

GLORIETTE FLOODPLAIN CASE STUDY: EVALUATION A CONCRETE EXAMPLE

This research project aims at evaluating the multi-use in flood management or protection infrastructures. For that, we have previously set up an analytical framework based on five criteria: economic efficiency, technical feasibility, accountability, social justice and vulnerability. These criteria came from the TRANS-ADAPT research program, which aims at evaluating local initiatives concerning the integration of the protection and management infrastructures in the urban development. Therefore, the five criteria have been defined and estimated, based on the current research project, focusing on the multi-use. Indeed, for each criterion, the reasons why it is important or not were explained as well as the reasons why it is important to study, and then, the indicators to measure each criterion were given. At last, a method has been developed in order to adapt our analytical framework, based on the five criteria, for different case studies. In fact, we consider that some criteria can be relevant to evaluate the multi-use for a certain type of flood infrastructures but less for another.

In this research project, the Gloriette floodplain (Tours, France) has been chosen as the case study. The objective is to transpose our theoretical analytical framework into a specific method for this case. At the end, we should have an assessment of the multi-use practiced in the Gloriette floodplain but also a critical look back on the analytical framework proposed in this report. Indeed, the importance and the evaluability of each criterion will be studied.

For that, a presentation of the case study will follow in this report. Different aspects will be presented: the historical context of the Gloriette floodplain, the reasons of this choice of case study and the description of the different activities considered as multi-use in the Gloriette. Then, we will adapt our analytical method based on the five criteria for the case study of the Gloriette floodplain, trying to determine the importance and the evaluability of each criterion. At last, each criterion will be analysed for the case study.

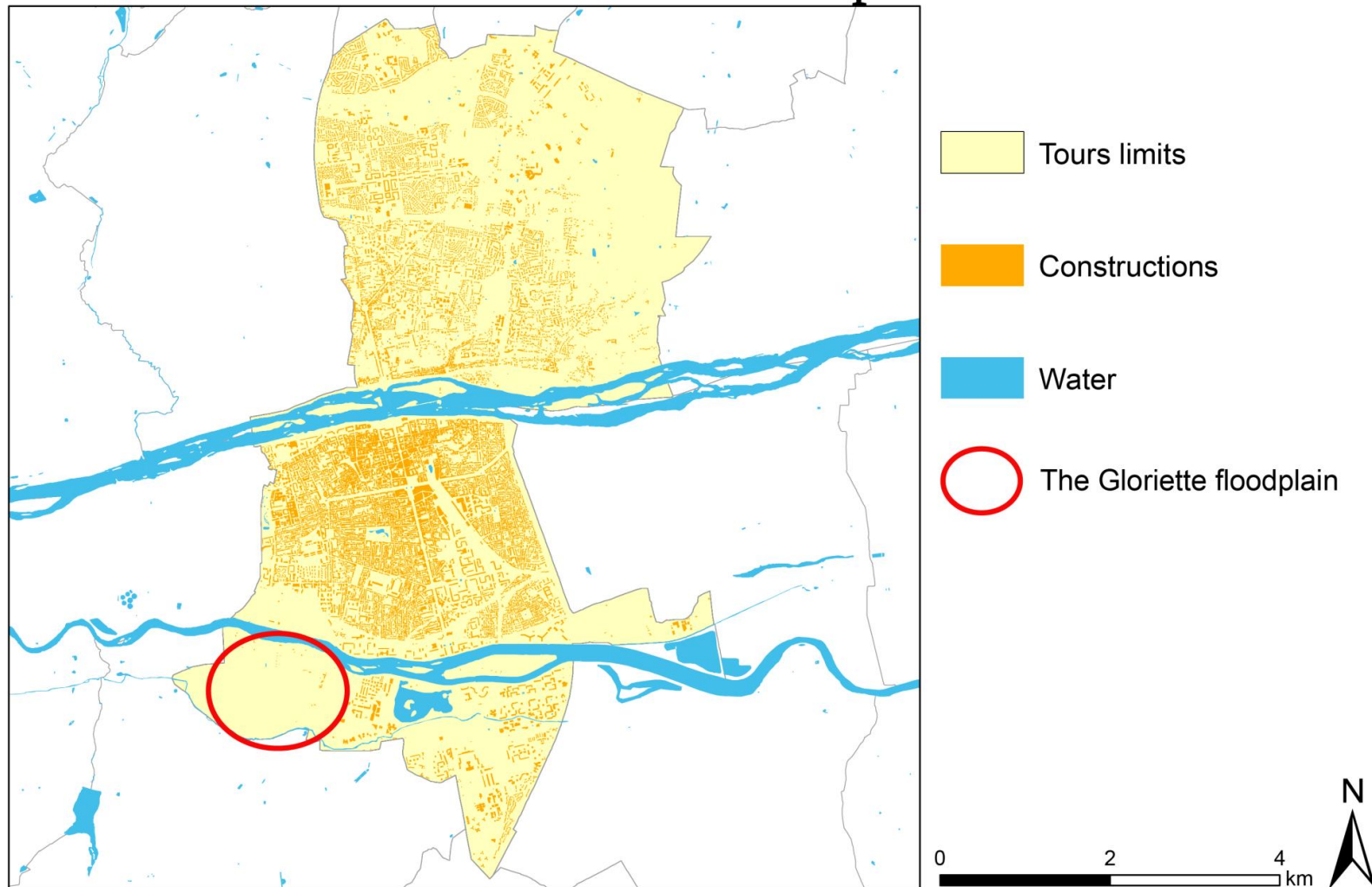
I. A compromise between urban project and flood management

Located in the south of the city of Tours, The Gloriette floodplain has been dedicated, in 1994, to receive the Cher floods. This floodplain is not a flood protection infrastructure like a dam or a dike. Indeed, a floodplain is a land adjacent to a river or a stream that is subject to recurring inundations, in others words, it's an area where water spreads when the stream overflows. So, a floodplain is not a flood protection infrastructure but a flood management infrastructure, according to what was said in the introduction. Moreover, a floodplain is generally a natural area so the term

“infrastructure” is not really adapted in that case. In fact, the term “infrastructure” means that is a man-made structure which is not the case here. The Gloriette floodplain is an abandoned area, with regard to the urbanization.

Even so, the Gloriette has been subject to many urban planning projects, frequently contested, earning it from now on, its status of “compromise” between an urban project and a flood management tool. Indeed, the Gloriette is nowadays, one of the biggest urban parks of the urban area of Tours, constituent of the conglomeration’s green belt, it receives two travellers camps, welcomes many spectators for different events, golf courses and some family gardens. These activities are considered as multi-use in this study.

Location of the Gloriette floodplain in Tours



Sources : BD TOPO IGN, DIREN CENTRE
Realisation : Auclair - Forgue - Lizano - Yassin

Map 1: Location of the Gloriette floodplain in Tours

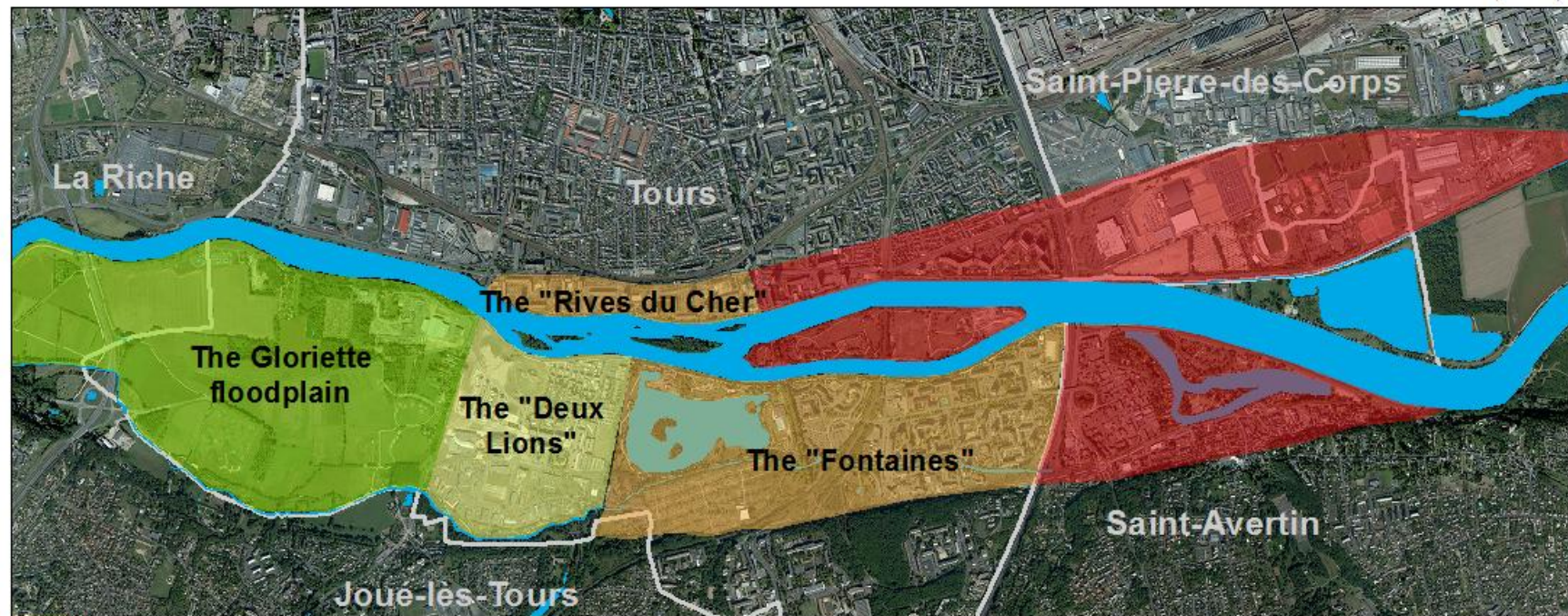
1. An area at the heart of the urban planning project of the Cher valley

The Gloriette floodplain is especially, a good example of multi-use projects on a flood management infrastructure. To understand what it is nowadays, it's important to study its history, beginning, into this report, in the 1960's. Since this date, the Gloriette has been an area under a big land pressure, representing both numerous urban and environmental stakes.

In 1963, the city of Tours, one of the most cramped administrative cities in France, receives a ministerial permission allowing the extension of constructible areas in the South of the city: the Cher valley, a land situated in a flood risk area and only dedicated to the agriculture. Since this date, the area situated between the Pont D'acrole on the East, and the highway A10 to the West is called the Gloriette and will be the subject of an urban planning project. All the projects will be realized under Jean Royer's mandate (1959-1995), who is biased in favour of the urbanisation of the Cher valley, which is in a flood risk area.

Three main phases of the project will follow one another, between 1962 and 1998, and the different districts called "les Fontaines", "les Rives du Cher" or "Les Deux-Lions", which are well known today by the inhabitants of Tours, will be built. These urban planning projects were possible thanks to embankment works and a downstream extension of the Cher's riverbed, because the river is canalised by means of dams and divided into two arms with a central island now called "le Parc Honoré de Balzac".

The different stages of development of the Cher Valley around Tours



-  Water
-  The Gloriette floodplain
-  Development achieved in 1998
-  Development realised between 1962 and 1968
-  Development realised between 1968 and 1971

0 1 2 km

Sources: BD TOPO IGN, IGN ORTHOPHOTOS 2010, Vezeau 2006
Realisation: Auclair - Forgue - Lizano - Yassin

Map 2: The different stages of development of the Cher valley Tours

In 1990, in continuity to these previous works, planned since 1962, provides the construction project of a new district on the Gloriette. It's supposed to be the final phase of the urbanisation of the Cher valley.

2. A space dedicated to flood risk management

From 1990, several plans and projects were thought to develop the place. In 1994, still under Jean Royer's mandate, the SEMIVIT (Société d'Economie Mixte Immobilière de la Ville de Tours) and the « Atelier d'Urbanisme de l'Agglomération de Tours » proposed a project called « Operation de la Gloriette ». This project concerned the extension of the technology park situated on the Deux-Lions district. A new district should be built on the Gloriette. The concept was to let a major place for the “city-nature” relation. The map of the area is inspired by the Villandry's gardens, in which there should be cycle lanes, fitness circuits, canal systems thanks to inhabitants could move by rowing boats, kitchen gardens, etc.

This project was confronted, in the same year, to Jean Germain's one. Actually, Jean Germain and Jean Royer were both candidates in the municipal elections in 1995. That is why, Jean Germain proposed an alternative to the urbanisation of the Gloriette floodplain, already contested by different ecologist groups.

Finally, in 1994, the Master Plan was refused by the prefect, therefore, the urban development on the Gloriette was cancelled, and embankment works were forbidden.

In 1995, Jean Germain was elected and Jean Royer's project was then totally abandoned. Concerning the Deux-Lions district, with the change of municipality, the initial project about the technology park will be re-invented. Jean Germain advocated the multi-functionality of the site, so the technology park project was abandoned. Thus, both housings, universities, tertiary and businesses activities would be established.

In 1995, concerning the Gloriette, a project of “Naturoscope” with “cultural gardens” was also proposed by the urban planning agency of Tours: the ATU. Dedicated to nature, the site should welcome family gardens, an observation course of the avifauna, big aviaries, an arboretum, kitchen gardens, orchards and a camping. However, this project was also abandoned: submitted to the “Loi Barnier”, in 1995, related to the strengthening of the environmental protection, the Gloriette floodplain is preserved as it is, in order to assure the manure spreading of the flood.

To conclude, the Gloriette should become a housing district, in continuity with the urban planning project of the Vallée du Cher. Even so, the project has to be abandoned and the reasons were not insignificant. Indeed, the entire Cher valley has always been in a flood risk area, so, in order to urbanise the different districts, big confinement and embankment works have been achieved. However, the flood risk was still present and studies showed that activities and buildings were not adapted to the flood risk. Therefore, the Gloriette floodplain had to stay as it was to receive the Cher floods.

3. The arena of the evolution of the French flood management policies

From 1995, with the law “Barnier”, relative to the protection of the environment, the Gloriette becomes a floodplain and the urbanisation of the area is forbidden. Therefore, a change of strategy, regarding the development of the Gloriette is necessary. However, it seems important to know that, at the same time, French flood management policies and practices have changed, between the 1980’s and the 1990’s. Considering that, the Gloriette can be studied as the arena of this evolution. The different urban projects for the development of the park have to deal with the changes of municipalities and the changes in management policies, set up by the French government.

In the 1980’s, the flood risk management of the Loire was directed to the construction of flood protection infrastructures like dams and overflows (Daluzeau, Oger, 2012). Indeed, in 1986, four constructions of dams were planned, in Serre-de-la-Fare, Chambonchard, le Veudre and Naussac, by the signature of a protocol between the Government, the Water agency of Loire Bretagne and the EPALA (Etablissement Public de l’Aménagement de la Loire et de ses Affluents, directed by Jean Royer, the mayor of Tours). Therefore, on Tours, the confinement and embankment works of the Cher are authorized and legitimized. However, in the same time, a scientist and ecologist group gets organized, creating the association Loire Vivante, in order to contest against the construction of the dams. Thanks to communication and mediatisation, the association try to spread a new ideology about flood risk management. This ideology disapproves the “zero risk” concept, and then the constructions of dams or embankment as well. However, it advocates the recapture of the streams’ banks. Finally, French flood management policies begin to change towards this new concept, and the construction of the four dams will be forbidden by the State. Therefore, in Tours, the Gloriette became the arena of conflicts between the scientists group and the EPALA, which advocated the urbanisation of the Gloriette.

For the first time, the French Government would show its absolute revolt for the protection of the environment and create, in collaboration with the local authorities the “Loire grandeur Nature” plan in 1994. This plan is initiated by Michel Barnier, the minister of Ecology, and should be a « *necessary framework to overtake the conflicts in order to engage some actions which associate the Government, the local authorities and the environmental associations and to focus the sustainable development of the stream and its floodplains as the politics priorities*” (Plan Loire).

From this date, the Gloriette became a floodplain. There were both political and governmental reasons that changed the projects on the park. Indeed, the election of Jean Germain against Jean Royer was the first step of the non-urbanisation of the Gloriette, with his project of Naturoscope, dedicated to the nature. Finally, the realisation of the “Loire Grandeur Nature” plan forbids the construction on the Gloriette and dedicates the site to its initial role: being a floodplain. The following part on this report will present the functioning of the floodplain and the flood risk present on the Gloriette.

4. A territory highly exposed to flood risk

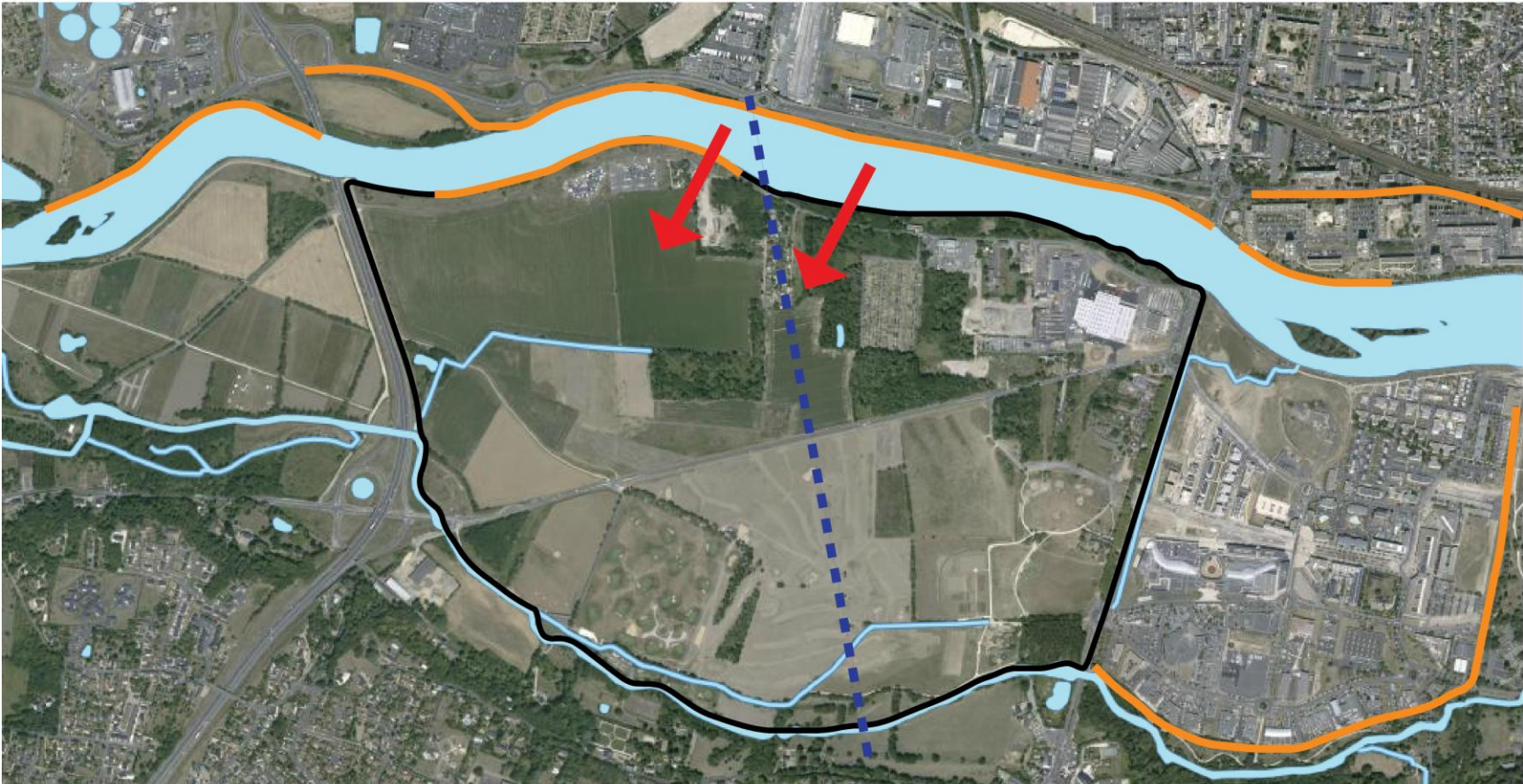
This part will describe the Gloriette as a floodplain. First, after explaining the meaning of floodplain, we will describe its geographical position in relation with the waterways. Then, we will show the important role of the Gloriette as an infrastructure to protect from flood. Finally, we will show that tools exist to inform public about flood risk but also that those tools are not used at their best.

The Gloriette floodplain: reasons and meanings


A floodplain represents a space where a waterway can extend its flow when its discharge becomes too important for water to stay on the action stage. So the floodplain is part of the flood major stage. As far as a waterway is part of the natural elements, floods are natural events. Each actor who is responsible of urbanisation has to keep in mind these recurrent events.

The Gloriette is placed side by side between the Cher to the North and the Vieux Cher (or Petit Cher) to the South. It is put to flood by expansion of the Cher which is a 367.8km long river starting in the Creuse department. The Cher is canalised from Noyers-sur-Cher to Villandry where it goes into the Loire. As we can see on the following drawing, to protect Tours, dikes have been built on each side of the river. Before the Cher could extend on 1000m, and nowadays the Cher can only extend on an artificial width of 230m due to the dikes. That justifies even more the need to keep the Gloriette as a floodplain.

Flood risk on the Gloriette floodplain



- The floodplain limits considered
- Dikes
- Transect of the elevation profile

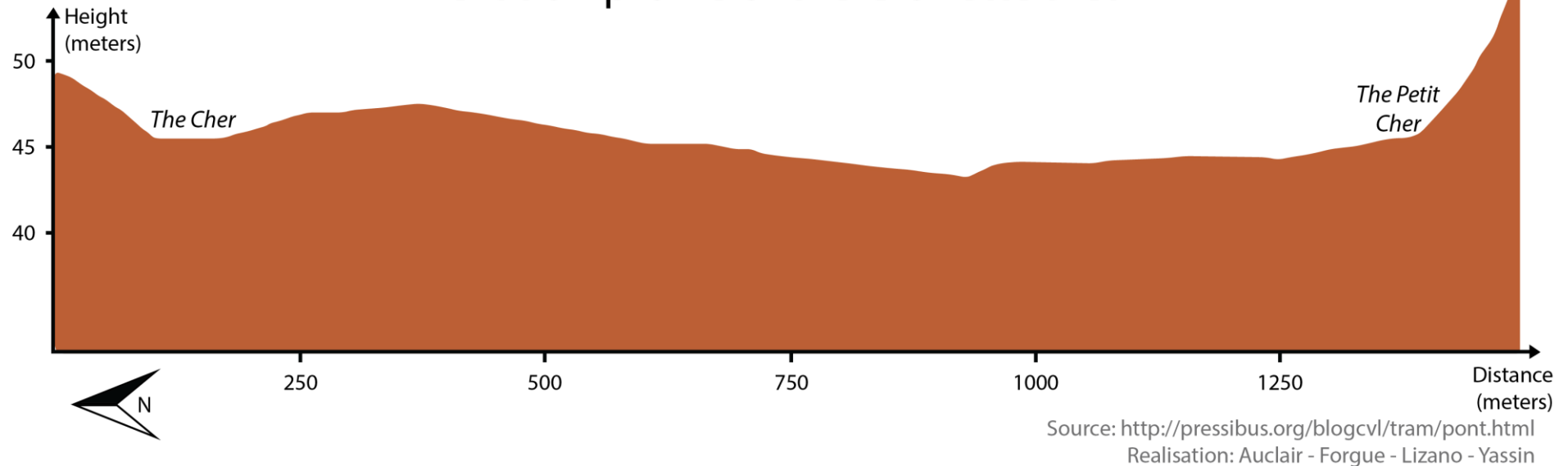
 Flood risk on the floodplain

200 meters

Sources: GeoPortail, IGN, La Nouvelle République
Realisation: Auclair - Forgue - Lizano - Yassin

Map 3: Flood risk on the Gloriette floodplain

Elevation profile of the Gloriette area



Scheme 1: Elevation profile of the Gloriette area

The Gloriette, memory of a larger floodplain

The discharge of the Cher is around $95.6\text{m}^3/\text{s}$, but it is important to clarify that the water flow can increase until $196\text{m}^3/\text{s}$ in February⁶. It is also important to notice that the monthly average water flow between December and May included is in $112\text{m}^3/\text{s}$ and $196\text{m}^3/\text{s}$. Concerning the « Petit Cher », it is an artificial stream which comes from and flows in the Cher.

The referenced floods are the same for the Loire and the Cher. There are 3 dates to remember; 1846, 1856 and 1866. At those dates the water flow reached respectively the threshold of 7.17m, 7.58m and 6.58m over the Loire's usual level. The Gloriette was under water each time as it is expected, sometimes under 3 meters of water flow. For those reasons and because 100 000 persons live in a risked area in Tours' conurbation⁷, it is essential to dedicate spaces to flood.

⁶ Hydrological station : K6710910 Le Cher à Tours (1966 – 2008)

⁷ aquavit37.fr/2014crues/

A flood event on the Cher can be due to different reasons⁸.

- At first, a flood could be due to a lot of rainfalls from the Oceanside. As the Cher is part of the Loire's basin, the rainfall would supply both the Loire and the Cher. Those floods are the most frequent and happen mostly during winter. Water can reach a flow of 2 300m³/s in middle Loire.
- The second kind of flood is due to rainfalls in the Cevenole region; those rainfalls coming from Mediterranean Sea cause important damages but are located in the high Loire and if there is no rainfall from the seaside, it does not go until Tours.
- The third kind of flood is a mix of the two previous. There are both rainfalls in Cevenole region and from the Oceanside. It was the case for the flood of 1846, 1856 and 1866.
- Then, during the winter season, when the Cher's discharge is the most important, it happens that the water flow freezes. In addition to that, ices melt, and then the discharge increase and can lead to a flood.



Image 3: The Gloriette under water, Savonnières road⁹

To protect the inhabitants, the dikes are not sufficient. That is why the Gloriette is used as a floodplain. A major part of the water flow would go in it in case of a flood event.

⁸ www2.centre.ecologie.gouv.fr/azi1/htm/Notice.htm

⁹ Bruno Marmioli

Prevention tools not highlighted enough

Since 1987, the French law obliged the French State to give information about risks to local communities and to the public. In response to this duty, flood atlas for each catchment area in France was created.¹⁰

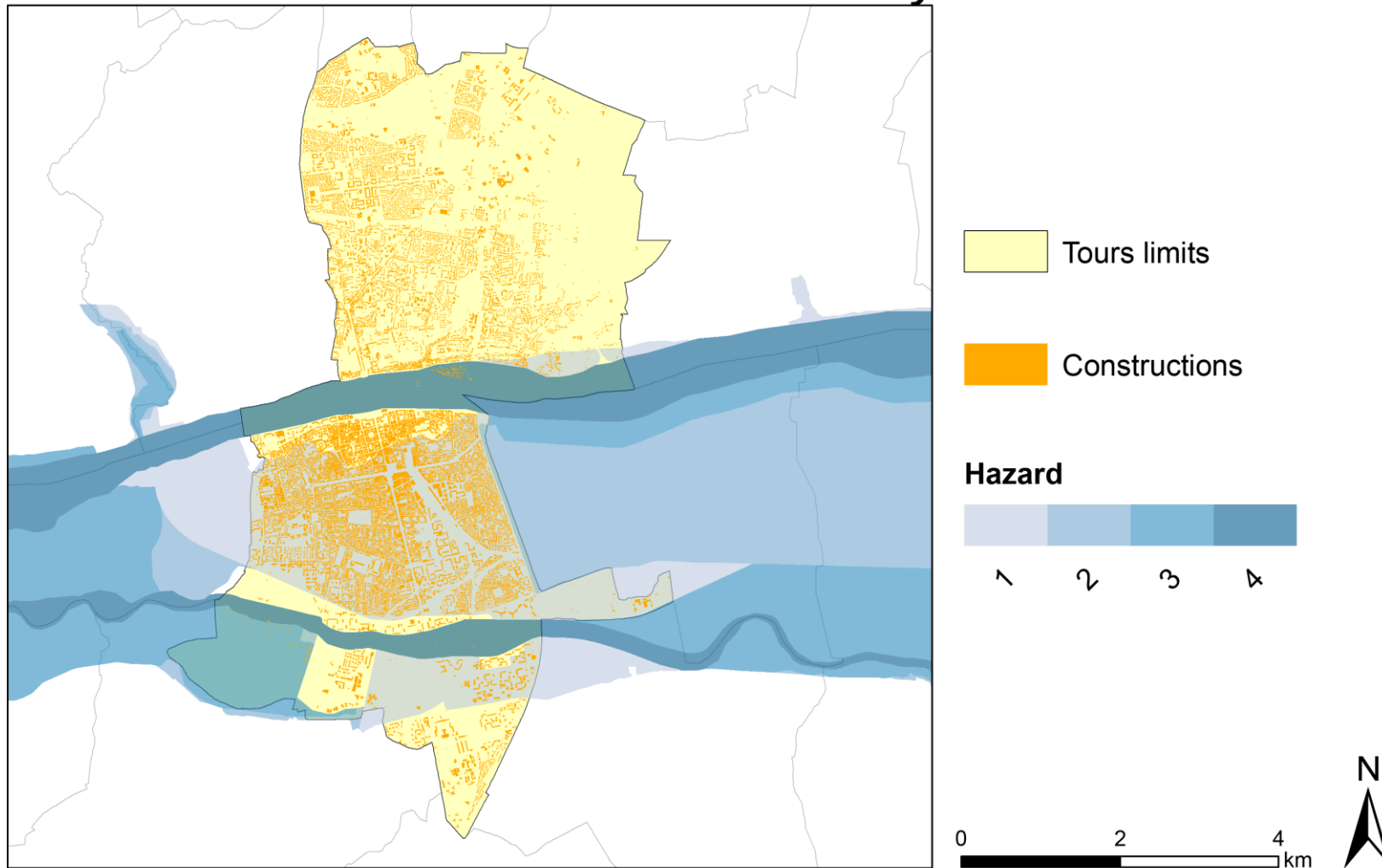
Some websites created by the government exist to prevent from flood. The website Vigicrues.gouv.fr for example allows seeing hour after hour if there is a flood risk in the Loire's basin. The SPC (Service de prévision des crues) Loire-Cher-Indre, part of the DREAL (Direction régionale de l'environnement, de l'aménagement et du logement), is a government service. Composed by 20 flood forecasters, the SPC aims at preventing inhabitants about flood. Thanks to them, and there 24/7 work, a flood can be detected 48 hours before it happens. That lets the time to leave the city and diminish the damages on populations.

Despite the existence of those sources of information, as inhabitants of Tours since 3 years, we can say that nothing is really done by the local authorities to make flood risk a priority. Nothing more than information about the risk hazard that concerns the place we live in was given to us when we settled in Tours.

In fact, it works this way; if a citizen wants to learn about flood hazard, there are tools to help him, like text messages sent to its mobile phone concerning the flow evolution, for example. He can also simply consult the vigicrues website which informs about flood in France.

¹⁰ Can be consulted on this website : http://www.vigicrues.gouv.fr/niv_spc.php?idspc=10

Flood hazard levels in the city of Tours



Sources : BD TOPO IGN, DIREN CENTRE
Realisation : Auclair - Forgue - Lizano - Yassin

Map 4: Flood hazard levels in the city of Tours

5. A compromise between urban project and flood risk management

The “exposition de préfiguration de l’aménagement de la Plaine de la Gloriette”: an expensive project

In 1999, under the new municipality of Jean Germain, the Gloriette still represented a big urban stake, but the law was strict, no urbanisation is authorized on the site. So, the municipality decided to develop an urban park on the Gloriette, the priority was given to the protection of the site; light arrangements were planned in order to showcase the natural resources existing. The idea is to develop the place, without disturbing the first role of the park: receiving the Cher floods.

In 2000, the municipality launches a call for projects in order to highlight the site. For that, Jean Germain assigned an important budget. Therefore, « l’Association pour la préfiguration de la plaine de la Gloriette » was created and would be the contracting authority. Its mission was to organise, for the two successive years, during the summer, the preliminary exhibition for the Gloriette’s development (exposition de préfiguration de l’aménagement de la Plaine de la Gloriette). The CIPJP (Conservatoire international des parcs et jardins et du paysage) was chosen to organise the first exposition, as the project manager. The two exhibitions aimed at experimenting light “planning prototypes”, which could be developed and used in the future park, experimenting animations in the park and sharing with the public the future project in the park.



Image 4: An example of lights “planning prototypes” for the first exposition, in 2000¹¹

Finally, the first year, the balance assessment was moderate. On one side, the exhibition received a large public, estimated at 28 000 people, but on the other side, it was a considerable cost for the municipality, which used financial, too important human and technical resources, all the most since the exhibition is free. The second year, there is a charge to the public so the exhibition received less people, about 10 000. Moreover, the project is confronted to short work deadlines, and because of the bad weather, the works fall behind. The municipality therefore decided to abandon the exhibitions projects for the future years.

¹¹ www.scene.fr

From 2002, different projects have been developed on the Gloriette giving rise to the actual park, studied in this report. So, the presentation of the actual Gloriette floodplain, the activities established there and the reasons why we chose this case study will follow in the next part.

The Gloriette floodplain: a space with multiple projects

The choice of the Gloriette: reasons and delimitation

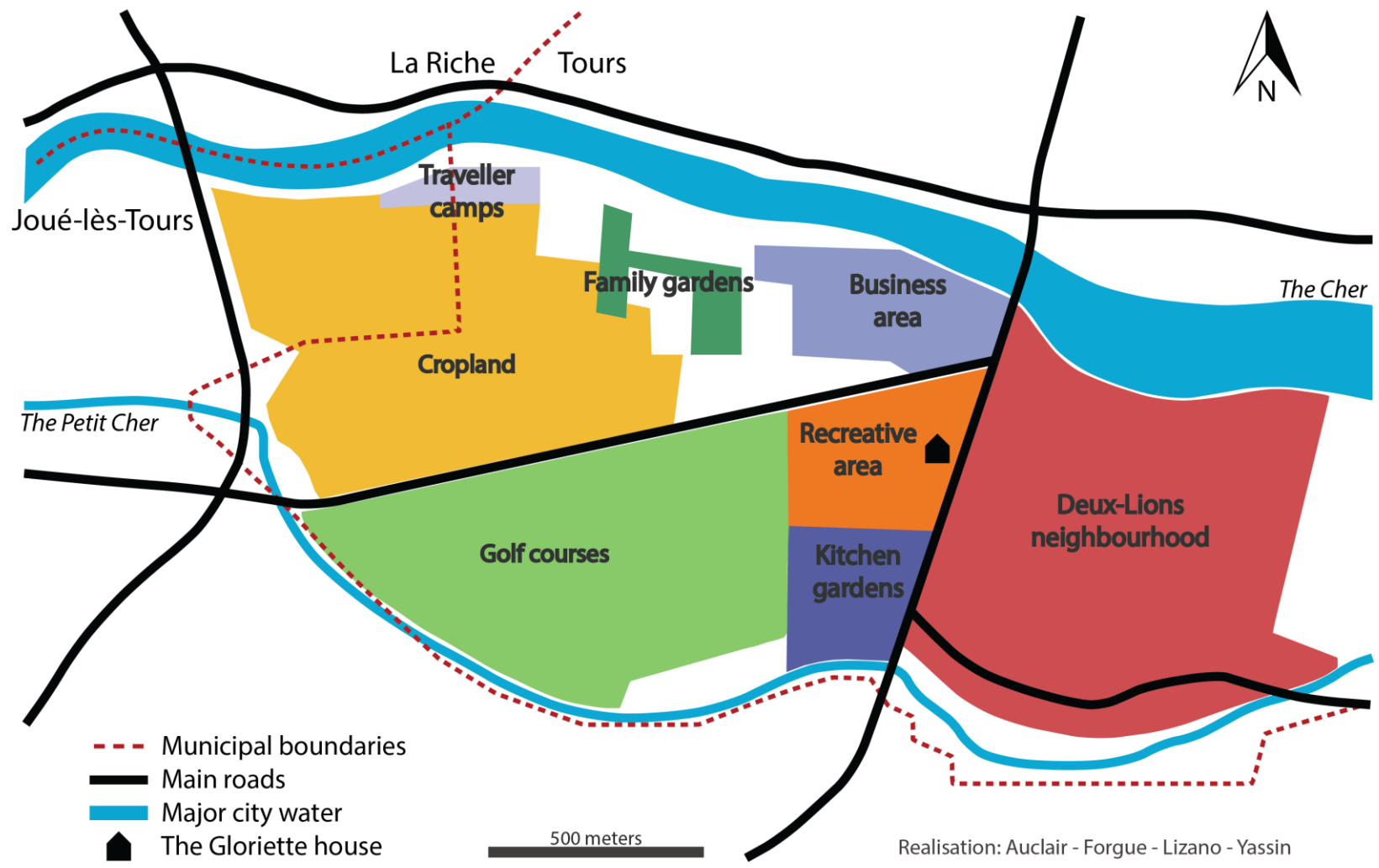
This research project focuses especially on the area delimited on the East by the Pont du Cher Avenue and, on the West, by the road ring D37. From the South to the North, it is delimited by the Cher and the Petit Cher. The studied area, covering 180 hectares, is characterised by the presence of different activities:

- A compact golf
- Two reception areas for travellers
- An urban park composed of a kitchen garden, two playgrounds (one seasonal and the other all the year), a seasonal bar called “Bar de la Gloriette” and a pedagogic apiary
- Family gardens
- Some cultural manifestations
- Some companies
- Private accommodations
- Croplands

These different activities are considered as multi-use because they are established on a floodplain, therefore a flood management infrastructure. In this report, we will consider only the activities that have been implanted after the creation and the approval of the “Loire Grandeur Nature” plan and the 1994 order of the prefect in which the urbanisation of the Gloriette floodplain is forbidden. Indeed, constructions which have been realised before this date can't be considered as multi-use because the Gloriette was not a floodplain regarding the law. The concerned area was open to the urbanisation so were not subject to the same laws and stakes as now. The construction standards weren't the same as now, for example, today the constructions have to be easily knockdown or constructed on piles. (PPRI de la Loire – Val de Tours – Val de Luynes, 2001). The activities developed on the Gloriette, since 1994, have to answer to a two-fold challenge: they have to respect the first mission of the place, which is to receive the floods from the Cher and they also have to answer urban stakes and needs. For example, we can suggest that the construction of the Golf and the development of the park answer to sports and leisure needs by the Tours' inhabitants.

Therefore, the private accommodations and the companies have a particular status in this study. Indeed, they have been built during a period when the urbanisation was authorised, and so, are not under the same laws and urban stakes as now. Even so, they will be evaluated for some criteria but not the others, like institutional legitimacy since they do not answer the current legislation.

Organisation of the different activities in The Gloriette floodplain in Tours



Map 5: Organisation of the different activities in the Gloriette floodplain in Tours

An important multi-use on the Gloriette

As it has already been said previously, the Gloriette is in the heart of several urban stakes. On one hand, it has to play the role of a flood management infrastructure. So, for flood warning, no obstacle shall obstruct the rise of water, but especially, no economic or human challenges shall be in stakes. This is the strict application of the prevention principle: avoiding or minimizing the economic, human or cultural stakes. On the other hand, the Gloriette has always been the subject of urbanisation projects. Indeed, it was a space dedicated to the extension of the city. With the construction of the different districts nearby, like the “Deux-Lions” or “Les rives du Cher”, the Gloriette is a privileged place to develop several urban projects answering the inhabitant’s needs. Moreover, the place is very well connected to the rest of the conglomeration thanks to the tramway, to bicycle paths (especially la Loire à Vélo), roads and the ring road are nearby.

For Tour(s) Plus, which has become, now, the main administrator of the Gloriette, but also for the municipalities of Tours and Joué-lès-Tours, the projects developed on the Gloriette have to answer these two previous goals. The different activities present on the Gloriette will be described in this part, by chronological order.

The croplands

Historically, the Gloriette was totally dedicated to agriculture but since it is subject to many urban projects, the area is considering the abandonment of farmland. Indeed, the cities of Tours and Joué-lès-Tours, and then, Tour(s) Plus, have gradually bought the lands to develop the different actual activities like the Golf, the travellers’ camps or the Gloriette park.

In 2006, six farmers, who cultivated cereals, were still present in the Gloriette (Oriane Vezian, 2006). They were not the owners of their lots, they had to rent the lands they used. From this date, the golf has been extended, the two traveller camps have been built, so the lands dedicated to the agriculture has decreased.

The “Pont aux Oies” family gardens

The family gardens situated on the Gloriette, in the area called “Pont aux Oies”, have been created in 1999, by the municipality of Tours. At this date, a first phase began and 40 gardens were created to replace the original gardens situated in the “Deux-Lions” district and destroyed during its development. Then, 43 gardens were created to welcome a part of the former gardens situated in La Riche and deleted in order to develop the “Levée du Cher” area.

Today, the family gardens situated in the Gloriette still counts 83 gardens. The management and the maintenance of the site are entrusted to the municipality of Tours via its parks department, but also to the maintenance pole, which ensure the maintenance of fences and garden sheds. The roads service realises the maintenance of the paths. The internal management of the site is entrusted to the president of the “Groupement des jardins de Saint-Sauveur” which organises the rent of the plot.

The culture about family gardens is really important in the region of Tours. The number of family gardens keeps on rising and the demand is still high. In 2014, the family gardens of Clos-Moreau, in the North of Tours, counts 10 more gardens, but more than 25 people are still waiting for the location of a garden (La Nouvelle République, 14/03/2014).

So, the family gardens of Pont-aux-Oies have been created to save old family gardens which have been destroyed for urban projects. The conservation of these gardens appears like the conservation of cultural practices. This first project developed in the Gloriette, whereas the site is dedicated to be a floodplain, is both a natural and cultural project. Indeed, the family gardens highlight agricultural practices appreciated by the inhabitants of Tours but also answer to a need of nature in a very dense urban area. This project is more a social project, the municipality of Tours does not hope for huge benefits from the family gardens. Besides, the annual rent price for one square meter of lot is estimated to 2€ (La Nouvelle République, 14/03/2014).

The urban park of the Gloriette

In 2002, the municipality of Tours decides to support itself the management of the park via its Parks Department. The budgets are squeezed, compared to the previous budget given to the “exposition de préfiguration”. The project consists in the construction of a modest kitchen garden, of 700m². The Gloriette house, created in 2000, by the municipality and the “Association de préfiguration de l’aménagement de la Plaine de la Gloriette”, manages the development of the kitchen garden. This garden grows edible and aromatics plants on the theme “World Gardens”. The objective is to achieve several projects dedicated to the education to the environment.

Finally, for a lack of financial resources, the projects are making no progress, and Tour(s) Plus therefore becomes the administrator and the owner of the Gloriette house. Moreover, the Gloriette is situated both on Tours and Joué-lès-Tours, so the transfer of management to Tour(s) Plus is pertinent. The Gloriette is supervised by Tour(s) Plus via a management agreement from the Park Department of Tours to the sustainable development service of Tour(s) Plus. It is not a question of transfer of competences yet. Indeed, the shell is still realised by the city of Tours. For example, the shearing is still realized by the park department of Tours, although it is supervised by Tour(s) Plus.



Image 5 : From left to right, the pedagogic apiary, the playground, the kitchen garden and the Gloriette bar¹²

Over the years, the garden will grow up: in 2010, its surface is 5000m². It is one of the biggest kitchen gardens developed by a local authority, in France. Bulletin boards are present in all the kitchen garden explaining to the public the different plants cultivated and the agricultural practices. The educational aspect is still privileged.

A few years later, an old house is rehabilitated and becomes the Gloriette house settlement, in which works now four employees: a person in charge, an animator and two gardeners. The Gloriette house manages the kitchen garden and organizes different events like the pumpkin festival or the kite festival. These events can be meetings, workshops or guided tours, centred on the gardening and the environment, in a broad sense. The educational aspect is still highlighted via the organisation of these different events. Indeed, two animation programs are realised by the Gloriette house, one for the large public and the other for schools. For example, in the 2014 animation program dedicated to the large public, cooking and gardening classes are organised. An educational apiary has been built in order to raise awareness about the role of bees in our global ecosystem. Finally, during the summer, a huge playing field for children is open with, for example, a giant Checkers or Parcheesi games and the Gloriette bar is opened every Sunday. All along the year, a permanent playing field is present on the Gloriette.

¹² Source : Auclair – Forgue – Lizano – Yassin



Image 6: Different events organised by the Gloriette house, the kite festival, the pumpkin festival and the beekeeper festival¹³

So, the urban park of the Gloriette, mainly managed by the Gloriette House privileges the educational aspect, dedicated to the general public and to schools, with two animation programs. The respect and the knowledge concerning the environment are really important in this park. This is a site dedicated both to leisure, sport (for runners or walkers) and learnings.

The compact golf

In 2007, the golf is inaugurated. Tour(s) Plus is the contracting authority, but it delegates the management of the golf to a private administrator via a public service delegation. In 2012, the extension of the golf is inaugurated too: it is 25 hectares bigger and is composed of a practice, a 9 holes course and a 18 holes course. The Gloriette golf is a public golf: there is no need to be a member for playing, and there is no entry-fee. Admission tickets cost 10€ for the 9 holes course and 17€ for the 18 holes course, which are very law prices¹⁴. Student prices also exist.

¹³ www.tours.fr

¹⁴ www.golfdelagloriette.com



Image 7: The club house and the 18 holes course¹⁵

So, the Golf is an equipment dedicated to leisure, but Tour(s) Plus makes it one of its top priorities, to make the golf accessible for everyone, whereas it is generally seen as a sport dedicated to wealthy people.

The two receptions areas

The two traveller camps have been built following the law of July 2000, relative to the elaboration of a plan for the reception of travellers in every department and the obligation for the 5000 inhabitants and more populated municipalities to build receptions areas expected in these plans. Therefore, in 2007, the two municipalities, Tours and Joué-lès-Tours, have built receptions areas on the Gloriette. The two areas are placed side by side but respectively on their administrator municipality.

The areas provide 24 locations. The Tours reception area is managed by a private company, via a public services delegation and the Joué-lès-Tours one is managed by the municipality. The two camps are opened all year. Generally, the parking time is limited to three months, but dispensations are authorised for children's schooling or in case of hospitalisation.

In 2014, a high traffic area was built by the municipality of Tours, but on the Joué-lès-Tours' municipality. This area aims at welcoming travellers, from April to October, for religious gatherings. This area is planned to welcome thousands of travellers, and then provides 200 locations.

The location of the three reception areas has been chosen due to the historical presence of the travellers on the Gloriette. Indeed, travellers have been established for long on the plain, not far from the place they are now. Flood risk existing on the Gloriette has never seemed to be a constraint for them. Therefore, because of the availability of lands on the Gloriette, it seemed logical for the two municipalities of Tours and Joué-lès-Tours to develop the reception areas on this place.

¹⁵ Id.

From the interview with Mr Bouthet, the Joué-lès-Tours reception area administrator, families are semi home-body and they attempt to settle. Indeed, each family stay several years because all the children are schooled. Moreover, as it was said previously, a strong family connection exists on the two camps: it is always the same families who are present. For five years, only two families have not a strong family connection with an old family already present on the site.

So, it seems that the municipalities of Tours and Joué-lès-Tours have found a good compromise for the creation of these two areas. Indeed, they have conserved the historical connection between the travellers and the Gloriette, and they valorised the site in the same time. Moreover, these two reception areas seem to be exceptions, since they are generally situated “in the depths of the industrial parks, behind the waste reception centre (Libération). In Tours and Joué-lès-Tours, the two camps are situated near the town centre, as the “Deux-Lions” district.

The different private manifestations

Different events take place on the Gloriette, non-organized by the Gloriette house. The municipality of Tours is in charge of the socio-cultural activities on the site, and its maintenance. There is especially a big event: The Aucard2Tours festival. This festival, created in 1986, was originally organised on the Aucard Island, but for security and logistical reasons, the event now takes place on the Gloriette. The Aucard2Tours festival welcomes every year more than 15 000 spectators, which makes it one the biggest festivals in the region (La Nouvelle République, 04/06/2013). There is also the “Potager Electronique”, a free concert, organized by the association “les hommes verts”, since 2007. This event is on a smaller scale than Aucard2Tours, welcoming in 2011 about 2000 people.

The Gloriette is also a site where different events take place on the scale of the conglomeration. The Gloriette can be seen as a place of many festivities and activities. The characteristic of these activities is the short live aspect. Therefore, these manifestations cannot be an obstacle for flood. Besides, the infrastructures used for these events shall be easily knockdown.

To conclude, the Gloriette floodplain provides large spaces to develop numerous projects and activities. The municipalities of Tours and Joué-lès-Tours, but also Tour(s) Plus, which are the main administrators and owners on the Gloriette, have principally developed projects dedicated to nature, but also to leisure, sport and education.

The objective of this research project is to analyse the multi-use on the Gloriette floodplain, that is to say, to analyse how the projects integrate both the flood risk and the urban stakes like the education to environmental challenges or the demand of nature by the inhabitants. In order to have a general representation of the different activities on the Gloriette, we decided to realize a calendar permitting to know the annual open season of each activity. This calendar also shows the periods during which the flood risk is high. From December to May, when the flood risk is the highest, there are less activities. It seems, at first glance, that the activities considered as multi-use are adapted to the flood risk. This analyse will be more developed in the flowing part of this report.

This part will then present the classification of each criterion, to eventually come to the final applicable grid for the assessment of our case study. To be brief, we will show that the majority of the criteria will be retained for the Gloriette assessment, except from technical feasibility, which is really irrelevant in that case. What's more, the criteria kept do not necessarily have the same importance, the most important ones being social justice and vulnerability.

1. Economic efficiency: a territory not concerned by economic activities

As we saw in the global definition, Economic Efficiency is a criterion which embraces various notions that describe the inputs and outputs used for a project. Here we justify our choices regarding the importance of it and its evaluability.

A low importance

The time we got for this project did not permit an exhaustive analysis of this criterion. Nevertheless, a global analysis through our documentary research and interviews allows us to say that the economic efficiency is not the priority in the Gloriette. It looks like Tour(s)Plus invests a lot in it and uses this floodplain as an educational place about biodiversity and a land of outside leisure activities without expecting a financial gain. We chose to give a note of 1 for the importance of Economic Efficiency, because we can feel it is not the point that justifies the presence of multiple uses in the Gloriette as we explain it in the Analysis part.

A criterion hardly evaluable

We note this criterion with a 1 concerning the evaluability. Because of the complexity of this criterion, and due to the short amount of time we had, we cannot access to all the information we need for a complete analysis.

2. Technical feasibility: an irrelevant criterion

Since we consider flood protection infrastructures that already exist, the criterion of Technical Feasibility loses a part of its sense here. Moreover and more specifically, because of its status of floodplain, La Plaine de la Gloriette and its multiple uses could not be described by the technical feasibility. To describe the impact of the multiple uses on the efficiency of the floodplain to welcome a flood, we choose to use the criterion of vulnerability which is larger than technical feasibility as far as it implies the technical issues and the inhabitant's issues.

That is why we note this criterion with two 0, both for the importance and the evaluability.

3. Accountability: a rather important criterion

As we have seen, accountability refers to the fact that all actors of a project are able to justify or account for their activities. In order to evaluate this, it seems easier to decline this criterion in three: the relevance, the institutional legitimacy and the citizen legitimacy. Several indicators can be released

from these criteria like needs of population, respect of regulation in the establishment of the multi-use, number of mobilisations made by population or association, participation and involvement of the population. We will see in the following part that this accountability is not the most important criterion, it seems important to study in the case of the Gloriette, even if data are not always available or accessible. These characteristics made the accountability the third criterion in terms of importance and evaluability.

Relevance: an interesting location

Relevance has been defined as the fact that the aims of the project meet the users' expectation or the needs of the neighbourhood. In order to evaluate this criterion, needs and uses seem to be good indicators to focus on. In this part, we will see that relevance is one of the most important criteria of accountability, in view of its importance and its evaluability.

A strong importance

The relevance criterion is really strong to understand in the Gloriette case study because this site is ideally located, not so far from the city centre of Tours. Moreover, districts around the Gloriette are relatively dense, with many collective housing. This situation and characteristics lead to strong urban issues. We can also notice that the "Deux-Lions" district and the Gloriette are not the less expensive districts of Tours, according to the newspaper Le Point¹⁶.

Moreover, this is an important place for the entire agglomeration because it is one of the last natural areas of Tours. Furthermore, the Gloriette is well connected to other districts of the town, thanks to the tramway, buses and roads. As a result, its area of influence is quite big and extend through the Tour(s) Plus territory.

A moderate evaluability

To evaluate relevance of the project, two main indicators were defined in the part before: needs and utilisation. To study these indicators it seems interesting to see how people use the place today, how it was planned to be before the multi-use was set up and also know the attendance of the place. Unfortunately, some information, like attendance, is not easily available because of the free activities, particularly those organised by the Gloriette house. Moreover, it is difficult to find specific needs of population of the neighbourhood because of a lack of time. That is why this criterion is moderately assessable.

¹⁶ Le Point. "Tours - La Cote Quartier Par Quartier - Le Point." Accessed December 9, 2014. http://www.lepoint.fr/villes/tours-la-cote-quartier-par-quartier-04-10-2012-1515864_27.php.

All these characteristics, on positioning and connectivity of the floodplain, justify the strong importance of the evaluation of this criterion of relevance for this case study. But the evaluability of this criterion is more difficult because of the access of information. All this make the relevance an important criterion but not the most important.

Institutional legitimacy: a sub-criterion linked to urban stakes

In a previous part, institutional legitimacy was defined as the right to be or do something in the society. For this criterion, precisions were made to focus on the legal aspect of the project set up in the Gloriette. Even if the importance of this criterion seems moderate comparing to other criteria, its evaluability is well ranked. That made the institutional legitimacy one of the highest ranked criteria of accountability.

An importance classified as medium

Institutional legitimacy has been considered as middle-range important criteria. In fact, the floodplain is located between the Cher and the Petit Cher, which is why it got this vocation. This implies that the area of the Gloriette is classified as high hazard by documents for flood risk prevention. Consequently, there are strong legislative constraints about what can be built or not. So it seems important to see if actors of the multi-use respect this legislation. But as we specified before, this area represents strong urban issues and the institutional legitimacy seems less important than the vulnerability or the social justice for example, as we will see later.

A good evaluability

In order to evaluate this criterion we will look at the main documents about risk prevention and documents determining land uses, like the PPRI and the PLU, which are available on the web site of the city. These documents are public documents and are consultable by anyone. The second indicator of this criterion is population mobilisations, their number and their impacts on the advancement of the projects. This data is available thanks to the interviews of different actors and article in local newspapers. With all this information, this criterion seems well assessable.

Thanks to an easy access to the information, first under the regulation of the land use on the Gloriette and then under the mobilisations that could exist on the site; but also thanks to the relative importance of this criterion, citizen legitimacy is, as relevance, in the middle in the scale of criterion for the case study.

Citizen legitimacy: a criterion becoming significant

As it was described before, citizen legitimacy refers to the correctness of the project for populations and users. In order to study this criterion, two main indicators have been proposed, the participation of population in the design of the projects and the events or mobilisations against the projects. Compared to the importance and the evaluability of relevance and institutional legitimacy, this criterion, regarding the case of the Gloriette, appears as the least important of the three sub-criteria of accountability.

An importance classed as medium

Citizen legitimacy is as important as the institutional one. In fact, because the Gloriette concerns a lot of people, as it is explained previously, it is important to see if the project is accepted by the population and if citizens have been consulted for the future of the Gloriette. In addition to the population, we also include all the associations fighting for ecological principles for example. Moreover, today, in a lot of country, participation principle is more and more spread, and it affects more and more the legitimacy.

A moderate evaluability

To evaluate the citizen legitimacy we need to know how the populations have participated to the project and if there was some mobilisation against. Some of this information, as the degree of participation for example, is difficult to find in the time we have to do this research project. As a result, a full evaluation of this criterion seems a complicated.

We have seen before, that the definition of accountability was complicated, and that it could be separated into three main sub-criteria to be easier to evaluate. Finally, this difficulty of definition is reflected in the difficulty to find information to do the best evaluation as possible. Because of these constraints, accountability is in a middle place in the classification of all criteria for the case of the Gloriette.

4. Social justice: an importance based on the numerous activities

The diversity of the activities proposed in the Gloriette makes the analysis of the criterion social justice easier. In fact, analysing equity and fairness both in terms of flood protection and access to the activities appears really relevant in the Gloriette case. Moreover, we will see that the data can be considered as available, so the criterion will then be one of the most appropriate to study.

A strong importance

Social justice seems to be a really relevant criterion to evaluate in the Gloriette case study. In fact, given the multitude and the diversity of the activities proposed on the site, we can easily imagine that a lot of different populations and people will come into consideration during the analysis. Thus, it will be particularly interesting to focus on the equity in terms of activities and in terms of flood protection in this case, because we can imagine that the interactions between the different actors must be interesting. Therefore, the score given to this criterion in terms of importance can easily be a 3.

A good evaluability

In terms of evaluability, this criterion will require more qualitative than quantitative data to be evaluated. Indeed, as it was said in the description of the criterion, in the previous part, the aim of this criterion is to assess whether every population and area are treated the same way concerning access to the activities and risk protection. So the kind of information needed will rather concern the purpose of the activities, the consideration of the different populations by each one, or even the consideration of the risk in each case, etc. So thanks to the interviews done with the different actors

concerned, and the different information found in the literature, it has been judged that the data is available for this criterion, so in terms of evaluability this criterion also gets the maximum score, that is to say 2.

So, eventually this criterion has the maximum scoring in this assessment grid with a total of 5. As a result, it will be one of the most relevant criteria of our analysis of the Gloriette case study.

5. Vulnerability: multiple uses involving multiple trade-offs

The criterion vulnerability is one of the most important criteria as well. Indeed, once again, due to the diversity of the activities proposed, it is interesting to study the different trade-offs made between risk protection and each activity to evaluate the perception and the importance given to flood protection by each activity.

A strong importance

The vulnerability criterion also appears relevant to study since the Gloriette is particularly exposed to flood risk because of its location on a maximum hazard area. Besides, it is not only a protective infrastructure but a space entirely dedicated to welcome water, which is not the case of every multi-use infrastructure that exists. Thereby, the question of vulnerability appears totally appropriate. Besides, the fact that there are numerous activities on the site questions especially the consideration of the risk by each of them and the impacts they have. Consequently, vulnerability also obtains the maximum score for its appropriateness, 3.

A good evaluability

Concerning the accessibility to the data, this criterion has also been judged as a good one. In fact information is collected the same way as for the social justice criterion, so via the interviews essentially or thanks to the literature and the internet. So the data is considered as available too, and the criterion obtains a score of 2.

Finally, the vulnerability criterion is as important to study as the social justice one for the Gloriette case study, with a total score of 5, the maximum.

CRITERIA	SUB-CRITERIA	IMPORTANCE	EVALUABILITY	SUM
ECONOMIC EFFICIENCY		1	1	2
TECHNICAL FEASIBILITY		0	0	0
ACCOUNTABILITY	Institutional legitimacy	2	2	4
	Citizen legitimacy	2	1	3
	Relevance	3	1	4
SOCIAL JUSTICE		3	2	5
VULNERABILITY		3	2	5

Table 3: Summary of the criteria's weights

In conclusion, the majority of the criteria are considered as important and appropriate to analyse for the assessment. In fact, the only one that will not be used is the technical feasibility. The others are all interesting to keep, even if for some of them, especially economic efficiency, citizen legitimacy and relevance, a complete data is not always findable. The most important ones are then social justice and vulnerability, which will be the easier to analyse thanks to their good evaluability.

III. Assessment of the Gloriette: a good example of multi-use flood management

The aim of this part is to evaluate the multi-use in the floodplain of the Gloriette, thanks to the method described in the part before. As it was explained, each criterion of the assessment framework was classified thanks to its importance and its evaluability. This evaluation of the Gloriette will follow the order of this classification as it was given in the part just before, so it will begin with the social justice and vulnerability of this multi-use. Then the evaluation will consider all the sub-criteria of the accountability criteria, namely relevance, institutional legitimacy and citizen legitimacy. Then, the economic efficiency criterion will be analysed. Finally, the technical feasibility will not be study because, as it was explained before, it does not appear relevant for the case of the Gloriette.

This assessment will be based on several kinds of data. First, we have made some interviews with different actors, linked in some ways to the development or the management of multi-use in the Gloriette. In the order that we met or contact them, the different actors are the followings.

- Joël Nouet, responsible of the Gloriette house
- Serge Bouthet, responsible of the Joué-lès-Tours travellers camp
- Enzo Petillault, one of the organisers of the music festival “Aucard de Tours”
- Catherine Boisneau, ecologist and lecturer
- David Chollet, an elected member of the Europe Ecologie les Verts political party
- Michel Durand, president of the SEPANT association (Société pour l’étude, la protection et l’aménagement de la nature en Touraine)
- François Chapacou, worker of the parks and gardens service of the city of Tours, responsible of the southern subdivision

Secondly, this assessment is based on a reading work. Media were varied, the evaluation appealed to institutional documents as documents for risk management, reports of other researchers on the Gloriette, but also some press articles.

All along this part, we will see how the Gloriette is situated concerning the different criteria defined and explained before. We will see that the social justice and the vulnerability of the project, the two most important criteria, have been evaluated relatively positively. Indeed, vulnerability is considered as a fair trade-off and social justice not so far from an impartial treatment, considering fairness in terms of flood protection, and at a high level considering fairness in terms of access to the activities. Concerning the accountability, even if the institutional legitimacy appears right, as well as the relevance, the citizen legitimacy seems less good. Finally, the evaluation of the economic efficiency of the project shows that the Gloriette and its multi-use were not established to produce economic benefits but more to give a better image of the city.

1. Social justice: a protection and an access fair for everyone

Social justice is one of the most relevant criteria kept after the elaboration of the analysis grid for the Gloriette case study. As the following analysis will show it, this site is a relatively rich space in terms of activities and frequentation. Therefore, according to the two evaluation scales proposed in the previous part, we can consider that the level of social justice corresponding to the Gloriette floodplain is rather good both in terms of flood protection and in terms of access to the activities. So, this part will focus on the analysis of the indicators elaborated in the assessment method to justify why the Gloriette is considered as a quite good example of social justice.

A significant diversity

This first part of the analysis will focus particularly on the first indicator elaborated in the second part of this paper, which concerned the type of population or area aimed by the activities. The information given in this part was collected thanks to the different interviews and the data found elsewhere.

As it was shown in the presentation of the Gloriette, numerous different activities are present on the site. First, there are the leisure activities, with the golf course, the accrobranche park, the wood games for kids, the kitchen gardens and the family gardens. What's more, every year in June, a music festival called "Aucard de Tours" takes place in the Gloriette. Secondly, there are economic activities, with the companies which were installed on the site before the development of the area. And finally, there are two traveller camps, also present prior to the development, and a high traffic area.

A great sports offer, in addition to the golf

Golf has always been considered as a rather expensive activity reserved to rich people. So in the first place we can think that the presence of golf courses is not a strength but on the contrary that it will only attract a certain kind of population and more particularly rather wealthy people. But the golf course studied here is actually a public one as it was said before, and in a more general way, golf is becoming a more and more accessible and affordable hobby. The image of this sport is actually changing, and as a matter of fact, the membership of the French Golf Federation has been growing steadily since 1970. In fact, at that time it counted only 20 000 members and between 2000 and 2009 this number rose from almost 300 000 to 410 000 members.

What's more, golf is an intergenerational sport gathering everyone. People can play golf with their family, or their friends, it is user-friendly. More specifically, the Gloriette golf is open to everyone and very affordable in comparison to other golf in France, with a price of 10€ for the 9 holes and 17€ for the 18 holes. Also, it is particularly interesting for young people because there are special prices for those under 26 years old and there is a partnership with the SUAPS (University department of physical and sports activities), a sport association dedicated to the students of the University of Tours. This allows them to benefit from even more preferential prices and access.

So even if people still have prejudices or misconceptions about this sport, the Gloriette courses are supposed to be open to everyone and not to serve only a certain kind of population. Plus, efforts are made by the golf to make it more affordable to everyone and especially thanks to special prices for young people and a partnership for the University students.

Furthermore, the sports offer also includes a beach volley field and an accrobranche park. So we can see that in terms of sports offer the Gloriette is relatively well furnished. What's more, the current unused territories are sometimes used as football or rugby fields. So people

The Gloriette house: educational activities for young and old

We can also see that entertaining and pedagogical activities are proposed for children and their parents. Indeed, from June to October, different animations are organised by the Gloriette house around nature and biodiversity to make the children concerned and interested about environment. For example, there is an area dedicated to kitchen gardens where children can learn more about culture, vegetables, etc, with school or not. Its area increased from 500 m² in 2002 to 7000 m² in 2010. There are also hives and since 2013 an educational apiary has been installed. Moreover, different manifestations are organised, like the pumpkin feast, the kite feast, etc., as it was said before.

Furthermore, the Gloriette welcomes family gardens, and even before going into details, we can see that in terms of social justice the principle is good as well. The aim is to gather families and rent them a piece of land to cultivate what they want. In the Gloriette we can count 83 family gardens, but it is a small part in comparison to the 1300 family gardens of the city, distributed in 18 different sites. The only problem that can be raised about these family gardens concerns the offer. Actually there is a much more important demand than the offer, so all the family cannot obtain one or have to wait a long time for it. But it also reflects the interest of the place and its success.

So a lot of activities are centred on nature to welcome children and family, and this is a good point in social justice because it gathers an intergenerational population.

An entire area dedicated to travellers

Inhabitants were present on the site before it started to be developed. In fact, travellers settled in the north of the area along the Cher, and now there are two traveller camps next to each other, but separated by the limit between Tours and Joué-lès-Tours. So each one is managed independently of the other one.

We can see that the development of the other activities presented before did not have any impacts on their location. It was considered that their presence did not bother any of them so they could stay there and not be excluded. What's more as it was said a high traffic area has been created to welcome religious manifestations during the summer.

So the presence of traveller camps and a high traffic area shows once more that population frequenting this place are really varied, and that no one is excluded or prioritised.

The working places

Furthermore, companies and farmers are located on the site. They were there prior to the development of the current activities. However we can see that they stayed there, and that the development of the area did not change anything for them. So they are still as vulnerable as before, but this is not due to the development of the area, given that their construction was allowed back then.

Leisure activities for all

Finally, concerning leisure activities, the public aimed is also varied since the activities go from games for kids, to an annual music festival. There are indeed two playgrounds, a tyrolean traverse, a pirate ship, and the accrobranche path. So it is an attractive place for children to play together, and in the same time it is a user-friendly zone for the parents accompanying them. It is a kind of meeting area gathering all type of populations from all ages.

A favourable location

Besides, if we focus rapidly on the location of the site we can see that it benefits from a remarkable situation, in the city itself near the centre of Tours, not in the periphery. It takes about 10 minutes to go downtown by car, and around 20 minutes by bus or tramway. Plus, the tramway and the bus stations are just a few minutes' walk from the site and the cycle route "La Loire à vélo" also deserves the area. Thus, the Gloriette has a great location, which allows it to be accessible to everyone by walk, car or public transports, rapidly.

So in conclusion, we can see that the Gloriette is a diverse and mixed space and then corresponds to a high level of social justice in terms of fairness of the activities. None of the activity presented has an influence on another one. Each one is spatially limited and there is no conflict between them. Given the wide range of activities proposed on the site and its location, we can see that the Gloriette gathers a lot of different people, from all types of populations and all ages, it is not intended to a particular population. So, even if at first sight we can think that the golf courses for example are aimed for rather wealthy people, or the family gardens for rather average people, the site offers a wide range of activities for everyone, from leisure to work.

A global knowledge and protection of the risk

The second part of the analysis will now focus on the second indicator, the evaluation of the fairness and equity in terms of flood protection.

The traveller camps, a privileged location

Globally, at first sight a surprising thing appears: travellers are located along the Cher, so they are the closest to the river, and then the most vulnerable. But, we learnt during the interview we had with Joël Nouet that travellers are actually located in the higher zone of the Gloriette, so they are the less vulnerable. This way, if the water table overflows, they are not the first ones in danger.

Moreover the overflow is predictable for the entire site, because it begins to be visible about two to three days before near the cities of Villandry and Savonnières before it happens in the Gloriette. In that case, concerning the travellers, Mr. Bouthet, administrator of the Joué-lès-Tours camp, is alerted and travellers are evacuated according to the evacuation procedure of the city. The principle is supposedly the same for the Tours camp.

Besides, in both the Tours and Joué-lès-Tours traveller camps, electricity meters are installed on top of little mounds to be protected in case of floods. There are also retention ponds and a ditch to welcome rainwater. So, finally we can see that travellers, unlike we could thought in the first place, are relatively well protected, due to their elevated position on the floodplain.

An inappropriateness of the activities

Concerning the other activities, as the law stipulates it, nothing can be built to welcome people permanently and that is what has been done in the Gloriette. Except from the travellers, no place welcomes people permanently. This way, we can consider that nobody is actually concerned by the risk on the other activities proposed in the Gloriette.

Vulnerability only concerns the activities strictly speaking, because in reality the crops, the kitchen gardens and the family gardens do not welcome people permanently. The impact is not the same for all these activities because in fact for the family gardens and the kitchen gardens the production is not sold. On the contrary, for farmers cultivating on the site, a flood will have big impacts on their season.

To conclude, the people exposed to flood risk in the Gloriette are the travellers and the farmers. But we saw that travellers are well protected, by both their localisation and the infrastructures implemented on their area. On the contrary farmers are really vulnerable so we can conclude that the fairness in terms of flood protection is not right for everyone even if it is for the majority. The Gloriette will then correspond to an intermediate level between impartial treatment and unconsciousness, because except from the farmers, nobody is exposed to flood risk in this area, thanks to the absence of permanent construction. However, it is not justified neither to talk about unconsciousness because the area is not flooded very often, so farmers are not exposed to a permanent risk, there can be a long time without any water and they knew about the risk before and chose to stay. In that sense, the level of unconsciousness exists but is really low.

An assessment depending on the period considered

Furthermore, an additional aspect seems important to be mentioned to put into perspective the analysis just made. In fact, if we consider the Gloriette floodplain according to its former boundaries, the Deux-Lions neighbourhood is included in the area and, to some significant degree, its construction had negative impacts on the Gloriette floodplain as it is known nowadays. The backfilling realised for the urbanisation of the Deux-Lions neighbourhood kind of sacrificed the current floodplain, because initially the whole Deux-Lions neighbourhood was a part of the floodplain, as it was explained more precisely in the presentation of the Gloriette. Considering this fact, the Deux-Lions neighbourhood didn't respond to the social justice principle, which implies that a measure taken in some place should not have negative impact somewhere else.

2. Vulnerability: trade-offs respectful of the risk

Vulnerability is also one of the most important criteria chosen for the analysis of the Gloriette floodplain. In this part, we will see that the trade between perceived risk and perceived benefit characterising the Gloriette is actually fair, so the level of vulnerability is low. The area is of course at risk, because it is a floodplain, but the various activities installed on the site are appropriate and they take the risk into account very well.

A well thought out development

In terms of impacts on the risk, it is clear that none of the activities has negative effects. Indeed, they are relatively simple and did not imply any physical modification of the area. There has not been any hydrological modification during the development of the different activities present today on the floodplain. The only modifications realised concern the change of land use with the construction of the golf courses especially, but also with the family and the kitchen gardens. But those changes do not have any impacts on the risk.

Given that activities do not have any impacts on the risk, it is not necessary to make a parallel between the evolution of the activities and the occurrence of floods, because they will not be linked. Especially since there has not been significant flood since the development of multi-use in the Gloriette.

A territory involved in flood protection

Concerning the consideration of the risk in the development and the management of the activities we can also see that the Gloriette is a good example for multiple reasons. First, a great importance is given to this place. There is a strong will to preserve the area as a floodplain and make it a showcase of the environment in the city. This will is shared by the different actors met, whatever their role is. So this testifies to the awareness of the risk and the desire to take it into account. This part will show more specifically how the risk is actually taken into account by the various activities.

First of all, in a general way, as it was said before, nothing permanent can be built on the Gloriette. People cannot stay permanently in the site, except from the travellers who lived there before. The policy is strict, the area must be preserved from all kind of permanent urbanisation.

If we look closer at the golf, the Gloriette house activities and the traveller camps, we can see that the risk is a really important part of the management. Indeed, the infrastructures installed by the Gloriette house for example, are all built in wood, and are removable so in case of a flood they can be disassembled. What's more, the Gloriette house also uses a system of dry toilets to save water and reduce water pollution.

Concerning the traveller camps, measures are also taken. In fact, retention ponds are installed on the site, and a ditch was created to welcome rainwater. In addition, as it was already said previously, the camps are on the higher zone of the Gloriette and the electric metres are installed on top of mounds so they are supposed to be protected in case of a flood.

The golf is also taking measures. Indeed, the reception building is built on stilts so it is not supposed to be damaged in case of a flood event. Moreover, even if it is less significant, another initiative is taken, pesticides are forbidden for the maintenance of the greens with a concern to limit the water pollution in case of a flood.

So we can conclude that there is an awareness and a respect of the risk through the development and the management of every activity present on the Gloriette. They are quite simple so they are appropriate to the context and they do not imply any modification of the hydrological system or anything, the risk remains unchanged. The only exceptions are the travellers camps, because they welcome people permanently, which is supposed to be forbidden. But they were present prior to the development of the area, and measures like the retention ponds, the ditch, and the elevation of the electric meters reflect the desire to reduce the risk for the populations. So in terms of vulnerability, the Gloriette can be qualified as a fair trade-off.

Besides, as it was said at the end of the previous criterion analysis, if we consider again the Deux-Lions neighbourhood in the Gloriette boundaries, then the trade-off is not fair, on the contrary, in that case it privileged the activity, which is the urbanisation of the neighbourhood, over risk protection.

3. Accountability

A relevant use across the city

Addressed needs

The first step to evaluate the relevance of the project is to study the needs of the population and the neighbourhood before and after the project. In fact, as we saw it in the historical part of the Gloriette, the entire area represented by the floodplain of the Gloriette, and the “Deux-Lions” district, was to expand the city of Tours, in the continuation of the already existing buildings. The main idea was to build a technology park, then, the next mayor of Tours decided to create a place with a functional diversity with housing, economical structures and services. The area of The Gloriette was left free of any construction because of the urbanisation of the “Deux-Lions” district, making flood risk more important in this area. This space became a protected area where no more constructions were allowed and the city had the ambition to make an “ecological showcase”. Today, the projects set up in the Gloriette are respectful of nature and linked to an idea of an ecological place, with, especially the family gardens and the kitchen gardens, which have a pedagogical aspect. In those terms, the Gloriette respects its ambitions. Moreover, a part of the Gloriette is a public space, open to everyone, something quite rare in the neighbourhood. Moreover, the Gloriette is one of the only urban parks in the agglomeration, so it meets the needs of this type of infrastructure in Tours. Concerning the specific needs of the population, data are not available, because of the lack of time, so it seems difficult to evaluate this point.

So concerning the need, the Gloriette seems to answer to the general needs of the city and the urban agglomeration, and ranks as one of the largest urban parks of the territory.

A reasonable use

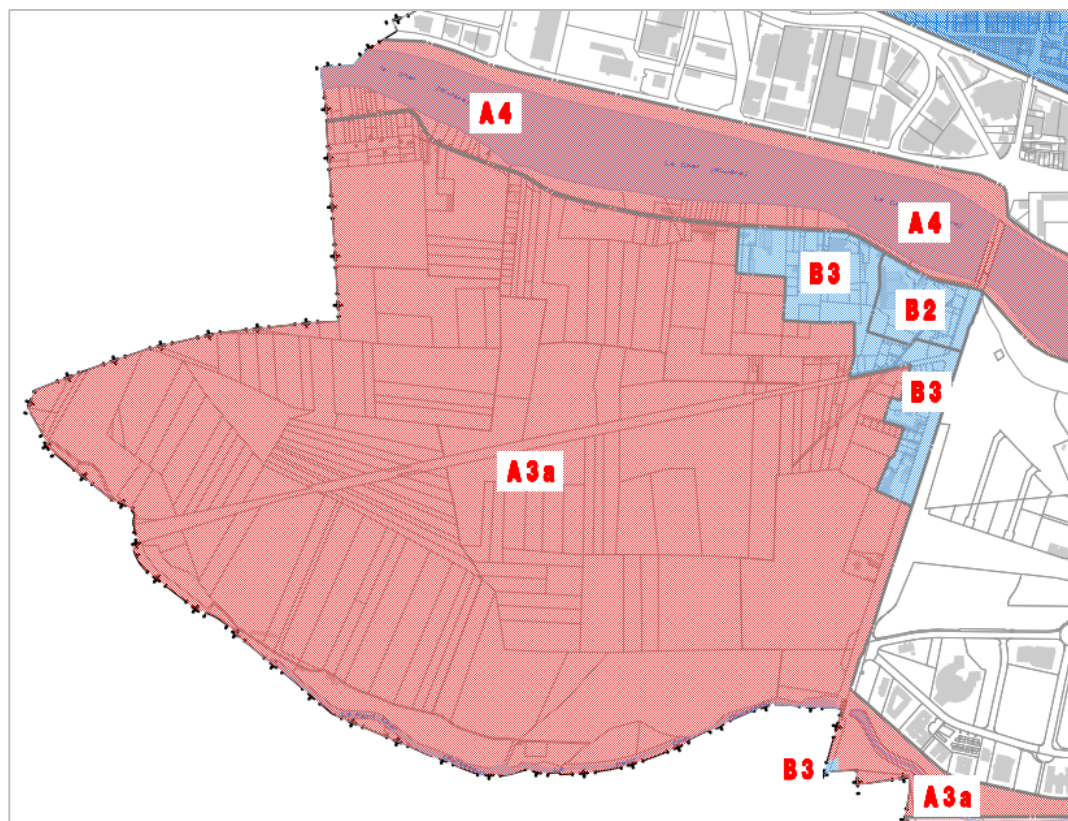
In order to evaluate the relevance of the project, we decided to look at the utilisation of this space. We saw in the Gloriette's presentation that there are several uses of this space. That implies that several types of population are involved in the use of this space and its activities. In fact, events taking place in the Gloriette are varied: the beehive feast, the pumpkin festival, the kite festival, etc. and addressed directly to all populations. Moreover, a lot of these events are free. Concerning attendance, there is no real data because of the free events, and the difficulty to have exact data, for the golf especially. But Joël Nouet, responsible of the Gloriette house, told us that attendance of the different festivals have increased, thanks to the tramway and the rising urbanisation of the "Deux-Lions". Moreover, the recent extension of the golf shows that this infrastructure works well and that the frequentation is good. Finally, the demand for family gardens are more important than the number of gardens available. The different activities of the Gloriette seem to be used by a lot of people and adapted to the most numerous. Finally, because some activities like playgrounds are open all year and accessible by everyone, we could notice, with observations on site that there are often used by several families.

To conclude on this criterion, difficulties to find information concerning the needs of the population do not allow us to say if the activities set up in the Gloriette meet the needs of the population. But we can notice that the Gloriette is in line with the broader needs of the city. Moreover, the place seems to be well used by different type of population. So we can classify the case study in the first level of relevance, where the utilisation seems to meet the needs of the population, in a big scale.

Institutional legitimacy: a project in accordance with the law

Activities respectful of the legislative documents

To evaluate the institutional legitimacy of the multi-use in the Gloriette, it appears important to see if the constructions of the different activities set up in the site are in accordance with flood risk prevention documents. As it has been specified before, in France, two main documents are considered as references in terms of risk prevention and land use: the "Plan Local d'Urbanisme" (PLU) and the "Plan de prévention des risques" (PPRI). In those of Tours, the Gloriette is divided in 4 areas as we can see on the map below.



Map 6: Classification of the lands in the Tours PPRI¹⁷

The North-East of the site is classified in B, that means that it is a flood urbanised area. The index for each area represents the degree of exposure to flood risk, so for an area classified in B2 the hazard is average and for a B3 area, the hazard is strong. In fact, areas situated close to the Cher are more exposed to the risk; as a result, regulation is stricter.

The remainder of the floodplain is classified in A, which is an area to preserve of any urbanisation. A3a means that this area is classified as a strong hazard one and as a frequently flooded area and A4 means that this is a very strong hazard area. In this kind of area, no construction is allowed. But,

¹⁷ Web Geo Service. "PLU Tours - Zones de Risques Naturels." Accessed December 5, 2014. http://ville-tours.webgeoservices.com/pdf_maps/148/.

according to the settlement of these documents, exceptions may be made. For example, in an A3 or A4 area, all constructions, works, amenities, or operating fields are forbidden, except from the followings.

- Maintenance work on existing facilities
- Modernisation and extension of wastewater treatment plants
- Reconstruction affecting by something other than floods
- Open shelters for animals
- Shelters for family gardens
- Shelters for pumping installations
- Public facilities for sanitation or electricity
- Stopping place for travellers
- ...

It is stated that all this constructions or installations need to be dismantled in 48 hours and needs to be built with materials waterproof.

For areas classified in B, the regulation is the same, but constructions already built have standards to respect. For example, all the products that can harm the environment need to be placed in a waterproof container and no basement are allowed. The evaluation of the institutional legitimacy needs to be done by looking if all activities present on the Gloriette meets these standards.

For all things organised and managed by the Gloriette house this standards are met. The few constructions are legal: shelters for family gardens are authorised in the regulation, the local of the Gloriette house is an old building renovated, and all the constructions like playgrounds are easily dismantled in less than 48 hours, or equipped with pumping systems, according to Joël Nouet, responsible of the Gloriette house.

Concerning the golf, the building was built in 2007. In a legislative point of view, even if the Gloriette is classified A3, this building is authorised. In fact the A3 classification involves a non-urbanisation of the area but exceptions are possible. For example, it allows the construction of new building or amenities for sports, leisure and tourism, as long as they do not welcome people permanently. That is the case of the golf's building. Moreover, this building is built on stilts to be more protected in case of flood.

Finally, buildings relative to economic activities were built before this quite strict regulation appeared, so their legitimacy does not seem to be questioned.

So, regarding all the activities in the floodplain, the Gloriette seems to be legitimate in the regulation point of view.

No significant mobilisation

In order to evaluate the institutional legitimacy, it seems also interesting to see if there were any mobilisations against the different projects planned to be in the Gloriette. With the different interviews we had and the different documents we could read about the Gloriette, we did not find any trace of this kind of event for activities present today. In contrast, there were some mobilisations of ecological associations like “Loire vivante”, for previous projects. These mobilisations led the Gloriette to be a non-urbanised area, and a place devoted to nature. Moreover, there was no decree taken by the prefect opposing any project since Jean Germain has decided to leave the area without urbanisation.

With all this information, the Gloriette and its multi-use appears as right concerning the institutional legitimacy.

Citizen legitimacy: a strong acceptance but no participation yet

Citizen legitimacy is the last sub-criterion of accountability. According to the classification of the criteria adapted to our case study, this sub-criterion is not the most important of all and it is the last one of accountability, regarding its importance and its evaluability. As it was explained before, citizen legitimacy has two indicators: acceptance and participation.

A development not called into question

This first indicator is really close to the one of institutional legitimacy, mobilisation. In fact, several reasons could exist to be mobilised against a project but they are all often made by citizens or associations. Citizens can protest against a project because it is not legal, because it is not relevant to put it there, because of the dangerousness of this project, because of the nature protection, or because of the excessive price for example. No mobilisation of citizens or associations can show that they agree with the project, on all the points discussed just before. For the Gloriette floodplain, it does not exist a lot of mobilisations against the project. In fact, as it was said earlier, since the Gloriette is totally dedicated to receive flood, the multi-use proposed seems not to go against the will of citizens. The association Loire Vivante is certainly the only association fighting for the Gloriette, but that was before Jean Germain, when the Gloriette was planned to be urbanised like the “Deux-Lions” district. As such, we can say that the different multi-uses on the Gloriette are accepted by everyone.

A low level of participation

Concerning the participation of the population in the project, we decide to evaluate it with the Arnstein ladder, described in the part where criteria are defined. Thanks to this ladder, we can determine if people were involved in the definition of the different projects of the Gloriette. Before evaluating the participation in our case study, it is important to precise that the phenomenon of participation is quite recent in France. Even if it is tending to develop itself, only a few actors ask for a population’s participation, like the Arnstein ladder defines it, that is to say a participation where population have a real power in decisions taken. The Arnstein ladder gives 3 levels to qualify the participation: citizen power, tokenism and non-participation; each one divided into several levels. In the case of Tours and more specially the Gloriette, decision making is not left to the citizen. As we could learn

thanks to some press articles and interviews made with the responsible of the Gloriette house, Joël Nouet and the president of an ecological association, Michel Durand, we could evaluate a part of the participation in the different projects set on the Gloriette. It seems that there was not a lot of participation for the different multi-uses. Since today, population was not involved in the decision-making but information under the project was available and searchable by everyone. In the Arnstein ladder, it was a non-participation level and the type of participation was only information. Now things seem to change. For example, a project of goat barn was proposed by the old municipal team, but this was abandoned by the new municipal team because of its important cost. Nowadays, to determine the future of this space, the Gloriette house and the city of Tours want to involve the population, and ask for its opinion. No concrete actions have been launched yet but the local newspaper had made a survey to know what inhabitants want instead of the goat barn. But there were only a few participants and that was not something official.

So to conclude on the evaluation of citizen legitimacy, we saw that the mobilisation of association and population was not so strong and that people seem to agree with the different projects realised. However, participation of the population is quite low too. That shows that citizen legitimacy is good, in the sense that population seems agree with the projects but in the sense of taking into account the desire of the population, the citizen legitimacy is not so good. As a result, we chose to classify citizen legitimacy in the middle class.

4. Economic efficiency: not the main objective of the Gloriette

An historical situation and political choices opposed concerning the environmental consideration

The criterion of Economic Efficiency needs surroundings in time. Here, the creation of the “Deux-Lions” district is the point of reference to consider the inventory of biodiversity. Before it, the Gloriette was part of a large floodplain where there were essentially fields and wild spaces progressively separated from the river by dike. Some associations like the SEPANT, fought against the project to build a district on the current Gloriette. Due to the new neighbourhood of Deux-Lions, the Gloriette situation evolved and ended up being more included in the urban area of Tours than before. Since the district was built, the Gloriette is now situated between a neighbourhood and a biodiversity zone. That justifies the will of Tours to use it as a space dedicated for “sport and leisure [...], an open space”¹⁸ dedicated to the whole urban conurbation.

The presence of a “biodiversity zone” described like it and situated in the west of the Gloriette seems to justify in its turn the use of the Gloriette as an open space for sport and leisure and not as a space for biodiversity and wildlife. To go further, if the Gloriette is regarded as showcase of biodiversity for the urban conglomeration nowadays it is only because it is compared to the Deux-Lions district.

In fact, the Gloriette has been used to develop a laboratory of observation about nature. For example, the Gloriette House was created in 2000 by Tours and aims at promoting environment and biodiversity to schools, thanks to animations. The fact that the Gloriette House depends on the Sustainable

¹⁸ Rapport de présentation du PLU, 11.07.2011, Ville de Tours

Development department of Tours municipality gives an idea about how the future development of the Gloriette is considered: respectful of the ecosystems, an example of sustainability.

Finally, concerning the environmental incomes and outputs, we can only conclude that currently, the biodiversity present on the Gloriette is less wild than before, it is a nature under control. The farmers' activities are less and less present even though the municipality shows a will to maintain agriculture near to city area with some project like the goat farm, especially since this project has been abandoned by the current and new municipality.

Employment: a gain thanks to new activities

The sub-criterion "employment" is considered at the scale of the activities present in the Gloriette and the surroundings depend on their creation or disappearance.

Since new activities have been established in the Gloriette, there are some employments that have been created. The Golf employs 6 persons for its management and maintenance. The Gloriette's House employs a total of 9 persons including three part-time jobs. Concerning the shared-garden, jobs are linked to Tours department, so we cannot consider them as created jobs linked to the Gloriette. Moreover, the shared-garden where not created in the Gloriette, but moved from Menneton's ZAC and Port-Corbon. Because they should have been created anyway, even if the travellers' areas employ for both the one of Joué-lès-Tours and Tours a total of 10 persons, they cannot be considered as the other jobs which were created because of the special status of the Gloriette.

To create those activities, lands for farming were used. Compared to the jobs that were created, we can believe that it is minimal, even if we did not have the time to evaluate it.

So, the assessment concerning employment seems to be positive. A total of around 25 jobs were created with the different activities present on the floodplain.

Activities in the Gloriette to justify the property value of the "Deux-Lions" district?

The property value is hard to estimate is the case of the Gloriette. The fact that the Deux-Lions district was only built 10 years old ago impacts highly the price of the land. Moreover, since the tramway was built in 2013, the district is easily accessible and the prices, by this means, are above the average of Tours' property which is around 2350€/m² to buy an apartment, while the average price in the Deux-Lions would be around 2 440€/m²¹⁹.

¹⁹ meilleuragent.com

Prices before the construction of the district are not known, but if we consider that they were field before or that the land were not used, we can say that the price increased a lot.

Anyway, the Gloriette is regulated and as the land cannot be built, the property value stays low: For example, Tours bought a land for the travellers area in 2014 and the price was of 2€/m² as it is said in the municipality reunion report which took place the 5th of May, 2014, that law price is linked to the interdiction of building any solid infrastructure.

Because there is the tramway, and a lot of facilities in the Deux-Lions, we cannot conclude that the property value of this district is directly linked to the activities in the Gloriette. Nevertheless, we can imagine that those activities add value to this district and to the lifestyle which is promoted.

A lot of financial investment for few gains on the Gloriette

The Gloriette is a floodplain which means that there is no possibility to build any new building on it. The current public policy is to buy all the lands and dedicate all the plain for public uses with multiple activities. That means some investments; Tour(s)Plus invested around 2 million € in 2007 for the Golf, for the Gloriette's House it invests around 270 000 € for renovating it. There is also functioning investment for the travellers' area. Tour(s)Plus is asked for 17400 € each year by Joué-lès-Tours to maintain its travellers' area.

To consider the gains, we know that the Golf is among the cheapest Golf in France. Unfortunately, we lack information like: the price to reserve the land for a festival or for an educational working group.

Finally, what the monetary indicators tells us is that Tour(s)Plus does not regard the Gloriette as an interesting financial place. They invest on it for the community, not to earn money. That makes sense for a public organisation.

Economic efficiency is hard to evaluate in our study case, due to a lack of information. Putting aside the environmental aspect, it seems that the assessment is quite good. But we need to be careful about that conclusion because we do not have all the information we need and especially the employment which disappeared, the gain linked to the activities or the details of wild species which were present before and the one that are still there now.

The only conclusion we could make would come from a global feeling that the activities in the Gloriette were not created for their economic efficiency but more to improve the image of the town.

5. The Gloriette: a complicated path for a coherent result

CRITERION	EVALUATION OF THE GLORIETTE
SOCIAL JUSTICE	High level (fairness for the access to the activities)
	Between impartial treatment and unconsciousness (fairness for flood protection)
VULNERABILITY	Fair trade-off
RELEVANCE	Right
INSTITUTIONAL LEGITIMACY	Right
CITIZEN LEGITIMACY	Middle
ECONOMIC EFFICIENCY	Not created for an economic efficiency but for the image of the city
TECHNICAL FEASIBILITY	Not treated

Table 4: Summary of the analysis for each criterion

This evaluation of the multi-use does not consider the neighbourhood of the “Deux-Lions”, but only the Gloriette floodplain like it is today. Otherwise, this evaluation would not have been the same, especially for the vulnerability and the social justice. These two ones would have been ranked lower, because the urbanisation of the “Deux-Lions” and its embankment has a real impact on the vulnerability of the Gloriette. If we look at the evaluation of the criteria chosen and we find relevant to evaluate, we can note that none of them have a bad evaluation. Some criteria have an average rating but sometimes, this note is more due to a difficulty to find information than a bad evaluation.

With these results, we can say that it is profitable for Tours to do multi-use in the Gloriette but it seems important to specify that there are no big economic issues in this area. Multi-use is not set up to make financial profit but more to improve the image of the city thanks to this urban park, where

nature and educational aspects are met. In that sense, the establishment of multi-use in the Gloriette is a good thing, it is well done and well thought not to affect the main purpose: receiving the water when there is a flood.

Finally, since 2001, there was no flood in the Gloriette, and at this date multi-use was not so developed. We cannot know how the different infrastructures and activities will support a flood, and what it will cost to the different owners. But judging the consideration of flood risk in the establishment of the different activities in the Gloriette, we can think that it will not be problematic.