International Plaza



LEGEND

1. Pedestrian Path
2. Tree
3. Bike/Vehicular Path
4. Fountain
5. Informational Wall
6. Sustainability Plaza
7. Bioswale
8. Historic Placard
9. Stone Fence
10. Seating
11. Lighting
12. Trash Bin
13. Flag Impression
14. Bollard
15. L' Allume
16. Flag Pole

Institutional Walk

The purpose of this institutional walk is to highlight one of the major historical points in Bonn. Not only for being the formal place where the German Parliament met in the past, but for also being a current place for research into a new and sustainable future. The first node which is the sustainability plaza features a interactive fountain the recycles both water from the river and rainwater while treating it through a bioswale system. The second node features an international theme with the many national flags of the member states of the UN embedded into the paving with lighting underneath. Both plazas feature a deck that can give more intimate access to the Rhine River. Both areas are connected through a historical river walk containing placards embedded into the paving illustrating the many important and famous people of Bonn's past.



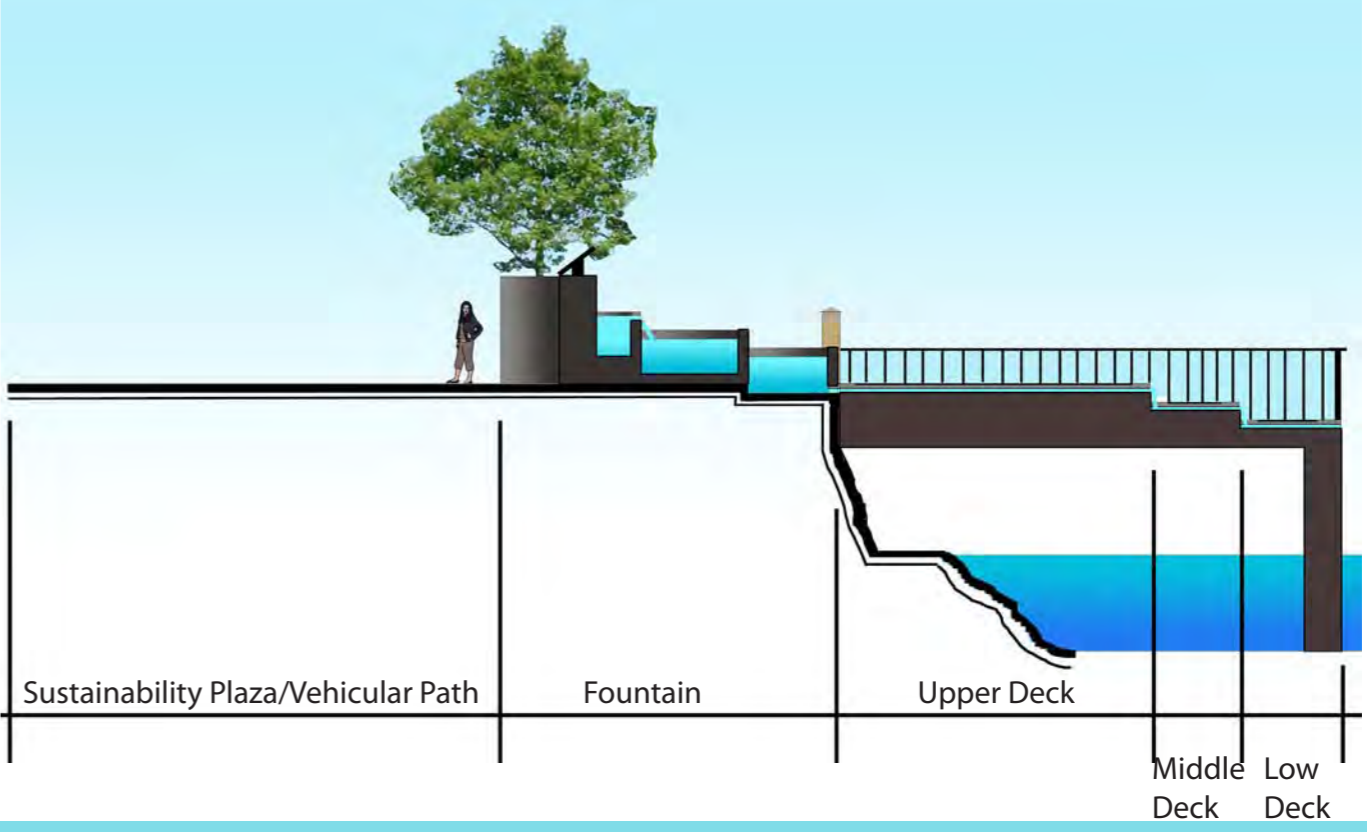
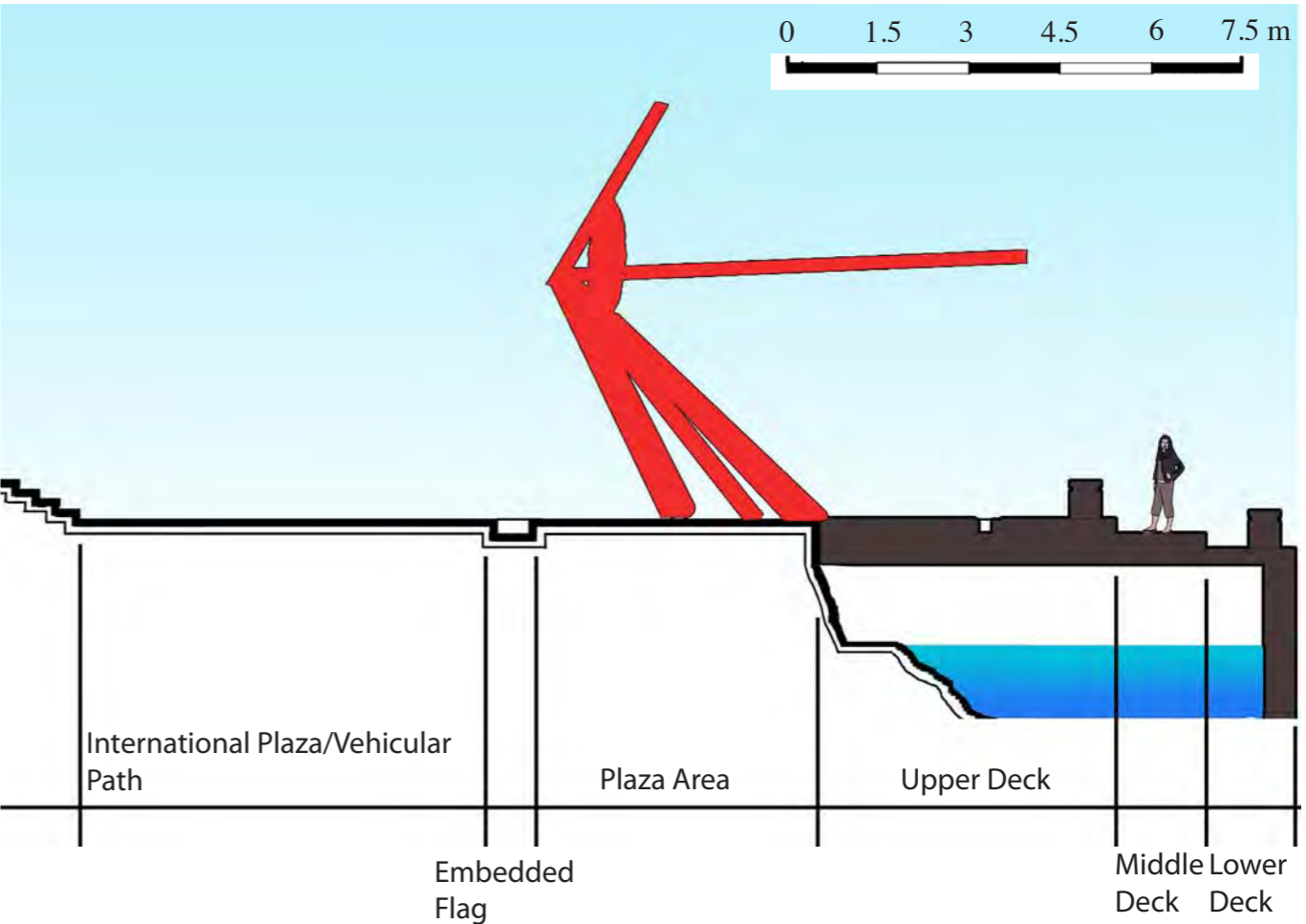
Site Details



This plaza is meant to attract visitors all over the world to engage in the cultural and international feel that Bonn, Germany has to offer. Visitors can witness the playfulness of the fountain in Sustainability Plaza or have their picture taken next to their country of origin in International Plaza. Whatever the cause, this area will be meant to leave a lasting impression.

Sources:

- http://www.mosaicstile.com/Construction_files/mosaic-tile1.jpg
- <http://www.vikingfenceanddeck.com/images/metal-fencing.jpg>
- <http://interiorlights.org/wp-content/uploads/solar-powered-lighting.jpg>





MISSION STATEMENT
 Bring attention to underutilized space, blending the corporate offices, governmental grounds, Rhine River, park land and recreational trails of Bonn.

ISSUES

- Oddly shaped
- Poorly planned space
- Awkwardly shaped land forms

POTENTIAL

- Major intersection of multiple modes of transport
- Used by several citizens daily
- Good view of Rhine river
- Adjacent to UN grounds, Rhine trail, corporate grounds and the Rheinaue



View towards Herman-Ehlers Strasse



View towards Kennedy bridge

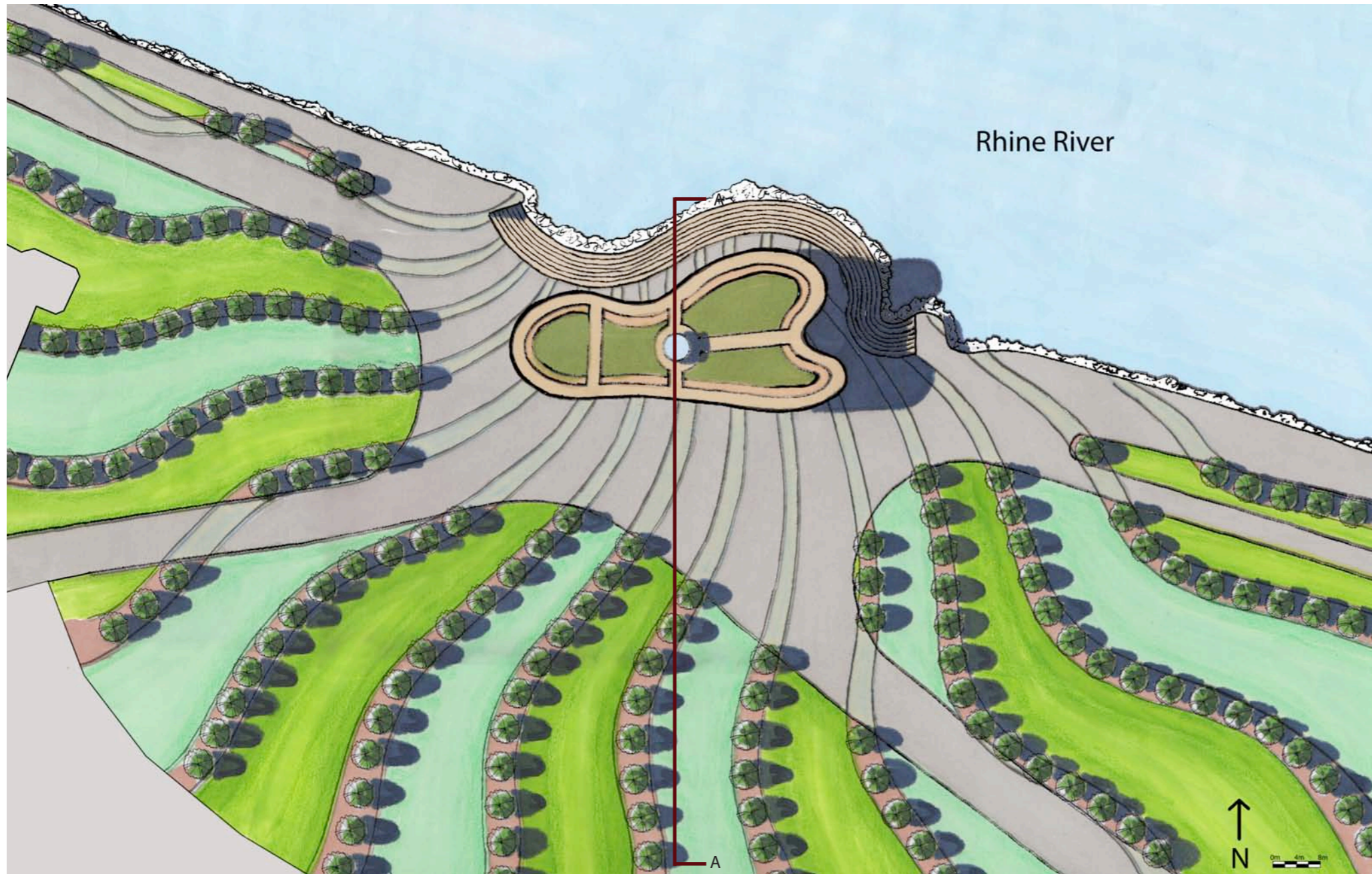


View towards UN Campus



View towards Rheinaue





Site Design Master Plan

The materials and form of the design bring attention to this overlooked space. The added restaurant serves as a visual focal point. The alternating paving and grass, as well as the rows of trees together form waves that lead to the restaurant and riverfront steps. The form of the building is curved like flowing water, and extends and recedes from the back like the erosion process of water on land.

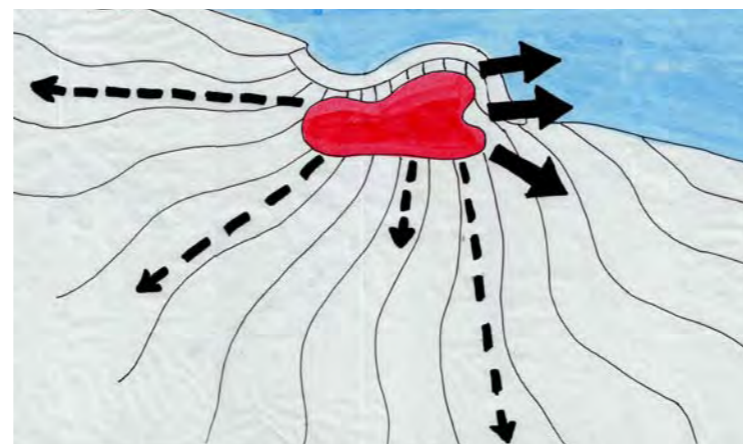
Circulation around the restaurant remains normal. Vehicles stay to the main roads that form an obtuse angle. Pedestrians and bicyclists are free to move around the structure or underneath it.

The east face of the building, as well as the furthest extending river front steps are oriented towards the Seven mountains, emphasizing that view to users.

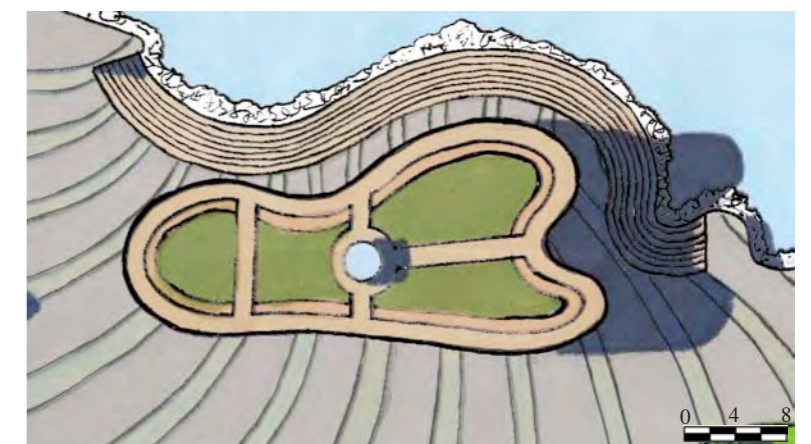
The curvilinear tree pattern creates small vistas to view the surrounding corporate and governmental grounds, while obscuring others, making the space feel smaller and more intimate.



Circulation Plan

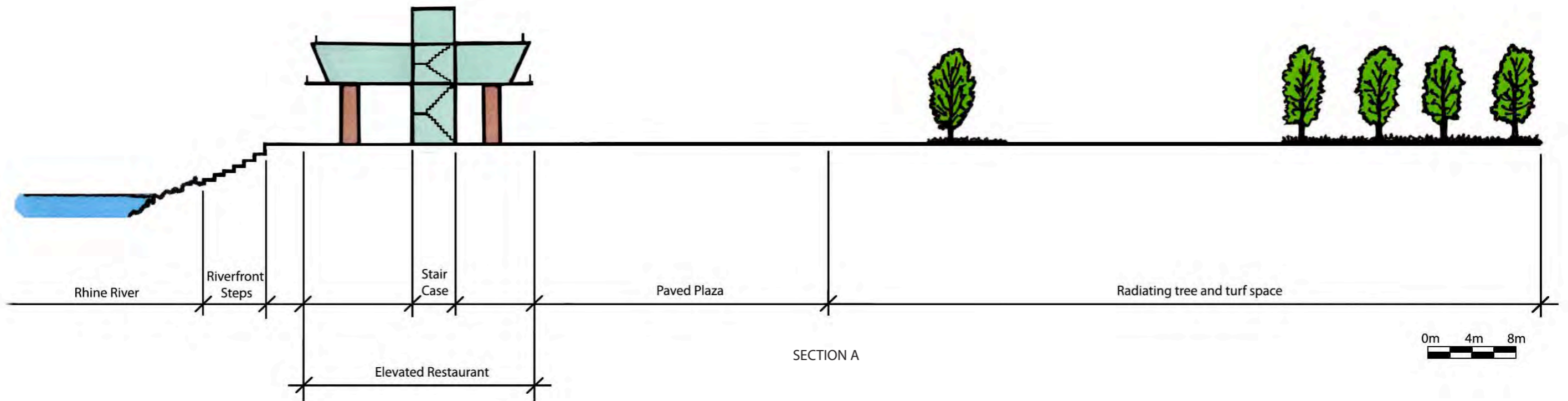


Viewpoint Plan



Enlarged restaurant plan





http://fc02.deviantart.net/fs25/f/2008/137/9/6/Grass_Stock_by_Fairiegoodmother.jpg



http://durhamtrainsofstanley.co.uk/my_store/images/WT45.jpg



http://www.artistdaily.com/cfs-fileSystemfile.ashx/___key/CommunityServer.Blogs.Components.WeblogFiles/pleinair/0810tree3_5F00_600x586.jpg



<http://www.slowtrav.com/blog/deborah/photoHunt%20STRIPES.JPG>

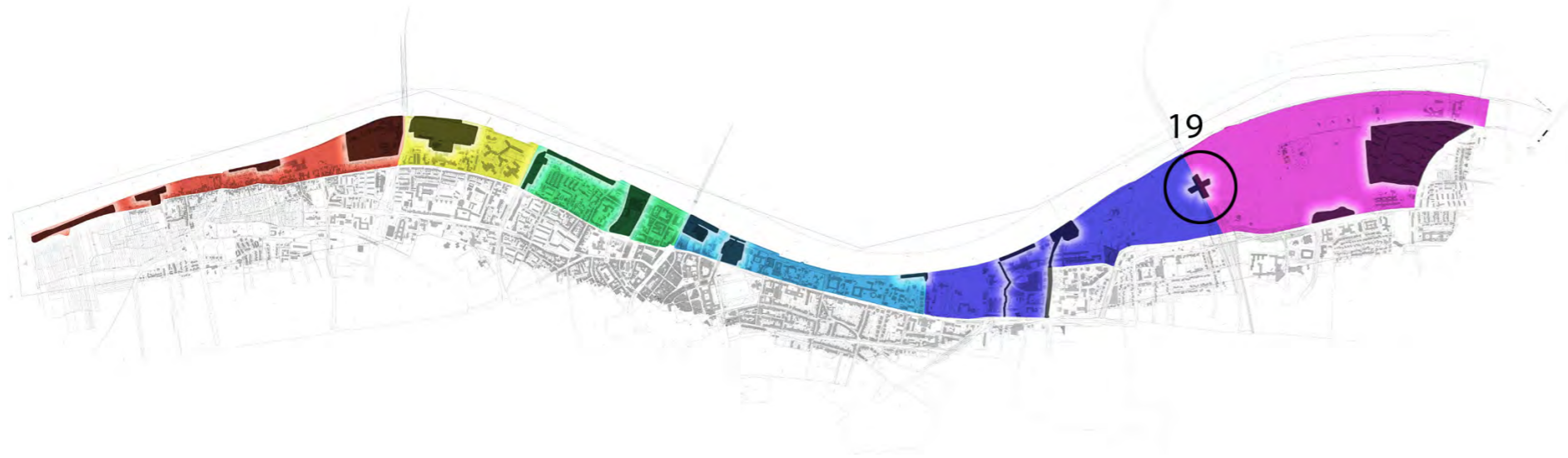
The first floor of the structure is open aired, supported by columns. The second level restaurant is encased in glass to allow outsiders visibility through the building, and those inside to view outward towards the surrounding scenery. The roof level is a green roof, which serves as social gathering spot, and offers a great view of the river and Seven mountains.

Key Design Materials:

- Variety of grass species, planted in tree divided rows
- Contrasting paving symbolic of waves
- Vertical growing trees



Under the South Bridge

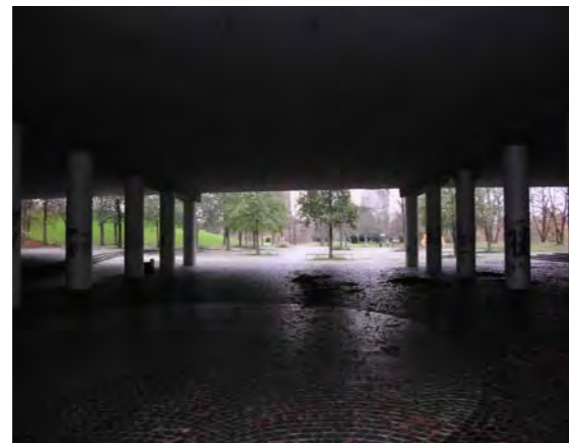


Existing Site Conditions

This site is located in the Rheinaue Park under the South Bridge. It is a connection points between two sides of the park and also the location of the Rheinau tram stop.



Sense of Place?



Dark and Uninviting



Graffiti

Goals

Create Sense of Place

- Make point of interest in the park

Promote Safety

- Create efficient/attractive lighting

Promote Unity

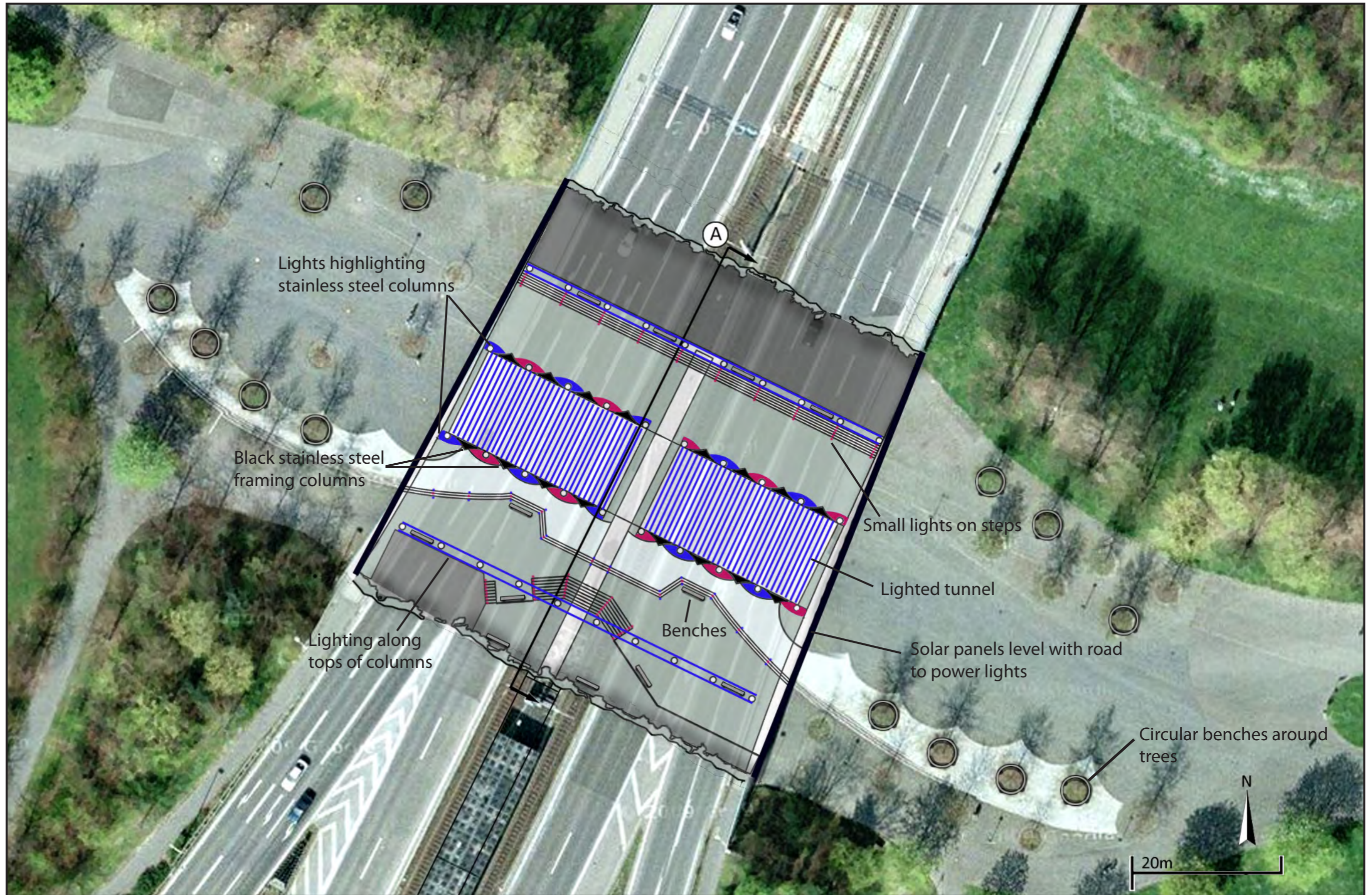
- Create smoother transition between sections of the park
- Transition between tram stop and park
- Represent scale of the site

Maximize Potential of Area

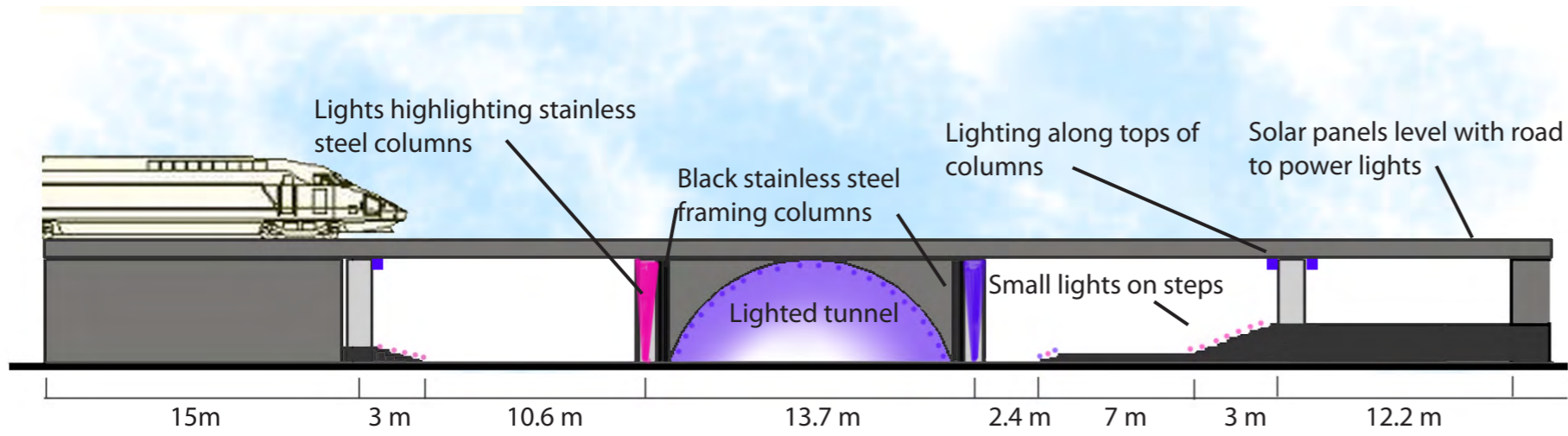
- Develop under utilized areas



Plan View



Section A

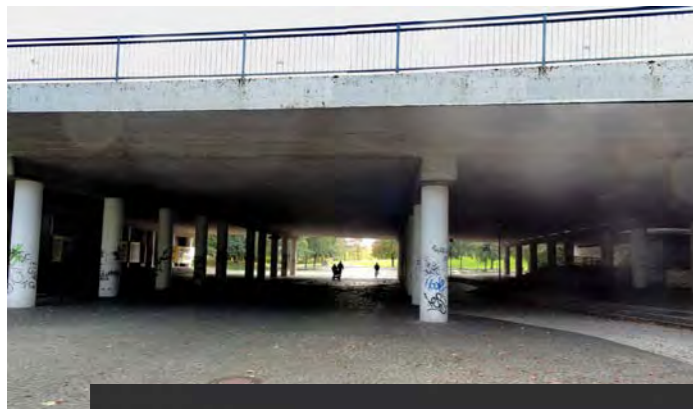


Details of Proposed Elements

Stainless Steel Columns - with protective coating to remove graffiti and enhance lighting effects

Benches - gives visitors a place to sit and relax or enjoy light shows

Lighting -Brightens area, creating a sense of place.
 -Allows potential for light shows
 -Accentuates architecture



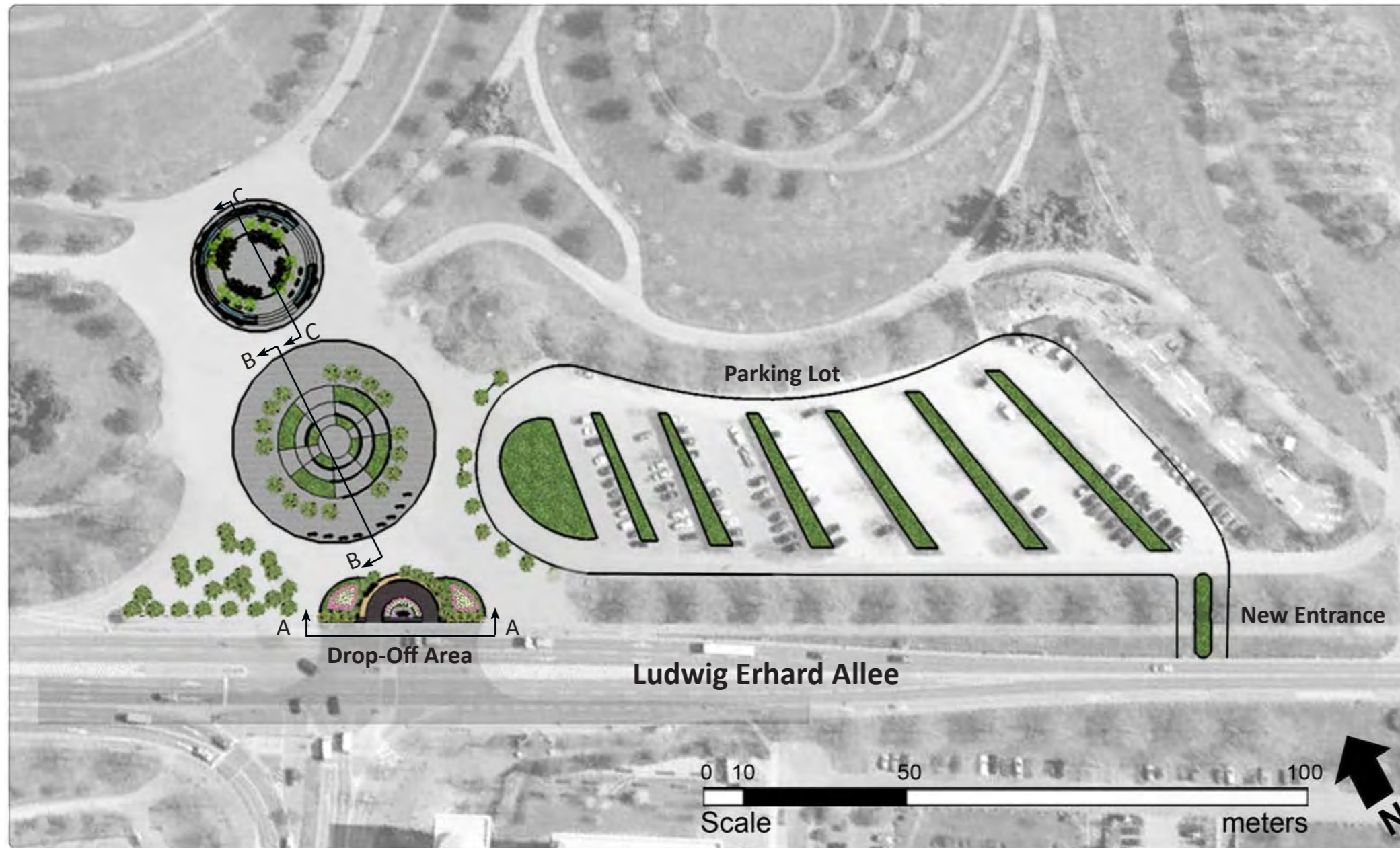
Current Conditions



Proposed Conditions



Master Plan



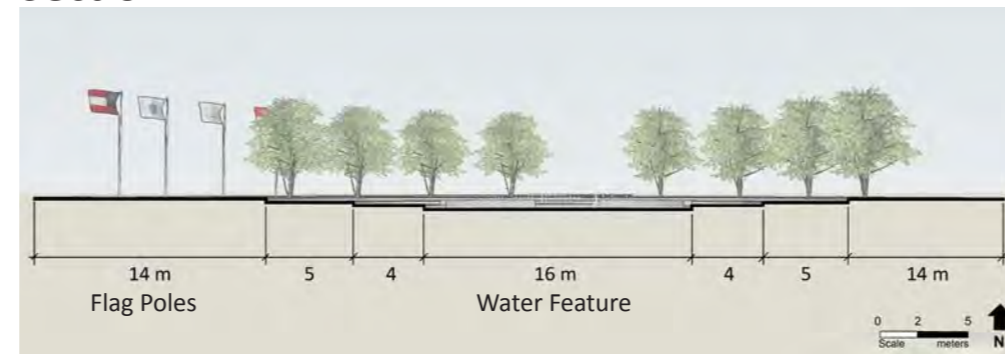
Impressions: On Site



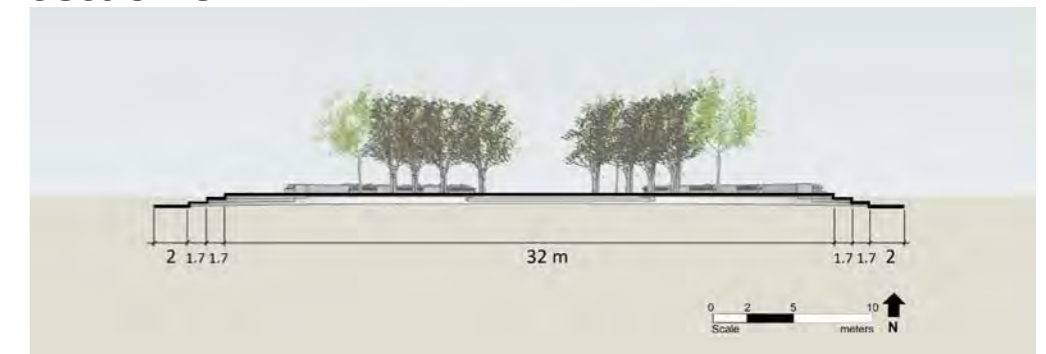
Elevation A



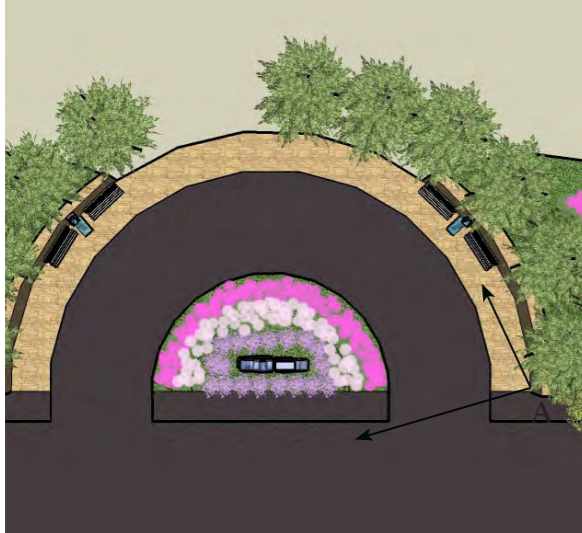
Section B



Section C



Plan View



Birds eye View

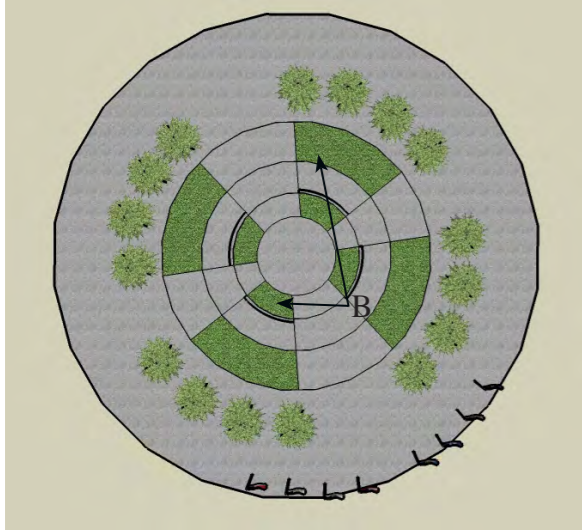


Perspective A



View of the drop-off area

Plan View



Birds eye view

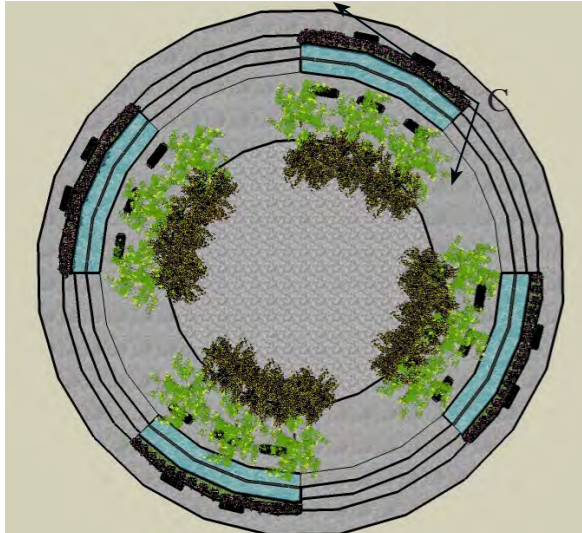


Perspective B

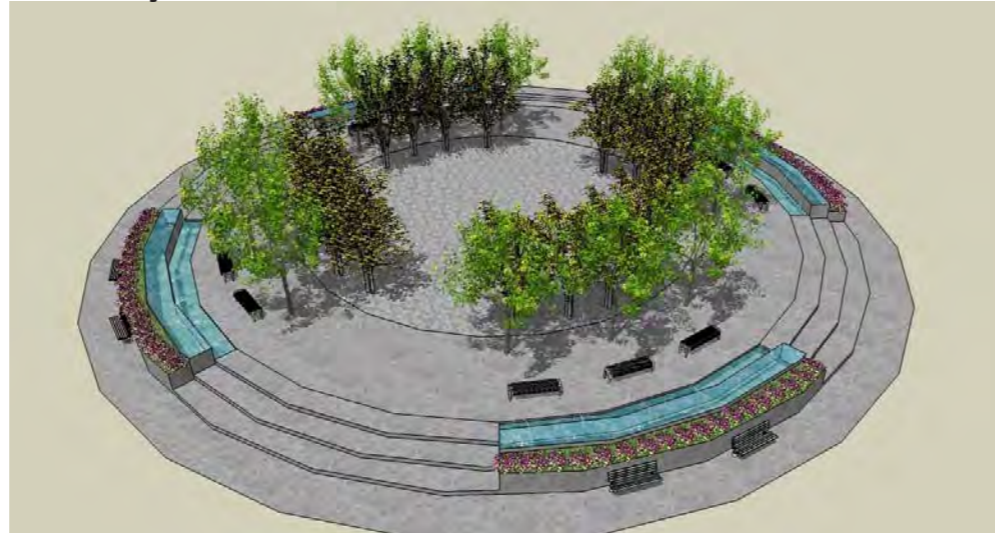


Interactive water feature in the center of the larger plaza

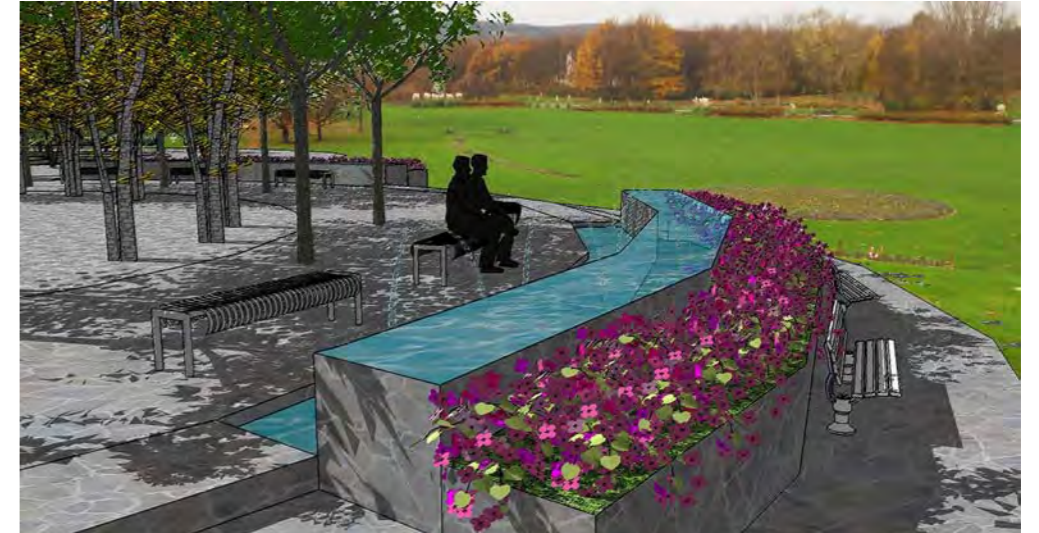
Plan View



Birds eye view



Perspective C



Observation point to a large open lawn area from the smaller plaza



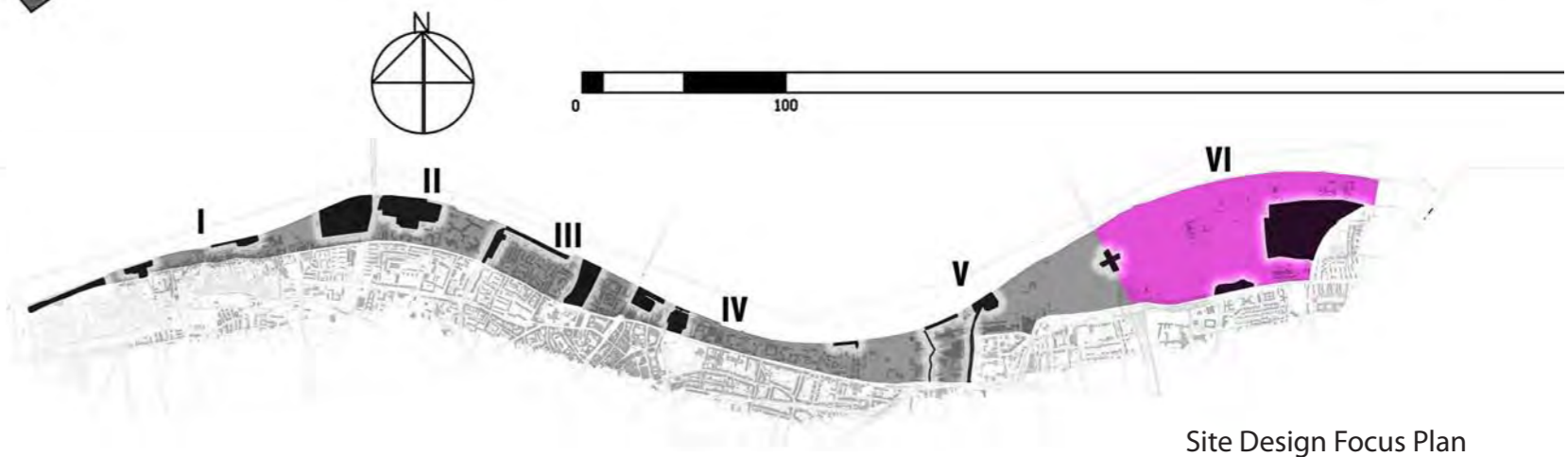
The New American Village Master Plan

The American Village (#17) sits at the southern end of Rheinaue Park. The village is calm and quiet, almost relishing in its proximity to the park. With this in mind, the goal of this design is bring vitality and economic viability to The New American Village through the means of American culture.

At the north end of Rheinaue Park there is the steady flow of business while at the south end there is *The New American Village*.



Aerial view of the existing American Village



Site Design Focus Plan

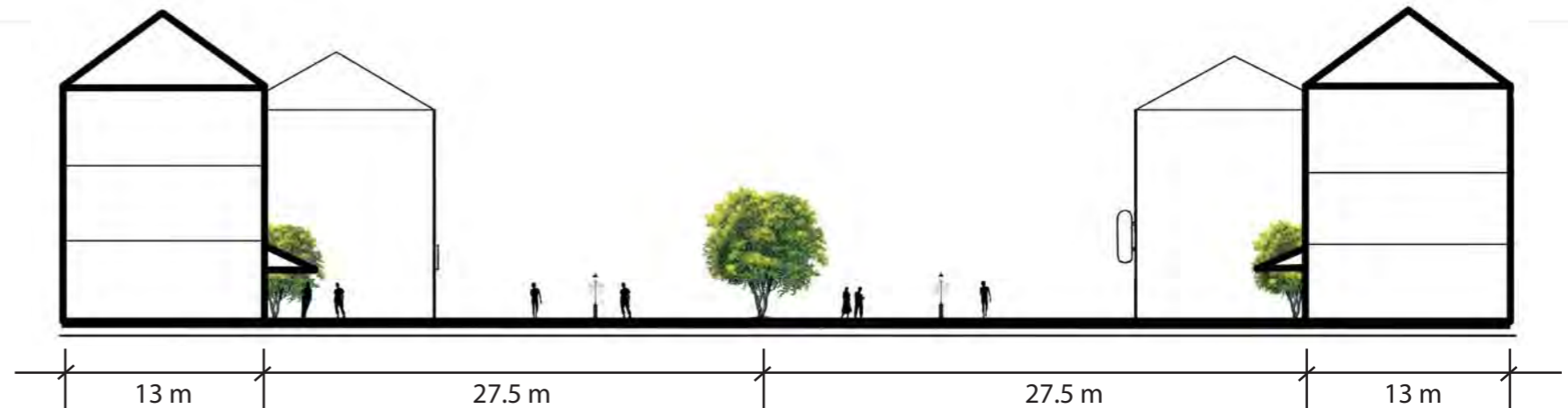
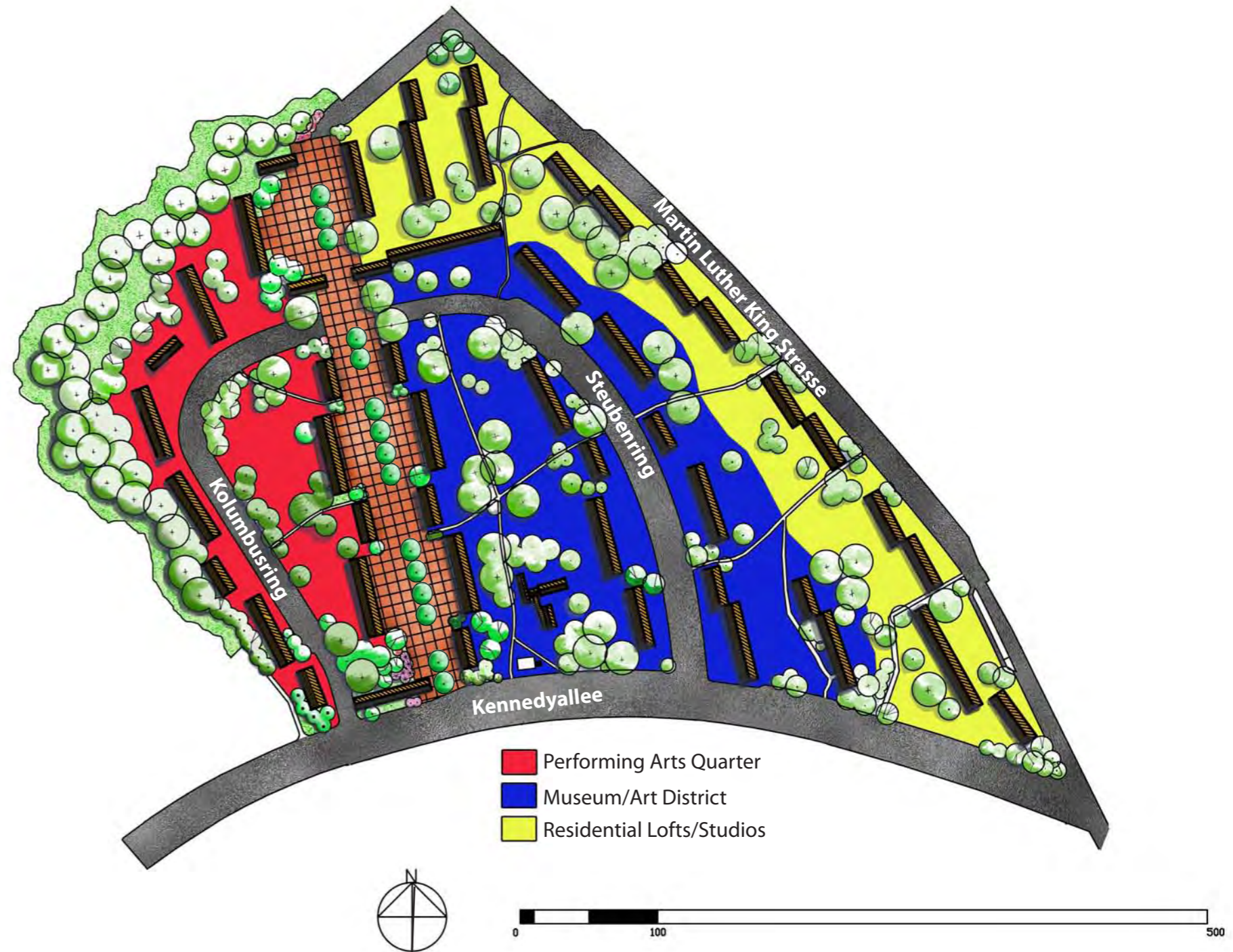


The New American Village Activity Plan

The New American Village offers citizens and tourists alike an opportunity to experience American culture. Not quite a Disneyland, The new American Village offers attractions such as an American Food quarters, with meals from different cities located around the States.

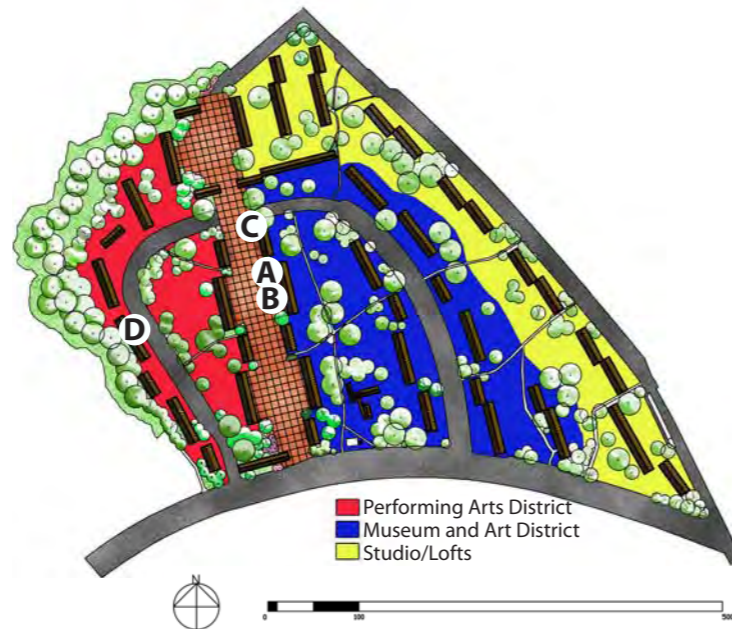
The young (as well as mature) crowd may enjoy the Performing Arts quarter that offers dance clubs featuring 50's swing and rockabilly music and also plays and acts from prior decades. There are record stores along with live concerts held both indoors and out.

The Museum/Art district is a different environment offering art lessons from artists staying in the American Village. Also, galleries display different exhibits demonstrating art movements from the American past as well as special showings such as Native American Pottery. Toys, historical figures, and American pop culture are all on display in this district.





A Diner Perspective



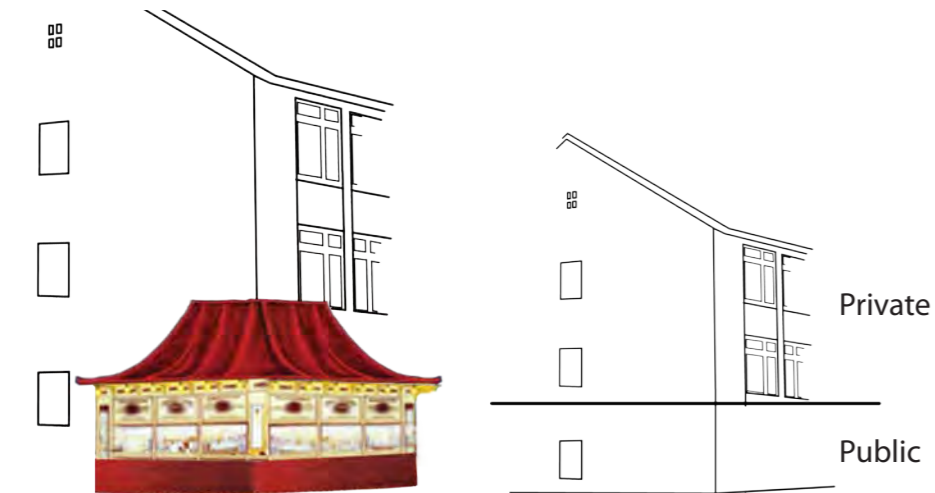
The separate staircase allows entry to the private apartments without going through a store or restaurant.



B Ice Cream Shop Elevation



A + B combination perspective



C Corner Restaurant

Public/Private division

ATTRACTION	KIDS	TEENS	COLLEGE	MIDDLE AGE	SENIORS
50's, 60's, 70's, 80's Museum(s)	X	X	X	X	X
Toy Museum	X			X	X
Music Museum	X	X	X	X	X
Movie Theater	X	X	X	X	X
Theater	X	X	X	X	X
Hair Salon		X	X	X	X
Tie Dye Shop	X	X	X		
Dance Halls		X	X	X	X
Clothing Stores		X	X	X	X
Diner	X	X	X	X	X
Drive In			X	X	X
Studios			X	X	X
Galleries			X	X	X
Record Store			X	X	X
Souvenir Shop		X	X	X	X
Pottery Shop/Museum/Classes	X	X	X	X	X



Before



After

D Perspective of Performing Arts District





Appendix: Waterfront Development Case Studies



Planning and Design for the Waterfront
Redevelopment of the West Bank of the
Rhine River, Bonn, Germany



Department of Landscape Architecture and Urban Planning,
College of Architecture, Texas A&M University
CARC 301 Study Abroad Design Studio, Fall 2010

KNSM Island, Amsterdam, Netherlands

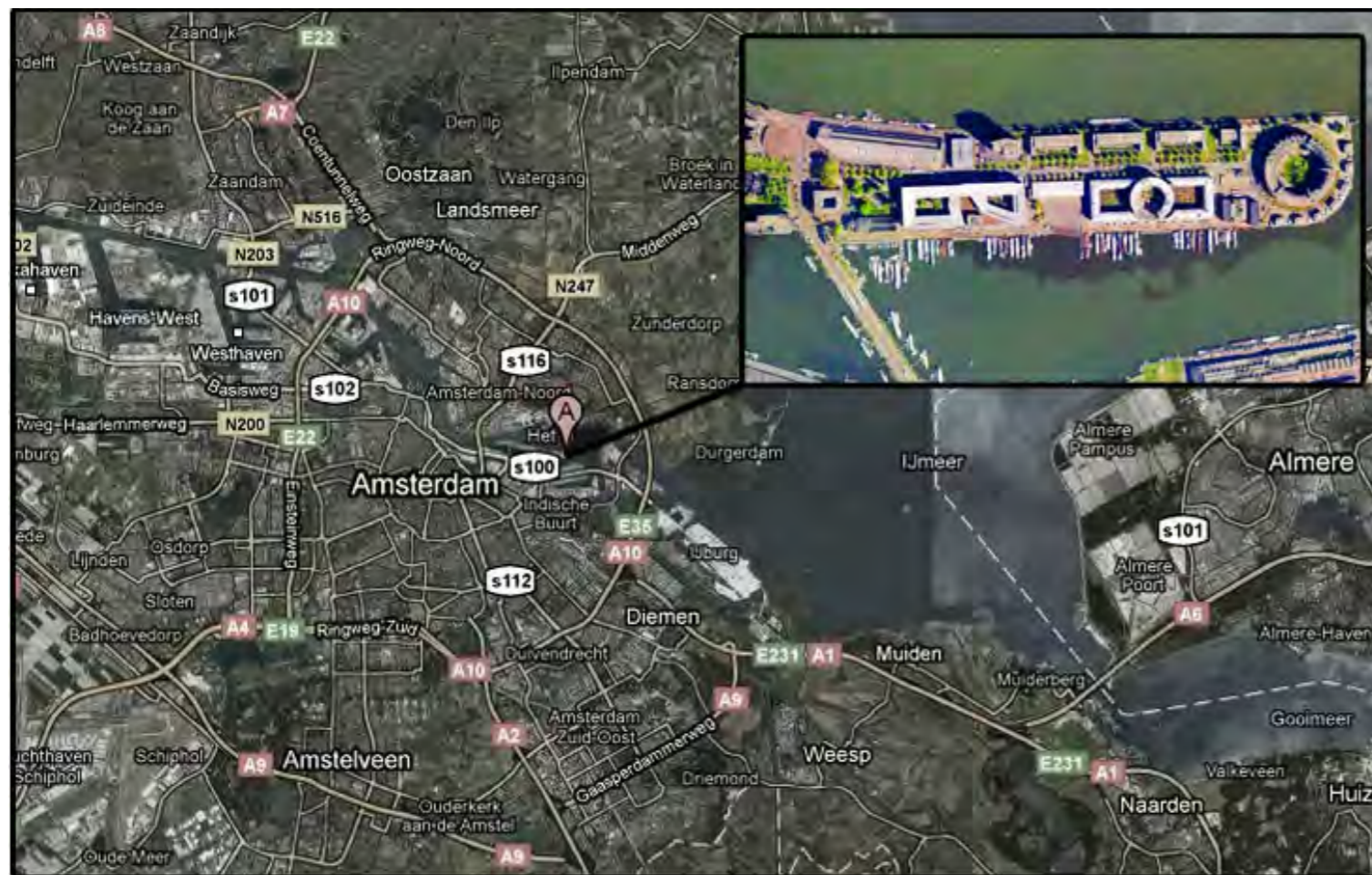
Introduction

Waterfront redevelopment projects as a whole is an art within itself by utilizing the opportunities provided as well as trying to integrate the environment with the demands of society. By incorporating all major aspects of a waterfront redevelopment project including, strategic design, social and cultural significance, economic value, and environment impact, it will result in a beneficiating thriving area. KNSM Island, located near the Eastern Docklands on the Amsterdam waterfront which is a great example of this concept. With an ambitious redevelopment plan executed, it enabled Amsterdam's waterfront to reemerge as an internationally acclaimed model for urban waterfront planning, development, and culture. With the extraordinary efforts of both public and private parties, numerous housing units, both affordable and premium, have been built, along with new opportunities for offices and retail, and a culture and entertainment center. With all of these characteristics combined, it creates a vivacious and lively urban environment for the surrounding area.



History

The Koninklijke Nederlandse Stoomboot Maatschappij (KNSM; Royal Dutch Steamship Company) was founded in 1856. In the early days of the KNSM, the quay at Kattenburg was used for docking boats and storing cargo, and later on moved to the Oostelijke Handelskade (Eastern Docklands). For the protections of the moored ships against waves and strong north and north-west winds, a protective dam north of the Eastern Docklands was constructed in 1876. When the shipping companies grew even larger over the years and thus a need for a larger mooring capacity became urgent, it was decided upon changing the former dam into an artificial island, which is now known as KNSM Island. In the early eighties the city council contemplated changing the island into a housing areas but it took until 1990 before the area was developed. (Artext) Jo Coenen was approved to become the master architect for the new KNSM Island for the urban planning and development of the area.

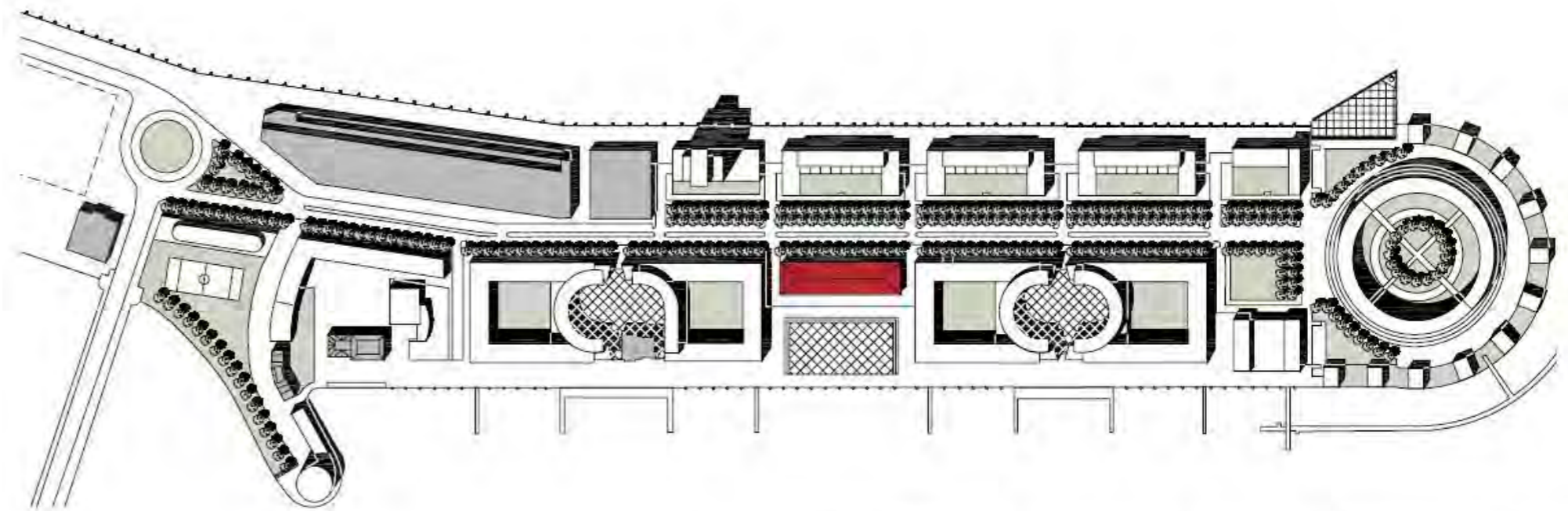
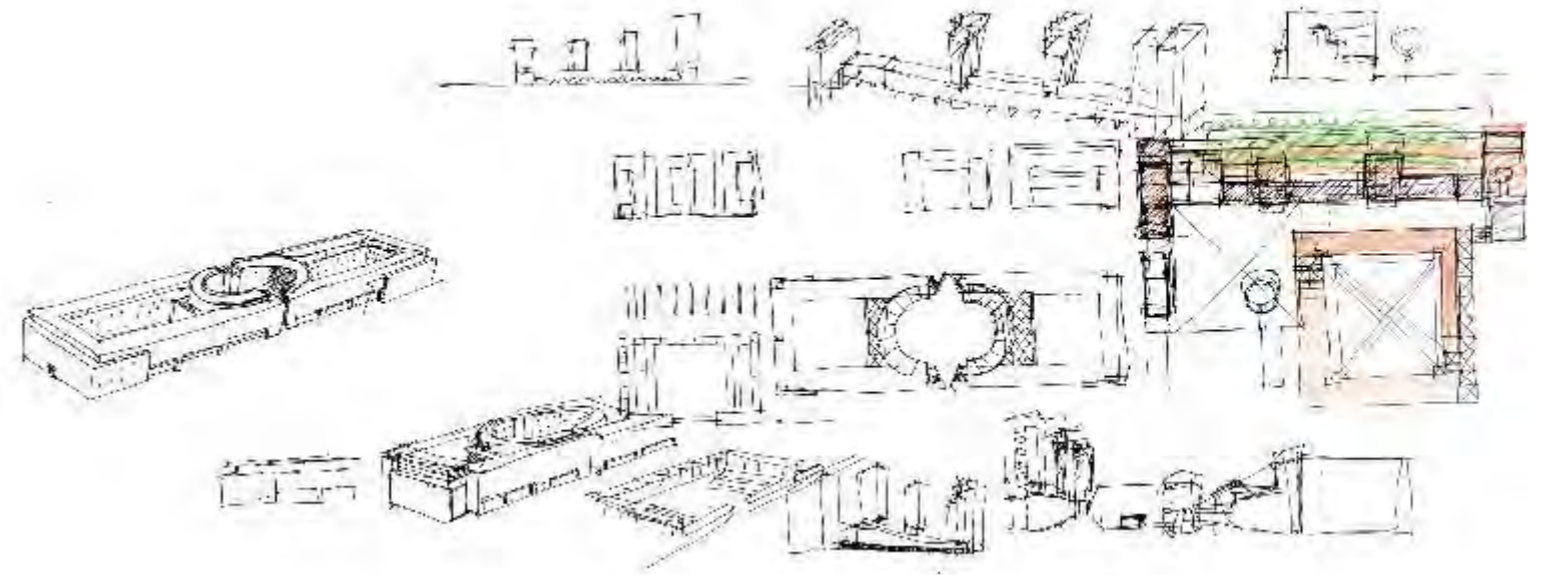


Redevelopment Strategies

In lieu of the cities' lack of housing caused by insufficient space and/or the over 'use' of investors, the city was in desperate need of new housing facilities and not to mention, a new face for KNSM Island. Until just recently, Amsterdam allowed investors to buy flats within the city and leave them vacant in hopes the value of the flat would rise over time. This caused problems for the city because number of available flats in Amsterdam was not enough to supply the residents' homes to rent and own. The city soon recruited Coenen to plan and develop a new residential domain for KNSM Island. Joe Coenen's main goal was "to create an urban ensemble that can vie with the inner city, in spite of the narrow, elongated shape of the island." (Coenen) His source of inspiration was the southern district of Amsterdam, with its well proportioned building blocks and carefully situated streets, hence the asymmetrically placed boulevard running lengthwise, flanked by apartment blocks with courtyards. (Coenen)

With this planning strategy, Coenen wanted to incorporate the architectural styles of the historic city of Amsterdam with the more modern styles of architecture and art. While plans initially called for a rather exclusive neighborhood of home owners, which was later reversed. Since the city of Amsterdam encompassed a lot of financial backbone in the project, they mandated that a significant portion of the homes were to be built as rentals, to attract a more diverse population. Coenen's original idea of building new buildings into a cliché and a mono-cultural housing development did not go as planned. Some existing buildings and warehouses were occupied by informal activities. This initial mixture of different activities ultimately led KNSM Island to become, not a "parasite" on the urbanity of the inner city, but an urban center in itself.

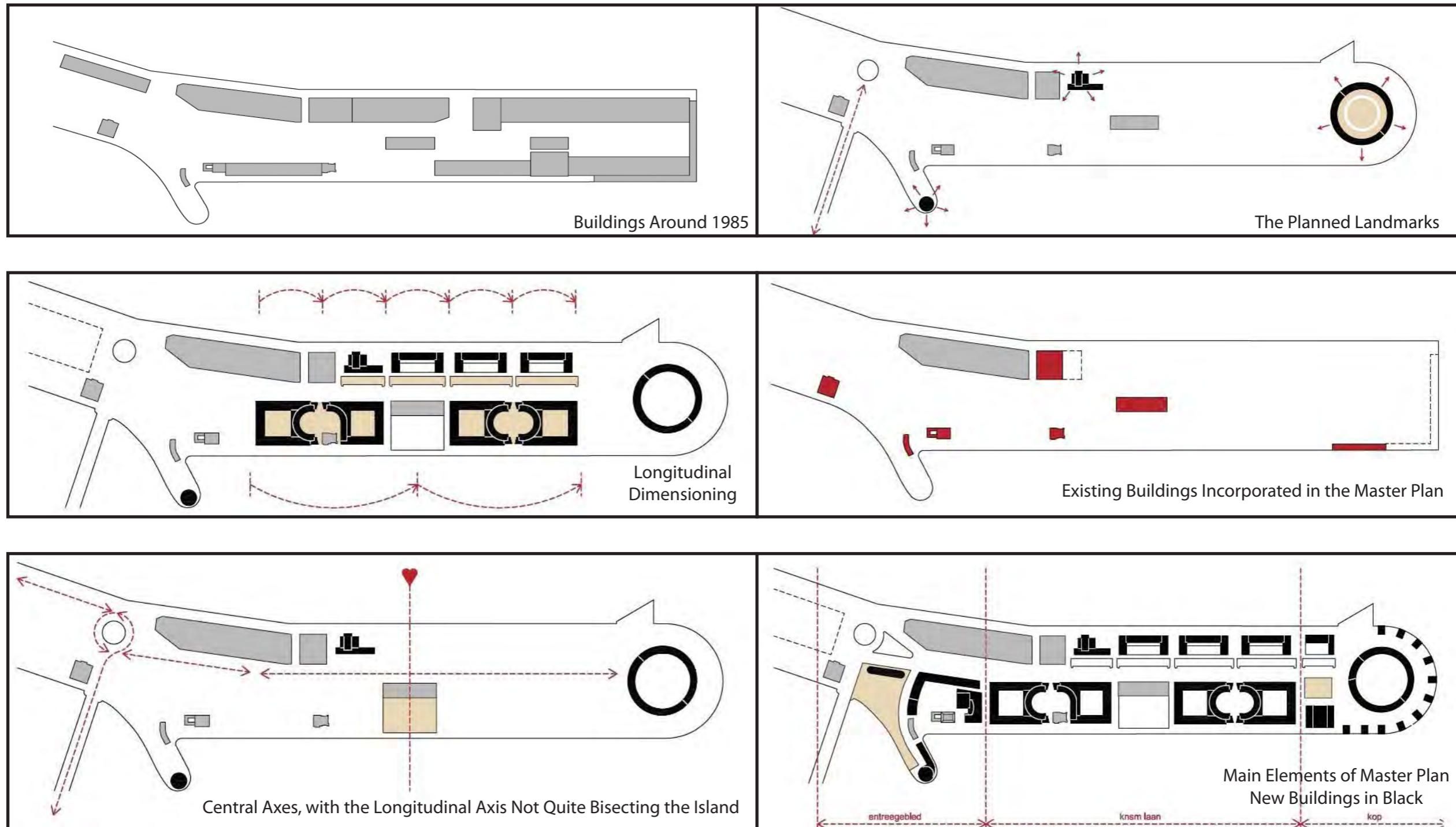
Coenen "envisioned a mixed use of the space, and planned "super blocks," big buildings containing lots of individual homes and apartments, along a central avenue, mimicking the organization of the island's former warehouses and storage buildings." (Coenen) He wanted to integrate the old uses of the island to tie in history and systematically create the best example of urban recycling. With his "blank canvas" his first step was to remove a number of the buildings on the island and to plan the major landmarks for the island, including: The Emerald Empire, The Sky Dome, and an access point to the island. These would be used as reference points for the developer as the project was being developed and for the community which would eventually inhabit the space. Longitudinal dimensioning was a main design strategy used for this development project, mostly coinciding with the concept of the old style and use of the island and the shape of the island. Using central axis points for the island design gives the orientation of the island a nice symmetrical plan, which is another main notion Coenen wanted to implement. The new buildings that were planned for the island molds the island into a form that is easy to access and is easy to move throughout the space.



master plan KNSM-island, some changes were made to the bridge and blocks



Redevelopment Strategies



A number of new buildings were constructed on the island, mostly for the use of residential housing, and some with mixed use development. The Emerald Empire, designed by Jo Coenen, is one of the more popular buildings that is strictly residential. Although, with the high income demeanor, all flats are to be own, with no option of renting. The Piraeus, however, is another large housing block which has 150 different types of apartments, of which 95% is social housing with the option of renting and owning. The Sky Dome is the highest building on the island with twenty stories. Other new buildings include the Albert, Hoogland, and the semi-new "Loods 6." Loods 6 is now known as one of the more popular spot for artist and innovators, it is highly known around the city as a place to display their artwork in exhibitions and galleries locked in and around the building.



Results

The island currently has an 85% occupancy rate that is increasing each year. (Knüvener) On average, the rent for an average size flat (130-150 m²) cost about 2,500-3,500 Euros per month. Although costly, keep in mind that there is a whole building that is 95% dedicated to low-income housing units, which result in a significantly lower rental cost. As you can see in there is nearly an equal amount of open space to residential space, if not more, which was one of Coenen's goals in his master plan. Although, with the amount of festivals and exhibitions held on this island, it seems that there is not enough allotted space dedicated to these events. On such a small island with so many people where the density rate is very high, open space is important. The amount of commercial space within the residential areas, also known as mixed use development, I believe is a well allotted amount. There is also a high number of restaurants, which is closely linked with the amount of tourist and visitors coming to this areas, as well as the high amount of residents on the island.

The only problem with this redevelopment project is that it was not built with sustainability in mind. Most of the buildings are higher energy consumption buildings even though this project had great potential in this area. I believe if they integrated water catch basins, green-roofs, and solar appliances, this redevelopment project would one of a kind. The location of this island would support these systems well with the abundant rain and sun Amsterdam receives year-round.



Lessons Learned

KNSM Island is a perfect example of how a strong redevelopment strategy that is planned from the beginning, you are able to improve even the most unlikely areas. You will be able to transform deserted areas and unknown land into something the public and community can incorporate into their daily life as well as, improve the quality of life of the persons already taking use of the area. The beauty of a redevelopment project is the fact that the reuse of existing structures can be stronger than the image of new buildings and new infrastructure. Existing make up of the area gives the opportunity to reduce, reuse, recycle, and to become as environmentally friendly as possible: one of the main goals of all urban planners today. Reusing existing buildings connects the current life to the history of the area resulting in stronger ties to the city and community. It is important to connect the traditional way of life, to the more modern way of life by the use of traditional architecture as well as modern architecture because it gives a sense of belonging to both the local society and visitors to come. KNSM Island also integrates diversity and mixed use development well within their development which are key concepts in a master plan for a successful redevelopment project. Will all of the important factors combined, it is not a mystery why and how KNSM Island has become so successful. I believe by embracing what you are given in the beginning, you have a very unique advantage than those who are given an empty area to work with.

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Chicago Waterfront Development

Introduction

Waterfronts are the most valuable resource of a city, and are usually the first part of the city that is built, for that reason it needs redevelopment sooner than any other parts of the city. The city of Chicago covers an area of 60000 hectares and about 3000 of these hectares are city parks totaling 552 parks, the city has a population of approximately 2,853,115. This city was built along a Fresh body of water, Lake Michigan. The Lake is approximately 190 km wide and 495 km long making it the 5th largest fresh body of water in the world. Chicago has a lakefront of 26 ml. and there are many public spaces that can be found along the waterfront such as: Parks, Beaches, high-rise commercial and residential buildings, cemeteries, golf course, the Aquarium, Lincoln zoo, Planetarium, soldier field, and many more. Also the city of Chicago adopted the Percentage-for-Arts Ordinance in 1978, this required the city to incorporate art with new development and redevelopment. Actually Chicago is the 1st and largest Municipalities to required public art as part of the renovation or construction of municipal buildings.



<http://www.city-data.com/forum/attachments/toronto/43597d1245356194-park-top-gardiner-chicago-waterfront-park.jpg>



http://www.hhl.de/wordpress/wp-content/uploads/2009/09/chicago_skyline.jpg
city of chicago

Chicago's History

The city of Chicago started out as a trading center taking advantage of its location along lake Michigan. The first resident is believed to have been a trader originally from Haiti as the city of Chicago states, " Chicago's first permanent resident was a trader named Jean Baptiste Point du Sable, a free black man apparently from Haiti, who came here in the late 1770s." Fort Dearborn was built in 1795 by the U.S government, 17 year later it was burned by the natives. Soon after Forth Dearborn was reconstructed and



<http://www.library.wisc.edu/etext/wireader/Images/Big/WER1236.jpeg>
Fort Dearborn in 1831.

in 1857 it was demolished and never rebuild again. The city of Chicago was officially incorporated as a city on March 4th 1837. In 1848 the Illinois and Michigan canal was finished, this canal linked lake Michigan and the Mississippi River facilitating trade and transportation in the Chicago area. The canal was soon over taken by the railroads and to this day about half of the U.S rail freight passes through the city of



<http://www.wolfskiller.net/Chicago/GreatChicagoFire.JPG>
The Chicago fire

Chicago. In the 1850s the Sewer system was installed, this was possible when the city raised it streets, sidewalks and buildings five to eight ft higher. The city of Chicago was destroyed to the ground in the Great Chicago Fire of 1871. Most of the debris was dumped into lake Michigan, creating a foundation to what are now Grant and Millennium parks as well as forming the foundation for the Art Institute of Chicago. After the Great Chicago fire Chicago experience lots of growth. Immigrants were coming from all over the world to work in factories and meatpacking plants. The World's Columbian Exposition of 1893 was held in Chicago. Thanks to the generous contributions of the Elite and the ability of banker Lyman Gage to raise several millions dollars in a 24-hour period, Congress voted in favor of Chicago versus New York. To choose a site became difficult finally, Jackson Park was chosen to be the place for the Worlds Columbian exposition, as Encyclopedia of Chicago states (2005):

Many downtown commercial interest favored a central location, but struggles over property rights and traffic congestion forced the





<http://www.chicagohs.org/history/expo/gif/crowdson.jpg> The World's Columbian Exposition 1893 had 716,881 on the Inauguration day

exposition corporation, headed by Harlow N. Higinbotham, and national exposition commission, headed by Thomas W. Palmer, to settle for Jackson Park, as marshy bog seven miles south of the loop.

Daniel H. Burnham was the exposition director of works; his main inspiration came from the 1889 Paris Universal Exposition. Towards the end all buildings were neoclassical painted in white, giving the city a new nickname White City.



http://www.famousquotesandauthors.com/pictures/daniel_h_burnham.jpg
Picture of Daniel H. Burnham

Transforming the city of Chicago

The First Skyscraper was built in 1884, it was made of steel and it was a 10-story building that was demolished in 1931. In May 3, 1973, Willis Tower or formally Sears Tower was completed. Willis tower is the 3rd tallest building in the world with 1450ft high. Due to the fear of developing the city of Chicago with high-rise buildings, the citizens of Chicago began to protect its parks. Grant Park Officially Lake Park and also know as the city's front yard, traces its development to 1835, as Chicago park district states (2010) "Grant Park's beginning date to 1835, when foresighted citizens, fearing commercial lakefront development, lobbied to protect the open space." The park suffered from erosion because of the railroads and from debris after the great fire. Soon after Daniel H. Burnham wanted to develop this area but was stopped by a lawsuits of Aaron Montgomery Ward, who wanted to protect the open space. In 1997 the railroad tracks were transformed into what is now Millennium Park. Millennium park encompass a total area of 34.5 acres and it includes: the Jay Pritzker Pavilion, Crown Fountain, Cloud gate, Ice Rink, Wrigley Square and Millennium Park Monument, The Lurie Garden, and the BP Bridge.



<http://www.cheekychicago.com/wp-content/uploads/2009/08/grant-park.jpg>
Grant Park



http://www.millenniumpark.org/artandarchitecture/jay_pritzker_pavilion.html

Millennium Park

Issues

One of the biggest issues in developing the Millennium Park was that it was over budget by over 300 million dollars. The Initial budget was of 150 million were 120 million was finance with bonds and the rest would have been private investors. The total cost of the Millennium Park was 475 million, in which the city end up paying 270 million and and over 200 million was donate by private investors. Another issue was that the park was behind schedule, the initial completion year was in 2000, but the park did not open till 2004, this is one of the reasons that the total cost also increased.

Goals

The goals when creating this park were many, as stated by Bruner Foundation (2009)

Transform the commuter railroad tracks, surface parking and degraded park land in the northwest corner of Grant Park into a landscaped venue for free public Programming, concerts and event

To created a permanent home for the Grant Park Music Festival
To provide one-of-a Kind public art spaces as a "gift" to all the citizens of Chicago from patrons who have made their fortunes in the city

To lay the foundation for future private residential and commercial development in the area.



Planning Design and Strategies

The Plan of this massive project was to transform the railroad tracks of the Northwest corner of Grant Park into a more sustainable area. The Millennium Park is actually a green roof, is it build on top of the new Millennium park-parking garage. Included in the design was the open-air art gallery as well ice skating rink a bike rental facility among others.

The architect chosen to build the Jay Pritzker Pavilion was Frank Gehry. The pavilion is 120 ft high and it's made of stainless steel, it includes 4000 fixed seats but is able to hold 7000 more people in its lawn. BP Bridge was build to connect the park and to facilitate access to the park promoting walk-ability. The Lurie Garden was design to give homage to Chicago's motto "Urbs in Horto" which means City in Garden. The garden's plants were well thought to provide a good visual appearance as well as to make sure the plants will survive in that environment.



<http://static.howstuffworks.com/gif/family-vacations-millennium-park-1.jpg>
The Cloud Gate

The Cloud gate also know as the Bean, was designed by Anish Kapoor is a 110-ton sculpture made of stainless steel. It has a 12 ft high arch inviting visitors to interact with it, as Daley, M. Richard (2010) states in his report, "A 12 ft high arch provides a "gate" to the concave chamber beneath the sculpture, inviting visitors to touch its mirror-like surface and see their images reflected back from a variety of perspectives."

The crown fountain was strategically design by Jaume Plensa, she wanted the participation of the citizens of Chicago, she was able to accomplish this by displaying the faces of 1000 resident of Chicago in the 50 ft glass block towers fountains. The faces are display between 4-5 minutes all year round while the water fountain is only functioning during summer time. This fountain promotes the visitors participation because they can actually get wet and watch the games that are displayed on the screen. Plensa wanted to have water coming out of the people's mouth because it meant the flow of live, Plensa adapted this practice by having faces of Chicago citizens projected on LED screens and having water flow through a water outlet in the screen to give the illusion of water spouting from their mouths" (Daley, M. Richard, 2010 pg.24).



http://www.yellow-springs.k12.oh.us/ys-mls/_borders/Crown%20Fountain%20Millennium%20Park%20Chicago%207-04.jpg
The Crown Fountains



Financing the Park

The original plan was not to use tax payers money to finance the project. The initial plan was to sell 120 million in bonds that were be paid back by the revenue of the parking garage and the rest of the money would be of private investors making this project a public-private partnership, in which the city had all rights. At the beginning of the year of 1999 the price had increased to 200 million and the parking garage was not making the money it was anticipated to produces. By the year of 2000 when the park was schedule to open, the cost was raised to 270 million, and the park was not finished yet, causing the city of Chicago to hire a new contractor. As a result of the cost Mayor Daley was forced into the TIF money, which cause lots of controversy since at the begging he had said the park was not to be finance through TIF. The amount that came out of the TIF account in the 2000 was 35 million dollars, and in 2001 he seek for 30-50 million dollars more out of the TIF. To help with the cost that by now has raised to 370 million the city is asking for more private donation in return the contributor will get a plaque that will be incorporated into the park. By December 2001 the city was forced to open the ice-skating rink to prove to the public that the project will be beneficial to the city. At this point the citizens of Chicago were not sure that the millennium park would be a success. Finally in 2004 the park open with a total cost of 475 million, were 279 million came from the public sector and the rest by private donations.



http://chicagoist.com/attachments/chicagoist_kevinr/2009_1_mayor_daley.jpg
Mayor of Chicago Ricahrd M. daley

Economic Impact

The measure of the economic impact the Millennium Park has made to its surrounding area has been great. As Goodman Williams Group URS Corporation (2005) states in their report, "total Value of residential Development Attributable to Millennium Park is estimated at \$1.4 billion" (pg.2). With the completion of the Millennium park, the city has attracted more visitors, and the surrounding retails have seen an increase of sales as well as the attraction of new tenant to the area. According to Goodman Williams Group URS Corporation (2005) the amount of pedestrian traffic should help generate sales for retailers, and as a result to the demand of retail space the area will see a rent increase. Hotels near Millennium Park are using the park as a mayor anchor to attract people; this gave hotels the opportunity to raise their prices. Restaurants also benefited from the Park, this could be calculated because the nearby restaurants have reported to have an increase in their sales, and that the profile of their customers has changed. Restaurants have reported that now they get more families with children in the evening in contrast to the slower business before the Park opened.

Conclusion

The Lakefront of Chicago traces back to the 19th century, and depending to the era it has being able to adapt well. Started as a trading center Chicago now is one of the most attracting and green city in the nation. With out the resident's concern of the public open space, Chicago would not have the parks it now has. Millennium Park has been a success, despite the fact that it took 4 extra year for the plan to be completed and about 300 million dollars more. Richard M. Daley has given the city a more beautiful aspect with the development to the area where the Millennium park now stands.

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Penn's Landing Waterfront Redevelopment Case Study

Penn's Landing Waterfront Redevelopment

About Penn's Landing Redevelopment:

Penn's Landing is the supposed site of William Penn's first landing in Philadelphia back in 1682, which is now an important attraction for the city of Philadelphia. It is situated on the Delaware River opposite of Camden, New Jersey. Penn's Landing is a park that stretches for several blocks along the Delaware river from Market Street to South Street. Penn's Landing Redevelopment is part of Central Delaware Redevelopment Plan. This plan is to redevelop the Central Delaware Harbor, in order to accomplish this, the Delaware River Waterfront Corporation divided the riverfront into 4 segments (as illustrated on the image below), and Penn's Landing is part of Segment 3. Segment 3 runs from Market Street to South Street, and it was completed in 2009.

The organization responsible of Penn's Landing Redevelopment was the Penn's Landing Corporation (PLC) which has now become the Delaware River Waterfront (DRWC). PLC changed to DRWC because the organization leaders decided to expand and become a non-profit organization whose purpose is to: *"design, develop, and manage the central Delaware River into a vibrant destination for locals and tourists."*

Before Redevelopment:

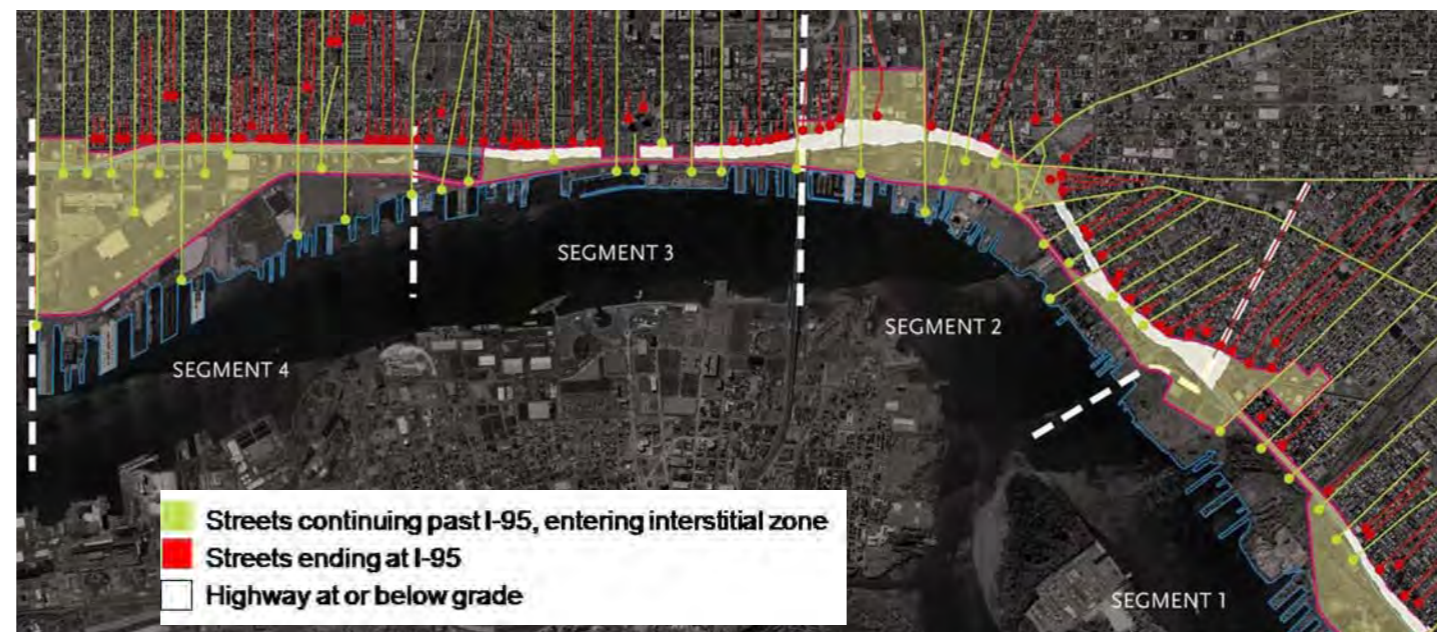
Penn's Landing used to be the backbone of Philadelphia's economy. It first started with cave dwellers which caved their houses on the river banks after fleeing England. Once Penn arrived new settlements and developments started to bloom. The early economy of Philadelphia consisted mostly of farmers and manufacturers and trade of raw materials which headed for England. This cognities were forced to export goods only to the mother country. The King of England exploited the raw materials and foods of the new continent. However colonists found new ways to produce money. They illegally exported lumber, livestock, crops, and tobacco to non-British ports. Therefore shipping and maritime trade was what helped boost Philadelphia's economy. Even today, you may find tankers, and freighters docked farther down the river.



Map of the United States showing location of Philadelphia, Pennsylvania. It is located on the northeastern part of the United States. It runs parallel to the Delaware River. Current population: 1,547,297.



Image of Riverstage or Central Plaza in Penn's Landing. This Central Plaza is a central gathering hot spot for Philadelphia residents and tourists. They feature nationally renowned bands, concerts, and festivals which are free.



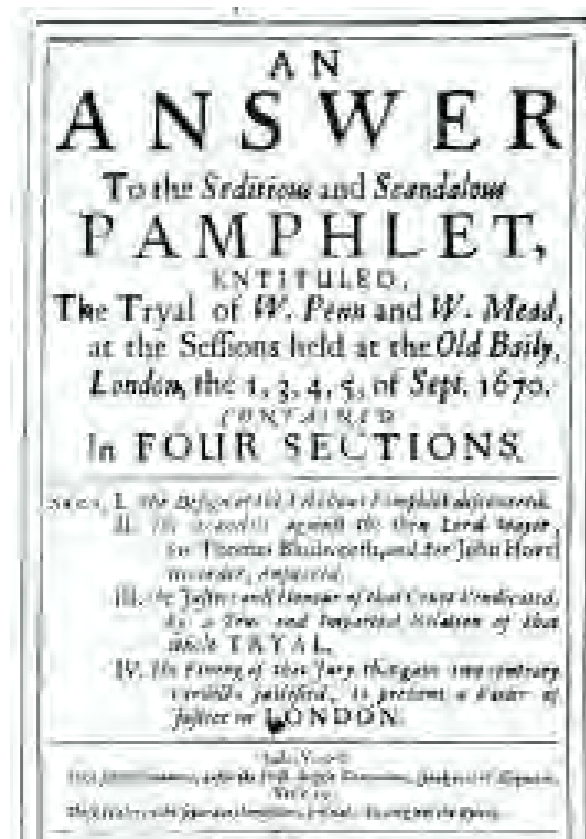
This image shows the 4 segments of the Central Delaware Redevelopment which are part of the Master Plan. Segment 3 which is Penn's Landing was finished back in 2009. However, it has not been attracted much private investment. Therefore there are plans on proposing a new Master Plan to redevelop Penn's Landing to a high-end mix-use development. This image also shows how the riverfront is blocked from the city due to I-95.



Penn's Landing Waterfront Redevelopment Case Study



(Above) Image of William Penn
(Below) Pamphlet of Penn & Mead's Trial



History:

About Penn's Harbor

Penn's Landing in Philadelphia, Pennsylvania is where William Penn first sailed up the Delaware River back in 1682 aboard the ship, "Welcome." William Penn arrived in Philadelphia by barge from the downriver town of Chester where the *Welcome* had moored.

About William Penn:

William Penn born on October 14, 1644 in London, England and died on July 30, 1718. Penn was an English real estate entrepreneur, philosopher, and founder of the Province of Pennsylvania, the English North American colony which later became the State of Pennsylvania. Penn was an early champion of democracy and religious freedom. At the age of 22, Penn joined the "Religious Society of Quakers." The Quakers obeyed their "inner light" which came directly from God. The Quakers refused to take up arms, they were a peaceful congregation. However, their principles caused turmoil in the English kingdom because they differed from the state imposed religion which was to swear an oath of loyalty to the King of England.

Persecutions of Penn:

Penn was an educated man, he attended Chigwell School, where he had his earliest religious experience. Thereafter, Penn's religious views exiled him from English society, he was expelled from Christ Church, Oxford for being a Quaker, and was arrested several times due to his religious views. One of the most famous trials against him was when he was arrested with William Meade for preaching before a Quaker gathering. He was found "not-guilty." The persecution of Quakers became so fierce that Penn decided that it would be better to try to found a new, free, Quaker settlement in North America.



This image shows William Penn's landing at Dock Creek Philadelphia. (circa 1830)



This image shows William Penn's relationship with the Native Americans. Penn became well-known for being a symbol of peace and tolerance with everyone.



This image is an aerial view of a painting in 1875. The city of Philadelphia was planned in a Grid Line system. The painting shows heavy usage in nautical transportation of goods.

Voyage to North America:

It was because in 1682 James Duke of York the future, "James II of England," handed Penn a large piece of his American holdings. This land included present day Pennsylvania and Delaware. This was due to Penn's idea proposal to the King and the Duke. Penn's proposed a mass emigration of English Quakers to North America, which some Quakers had already moved to the new continent. In 1677 a group of Quakers included Penn purchased the colonial province of West Jersey. This led to an emigration of approximately 200 settlers from distinct towns, these immigrants founded the town of Burlington.

After having New Jersey foothold in place, Penn pressed his case which consisted in extending the Quaker region in North America. In an unexpected surprise the King of England granted Penn an extraordinarily generous charter in North America; this made Penn the world's largest private (non-royal) landowner. Penn owned 120,000 km². Penn immediately sailed to North America. On this occasion, colonists which were already established in the area pledged allegiance to Penn as their new Proprietor.

Penn's Harbor:

William Penn envisaged a beautiful waterfront for his city, he wanted something similar to the embankment in London. This area became a scene of great commercial activity, and wharves, warehouses, and taverns sprang up. The Philadelphia harbor banks are one of the oldest and most historic in the city of Philadelphia, from which the city of Philadelphia grew westward toward the Schuylkill River. First residents of the area were less socially acceptable residents like; craftspeople, and artisans, however they were the backbone of the young colony & republic. This led to a heavy industrial development supplanting the goods of the craftspeople.



Penn's Landing Waterfront Redevelopment Case Study

Reasons for Redevelopment & Redevelopment Strategies

Reasons for Redevelopment:

Penn's Landing in Philadelphia is unique because this is where the colonization of this area started with the arrival of William Penn to the harbor. Therefore it plays a very important role in the lives of the residents of Philadelphia. Throughout the years, Penn's Landing was slowly been forgotten.

Reasons:

- Inadequate Access:

Blockage due to Interstate 95

- Poor Maintenance:

Residents were not taking care or showing interest in this area.

- Vacant/Underutilized Land:

This area was an empty space that was rarely used.

- Uncoordinated Development:

City planners & developers had unsuccessful efforts to redevelop Penn's Harbor

- Shortage of quality parks & open spaces:

City of Philadelphia wanted more open & recreational spaces.

- William Penn's idea of tree-lined promenade:

When Penn planned the city of Philadelphia he wanted a tree-lined promenade along the Delaware River. It wasn't until 300 years later when his wish was fulfilled.



(Above): This image shows a rendering image of Penn's Landing in the Master Plan. This is clearly using the 7 principles of "Creating a Civic Vision."

(Left): An photograph of current Penn's Landing. You can see there are numerous of people using and enjoying the newly developed space.

Development Strategies:

Penn's Landing was for many a success because of almost 40 years of unsuccessful planning. The Delaware River Waterfront Corporation & Wallace Robert Todd (WRT) were the groups which made that development possible. In the Master Plan they wanted to base their development in a concept. This concept is called: "Creating a Civic Vision." This Civic Vision would cover 7 principles:

The 7 Principles for Creating a Civic Vision:

-Reconnect the city to the river's edge

Bring Philadelphia residents back to the river

-Honor the river

Acknowledge the historical role of the river

-Design with nature

Careful planning for sites to coexist harmoniously

-Strike the right balance

Create healthy mix of urban development and public improvements

-Take the long view

Do not be seduced by short-term gains

-Protect the public good

Create a meeting place for all Philadelphia residents

-Make it real, Philadelphia

Honor Philadelphia's illustrious past and promising future



Penn's Landing Waterfront Redevelopment Case Study

Features & Uses

Penn's Landing redevelopment has a great variety of features & uses. Penn's Landing has, commercial, recreational, entertainment/social, and residential.

Features & Uses in Penn's Landing:

-Commercial

Restaurants, shops, hotels, museums, tour guides.

-Recreational

Walk, jog, run, bike, kayak, skate, etc.

-Entertainment/Social

Musical festivals, gathering hot spots

-Residential

Low-rise residential, mix-use buildings

Users can enjoy evening walks with their family for a summer stroll, ice skating in the winter, enjoy free concerts, and learn about the war history of the U.S. by visiting the museums. Penn's landing offers a variety of possibilities where the children of all ages can go and enjoy

Major Issues:

Penn's Landing has and will have flaws. Penn's Landing did not take 60 years of unsuccessful planning for nothing. The major issue with Penn's Landing is Interstate-95. I-95 runs parallel with the Delaware river, thus making it a natural barrier. However, this problem has been fixed by adding additional bridges underpasses to facilitate connectivity with the city. Another major issue is the fact that Penn's Landing is currently a public development and it is not attracting private investment. Without private investment Penn's Landing can slowly desintegrate or disappear due to lack of investment. The city has taken this into consideration and there is a current debate about developing two, slots-only casinos. If all this fails, there is also consideration of a new master plan which will attract private investment by bring mix-use development to this area. Many planners in the City of Philadelphia including WRT believe that mix-use development in this area would bring a lot of revenue. However, this is a hard decision because this would mean they would take away a lot of the current open space in Penn's Landing and even bring social gentrification to the area; just like Society Hill did back in the 70's. Society Hill was a community in Philadelphia which socially separated the rich from the poor.

Value & Benefits

Penn's Landing does have issues, however Penn's Landing also has a lot to contribute to the community of Philadelphia and tourists who visit the area. Penn's Landing help boost the economy of Philadelphia thanks to the money that is spent by locals and tourists in Penn's Landing commercial areas, and hotels. Penn's Landing is also helps the social aspect of Philadelphia by having gathering hot spots which increases communication and social integration amongst locals and tourists. Therefore this helps increase the image of the City of Philadelphia by bringing to life the importance of the city's past and connecting the people of Philadelphia with its city and past.

Lessons Learned:

I believe we can learn a lot from Penn's Landing and incorporate this knowledge to our Waterfront Redevelopment Project here in Bonn. I believe Philadelphia has a lot of similarities with Bonn. They both have a very rich history, and both lay on very important rivers which help both cities to develop through maritime trade. I believe we can incorporate the concept of: "Creating a Civic Vision" and it's 7 principles. However, Bonn would have to be careful in implementing this 7 principles. However, if Bonn does decide to use this 7 principles they are going to have to be careful. Why? because as Penn's Landing did, they just focused on the public aspect, thus not attracting private investment. There is a lot of potential when it comes to the economic gain which both cities can have if they include private development/investment on their river-fronts. These 7 principles are: connecting city with river, honor the river, design with nature, strike the right balance, take the long view, protect the public good, make it real Philadelphia. Bonn also has to be careful when it comes to the social integration/gentrification. I believe separating the rich from the poor is bad for the city's image, therefore they will have to implement a special strategy of incorporating both poor, and rich in a harmonious manner.

Due to Philadelphia and Bonn's similarities they can both learn from each other. I believe with careful planning Bonn can have great success in both economical, social, and just the image of the city. Bonn is already seen as a sustainable city, however this can only help and boost the city's image through Germany, Europe, and even the world. I believe the City of Bonn can become a world power city like New York, London, or Paris. They just have to be careful and take baby steps to accomplish something this big.



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City of Duisburg: Data/ Facts/ Figures



Background

The city of Duisburg, Germany is situated within the federal state of North Rhine-Westphalia. It is located at the confluence of the famous Rhine and Ruhr River and also within the heart of Germany's industrial area. Once being the world largest inner harbor and now Europe's largest inland harbor, Duisburg has become an important site for commerce and steel production.

Duisburg is divided into 7 districts: Walsum, Hamborn, Homberg-Ruhrort-Baerl, Rheinhausen, Mitte, and Sud; and are subdivided into 46 sub-urbs. Before the incorporations of neighboring towns, the city's population was already over 100,000, but now consists of approximately 500,000 inhabitants after further incorporations; this makes Duisburg the 15th largest city in Germany. The dominant age group are the adults with approximately 61 percent posing a very difficult issue in the future for Duisburg since their young population is not increasing. Although this might seem an issue to most Germans, this problem is been offset by the foreign population which for the most part is from Turkish origins.

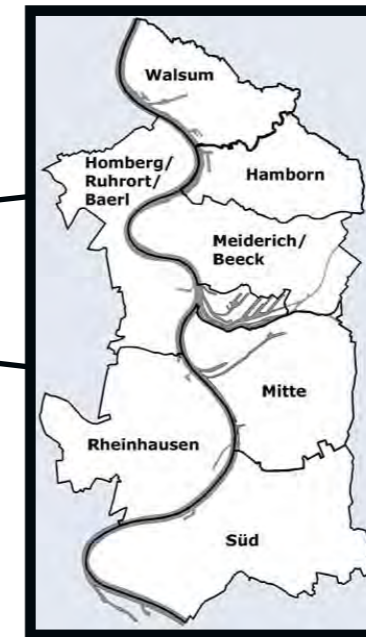
City Interests

Duisburg hosts a comprehensive range of cultural facilities and events. A highlight is the annual "Duisburger Akzente", a festival focusing on modern social, political and cultural topics. The city also offers a variety of architectural places of interest, ranging from old churches such as "St Johann Baptist", built in 900, to modern age buildings like Micro-Electronic-Centrum, built in 1995. Another subject of interest is the Landschaftspark Duisburg-Nord, an abandoned industrial complex open to the public and an Anchor Point of The European Route of Industrial Heritage. The city also contains two botanical gardens, the Botanischer Garten Duisburg-Hamborn and the Botanischer Garten Kaiserberg.

Sources: "History of the Inner Harbor." Innenhafen Duisburg. Web. 1 Nov 2010. <http://www.innenhafen-duisburg.de/de/index.html>. "Figures/Data/Facts" Duisburg am Rhein. Web Nov 8 2010. <http://www.duisburg.de/micro/english/introducing/102010100000187826.php#a0>



Location of Duisburg, Germany



7 Districts within Duisburg



Aerial View of Duisburg

Basic Data:

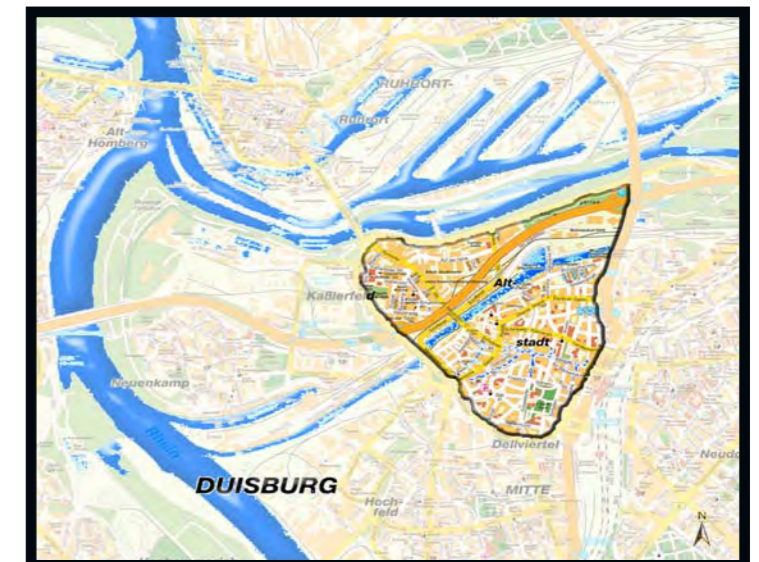
Federal state: North Rhine-Westphalia
Administrative district: Düsseldorf Area: 232.82 sq. m
Inhabitants: 498,466 (Germany's 15th largest city)
Population density: 2,141 inhabitants/sq. km
Height: 31 m above sea level

Age structure:

0-17: 17.6 %
18-65: 61.2 %
65 and over: 21.2 %

Percentage of foreigners: 15.1 %

Percentage of foreign background: 31.7%



Duisburg City Center



Historical Background of Duisburg Inner Harbor

Function and Character Over Time

Historical records indicate that the first mentioning of the city of Duisburg was in 883 and 300 years later the first city fortification was built. Were today the inner harbor is located, the Rhine River flowed many centuries ago. Some time between the 11th and 13th century, the Rhine shifted its course westward and Duisburg no longer found itself lying along the Rhine leaving the city dry. However, for the following 400 years, Duisburg still remained connected to the Rhine through a navigable dead arm of the river. Before the river shifted its course, Duisburg used to be a successful and important trading community but soon after, the settlement declined into a small agricultural town. As for what type of trading occurred in Duisburg, there is no accurate information as to what was being traded, but it is believed that there was a variety of goods traded since the Rhine was a huge water transportation entity. Also during this time period, where today the city hall is located, a Frankish regal court stood along the banks of the Rhine and within the same location, the old Duisburg church, the market, and the city wall stood.

It was not until the 19th century that an initiative was made to bring back a direct connection to the Rhine and turned out to be successful. Initially, the outer harbour was dug from the Rhine, and in 1883 the harbor was extended to the east there by creating the inner harbor. At first the timber industry established itself here but later the harbor was mainly characterized by grain silos, mill buildings, and warehouses. This new face proved to be economically successful and would take the inner harbor to be known as the breadbasket of the Ruhr district because of its rapid supply of the growing population. This area would later lose its purpose due to the decline of the grain mills in the 1960s and the waning of the Industrial Age. The harbor lost its economic significance and was now primarily characterized by warehouses. The image of the useless harbor would soon change as new ideas were developed during the 1980s to bring back life to unused industrial sites.

Sources: "History of the Inner Harbor." Innenhafen Duisburg. Web. 1 Nov 2010. <http://www.innenhafen-duisburg.de/de/index.html>; "Duisburg Inner Harbor: History." Serving History: World History served daily. Web. 28 Oct 2010. http://www.servinghistory.com/topics/Duisburg_Inner_Harbour; Innenstadt Duisburg. "History of the Inner Harbour" Innenhafen Duisburg. Web 10 Nov. <http://www.innenhafen-duisburg.de>



Current aerial view of Duisburg showing the ancient town



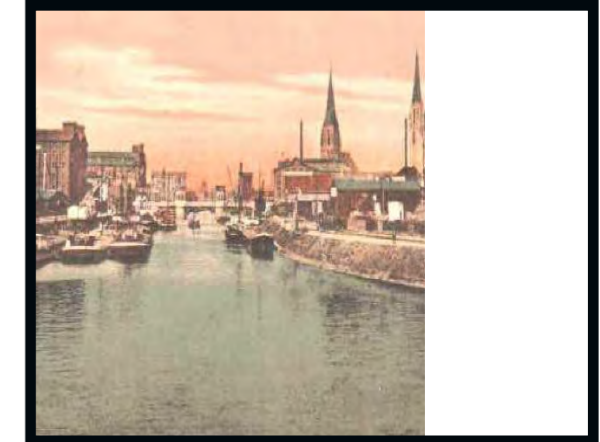
Duisburg in 1566



Computer animated image of Duisburg when it used to be along the Rhine

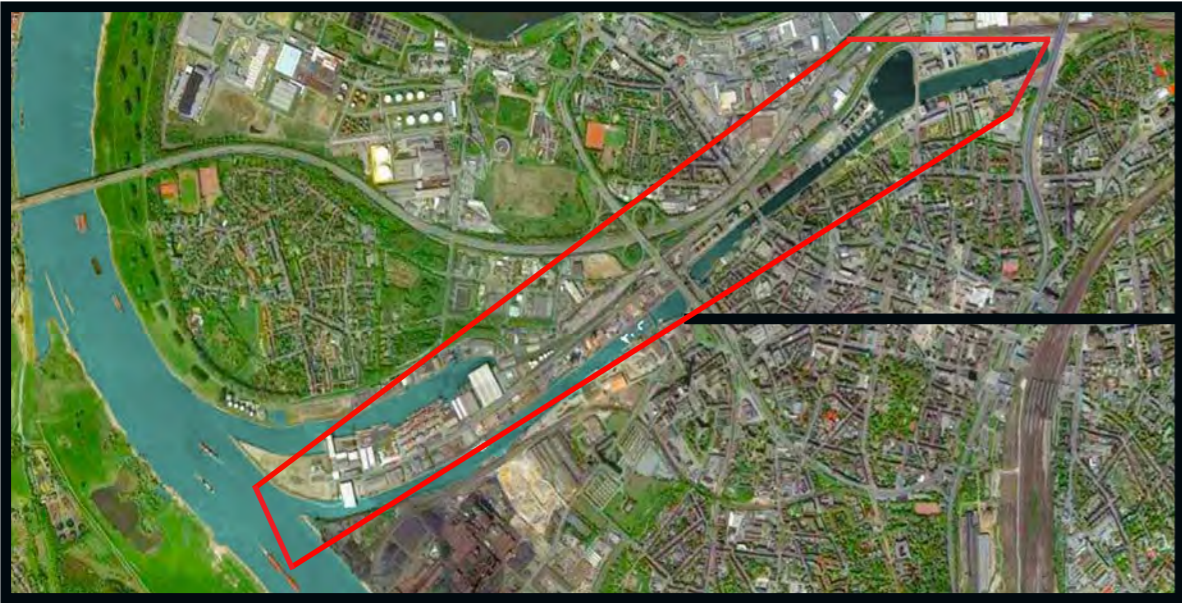


19th Century Inner Harbor



Duisburg Inner Harbor Re-development

Emscher Park Region showing the various projects that were completed from 1989-1999



Zoomed in image of Duisburg Inner Harbor



Inner Harbor City Masterplan

Influences for Re-development

The International Building Exhibition (IBA) Emscher Park was the advent that set the starting point for urban development in unused industrial sites. IBA Emscher Park consisted of a 10 year program and was based on a structural program of 1988 with the main objective of giving a strong impulse to the Emscher Area (a densely populated ruined industrial region) and with the main goal of urban development and ecological renewal in highly contaminated industrial and mining areas. In order to accomplish such difficult tasks approximately 120 projects were implemented, which consisted of three main themes: environmental recovery of water-resources, recovery of the landscape, and preservation and reuse of the historical heritage.

Re-development Project Details

- Area:** 89 hectares
- Length:** Approximately 2 km
- Project start:** 1995
- Current status:** still been developed
- Type of development:** Mixed-use
- Number of projects:** 40

Developers:

Site redevelopment was a master plan from Foster + Partners of London (main), THS GmbH and Kaiser Bautechnik Duisburg

Goals:

- To incorporate a business and residential center distinguished by its architectural quality in its conversion of historic harbor buildings and in its new and modern structures that are incorporated in an open-space design
- To draw life of the city to the waterfront
- To open the grounds for recreational areas

Strategies: In order to attract people, new infrastructure and public amenities were put in first in order to establish the harbor as an attractive place in which to live and work. Part of the strategies was to leave 30% to 40% of the old warehouses and mill structures and refurbish them into offices, museums and restaurants

Planning strategies: Re-utilize land, Modernize existing buildings and incorporate ecologically sound construction

Investment Strategies: This project is a great example of a public-private partnership. Like stated previously, new infrastructure and public amenities were put in place first. Public investment in the infrastructure, made possible by European Union grants, was some 65 million euros which was used in public spaces. This same investment has attracted some 400 million euros of private investment so far. It is estimated that by the time the whole project is completed, it will have raised 10 euros of private money for every single euro of public money spent.

Sources: "Buisness and Residential Centre Inner Harbour" M: AI. M:AI Museum für Architektur und Ingenieurkunst NRW e.V. Web. 1 Nov. 2010. [http://www.mai-nrw.de/Innenhafen-Duisburg.38.0.html?&L=1](http://www.mai-nrw.de/Innenhafen-Duisburg.38.0.html?&L=1;);"Zoomed in image of Inner Harbor". Google Maps. Web. 10 Nov. 2010. <http://google.maps.com>;"Duisburg City Masterplan" Foster + Partners. Web. 2007. <http://www.fosterandpartners.com/Projects/1443/Default.aspx>



Inner Harbor Results

Environmental: It is environmental sustainable. The redevelopment has dramatically changed the image of the city. It has gone from a decaying German industrial harbor into a new vibrant neighborhood making it an example of industrial evolution. In additions new construction incorporates the use of green techniques.

Economical: As stated in the previous page, investment in the inner harbor has increased up to a 10 fold. This will pave the way for a greater successful economic district. At the same time this redevelopment is influencing the new redevelopment of the inner city.

Social/Cultural: Local residents as well as tourist are enthused by the ongoing redevelopment process. Attitude towards the harbor has changed to a great extent that now residents of Duisburg see the new site as a trademark of the city

The residential area along the harbor with its Dutch type canals has created a mixture of cafes, bars and restaurants making it a new social point and popular waterside leisure resort.

Conclusions: Re-development/revitalization measures are directed toward several goals:

- To improve the image of the city
- To supply development ready land for commercial and office use
- To attract new industries and enterprises, thus creating jobs
- To alter the competition position of the city in a national or even European context

The project has turned out to be quite significant since it turned the region around in many respects. With the large industry leaving the area, the reuse of existing buildings and structures and introduction of new amenities has successfully changed the industrial area into a place for the people. At the same time, the harbor has transformed itself into a successful district combining and achieving employment, housing, culture, green space and water-based leisure activities as well as a sound urban and ecologically sustainable site. Due to the high positive remarks of this site, there is no objection that in the near future it will become a well-known example of industrial evolution worldwide.

Sources: Innenstadt Duisburg, "Implementation of Projects" Innenhafen Duisburg. Web. 10 Nov 2010. <http://www.innenhafen-duisburg.de>; "Duisburg Tourist Map" Duisburg: Discover the Difference. September 2006. http://www.duisburg.de/micro/english/medien/DU_ueberraschend_anders_GB.pdf



Marina

The marina has 133 permanent dock Duisburg and offers many visiting sports boat enthusiasts a delightful stopover directly on the Rhine and at the same time in the middle of the city



Five Boats Offices

New office building with a maritime flair, shops, services and restaurants; completed in 2004

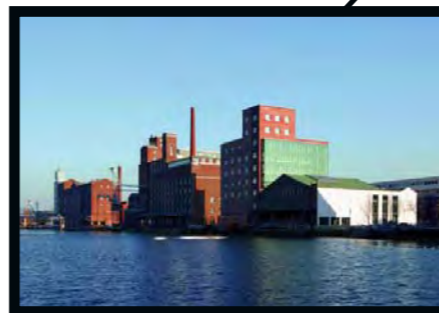
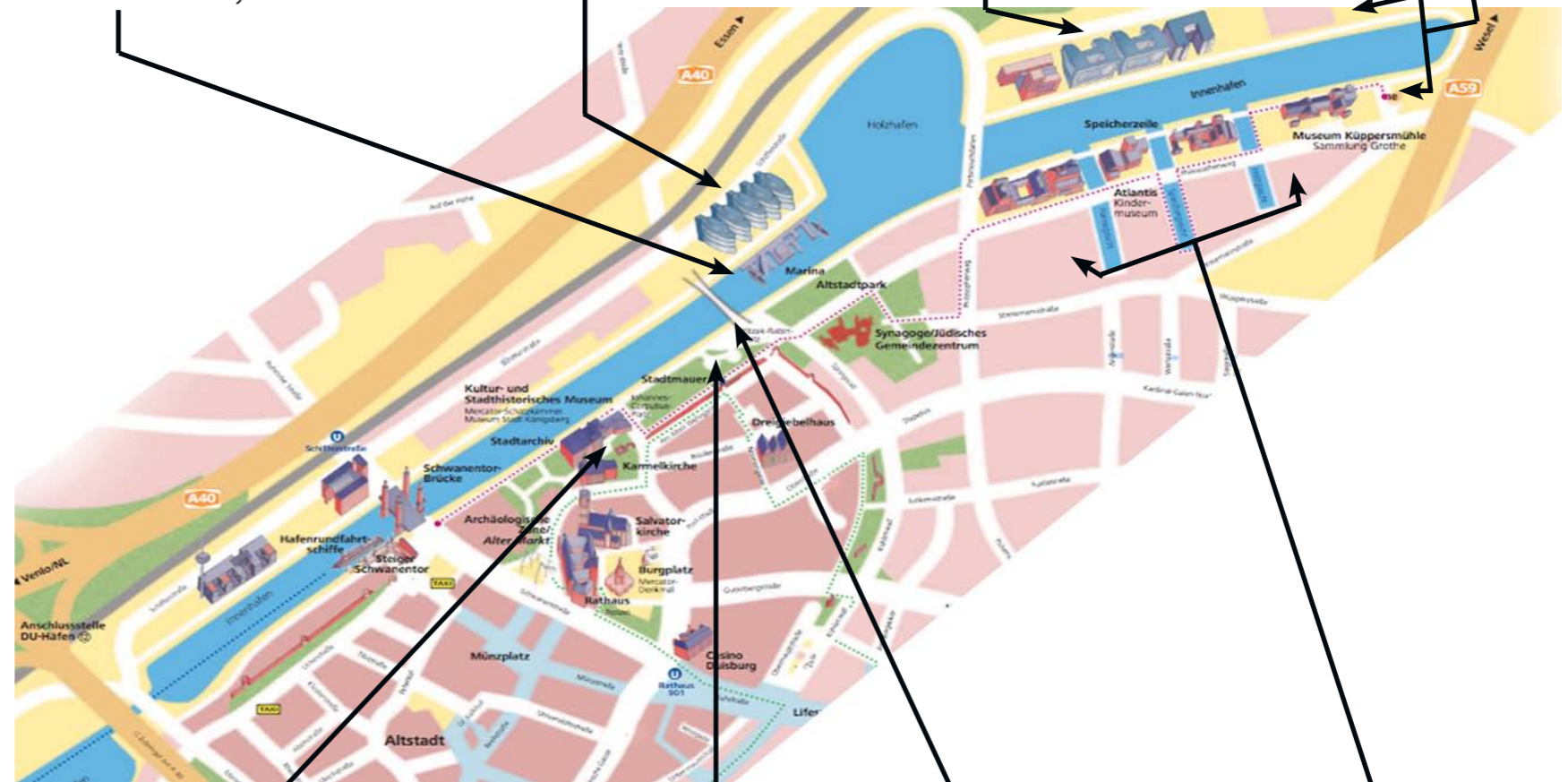


H2O Office Building

The H-shaped chassis structure of the floor plan resembles a catamaran. Also at night, the building is illuminated with accent lighting



Inner Harbor Overview



Business office In'n port

Conversion of former mill Werhahn to an office building with restaurants; completed in 2002



Garden of Remembrance

Designed by the landscape sculptor Dani Karavan, the garden incorporates fragments of former industrial buildings from the area



Movable Foot Bridge

The first height-adjustable suspension bridge in the world



Canals

The system of canals is a defining element of urban development and also has the task of a graduated system of water management



