

Building the future in a town of the past

a plan and strategy for the spatial integration of the university campus in Delft

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In a city where the university defines both the economy and its future the spatial integration of the campus should be treated very carefully.

If this city is equipped with a beautiful waterfront area connecting both the campus and the city centre, would it be wise to leave the development to just one party?



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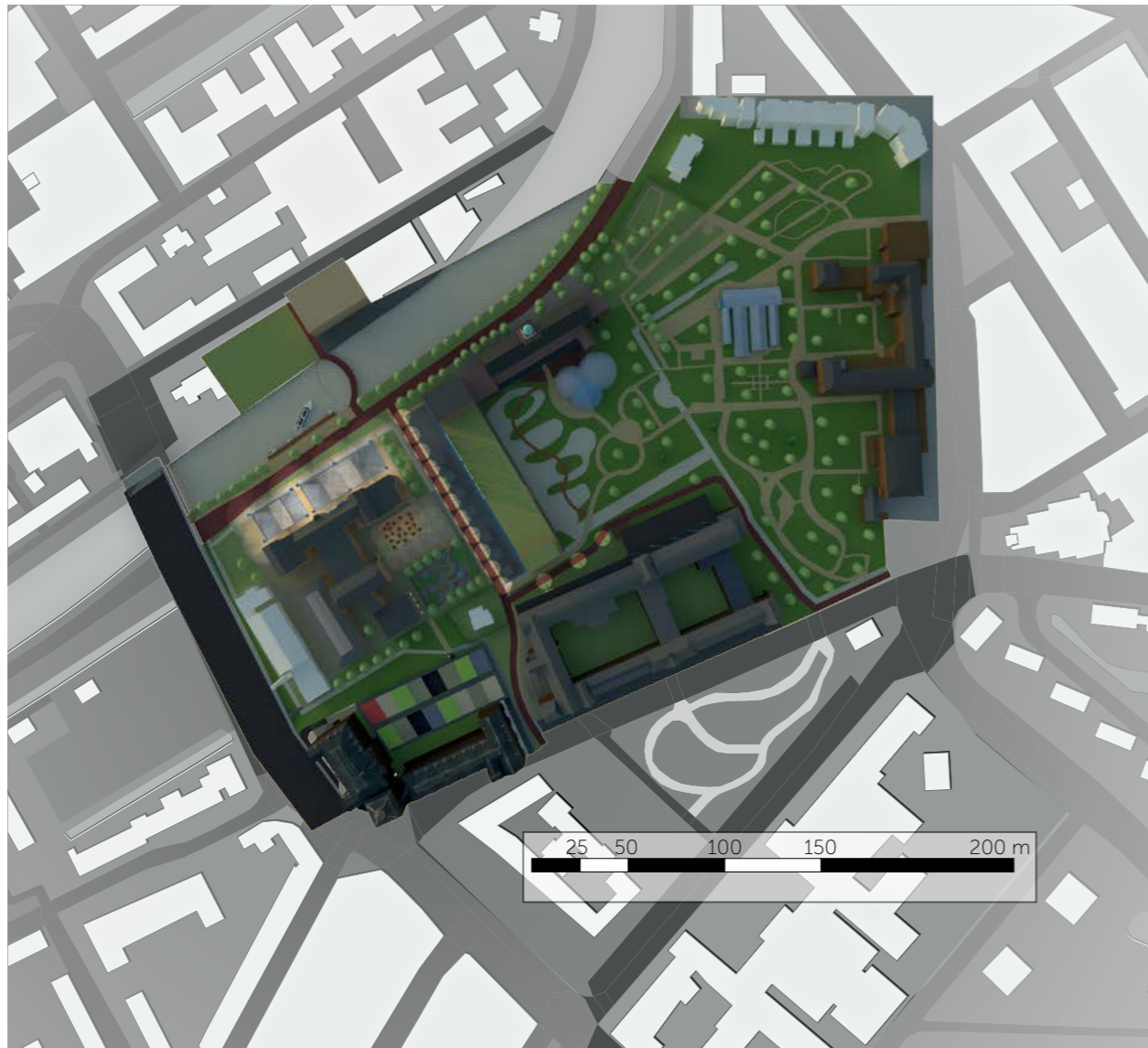


Figure 1 Vision for the area



Figure 2 Waterfront area



Figure 3 Urban park

Summary

The objective of this project to supply the city of Delft, more specifically its urban planning department, with a clear vision on how they could integrate the university campus more properly into the urban fabric. By doing this, it could greatly enhance the local prosperity and strengthen its position and identity as a stronghold of innovative knowledge. Right between the campus area and the inner city an area is available that shows great potential in hosting a great variety of functions to support that cause.

The development of that area has stagnated and is currently mainly driven by one single actor. When more actors would be motivated to be involved in the development of this area, it could form a very strong spatial link between the local knowledge economy and the facilities of the city centre. Also liveability (by creating shared spaces) and sustainability (by water treatment and raising awareness) would be improved. To get these actors committed, it is important that an urbanist translates their wishes and requirements. By cleverly integrating them and showing the potential of collaboration, he or she becomes a very useful catalyst for the quality of the whole area and its surroundings.

The specific proposal for this area is based on a vision consisting of three major spatial elements:

1. A waterfront area that showcases the innovation and excellence of the local knowledge economy;
2. an attractive urban park that hosts several business places, suitable for different company types;
3. a slow traffic route that connects these areas to each other and the surrounding area.

These areas are defined by five groups of interventions, based on integrated stakes and assets of actors active in the area:

1. A combination of (student) housing with shared facilities, which are available to everyone
2. An ensemble of working places and suiting facilities
3. A collection of locations and spatial elements to host temporary pavilions and (student) projects
4. An integrated water management system, which adds to the quality and storage of water and brings even more spatial quality to the area
5. A route that caters to the needs and wishes of students, inhabitants and tourists and that increases the liveliness and liveability of the location.

The end result is an area that strongly contributes to prosperity, sustainability and liveability. It shows the unique surplus of more thorough collaboration of actors in the area and demonstrates that, by cleverly translating and integrating spatial claims, urbanists can have an influential role in the contemporary area development practice.



Figure 4 Vacant campus area (source: David Levinson)

Preface

Fascination

Something had struck me already very early during my time in Delft. It occurred to me when walking through the city centre in the weekend and when I wanted to have some food with fellow students. Why is the only choice for a bite on the campus the faculty restaurants which are all run by one single company? Why can't I have a drink after a long day of work? Why do I never bring visitors to Delft to the campus? Why do I never meet other inhabitants of Delft?

The answer is simple, a strict spatial division between the two functions in Delft. At one end you have the city centre, offering a spectrum of facilities and which is always under pressure by the larger offer at Rotterdam and The Hague which are very close-by. At the other end you have a campus which is sort of public, but does not have anything to offer to non-students, or anyone actually late at night.

Right between these two areas is a beautiful waterfront area with monumental buildings (see Figure 4). It shows great opportunity for lively functions, cool bars and inspiring work spaces. However, this promising area, overgrown with plants, fitted with a struggling Botanical Garden and decaying vacant building reminiscent of Harry Potter, will be soon be claimed by even larger traffic nuisance and the goals of one single actor, filling it up with commercial functions and student housing. In just a matter of years the barrier between student and 'normal' inhabitant of Delft will become even larger.

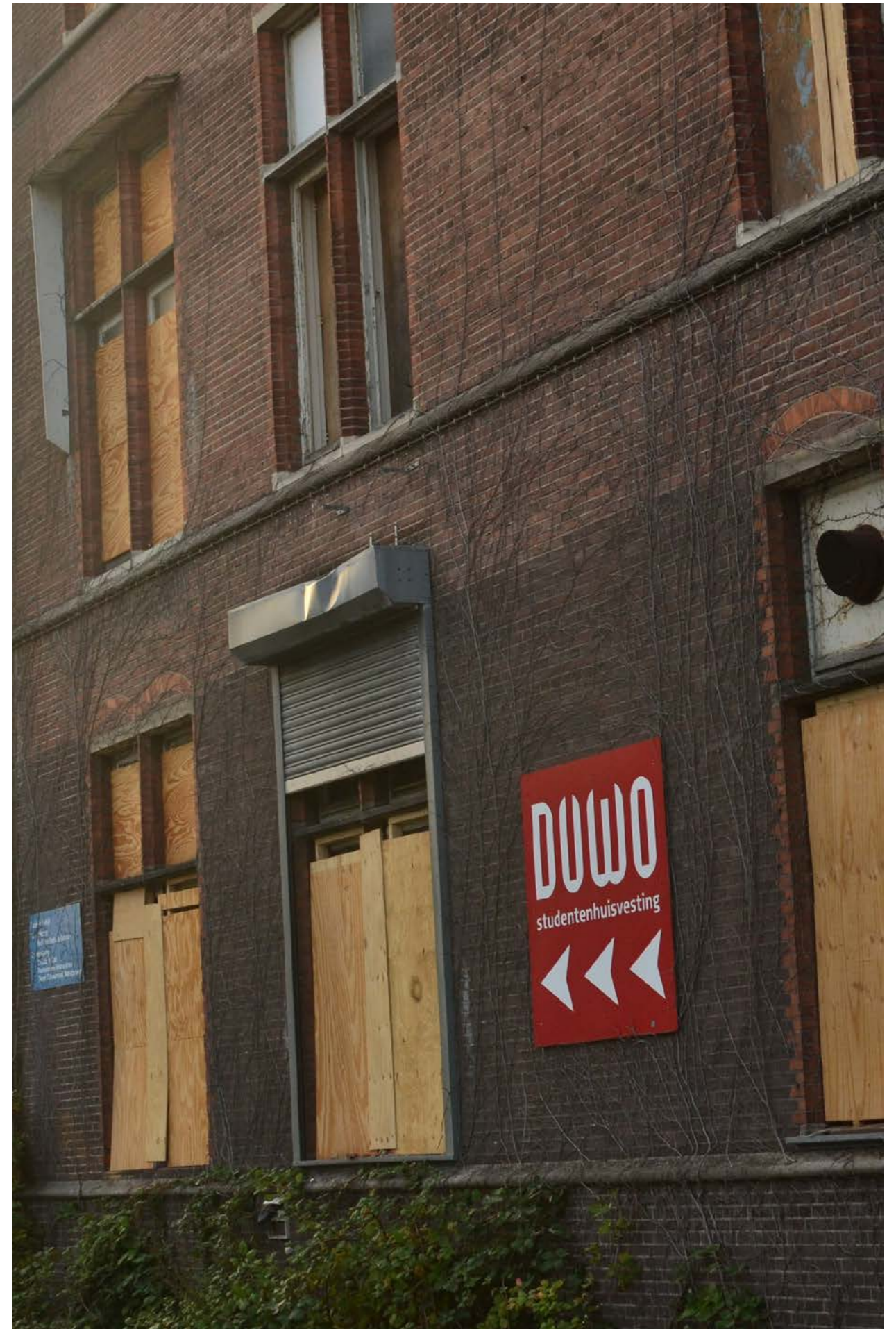
This great lost potential of connecting the university and the city is an acknowledged goal, but neither the municipality nor the university has the resources to do anything at the moment. A typical case, in crisis haunted Holland. Shouldn't the contemporary urbanist be able to handle these issues? What can he do to enlarge liveability, sustainability and economic stakes without a tradition solicitation?

The aim of the project described by this thesis is to investigate that challenge and to propose an alternative spatial approach in Delft (see Figure 5).

Personal motivation

Getting a grasp on the new tactical part the urbanist can claim will be an essential aspect in my personal development. The starting point for this thesis, a vision on how Delft should utilise the waterfront, is a sketchy demonstration of how I think urbanism should work: self soliciting and committed. I aim to continue this practice after my graduation, and academic insights deriving from this project will be very welcome.

Connection between city and university
The issues this project wants to address



Problem statement, aim and research questions

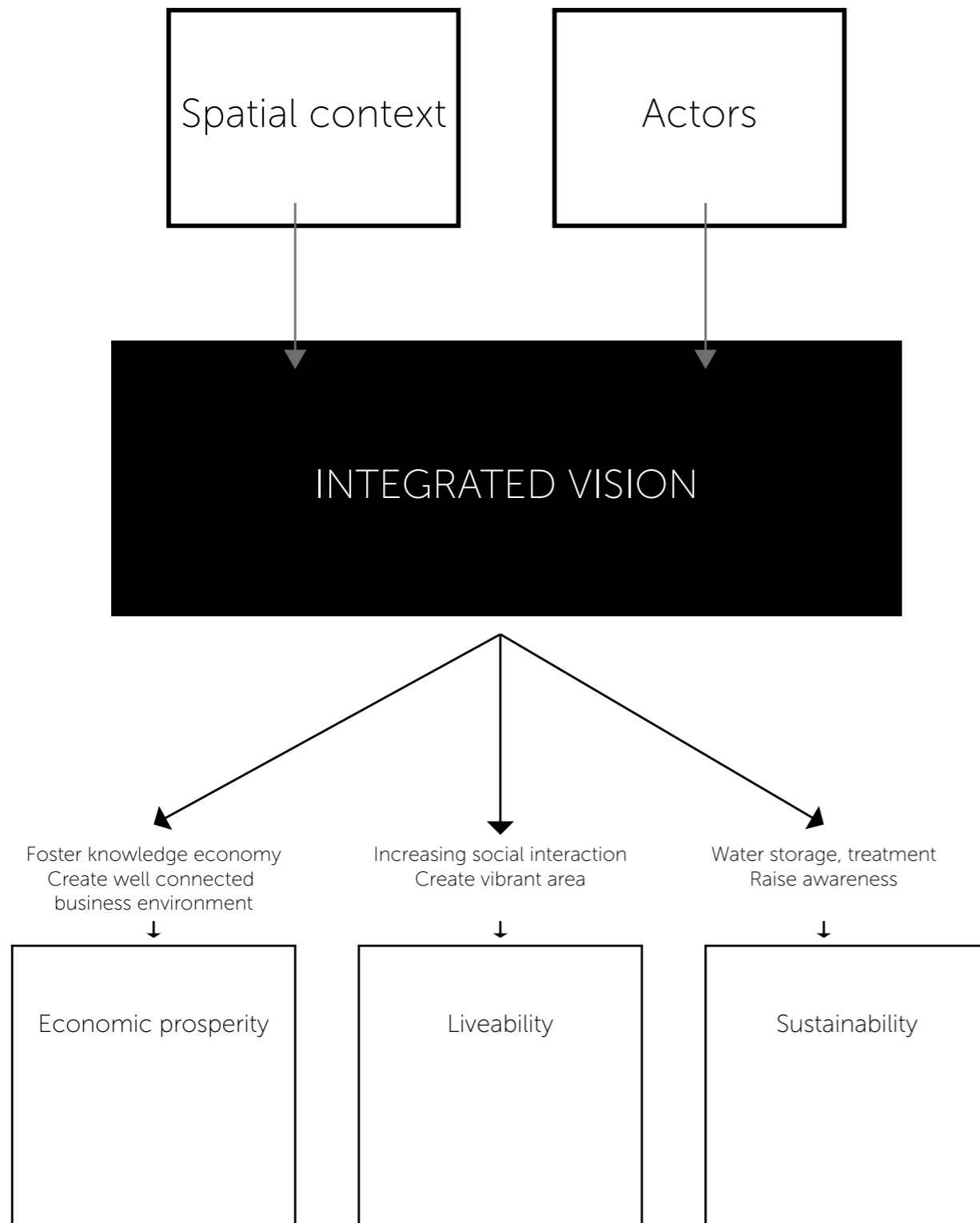


Figure 5 Diagrammatic overview of the purpose of this graduation project



Problem statement

In university cities, a clear choice should be made whether to include or exclude the campus into the urban fabric. In that way, cities can benefit from the presence of the university (Den Heijer, 2013). Delft, a city of approximately 100,000 inhabitants in the western part of the Netherlands is the founding ground of the largest of three Dutch technical universities: the Delft University of Technology. Both the city of Delft (represented by the municipality) and the university clearly state that they want to include the campus into the city (Delft University of Technology, 2013; Gemeente Delft, 2010), for mutual spatial and economic benefit.

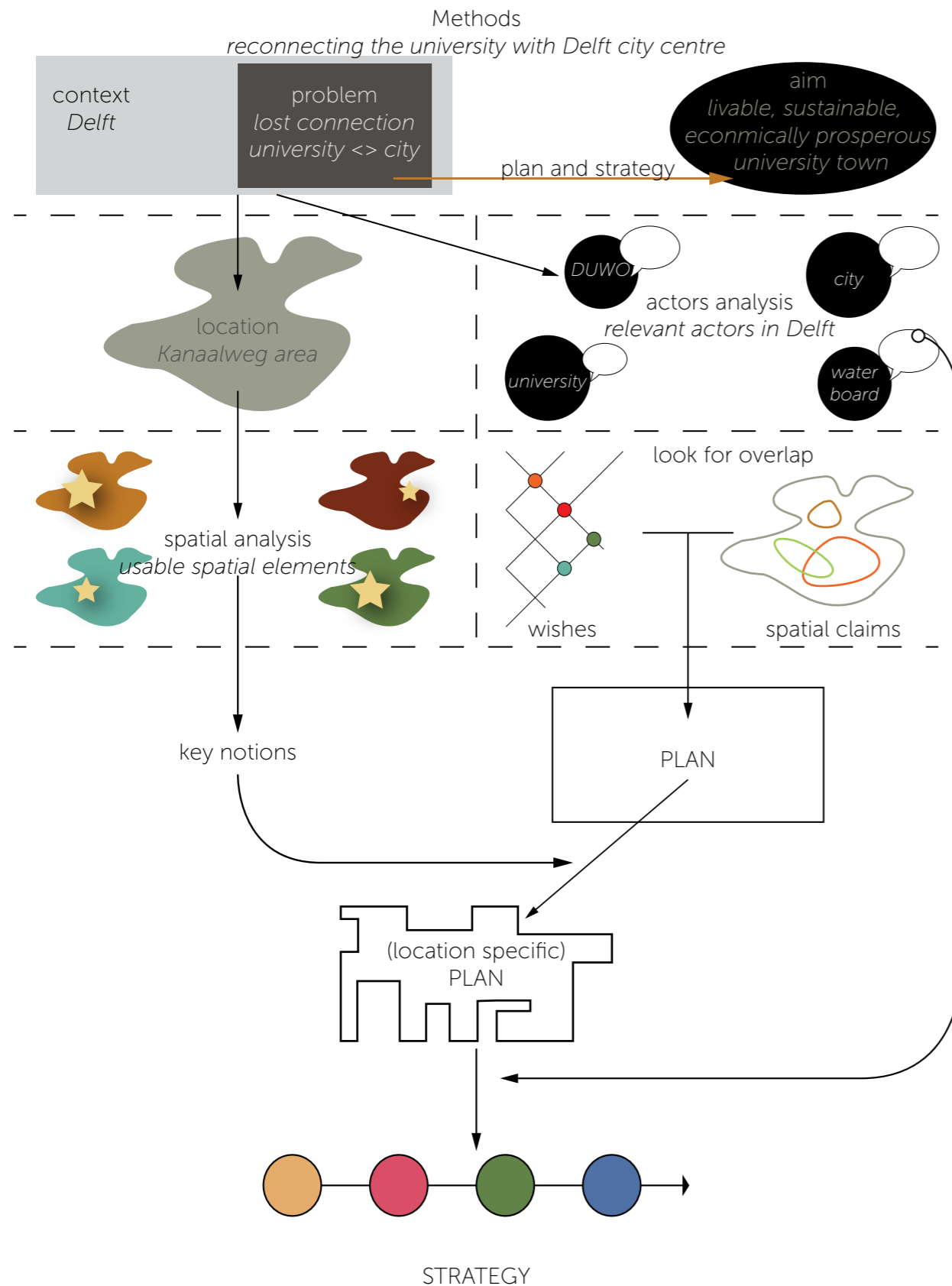
However, really practice of that objective is scarce. Even worse, the area that used to connect the historical city centre and the campus is left to decay. A greater part of the monumental buildings is in bad shape, the (waterfront) public space is in disuse and more vacancy is threatening the area and its functions. This is a substantial waste of communal resources and potential economic prosperity, since this is an area in ownership of (semi)public institutions and should therefore cater to everyone's needs. Also sustainability issues, especially related to water storage and infiltration, are not addressed at the moment.

By cleverly involving committed actors the development of the area could be started without depending solely on the financially troubled local government. Only the stakes of DUWO (the student housing corporation) are currently represented in spatial plans and policy is mostly focused on confrontation avoidance. A pro-active stance from the policy makers could reduce waste of the potential of this area. They would be helped by a participatory strategy and plan, which would enhance liveability and economic prosperity. It should do so by spatially and programmatically reconnecting the campus to the city centre. Also, the issue of sustainability could be addressed by integrating stakes and interventions of involved actors (see Figure 5).

Aim of the project

Motivating the local government and relevant actors to collaborate and steer the development of this area into a more liveable, economically prosperous and sustainable area. To do so, a compelling vision for the area needs to be compiled to show the potential outcome of thorough collaboration. That is the end result of this thesis, and a typical assignment for a contemporary urbanist.

Notion 1 The aim of the project is to both spatially and program wise connect the city of Delft with the university.



Research questions and methods

Research question

How can a participatory spatial strategy and design help the city of Delft and the Delft University of Technology to both sustainably benefit from the campus on its main waterfront, the Schie, and what can the contemporary urbanist do to stimulate this development?

Sub-questions

1. How can liveability be improved by a more thorough integration of an university campus into the urban fabric?
2. How can economic prosperity be improved by spatial strategy in university cities?
3. How can an integrative approach benefit the feasibility of improving sustainability in a certain urban area?

Methods

As described before, the aim of this project is to motivate the local government and relevant actors to collaborate in the development of the specific area. To do so a persuasive vision on the area needs to be developed, which consists of a urban plan and a specific spatial strategy. How this process will be approached in this project is pictured in Figure 5.

First, two elements of the context need to be inventoried, analysed and documented. These two elements are the location specific elements and the relevant actors. Considering the location it is important to find relevant elements to utilize in favour of the aim. Considering the actors it is important to look for overlap in requirements, wishes and bothers to determine common ground. Key notions from both the location and actor analysis will be used to compile a plan. As first step, a plan based on the actor specific conditions and as second step this plan needs to be adjusted and specified to the specific location.

As last part of the process, there needs to be a step back to the actors analysis to define how this plan can be developed into a spatial strategy.

Figure 6 Project approach as described to the right.

Role of the urbanist in area development
Integrating different objectives spatially



Historical development role of the urbanist

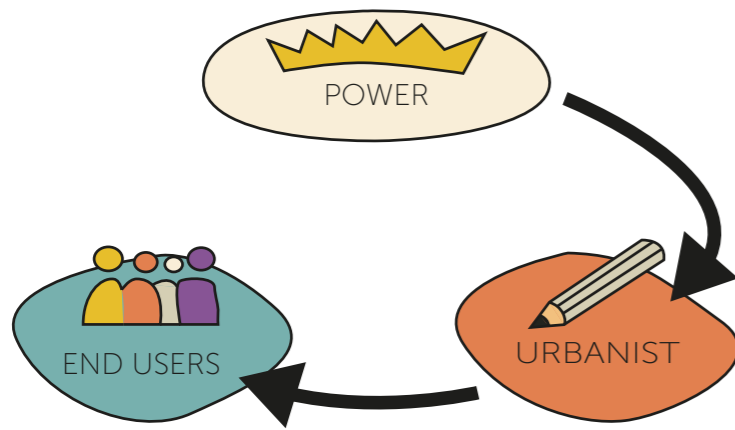


Figure 7 Working situation of the urbanist upon to the 1900s

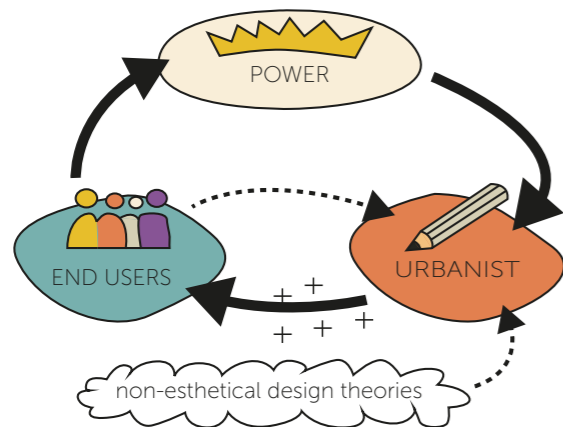


Figure 8 More influence from the public via democratic processes lead to the necessity of theory for more elaborate design theories

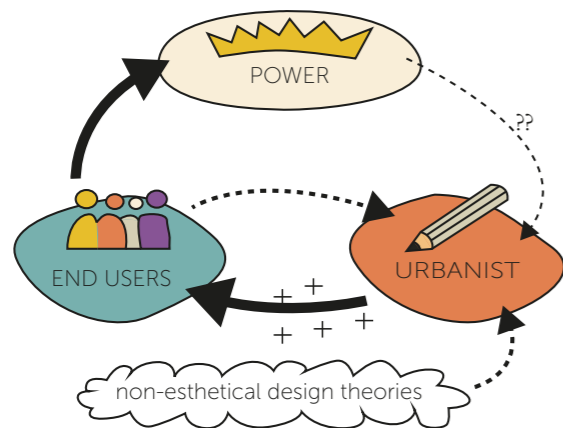


Figure 9 A weakening government function since 1990

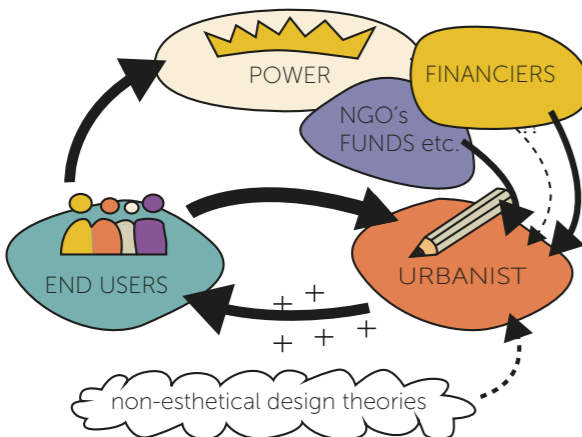


Figure 10 Crisis situation since 2008

Throughout the centuries, the role of the urban designer and/or planner has always been subject to change, but not as much and quickly as from the beginning of the 21st century. Before real democracies were established, urban planners were mostly from the elite and only had responsibilities towards the real, most of the times autocratic, power (see Figure 7). The most famous example of this is the work of Haussmann, which was based on a more glorious Paris for emperor Napoleon the 3rd. Voting and other democratic systems have changed the attention towards the end user, and due to (amongst others) humanistic views visions for the way people should live were emerging (see Figure 8). Modernism and other movements made clear visions on this. However, the direct influence still was the client and for the urban designer that was (especially in Europe) mostly the local government. Due to increasing influence of the public to the lawmakers, the public got more methods to influence spatial policy. This direct influence is getting weaker the last years by a less active government, due to privatisation trends of the 1990s (see Figure 9). Also, Dutch citizens are in strongly improved financial situation and therefore more able to make choices for themselves.

It looks like a new era is coming now, where due to austerity of the government (because of budget cuts and failed large scale projects) architects and planners turn directly towards the end user (Vanstiphout & Hyde, 2010; Zonneveld, 2013). Furthermore, they look for new ways of realising their goals, such a alternative financing (see Figure 7). This has a high potential for positive effects on the end users, because the inefficient translation of what people want (and buy) and say they want (and vote) can be translated earlier on by the urbanist itself. This results in more direct influence on decisions regarding housing and the built environment for the end users. To benefit from the new possibilities, it is very important that the urbanist engages with the developers task. In comparison to the process in the building industry, this means taking initiative and looking for opportunities in the spatial context. As stated before, it will become more and more the task of the urbanist to investigate the requirements to motivate end users to become involved with certain developments. To be able to do so, they must find out the real objectives of the actor. This can be done by interviews, but rather to investigate actions that display a discrepancy of what they say they want and what they actually do. In this thesis an example is given how actors wishes and requirements can be researched and translated spatially.

Notion 2 By focusing on end users and key actors, instead of traditional solicitors, urbanists can resilient to governmental austerity.

Positive new trends in area development

As stated in the previous pages, the working terrain of the urbanist is shifting. For governments, traditionally an important client for the urbanist, the concept of area developments is increasingly important. Area development is defined as 'result driven working method to perform a collection of tasks [...] which relate to a certain limited area in an integrated way, where the government connects certain actors and takes a responsible, risk-bearing task' (RLg, 2007). There is a lot going on in this field, especially because of the economic developments of the last few years. Rijkswaterstaat sees that the status quo of governmental regulation is not functioning as it should, 'with the existing procedures of 'allowance planning' (where the government takes a strict control function) these tasks are hard to realise. By combining these tasks and assignments the concerned parties will be able to perceive the opportunity to realise and give a quality stimulation to the area' (p 20., 2010). This illustrates a demand for an alternative practice and new approaches. Based on a literature review research, a few trends are described below. These trends and new or rediscovered concepts of development are of importance as a source of inspiration for the spatial strategy for the key area.

The trend of alternative area development strategies are differentiated into three categories based on the kind of actors where they depend on: the (central or local) government, the end users (inhabitants), and the designers (architects and urbanists).

Governmental organs

The central government expects a lot from bottom-up and wants to depend more on local governments for initiatives and projects, stating that the time of large top-down projects is more or less behind us (Rutte and Samson, 2012, Praktijkleerstoel Gebiedsontwikkeling TU Delft, 2011). This is important, because, citing De Graaf and Dewulf (2010), the 'institutional characteristics of a public sector dominated country in the developed world, strongly limit the possibilities for strategic urban planning' (p. 477). That relevant policy is made locally, could result in a more tailor-made framework for spatial development. One of the instruments that is applied for this means is deregulation: the elimination of not strictly necessary rules and boundaries. The local governments are meanwhile experimenting with supporting bottom-up initiatives instead of initiating them themselves. McGuire (2002) name the 5 steps a local government should undertake with these projects: (1) activation, by (continuously) stimulating initiatives or by inviting people to come up with ideas; (2) taking away formal rules, which can block process; (3) fighting

Notion 3 The government body that wants to profit from involved designers needs to actively facilitate their practice.



Figure 11 Self built homes in Almere (source: orga-architect.nl)



Figure 12 Crowd-funded solar energy (source: rijnenijsselenergie.nl)



Figure 13 Crowd-funded bridge in Rotterdam (source: luchtsingel.org)



Figure 14 Recetas Urbanas

informal rules or culture, such as non-cooperating civil servants who are not familiar of thinking along; (4) framing, the management of expectancies; (5) mobilising, the support with financial resources and information of the initiators, to 'develop commitment and support for network processes from network participants and external stakeholders' (p. 603). With a reference to the 'Luchtsingel' in Rotterdam, Van der Meer calls this 'urban renewal on invitation', and also warns for troubled neighbourhoods that are less likely to attract (commercial) initiators (Van Der Meer, 2013).

End users

In both Berlin (Germany) and Almere (The Netherlands) there have been some very interesting and attention-grabbing projects based on co-creation and building by the end users themselves (Neate, 2014). Berlin has a large variety of very interesting co-creation projects, where there was a lot of quality added with a reasonable budget. For instance, of the 124 co-creation projects Ring (2002) describes that 90% is built above building norms regarding ecological values. Most of them were filled with innovative solutions, the greater part is equipped with communal spaces, and 40% was built for under €2,000 per square meter. Almere has a long tradition and that is inspiring even the British, which are also already building one in ten building self-built (Collinson, 2011). Sanders (2006) already predicted this: she states that designers will gradually lose their traditional role and become an incubator and consultant for clients, and in that way strengthen the creative skills of their clients. Interesting as well is the rise of new manufacturing processes as for instance with the 'Kamermaker' from DUS architects (Bogue, 2013). 3D Printing of building materials will perhaps form the main development in the upcoming of 'convivial' tools, which Illich (1973) predicted: tools that enable the end users to be part of the manufacturing process. For urbanists this illustrates the importance to focus more on the end users instead of only the policy makers, since they could increasingly become the driver for change in the urban environment.

Designers themselves

A new phenomenon: the initiative for new spatial projects coming from designers such as architects. Instead of waiting for new assignments to come, Hyde and Moore (2009) argue that architects should pick up the phone and go look for assignments themselves. They indicate a few interesting examples all around the world, such as Skip architects, who built public facilities on top of garbage containers and then applied for a garbage container permit (just 35 Euro) and placed those on all kind of places in Seville, Spain (see Figure 14). Not only could this be a good compensation for the si-

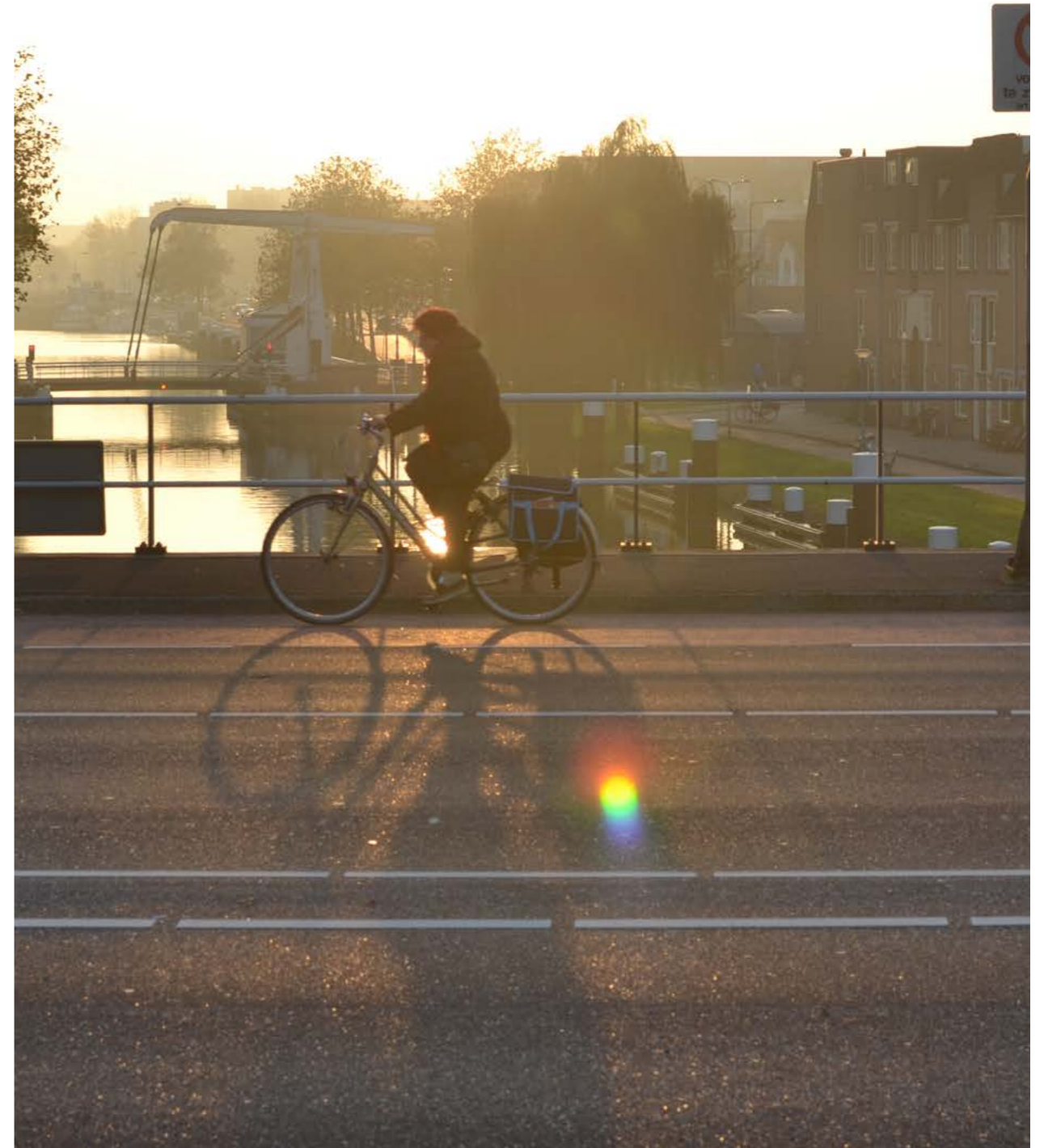
Notion 4 *By involving or working directly for the end users, buildings can be designed with more attention for sustainability*

lence on the market, Vanstiphout (2010) argues that this could be the way for architects to really become visionary again: 'If you really want to change the city, or want a real struggle, a real fight, then it would require re-engaging with things like public planning for example, or re-engaging with government, or re-engaging with large-scale institutionalised developers. I think that's where the real struggles lie, that we re-engage with these structures and these institutions, this horribly complex 'dark matter' (p. 2). This is also supporting the cause which has been bespoken on page 19 and shows another benefit of committed spatial designers. As Sehestad states it: 'Nowadays, the expectations are more complex and demanding. They have to 'get out of the office', as one describes it, and participate in many projects, and politicians expect them to represent municipal goals and interests wherever they go.' (2010, p. 253). Aside from political developments, changes for the profession of the urbanist are also caused by other decision makers than only the government, due to changing roles in area development of public and private parties: 'we can state that the policy shift from restrictive towards planning development concepts has impacted the way public and private organisations co-operate in urban area development processes.' (Heurkens, 2009, p. 2). To conclude, urbanists should re-engage themselves with the end users and realise that their role as a meta-governor can be very powerful in the area development field.

Notion 5 *Urbanists should not depend on assignments, but be pro-active as a meta-governor to fulfil their goals.*

Notion 6 *Spatial design is a strong tool in area development and can be the added value of an involved urban designer or planner.*

Campus cities and waterfront urbanisation
Trends in academic literature on these two subjects



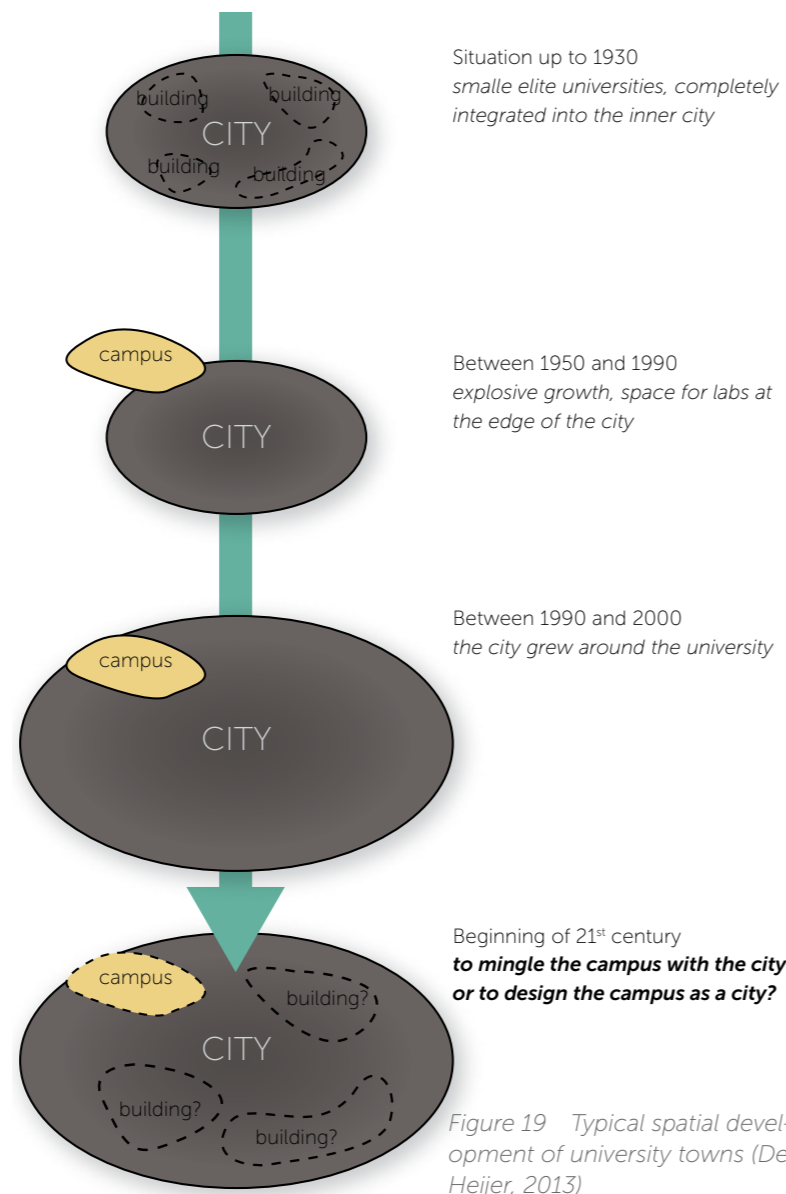


Figure 19 Typical spatial development of university towns (Den Heijer, 2013)

cities expanded after that development, the campuses were once again integrated into the city structure (see Figure 19). According to Arkesteijn and Den Heijer, the discussion now is about whether to mingle the campus with the city or to design that campus as a new city (Den Heijer & Arkesteijn, 2009). This corresponds to the situation in Delft.

Universities and municipalities state that they would like to choose for the option of a campus that is integrated into the city, but this takes effort: thorough collaboration and willingness to offer shared facilities to the other party (idem). Den Heijer elaborates on 4 scenarios for universities based on 2 variables: whether a university operates internationally or nationally and if it is public or private. The university in Delft is an internationally operating, public institution, and this results in the scenario of „global solidarity’: an international scope, social integration and public values. The network campus would fit this scenario the best: „more collaboration with third parties, more shared facilities, a higher income per m², a campus that is a meeting place and a group working location’ (2014, p. 104). This is already happening, because the ambitions to offer a ‚learning experience’ and ‚home-base’ for an increas-

ingly international student and tutor population ask for a more multifunctional campus (Worthington, 2007, den Heijer, 2011).

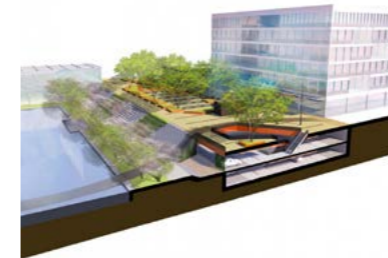


Figure 20 Edge of the campus in Rotterdam (source: de Architect)



Figure 21 High tech in Eindhoven (source: ASML)

Rotterdam

A good example of this is the Erasmus University in Rotterdam. This university is located far outside of the city centre and chose for a focus on its own campus. They did however take great care in designing the edges of the area to fit with adjacent areas and to contribute to their spatial quality as well (see Figure 20). Integration with the city was a strong focal point from the beginning (Edens, 2014). This was all part of a larger master plan that was made to match the campus to the international ambition of the university. Therefore the board of the university agreed to thoroughly invest in the public space that ‘expresses quality’, as cited from their online communication (Erasmus University Rotterdam, 2014)

Eindhoven

Another example of an integrated approach of university cities is the city of Eindhoven in the South of the Netherlands. After the severe economic effects of the de-industrialisation of the home town of electronics manufacturer Philips, the municipality applied a Triple Helix model. Triple Helix is a form of university-city-commerce collaboration and assumes that ‘the interaction in university-industry-government is the key to improving the conditions for innovation in a knowledge-based society.’ (p. 295, Etzkowitz, 2003). By collaborating thoroughly with commercial partners and educational institutions, the city of Eindhoven established the ‘High Tech Campus Eindhoven’, attracted and incubated many new and existing high-tech businesses and redeveloped large amounts of industrial heritage. The municipality did this by assuming many different roles in the process and acting as network party instead of a authority (Smits, 2011). As a result, the employment rate is now even higher than before and the region is even named as the smartest region in the world by the Intelligent Community Forum in 2011 (NOS, 2011).

Concluding, Delft and the university would both be benefiting from a more vast spatial collaboration. They both want to keep the high educated personnel living and enjoying themselves in Delft. The low density and harsh competition from nearby large cities however trouble those objectives, as found in multiple interviews with actors. More shared facilities by functionally and physically locating them between the city (centre) and the university at a spatial very attractive area could be a way to address these issues and responds to Den Heijers requirements.

Notion 7 To fully profit from the presence of the university, a spatial vision from the municipality is required.

Notion 8 Universities also benefit from a clear policy on whether to include or exclude the campus from the city fabric.

History and potential of urban waterfronts

De-industrialisation

The International Encyclopaedia of Human Geography clarifies that the functionality of the water has led to another urban development than in places in the city with a lack of water. Examples of this functionality are transit by boat, waste disposal (e.g. dumping in the water) and energy (e.g. hydro-power plants) (Davidson, 2009). This was especially the case in the Netherlands which has a rich tradition in (urban) water applications. A few trends led to the postmodern development of waterfronts we know today: (1) technological changes after World War II sparked a decline in industrial land use, (2) the power of the historical preservation movement, (3) attention for environmental urban issues, (4) consistent pressure to redevelop central city areas and (5) urban renewal policies (Sairinen and Kumpulainen, 2006). Also a big influence was change of city characteristics from production to consumption (Norcliffe et al., 1996). This was the most important specific influence for Delft which lost multiple large scale industrial facilities in the North and South. For these areas, a lot of plans have been made: in the south both shores will be connected and there is a plan to form a cultural cluster (Gemeente Delft and Bosch Slabbers Landschapsarchitecten, 2006). The area in the North is destined to become a residential area.

Possibilities

The vicinity of water adds a comprehensive value to pleasures of living and working at a certain location. This is illustrated by the effect on house prices in the Netherlands: they can increase by 28% when they have a garden connected to water, and only a view over water already increases the prices by 8% (Luttik, 2000). So when areas at the waterside became available due to de-industrialisation, they became a hotspot for large scale developments in the 1990s. For example in Rotterdam, where the 'Kop van Zuid' area was redeveloped as a flashy metropolitan area to reconnect both parts of the city, split by the river. It was filled with prominent companies and upper class apartments. However, not only commercial parties benefited from the development over there, also adjacent neighbourhoods were influenced by the gentrification of the area. Even while those inhabitants were not the target group and cannot afford to live there, their quality of life has improved by a better image and more facilities nearby (Doucet et al., 2011). These economic and social benefits caused a lot of cities, both inside and outside of the Netherlands, to rethink the use of their waterfronts and for instance use it as a backbone of the urban regeneration in historic city centres. This was acknowledged by the EU project WIHCC (Water in

Notion 9 *The visibility of waterfront regeneration results in large effects on adjacent neighbourhoods.*

Notion 10 *The view on water can increase residential real estate prices by 28%*



Figure 22 Kanaalweg in Delft (source: Alper Çuğun)



Figure 23 Industrial waterfront (source: Pieter van Marion)

Historic City Centres) where six European cities, two of them Dutch, used water works for the improvement of their centres and shared the knowledge. While difficulties sometimes arose, all the projects lead to a lasting improvement in the quality of public space (Huisman, 2008).

Delft and its three largest actors

The also in Delft decreasing industrial activity and the barrier function of the Schie has now put the canal on the number one spot in the structural vision of the municipality (Gemeente Delft, 2010). For the two industrial zones, there are already a lot of plans, but the retraction of the university from the canal has now delivered a new challenge. The municipality wants liveliness and functions on the waterside to improve the living and working conditions in the city, but the most important actor in the city is leaving the water. The university has switched their policy and are now focusing on the middle part of the campus with its educational functions. However, the university would like to have a liveable area over there, with cultural and other 'urban' functions: they designate the area as 'TU city': with 'public attractions; an urban landscape; and functions which connect culture and the society with science' (Delft University of Technology, 2013, p. 21).

Summarising: the vicinity of the water could become an important element to create leverage for projects in the area, if exploited in a handy way. Not only the area would benefit, but also adjacent areas. This is an important notion for further development of the plans later on.

A lot of projects concerning water in European inner cities are about the re-entry of muted canals (Huisman, 2008). This is an example of changing visions causing a lot of energy and resources waste. There are two major themes in the area which motivate to focus on a more durable end result for this project.

Sustainability and storm water

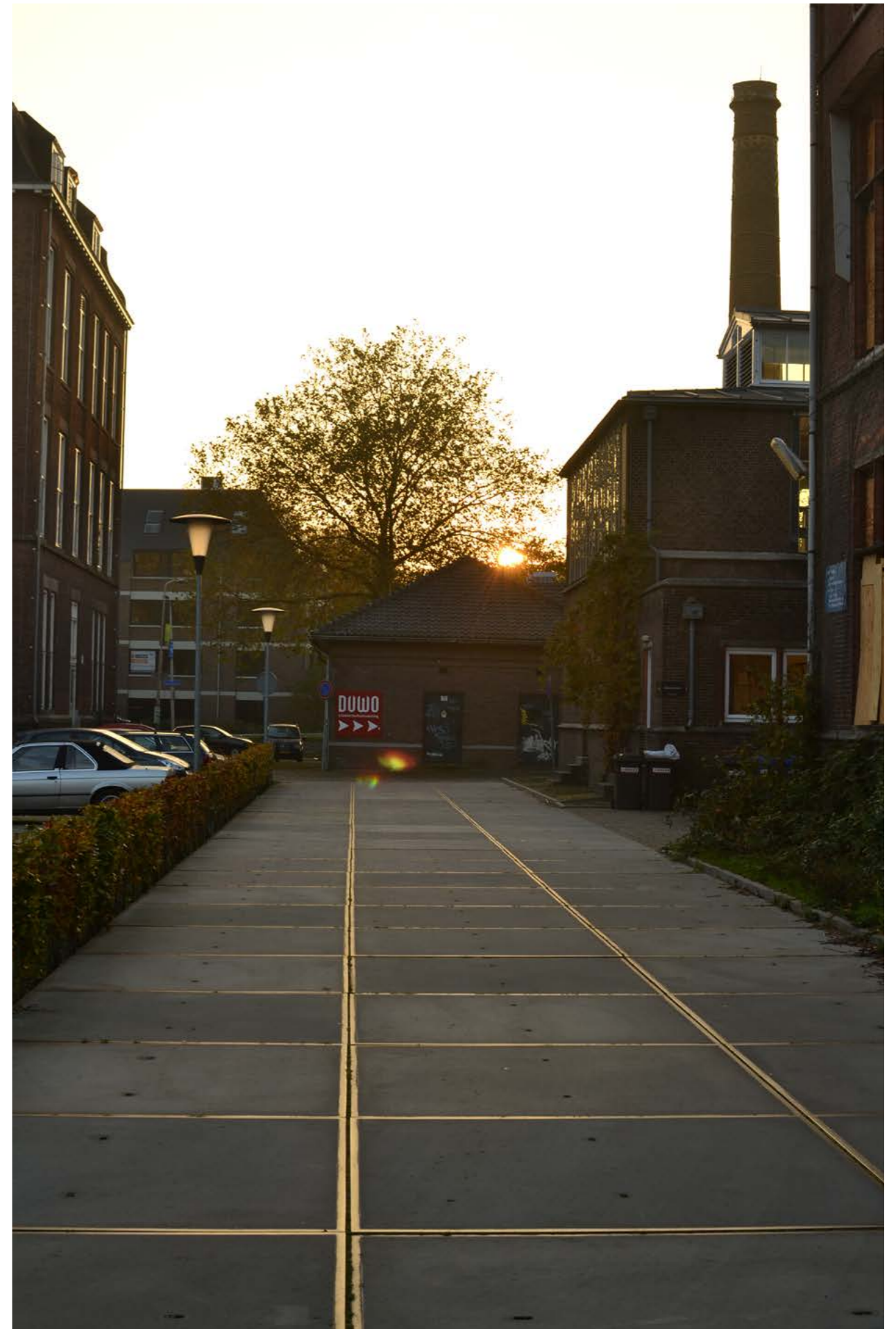
There is another generic point which asks for a special notation. The subject of water automatically delivers an interesting extra focus for this project: a reaction to new environmental issues. In other words, a reaction to the heightened demand for sustainability. As the Brundtland Commission famously stated, this is about 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. In this project, that means that while profiting from new possibilities on the waterfront, these should not inflict future generations in a negative way, by for instance disabling future uses (United Nations, 1987).

As stated before, there is also an ambulant need for an answer to the increasing amount of storm water, or: the need for 'Water Sensitive Urban Design' (Hoyer et al., 2011). Due to the high sealing of the urban ground, water perspiration has increased and modern cities need to react to this development. In Delft water storage is a large issue, due to rising water levels the capacity to store storm water is becoming insufficient. These two issues need to be addressed in the plan.

Notion 11 *Delft has large spatial potential on its waterfront, due to the heavy (industrial) use of it and the historical value.*

Notion 12 *Urban water involves serious sustainability issues.*

Spatial and social context of the project
What is going on in this city where history and future meet



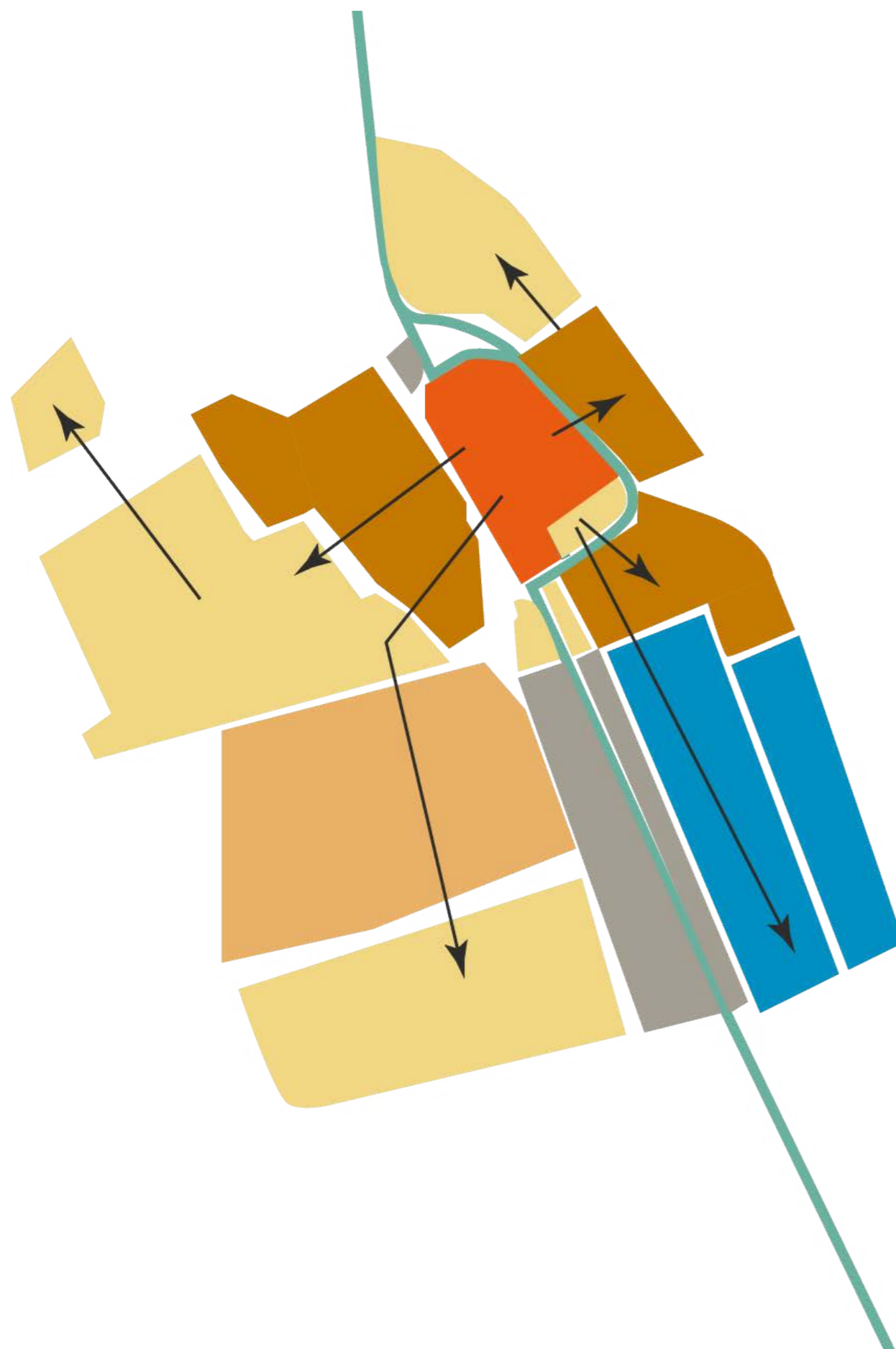


Figure 24 Historical spatial development of Delft

Brief history of Delft

The university

In 1842 the Royal Academy was founded in Delft to educate more engineers, with the goal to get the Netherlands back in the European race of industrialisation. The location was chosen based on the regionally local location and its access to large amounts of people. This Academy grew to become the Delft University of Technology of today: it is now the largest employer in Delft and outnumbers the municipality in yearly revenue (450 versus 350 million Euros). Not only does it attract a total number of 14,000 students everyday, but also it co-formed the base for multiple technical institutions, such as TNO which are famous on itself. Outside of the direct advantage for the local economy by orders and commissions from universities, there are several beneficial side effects such as the foundation of spin-off companies (for example in Delft the ones hosted by Yes!Delft) and the attraction of other technical companies which you could call spin-ons: companies that are attracted by the vicinity of highly schooled personnel and knowledge itself (Pellenberg, 2004). Especially these spin-off companies are very important for the university board, which focuses on the valorisation of knowledge. Altogether, the stake the university holds in the city is so large that one could argue they are maybe more powerful than the municipality itself.

Urban development in Delft

After the Industrial Revolution, hence for the last 150 years, Delft grew strongly and has expanded in a few directions outside of the city centre: firstly towards the west at the other side of the railway track and towards the Wippolder: the area in the South where the university located its first buildings outside of the city centre. This is also due to the annexation of multiple adjacent villages in 1921 which before that blocked the expansion of Delft. After the World War II there were a few major expansions on functional bases, with large scale high rise residential areas. This was also due to the fact that a lot of inhabitants from Rotterdam, which was severely bombed during the war, had to be housed somewhere near their own city. Due to these high rise buildings, the density in these areas is extremely high. For example, at one of these areas, the 'Voorhof', the density is around 9,800 dwellers per square kilometre: double the Delft standard. After the rebuilding phase of the 1950s and 1960s, Delft continued to grow, mostly in the south west direction. On of the last projects is currently being built: the 'Harnaschpolder' in the north west.

Notion 13 Delft has been spatially defined by the Schie and urban expansions in the 20th century.

Notion 14 The policy is now mainly focused on a knowledge economy.



Figure 26 The 100,000st inhabitant of Delft



Figure 25 Interior of Yes!Delft, the high-tech company incubator located in TIC-Delft

Demographics and economy of Delft

Demographic

Delft has just reached the 100,000 inhabitants mark and has shown a steady growing number the last few years. A good connection to both the Hague and Rotterdam, good liveability grades and proper facilities: the growth is expected to continue. The issue is based on lack of space. The 'Harnaschpolder', one of the last Vinex-locations, will be probably will be one of the last of large-scale expansions for Delft and densification in city limits will probably be the new assignment. Part of this assignment is the comprehensive stock of monumental buildings. Until 2008, the renovation and redevelopment of these buildings was taken care of by large market actors such as real estate investors and banks. Nowadays this has shown to be much more of a hassle, because house prices have dropped which troubles the feasibility of such projects.

Another issue is with the housing of students: while a lot of projects are on their way again or have just been completed, postponement has come with the crisis and legal uncertainty (architectenweb.nl, 2013). And the expectation is that all the effort is still not enough. Delft, home to the first student housing project in the Netherlands, still needs to build 5000 extra student 'housing units' before 2024 (Gemeente Delft). Besides being a bottle neck for the ambition of a knowledge based economy, there is a more direct effect: every student living in Delft delivers an estimated 25,000 Euros to the local economy yearly. There will probably be a small decrease in students being able to live on their own and they are stimulated to study shorter. Because of those factors, the shortage will probably decrease a bit, but not entirely.

Economy

Delft has still been able to keep industrial activity in the city after the loss of the famous Calvé factory in 2008 and is pretty successful in attracting new companies to the area, such as 3M. Another strong point of the Delft economy is the large base of (technology) start-ups. Heleen Bothof (former president of Delft Design, a local union of creative firms) indicated the large demand for affordable office space. The fully occupied creative companies tenant buildings in the city, such as 'de Zuster' and 'Bacinal 2' support this. As stated before, Christiaanse (2011) showed that these companies have a high demand for facilities in the vicinity and a connection via slow traffic. This is very relevant for our location, which is already well connected to the rest of the city by slow traffic. The municipality made plans for attracting these technology start-ups and sees much future in them as the new economic power in Delft, together with the university it would form the Technology Innovation Campus Delft (see Figure 25) (Sikkens et al.).

Notion 15 The housing of students is an issue for Delft.

Notion 16 Start-ups need a reachable location with many facilities.



Figure 28 Tourist qualities of the historical inner city of Delft (source: Wikipedia)



Figure 27 Network of car roads around Delft (source: verkeersplanoloog.blogspot.com)

Delft and its context

International

Delft plays two important international roles. The first is the consolidation of Delft as international knowledge centre for high tech. This all started of course with the foundation of the Delft University of Technology, but developed further with the migration of multiple institutions and corporations. The second role is the one as tourist destination. With its heritage, it was the residency of the founder of the Kingdom of the Netherlands, and attractive city centre it caters a lot of day visitors. The municipality wants to link these to each other, e.g. using the university campus as an attraction with technology museums.

National

As said before, apart from its historical role, Delft houses the TU Delft: the biggest technically focused university in the Netherlands and Belgium. Its presence with a lot of similarly interested institutions (such as research firm TNO) creates the one of largest high tech cluster in the Netherlands. 'Collaboration of high-tech industry with knowledge institutes is of large importance for research and well educated personnel. This could be the explanation why there is especially a lot of employment in the high tech industry around cities with a technical university. Specialised companies and technical knowledge institutions could together form a well functioning network, which is important for the competitiveness of this sector (high tech, one of the appointed 'top sectors' in the Netherlands, RL)' (Raspe et al., 2012, p. 31). Delft also plays a tourist role nationally, its small historic inner city makes it a nice day trip for the Dutch.

Regional

Delft is right between two of the focal points of the Southern Wing of the 'Randstad' agglomeration: the Hague and Rotterdam. That delivers a harsh competition for commercial parties in Delft since those two cities are easily reached within 15 minutes by public transport. Delft however has a strong regional function as a shopping city for neighbouring towns as Naaldwijk, Pijnacker and Schipluiden which are connected by public transport. This region is aiming at a closer collaboration and this sparked the formation of the Metropolitan Region Rotterdam the Hague (MRDH), whose most important ambitions are: one organisation for (public) people transport; one economic view which focuses on the national top branches; and a broad and attractive offer on the residential market (Metropoolregio Rotterdam Den Haag, 2013). One of the most practical points is the improvement of the transportation possibilities, of which two of the most important are going through Delft: the A13 highway and the Schie canal.

Notion 17 Delft plays two international parts: tourism and knowledge.

Notion 18 Delft is located between and connected to two large cities.

Spatial structure of Delft

The Schie

The city of Delft even owes its name to the water. 'Delft' is derived from the verb 'delven' (to dig) in Dutch and relates to the digging of the first canal, which is called the Oude Delft. At this canal the city was founded. In 1389 the Schie canal was dug to connect Delft to the Meuse river via the village of 'Delfshaven' (now part of Rotterdam): this connection to the world economy would give a boost to the prosperity of the city. Its office of the Dutch East India Company organised trips to the whole world and became the largest employer in Delft. This all led to the development of Delft as a trading centre in the 16th and 17th century. Delft kept this status until Rotterdam superseded its neighbour in trade, in the 18th century (2013). However, the water sustained its function for the local industries: for instance for the delivery of resources for the yeast manufacturing at DSM, the cables made by de Nederlandse Kabelfabriek and the gelatine from the Lijm- en Gelatinefabriek. All these factories, among others, were located at the Schie. Even while some of the companies have stopped, those corresponding areas are still in use as industrial sites and the water is still occupied as a transportation facility: it is for example used by the garbage plant in the south of the city. Furthermore, the Schie canal has kept its important role as an industrial bearer, but has not been put to use for leisure measures, except for rowing, tourist tours and passing pleasure yachts. Outside of the two industrial zones, it runs through almost entirely residential zones. However, the most waterfront facilities in the city are not alongside the Schie but located in the city centre on the other prominent water bodies: the inner city canals. This is rectified by policy of the municipality: they want to focus more on the Schie waterfront and put it to better use (Gemeente Delft, 2010).

The Schie has changed shape two times: the curves at the south and the north were altered to adapt to the course of ships: corners became less sharp. Apart from that, it kept its function and form from 1389 on.

Structure

Apart from the Schie, the expansions as described in page 37 were the most defining for the current structure of Delft. Designed in different eras, they vary in functional intent but are all fitted with smaller shopping facilities. However, according to interviews, Delft focuses the placement of most functions in the city centre, to consolidate the liveliness and economic function there.



Figure 29 Spatial qualities of different parts in Delft (source: author)

Notion 19 The Schie defines the city centre and industrial zones.



Figure 30 Key area and larger context of Delft

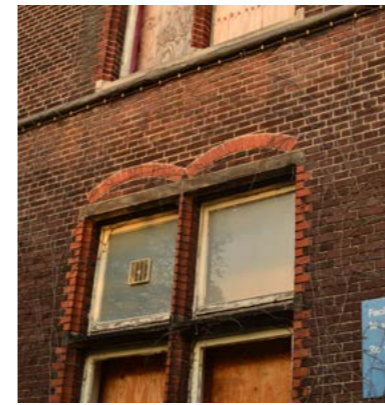


Figure 31 Old university building



Figure 32 Kanaalweg 2b

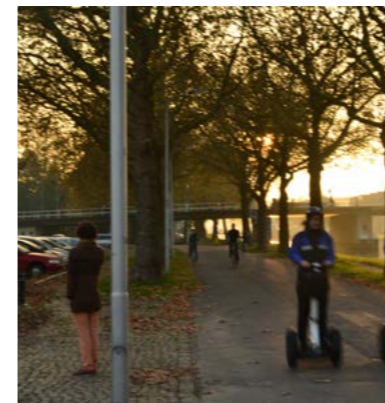


Figure 33 Kanaalweg



Figure 34 DUWO Headquarters

Key area and its role in the context

One area that comes to mind as a high potential location for developments is the waterfront area which connects, or now mostly disconnects, the biggest actor in Delft with the city centre. The former campus area of the university not only offers a lively canal frequented by cargo ships and pleasure yachts, but also monumental buildings with a lot of heritage and a relatively high amount of green. The university used to have an active vision on the area but due to being forced to focus on their core business, it changed to more non-committal wishes. To be precise, in their new campus vision they state that it should become 'urban in terms of programming, and physically attached to the inner city of Delft. It is characterised by housing facilities for students with an international focus' (Delft University of Technology, 2013, p. 22). The university depends on DUWO (the student housing association) to take care of these plans. DUWO is actively participating, wants to build as many (international) student houses as possible and is settling in the area with their headquarters. That being said, according to interviews, the DUWO is being forced by the central government to focus on its core business instead of providing other services to inhabitants. However, solitude of (especially international) tenants is an issue for DUWO and social facilities are a tool to approach that problem. But a little help by other actors who would provide functions that improve social cohesion would be welcome.

Also, the fact that just one actor is involved in the development of the area, while so many are committed to it, creates a very linear process. This also explains the event in 2009, where multiple displeased parties in the area brought the previous plans for student housing in the area to the Council of State of the Netherlands. That organ, the highest public administration court in the Netherlands, destroyed the zoning plan that made those plans possible based on the low attention for environmental and inhabitant issues (Raad van State, 2009). That forced DUWO and the municipality to adapt the plans to the requirements of inhabitants, companies and the environment. However, while their wishes are granted, those parties are still not actively involved in the process. The problem of that situation is that potential of involving those parties and actors in the process is lost. Since the area offers a large variety of interesting actors, that is of significant importance. With their commitment, the area could be developed in a way which would cater a larger amount of people: shared facilities could be key for this.

Notion 20 The key area is very well located and fitted with amazing architecture, yet mostly vacant (both buildings and public space).

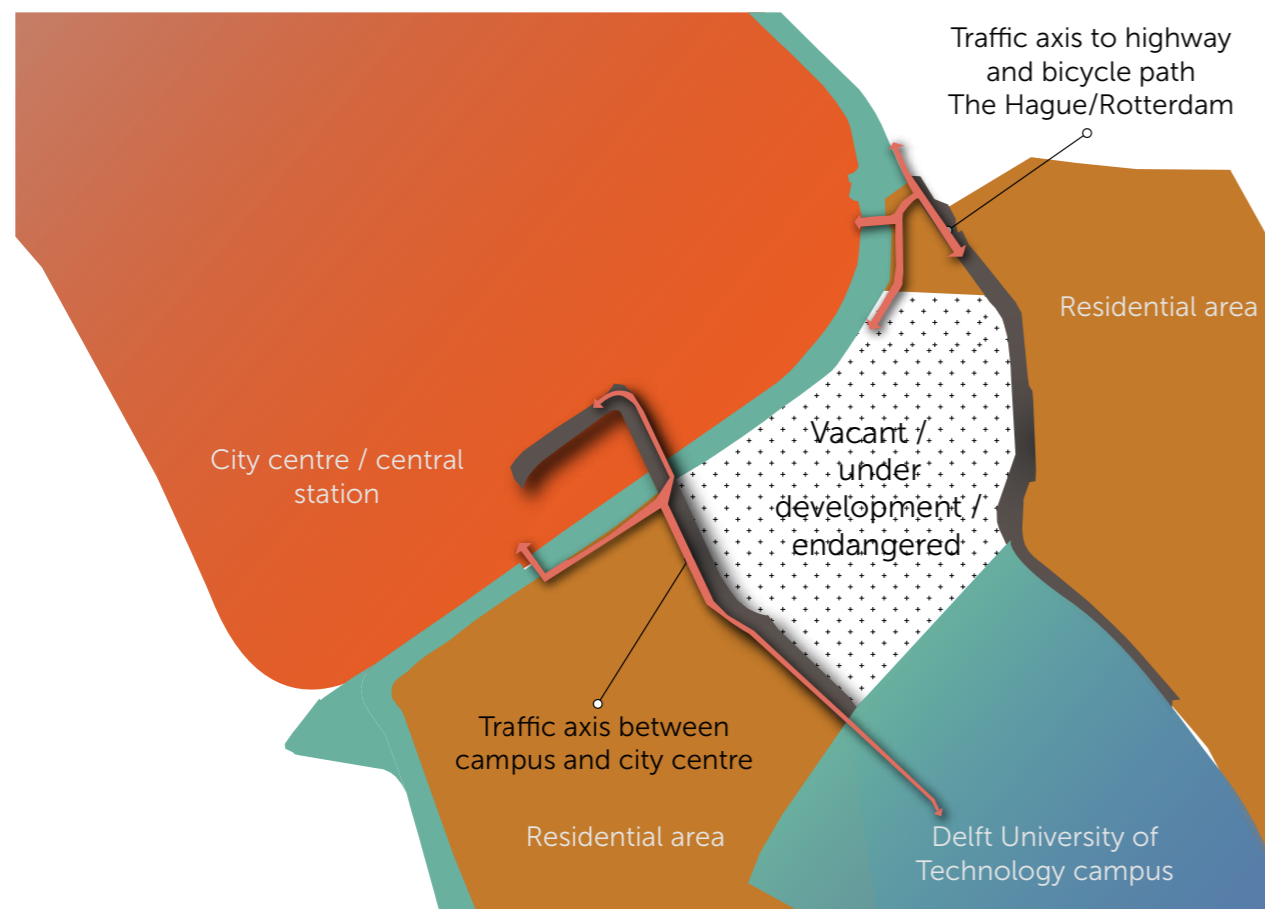


Figure 36 Direct context of the area

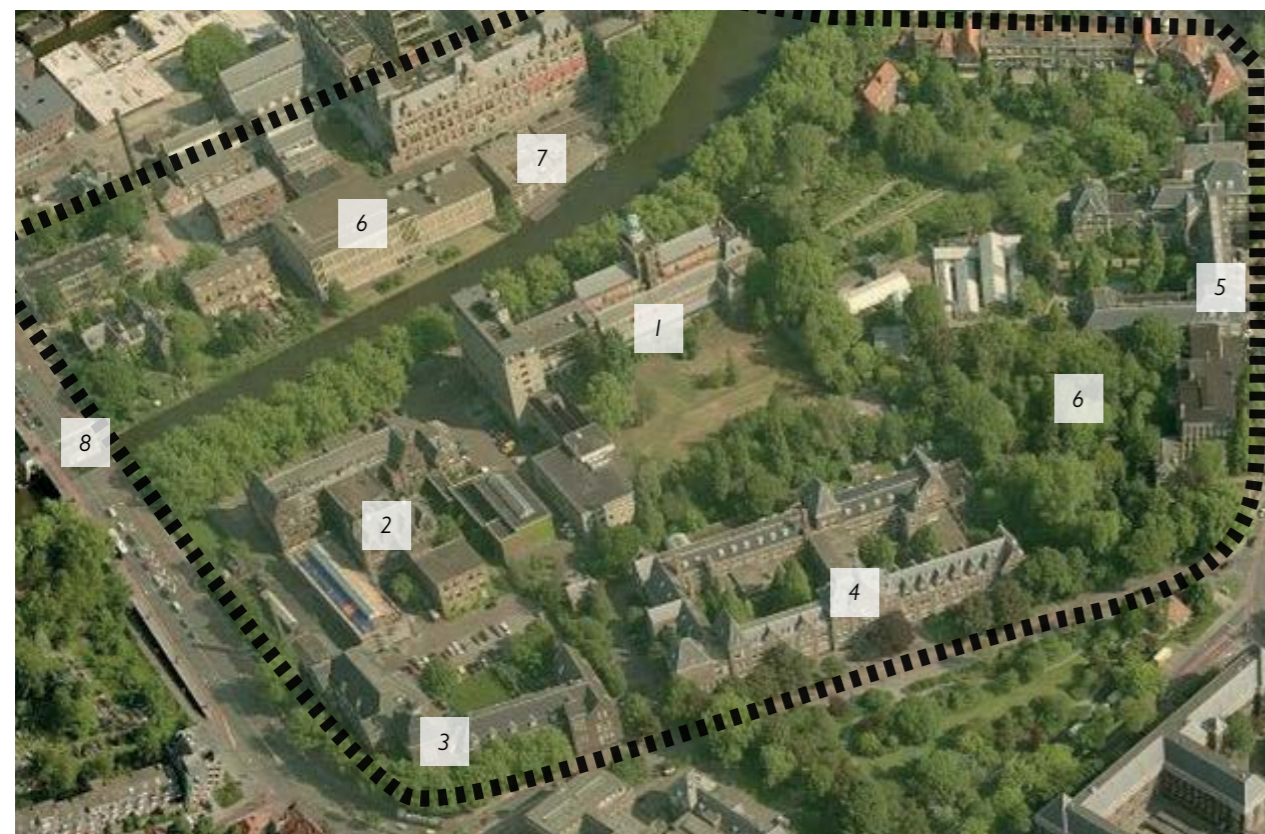


Figure 35 The area and its most prominent buildings.
 1. DUWO office; 2. Kanaalweg 2b 3. Faculty for Mine Construction; 4. Science Centre; 5. Faculty for TNW (Biotechnology); 6. Botanical Garden; 7. Student rowing association Laga; 8. The soon to be renovated Sebastiaans Bridge

History of area

University and botanical garden

Just before the turn of the twentieth century the Wippolder area, south of the centre, was only occupied by agrarian functions. After the university first build the first faculty (for Geodesy) at the Kanaalweg in 1894, it went quickly. The university was growing and needed space they could not find in the inner city anymore. In 1903 the adjacent building was constructed, followed by the faculty for Mine Construction at the Mijnbouwstraat in 1912. The fourth monumental building, the faculty of TNW which is currently still in use was built after the war in 1956.

Another monumental part of the area is the Botanical Garden of the university. There is a large description of the history of the garden available at the university web site, written by Schrijvenaars (2013). The garden was founded by Gerrit van Iterson Jr., who first started growing plants for science in the backyard of the building where he worked on the Oude Delft 81 in 1907. After a few years of lobby work and heavy debate, the university acquired and leveled some ground in the Wippolder, alongside the Schie. It was mostly focused on tropical agriculture due to the former colony of the Netherlands: Indonesia. After the war the colony became independent and the garden therefore lost the incentive for research in tropical botany. The garden started to lose its direct function for the university. The greenhouses were renovated in the 1960s, but after that the garden endured some hard times, with serious plans in 1980s to sell the ground and build houses in the area. Fortunately, this was avoided and today there is a lot of work being done to the garden to get it up-to-date. However, the departure of the faculty of TNW will cause a loss of a direct link to the university for the garden.

Redevelopment

The university slowly started to move faculties at the end of the twentieth century, and will leave the area almost completely when TNW is moved. The building at the Mijnbouwstraat, the former Mine Construction faculty is maintained and now houses technology start-ups and a museum. The Geodesy faculty was first sold to a government agency but is now in the hands of DUWO, which also bought the other monumental buildings. One of them has been redeveloped and is now occupied by Fabrique, a famous advertising and design company.

Notion 21 The Botanic Garden is losing its connection with the university.

Notion 22 The TNW Faculty will be vacant soon.



Figure 38 Analysis building state

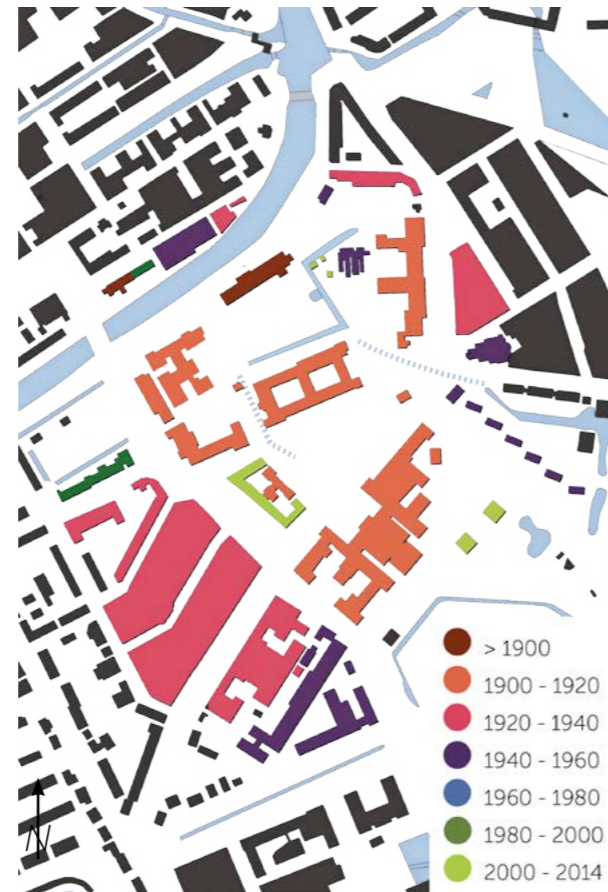
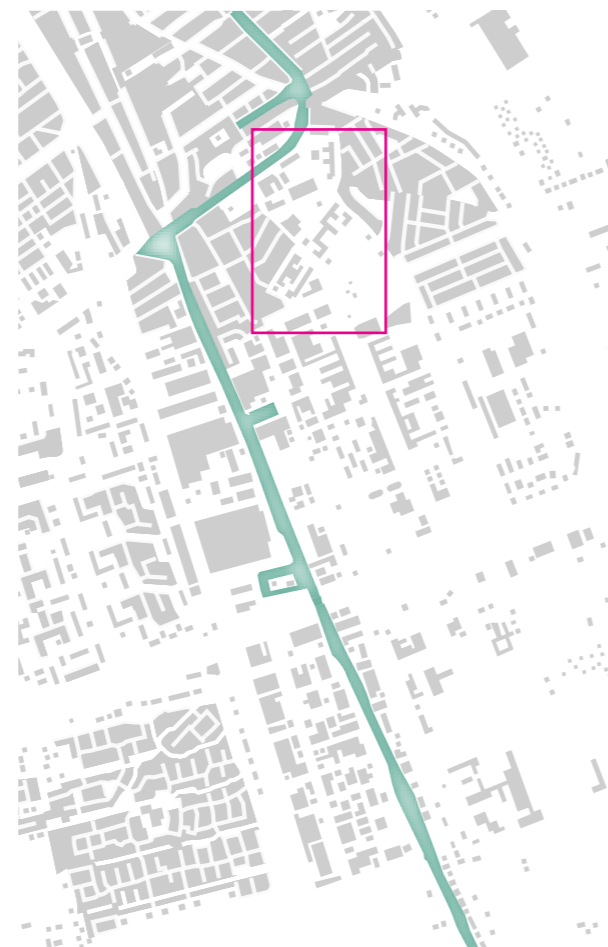


Figure 39 Analysis building age



Figure 37 Analysis monuments



Analysis key area: built environment

Building age (Figure 39)

The buildings in the area are all characterised by a long history, see page 47. Also, in a more focused view, it is clear to see that the key area formed the first step of urban growth in the area. The adjacent residential areas to the west and east are slightly less old.

Building state (Figure 38)

The current state, however, differs strongly. Some are currently undergoing renovation, some are in perfect shape due to their new function, and a few are falling behind. That is mostly the effect of lacking a (certain) function. That is also an argument that to sustainably retain these buildings, suitable new functions need to be found. Under largest threat are the buildings in the North-West corner. The largest one is currently under renovation: DUWO will occupy this building soon as its headquarters. Question is what will happen if they ever move out: the building is very costly to maintain due to all the architectural details.

Monumental status (Figure 37)

Not only is the area protected by a legal status known as 'beschermd stadsgezicht' (protected urban area), the majority of buildings is also on the highest level of monumental protection. Even the large transformer house in the north is a monument. It goes under municipal protection, however. The only exception is the TNW faculty in the East of the area, which is not protected since it has a smaller architectural value. This creates unique chances for more intense adaptations of the building.

Notion 23 *Decaying buildings (yet monumental and historical) are the largest threat to the area.*



Figure 40 Analysis non hardened space



Figure 41 Analysis water management system

Analysis key area: green and blue

Ecology (Figure 40)

In both the Structure Vision (Gemeente Delft, 2010), the Green-Blue Plan (Heleen Bothof and Gemeente Delft, 2012) and the Green Bill (Gemeente Delft, 2013) the connection of the shore to the already existing green in the campus is emphasised. The Green Bill names 4 major aspects for the campus area: ecology (biodiversity), physics (the climate task), social (meeting) and economical (green growth).

The Green-Blue Plan (an assignment from the municipality performed by Heleen Bothof (2012)) names the issue of water storage and has a lot of pointer to how wishes could be combined. In these plans there is always a strong connection between the botanical garden and the adjacent ecological zone behind DUWO.

Water (management) (Figure 41)

On basis of a norm of 325 square meter per hectare, the municipality and the water board for Delfland, the authority which controls the water management of a certain district in the Netherlands, compiled that there are 10,430 square meters of water storage lacking in the polder where the focus area is located (Gemeente Delft et al., 2005). Of course this does not necessarily have to be resolved entirely in the project area, but since this is largest ongoing public area project, it would be efficient. In 2005, multiple plans were made to improve the circulation and storage in de 'Zuidpolder van Delfgauw', the specific polder. 'Water storage is hard to realise in TU-noord: there is not a lot of water located there and there a lot of culverts (underground water passages)' (Gemeente Delft et al., 2005, p. 21).

Notion 24 The area is well equipped with green functions.

Notion 25 The water storage is not sufficient and not well connected.



Figure 43 Analysis visitor numbers



Figure 44 Analysis traffic streams

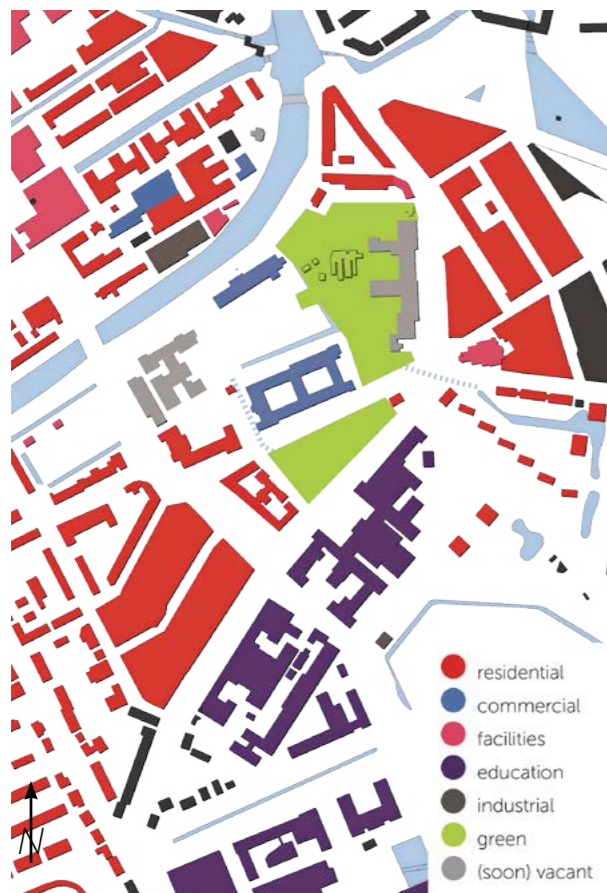


Figure 42 Analysis functions

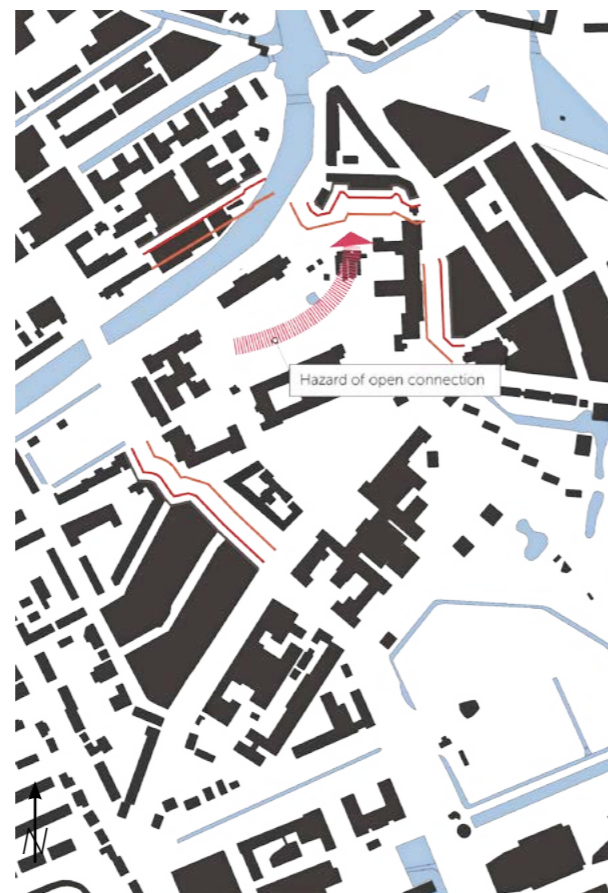


Figure 45 Analysis noise perimeters

Analysis key area: functions and activity

Functions (Figure 42)

The area is defined by a **decreasing amount of education functions**, and a growing number of commercial and residential real estate. Since the new faculty for TNW is being built on the old site of the burned down Architecture faculty, the current one will be deserted in a few years time. There are a few small commercial functions in the area: a daycare centre, a business for sun shading materials and liquor store. A still functioning church is also standing in the vicinity and complements the small scale supply range of functions. The largest open air function by area is the Botanical Garden, which has been described a few chapters back. Together (but not collaborating) with the Science Centre (the university museum) the form the leisure offer in the area. Two other green areas functions as cemetery.

Activity (Figure 43)

Activity is mostly created by the vast amounts of commuting through the area. Students mostly by bicycle or the public transport by bus (and soon tram) lines and other visitors mostly by car. The whole area offers no public activity after 6 in the evening, only the university stays open after that.

Infrastructure (Figure 44)

There are two major changes in the area: firstly, the Mijnbouwstraat will be **changed into a two-way street**. Now it works together with the nearby Julianastreet as exit road, but in the future it has to do the job on its own. The objective is to make the traffic more effective and to take away barriers in the area. However, the road already creates too much noise and pollution at the moment, compared to national norms. Also, this means increased traffic and therefore probably an allocation of the bus stop, which is not in favour of the accessibility of the Science Centre. Secondly there is a tram going over the Sebastiaansbridge in 2015 which will increase the accessibility of the area altogether.

The municipality is also planning to alter the traffic in the area itself. There will be a **road added through the area** and the Kanaalweg will be blocked for car traffic. The Sebastiaansbridge will be renovated in 2014, not only for the earlier mentioned tram line, but also the space under the bridge will be improved. This project is undertaken by both the municipality as the province.

Meanwhile, DUWO wants to realise a **large parking garage** in the area, with 350 spots for parking. This corresponds to a required 8750 square meters, considering the average parking space takes 25 square meters.

Notion 26 *There are well used and varying functions in the area, but low activity in the night time.*

Notion 27 *New traffic through the area will cut off parts of the area.*

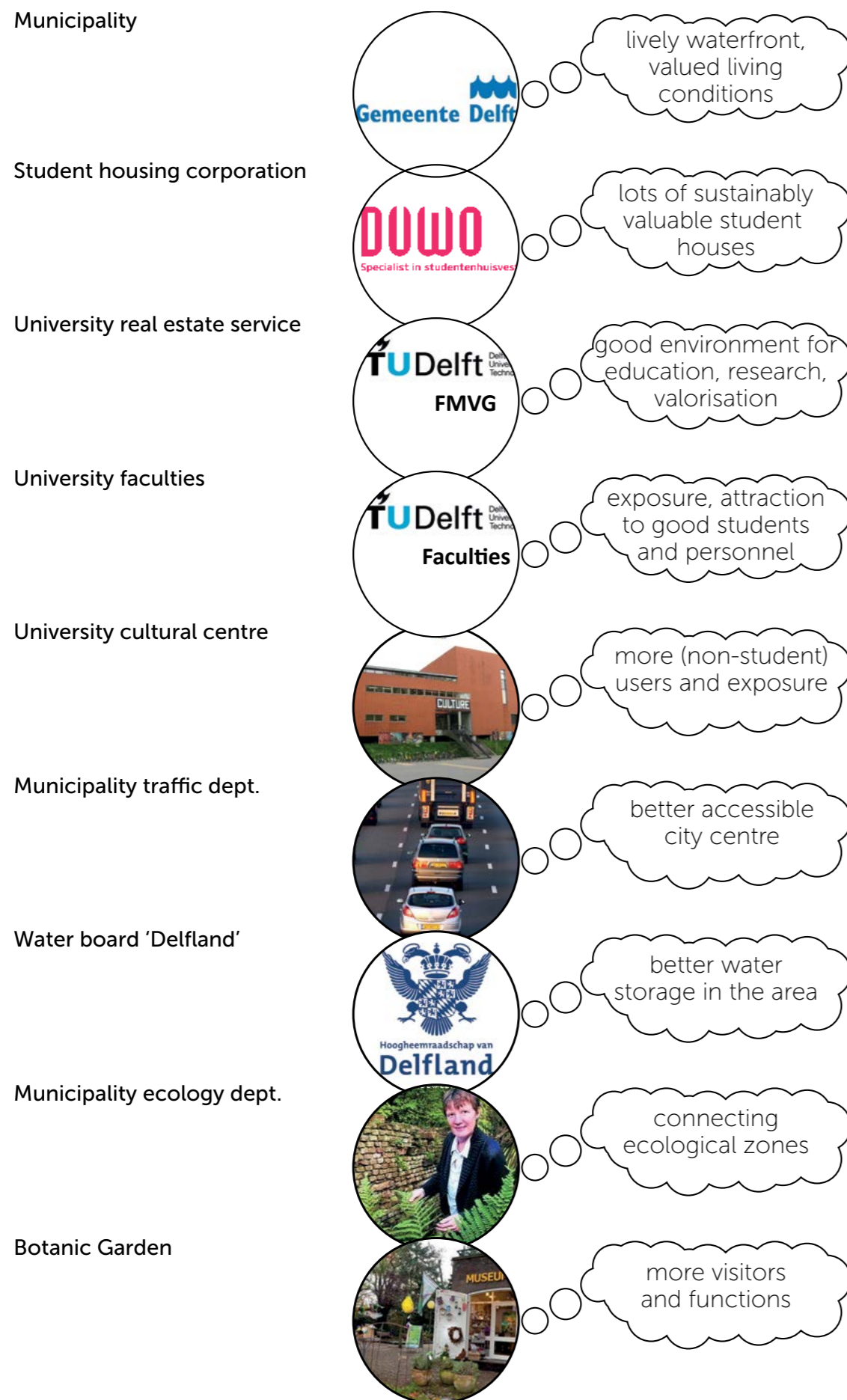


Figure 46 Actors and their most prominent wish

Relevant actors and their spatial claims

These insights are based on interviews with

1. Laurens Engelbrecht (senior planner municipality)
2. Pieter Guldemond (alderman urban planning Delft)
3. Bob van der Bol (urban planner Delft)
4. Catelijne Elissen (FMVG)
5. Kelvin Berghorst (FMVG)
6. Jaap Korf (water board Delfland)
7. Heleen Bothof (urban designer and former president TOP Delft)
8. Erik van Hunnik (president inhabitant association)
9. Hans Hirs (secretary Friends of the Botanic Garden Delft)
10. Alexandra den Heijer (commissioner of DUWO)

and policy documents listed in the References chapter on page 100.

There is a large spectrum of actors committed to and active in the area. A selection was made on basis of interviews, media coverage, policy documents and ownership in the area. Below a short description, Figure 46 depicts their main incentive and/or wish. On page 55, their spatial claim and influence is drawn.

Student housing association DUWO

Has the area depicted as large expansion area, with a wish to place 432 student houses in the area. Has the job to facilitate 5000 new student rooms in Delft, and is limited to invest in other functions. Tries however to create qualitative (thus multi-function) housing through facilitating these other functions.

Municipality (Gemeente) Delft

Tries to reactive the Schie canal as a lively barrier through the city and is highly motivated to facilitate the local (knowledge) economy to keep its identity and sustain its growth. Heavily financially troubled at the moment because of disappointing outcome of the Spoorzone project.

TU Delft FMVG (real estate department)

Wants the area to be lively and attractive, but has to focus on high-quality buildings which are cost efficient and therefore choses to work with new buildings in the campus area down south.

TU Delft Faculties (or educational organs)

Require a high quality environment to lure both students and personnel and are always looking for ways to expose their qualities to interested unknowing parties. While they manage their educational jobs individually, their promotion is managed centrally by the university. New focus is on student projects and their positive exposure, such as the Nuna Car, Nova bike, Pret-a-Loger, etcetera.

TU Delft extracurricular functions (non-educational organs)

Would like to have a larger crowd for their activities and more exposure, and would also like to have an extra location more closely to the city centre. However, they do not have budget available.

Traffic department

Wants to improve accessibility of the city centre and will use the Mijnbouwstraat for that purpose. Also tries to have a new corridor through the key area.

Water board Delfland

Has the job to maintain and improve water systems in the

Notion 28 *The main actors in the area are in favour of common values but not in the position to act.*

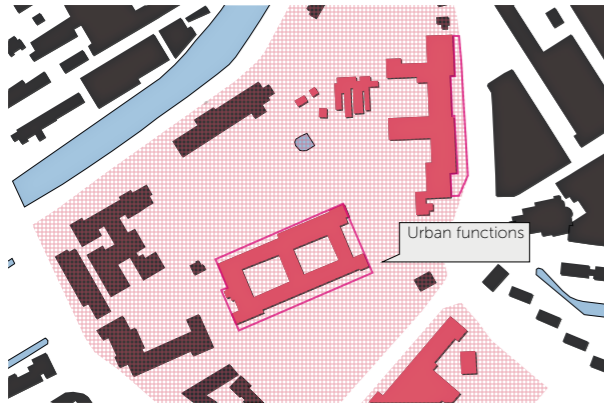


Figure 47 Spatial claim university services (combined)

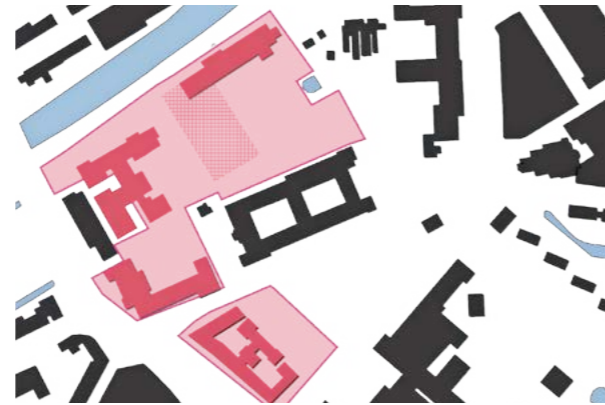


Figure 48 Spatial claim DUWO



Figure 49 Spatial claim municipality



Figure 50 Spatial claim traffic department

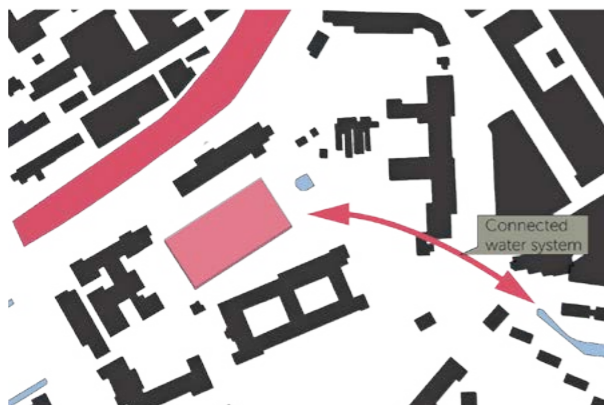


Figure 51 Spatial claim water board Delfland



Figure 52 Spatial claim inhabitants / ecology dept.



Figure 53 Spatial claim water extracurricular functions

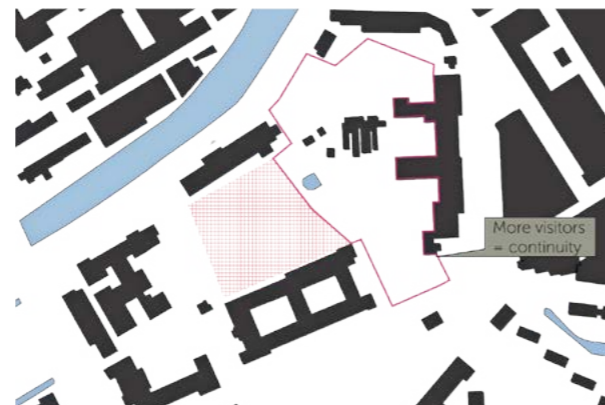


Figure 54 Spatial claim botanic garden

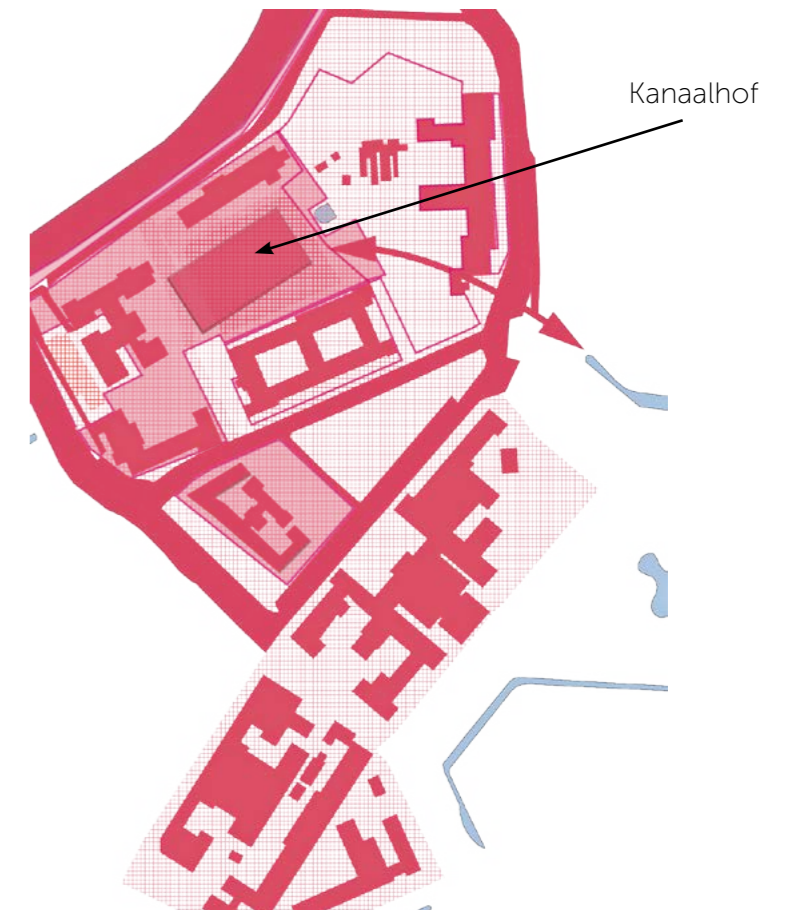


Figure 55 Conclusion of claims

area. One important objective is to be able to counter new water storage problems due to climate change. To do this, they want to add a comprehensive water storage for storm water in the area and to connect it to the water in the south east.

Ecology department

Wants the area to be used for more biodiversity and to have it connected to the green parts in the south.

Local inhabitants

The local inhabitants spatial claim is similar to that of the ecology department. They want a green area in the neighbourhood, more specifically a park, but most of all demand low or no nuisance from developments.

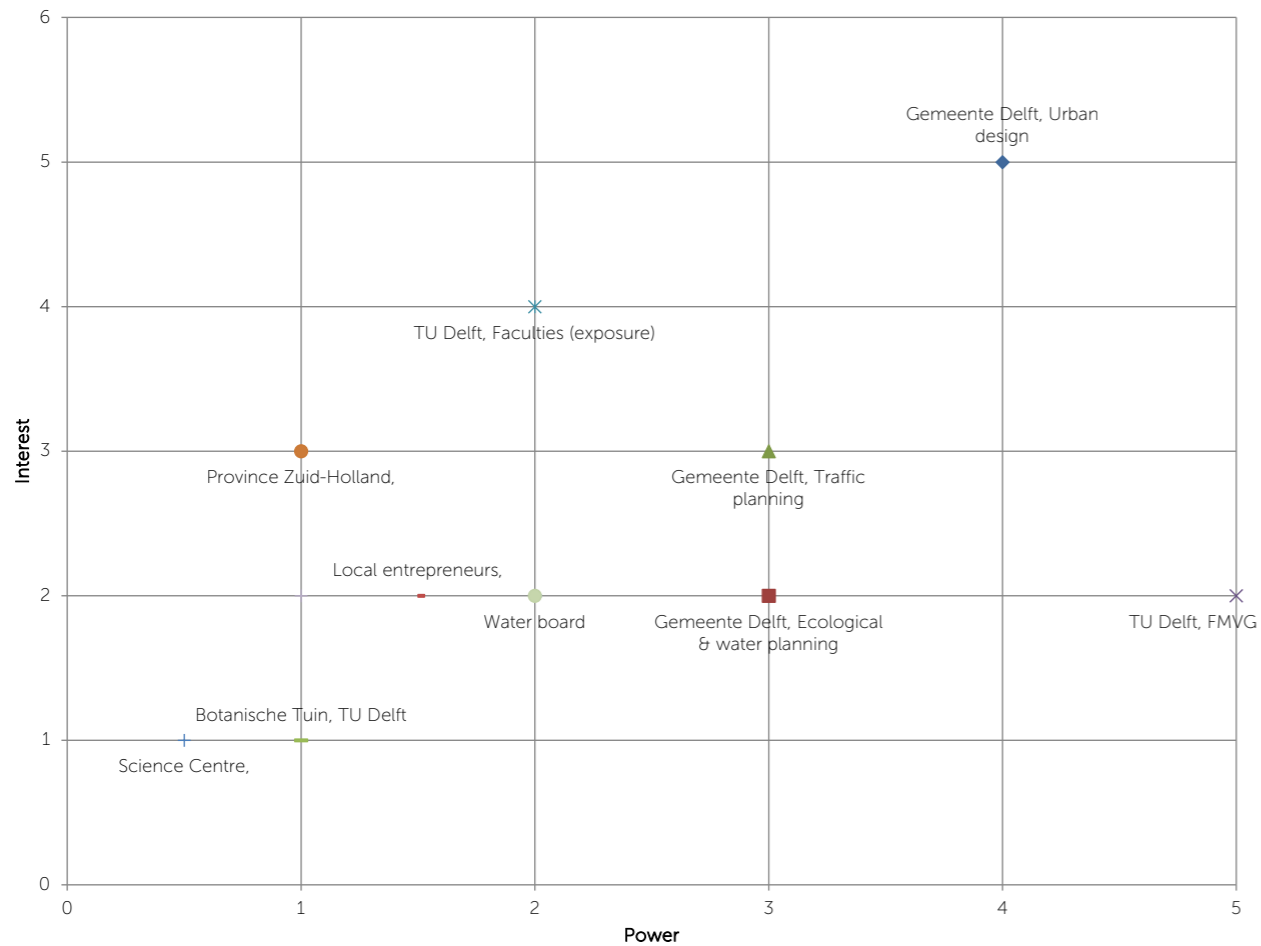
Botanic Garden

Has a very high quality botanical collection but will soon lose its physical link to the university. Could use a boost in visitor numbers to sustain its existence.

Conclusion

There are a lot of claims on the area. Especially on the so called 'Kanaalhof' area, behind Kanaalweg 4 (see Figure 55). A lot of claims are related to making a connection in the area: either economically, ecologically or traffic wise. A proposal for this area has to smartly integrate this diverse wishes.

Notion 29 *The public space is claimed by many but stakes show overlap and therefore potential.*



Actor analysis

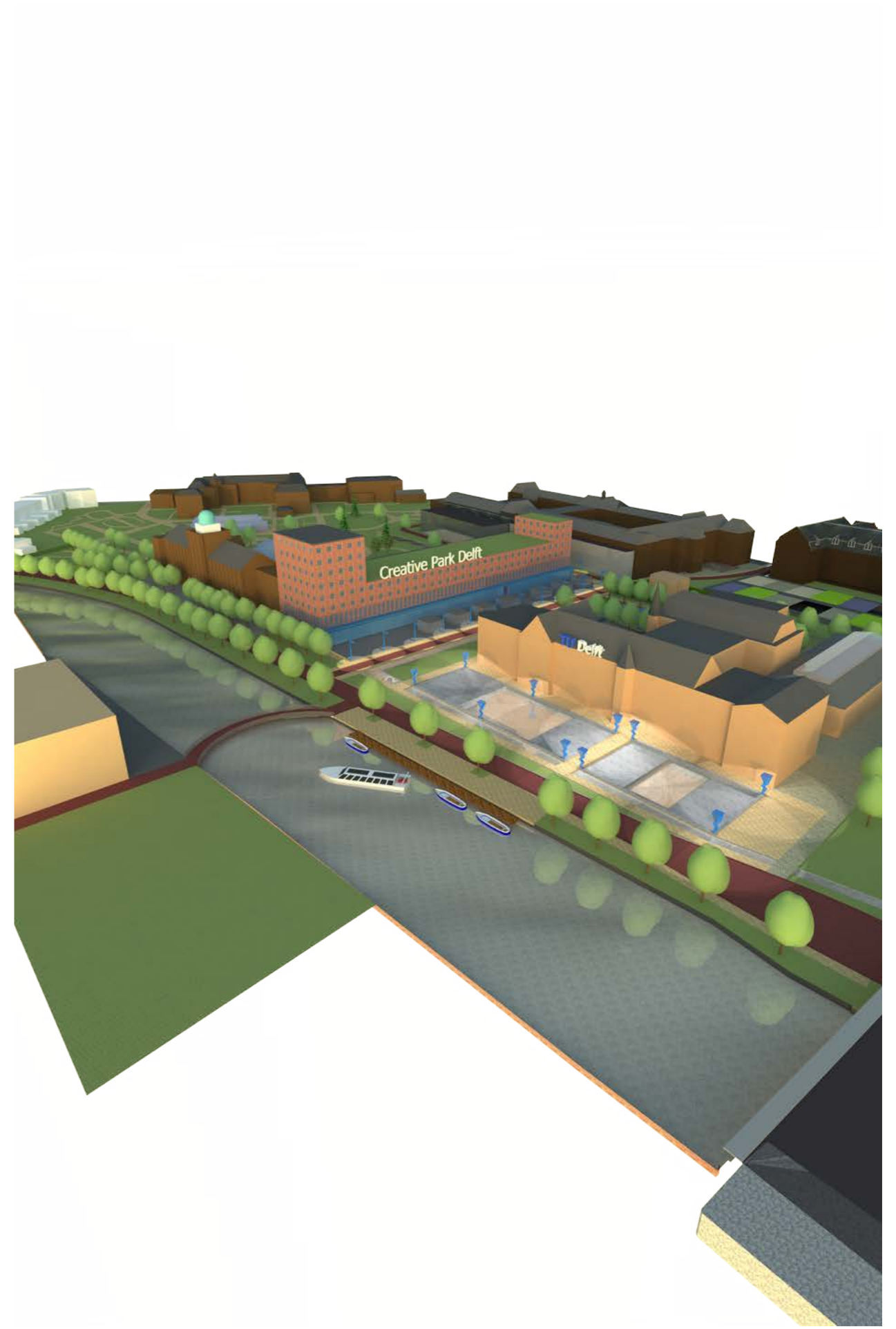
To be able to place the actors in the right spot in the plan, their wishes and requirements have to be weighted. By academic review, a traditional power-interest analysis combined with a spatial element was chosen as the most suitable. Combined with the spatial claims and ownership on page 55, they form an important element for choosing the right strategic partners for the vision.

The most striking is that the most interested and powerful organ, the municipality is a bit run down by financial needs. However, based on earlier conclusions from literature, this is not necessarily a boundary. It is just as important that the municipality puts effort in lowering regulation and actively facilitating initiatives. The water board, traffic planning and the faculties of the university could be facilitated to work together as assistant to the plans of the DUWO. These conclusions will be used in the strategy of the strategy.

Notion 30 *The most powerful actors are not able to fully develop this area into a multifunctional part of the city.*



Proposal for a integration of campus and city
How can a design and strategy help to let the campus reconnect the university and the city



Summary earlier notions

In the last chapters, a lot of valuable information was brought up in favour of this project. At this point, it would be valuable to summarize the most important notions to apply them in the proposal. These are the most relevant:

Strategic planning and the role of the urbanist

- “The aim of the project is to both spatially and program wise connect the city of Delft with the university.” on page 13
- “The government body that wants to profit from involved designers needs to actively facilitate their practice.” on page 21
- “Urbanists should not depend on assignments, but be pro-active as a meta-governor to fulfil their goals.” on page 23

University towns

- “To fully profit from the presence of the university, a spatial vision from the municipality is required.” on page 29

Urban waterfronts

- “The view on water can increase residential real estate prices by 28%” on page 31
- “Delft has large spatial potential on its waterfront, due to the heavy (industrial) use of it and the historical value.” on page 33

Location and actor specific

- “The policy is now mainly focused on a knowledge economy.” on page 37
- “The housing of students is an issue for Delft.” on page 39
- “Start-ups need a reachable location with many facilities.” on page 39
- “The area is well equipped with green functions.” on page 51
- “The water storage is not sufficient and not well connected.” on page 51
- “There are well used and varying functions in the area, but low activity in the night time.” on page 53
- “New traffic through the area will cut off parts of the area.” on page 53



Figure 56 The area at sunrise (source: flickr.com/anouk)

Aims of proposal

This proposal will react to the notions described on page 63. The overall aim of the plan is to design an area which sustainably caters to three aspects: liveability, environmental value and economic prosperity. The objectives of this plan are categorised based on these three aspect:

Liveability

The area could function as an active element which would facilitate shared spaces and facilities for students, other inhabitants and visitors of Delft. By offering a wide variety of functions that are active at different parts of the day a vibrant area should be created. In this way, it could contribute to the level of facilities and security of the area. All this while keeping nuisance levels as limited as possible.

Environmental value

Policy documents on environment and ecological sustainability point into one direction: a connecting and buffering function for the area. Water storage and a strong contribution to water quality are a key requirement for this.

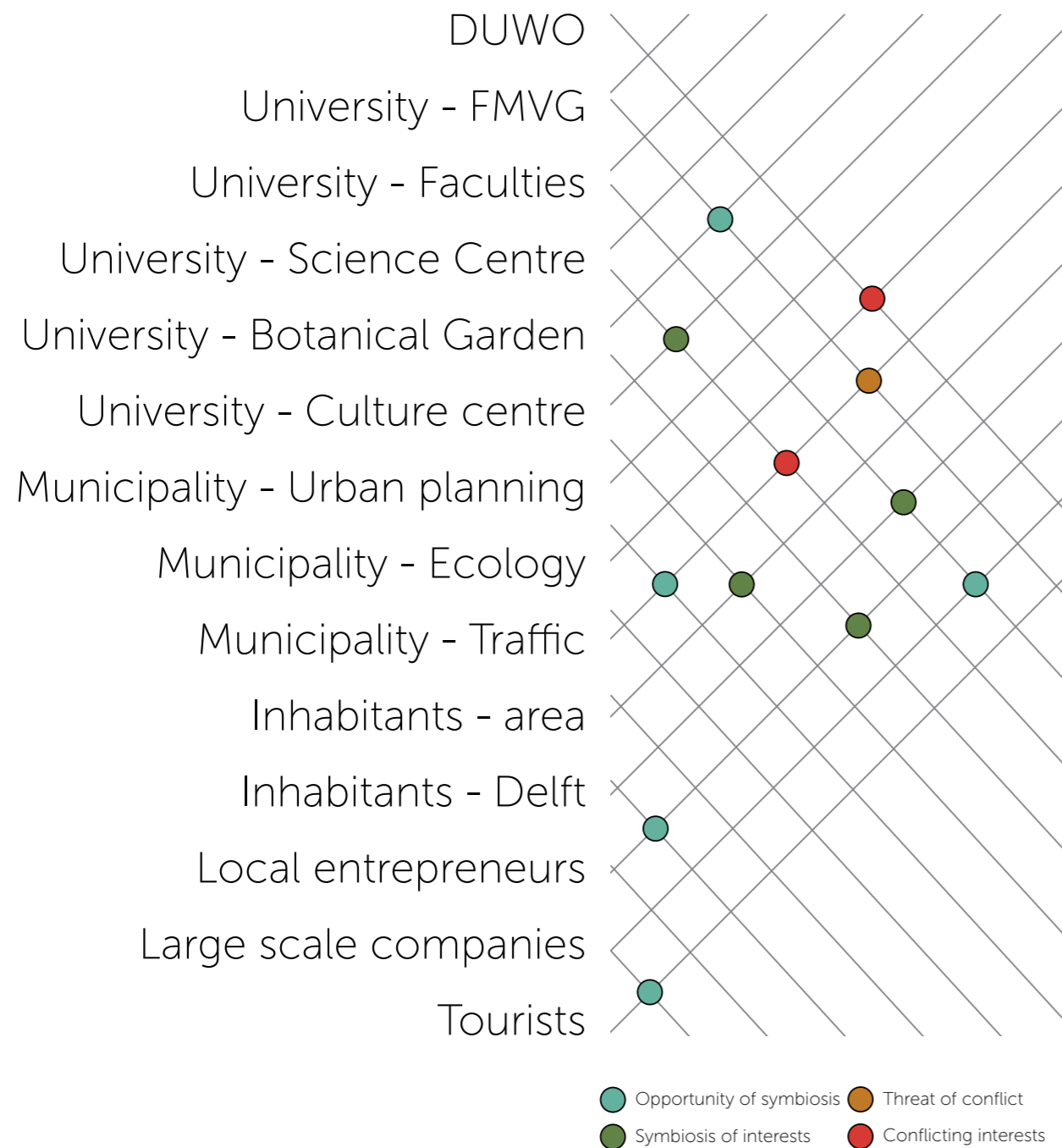
Economic prosperity

For a sustainably prosperous Delft, the objective is to focus mainly on the development of the local knowledge economy. Since the area is really well connected by both car, bicycle and public transport, it could easily contribute to this important point.



Figure 57 The Nuna solar car, a landmark project of the TU Delft (source: Nuna Solar Team)

Opportunities in overlapping actor wishes



To achieve these three aims, there has been a thorough research on common ground of the different actors. Based on their situations, wishes and requirements as described page 55 an analysis has been compiled on whether and where their objectives overlap or confront. This has been done by putting the actors in a grid, in a way that the urbanist is forced to look for overlap in wishes and requirements, which makes it a powerful tool for out of the box solutions. Especially since most research is done by interview inquiries, obvious collaborations quickly draw attention. This technique adds to those obvious relations.

The most prominent ones will be elaborated on.

Botanical Garden and FMVG

While it does not necessarily fulfil the core values of the university, it could a strong partner to add to the functions that do. By combining it with other buildings and functions, it would function better itself and benefit from increased visitor numbers and quality of the surrounding.

Traffic department and Science Centre

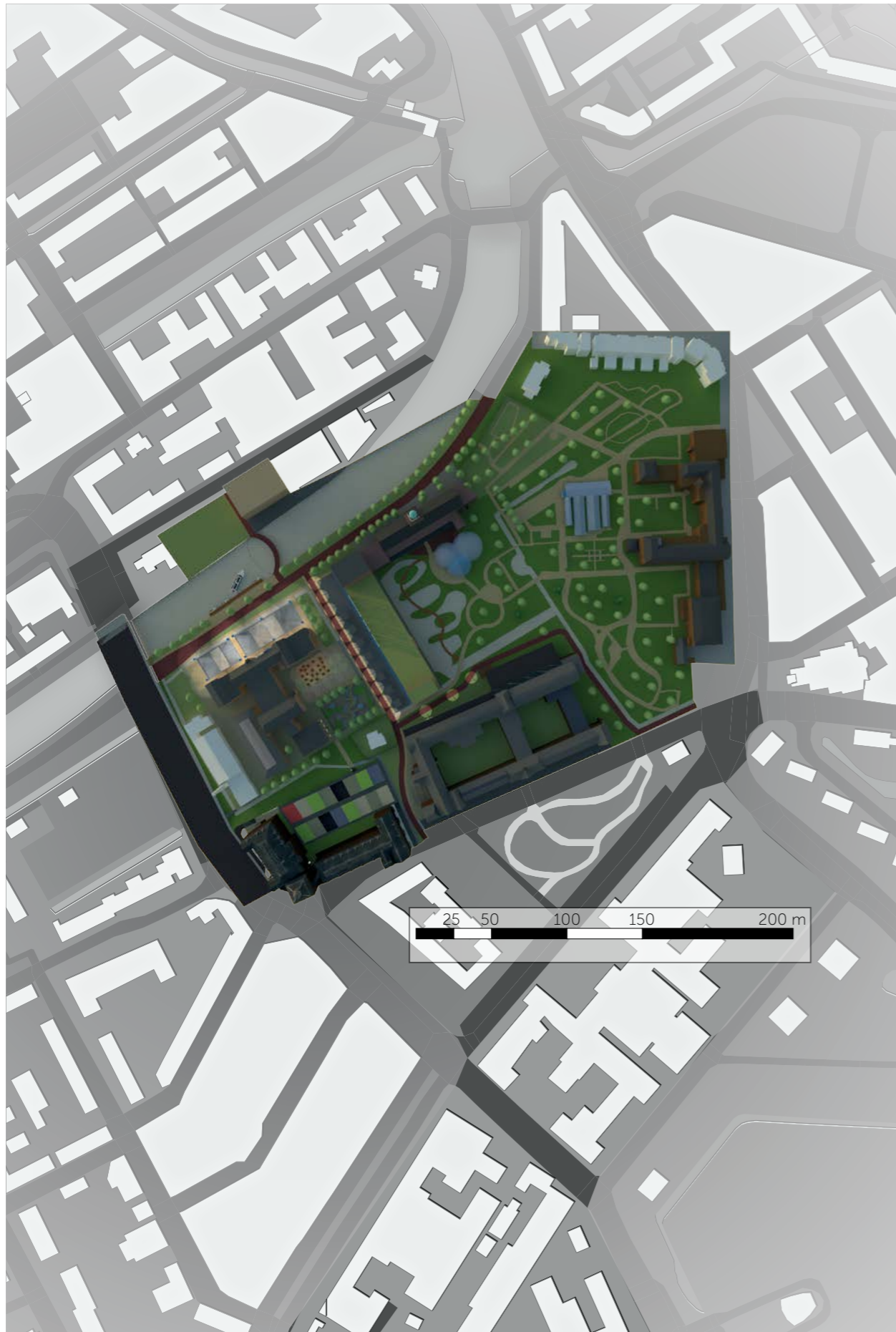
The Science Centre (soon, the university's only stake in the area), is afraid that the new heavier used two-way road will decrease the accessibility of the Science Centre. A smart solution bring benefit to both parties.

Inhabitants in the area and Cultural Centre

The inhabitant association stressed that while they are afraid of the nuisance, they dislike the departure of functions in the area, such as the university. An attractive proposal would be to add functions to the area they could use themselves, such as theatres and other cultural facilities.

DUWO and the Ecology department

At this point, the wishes for both these parties are in stride. However, ecological measures could largely bring benefit to the spatial quality if they are designed properly. This would be beneficial for the value of DUWO's real estate.



Vision for the area and spatial structure

*A vibrant hub of knowledge, ecology and committed users that will connect city and university.
A real link for the local knowledge economy, both physically as functionally.*

Before the interventions get their place, a framework in the shape of an area concept is created. Based on the spatial claims as described on page 55, specific areas are chosen to host the interventions as described on page 73.

The Campus Showroom

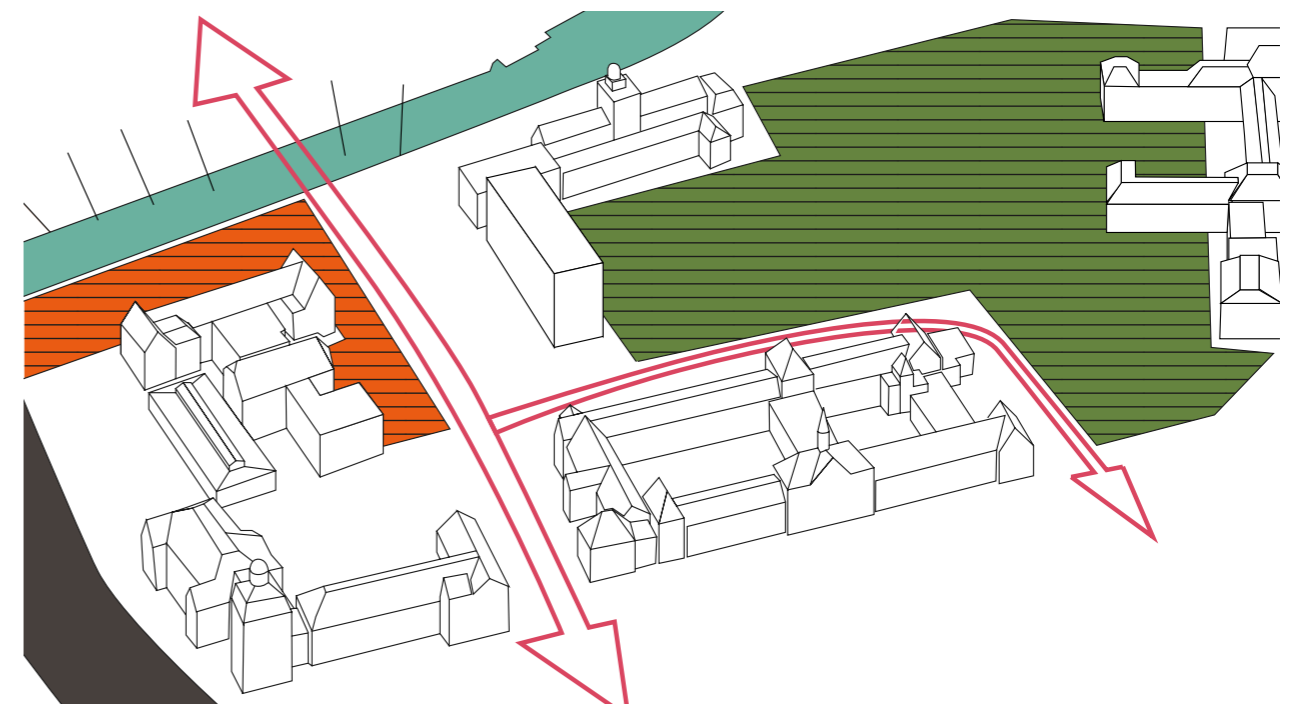
By activating the spatial quality of the waterfront and the monumental buildings, a meeting place for students, inhabitants, commerce and tourists is created here.

The Creative Park

By combining the unique outdoor qualities of the Botanical Garden, the economic potentials of Delft itself and the large available building space, the Creative Park is created. Not only a place to host a biosphere of entrepreneurship, but also a unique place to combine both the long-term necessity and short-term attractiveness of innovative sustainable measures.

A New Route

By introducing a new route through the area that caters to the needs of inhabitants, students and tourists, not only the liveliness is greatly enhanced, but also the visitors around the clock improve the social security of the area.



Initiators	Incentive	Support													
		Tourism board	Large scale companies	Small scale entrepreneurs	Inhabitants in Delft	Inhabitants in vicinity	Municipality - Traffic	Municipality - Ecology	Municipality - Urban planning	University - Extracurricular	University - Botanical Garden	University - Science Centre	University - Students and faculties	University - Real estate	DUWO
DUWO	Mission statement														
University - Real estate	Mission statement														
University - Students and faculties	Exposure and ranking														
University - Science Centre	Visitor numbers														
University - Botanical Garden	Continuity														
University - Extracurricular	Extra revenue														
Municipality - Urban planning	Inhabitant satisfaction														
Municipality - Ecology	Environmental value														
Municipality - Traffic	Traffic efficiency targets														
Water board Delfland	Water management and storage														

This scheme explains the planned collaboration of actors in this plan. The horizontal axis defines the actors who are most benefited by the concept and who should be the cart pullers of the projects.

- Hybrid Housing
- Entrepreneurial Ecosystem
- Exposure for Excellence
- Integrated water storage and treatment
- Smart routing for all



Figure 58 Lander Hall, Seattle, USA (source: mithun.com)



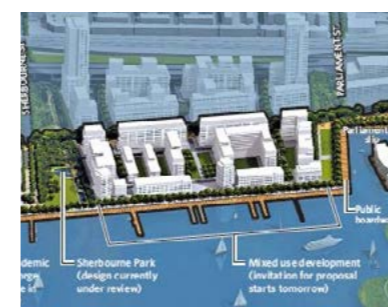
Figure 59 High Tech Campus, Eindhoven (source: jhk.nl)



Figure 60 Krölller Müller pavilions (source: buitenbeeldinbeeld.nl)



Potsdamer Platz, Berlin, D (source: dreiseitl.com)



George Washington University, Toronto, CAN (source: thestar.com)

The five supporting functional elements

To establish the vision there are five supporting elements based on the opportunities of collaborating actors as described on page 67.

Hybrid Housing

By combining (student) housing with other functions and the wishes of other actors, a more flexible and therefore resilient building ensemble is created. It also keeps the special architecture of the monumental buildings in mind.

Entrepreneurial Ecosystem

By not only constructing buildings but also by creating a suiting environment for start-ups and more developed companies, this area could be a key element for the knowledge economy Delft wants to host.

Exposure for Excellence

For many visitors and inhabitants high tech is a fascinating world. However, in Delft it is mostly kept indoors, even at the Science Museum. Facilities in the public space could show what is going on at the university.

Integrated water storage and treatment

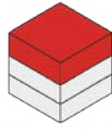
The area could have a very beneficial role for the local water management system in terms of storage and circulation. By making these functions visible, awareness about these issues could be raised by the visitors.

Smart routing for all

The area shows great potential for connecting different streams of visitors and introducing them to all the aspects of Delft and this area in particular.

Hybrid housing

Connected, social student housing
332 houses



Commercial functions second floor
visible within building

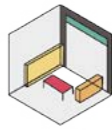


Accessible functions ground floor
publicly enclosed



Entrepreneurial ecosystem

Do It Yourself offices
50 units of 25 m²



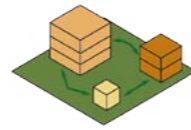
Representative, small offices
50 units of 40 m²



Representative, large offices
10 units of 300 m²



High spatial quality public space

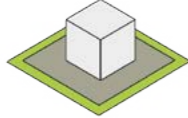


Exposure for excellence

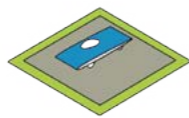
Temporary allotments



Room for temporary pavilions
8 units, 10 x 10 m

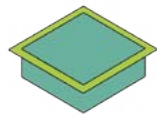


Exposition places landmark projects
8 units, 5 x 5 m



Integrated water storage

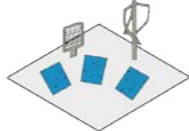
Water storage facilities
10,420 m³



Energy reduction through insulation

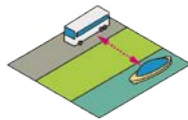


Energy production
area self-sufficient



Smart routing for all

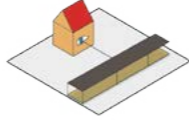
Transport hub tourists



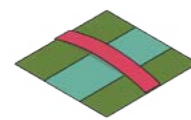
Bicycle showcase route



Safe route to the university
social control + shelter



Bicycle bridge
easily openable



Interventions and their requirements

These interventions were created based on the requirements and opportunities deriving from inter-actor relations. Hereunder a summary of minimal conditions for these interventions.

Category	Subject	Calculation	Measurement	Source
Hybrid Housing				
	Student houses		450 units	Cepezed & DUWO, 2012
	Commercial spaces		1700 m ²	Cepezed & DUWO, 2012
Entrepreneurial ecosystem				
	DIY offices	20 * 4 p * 4 m ²	= 320 m ²	NEN1842 + current demand
	Representative and small	10 * 10 p * 4 m ²	= 400 m ²	NEN1842 + current demand
	Large scale	5 * 25 p * 4 m ²	= 500 m ²	NEN1842 + current demand
Exposure for excellence				
	Exposition spaces	8 faculties, 3 companies + 5 extra	16 units	
		5x5	25 m ²	Capable to hold Nuna
	Pavilions	2 x Architecture, 1 x Industrial Design	3 units	
		25x25m	625 m ²	Kas Oosterhuis pavilion
Integrated water storage				
	Storm water	n.a.	10430 m ³	Water board policy
	Rain water storage	5*100*total surface roof	= 14241 m ³	Pötz & Bleuzé, 2012, p. 173
Smart routing for all				
	Bus storage		4 buses	Current situation
	Boat docking spaces		5 units	Half current situation
			8 m	Length current water taxi in Delft
	Bicycle path		3,5 m	Bosch & Veenenbos, 2011



Hybrid housing
Integrated water storage

Entrepreneurial ecosystem
Route for all

Exposure for Excellence



Figure 61 Square [3] (source: didatticaonline.artisticobusto.it/)



Figure 62 Water storage [4] (source: McGregor Coxall)



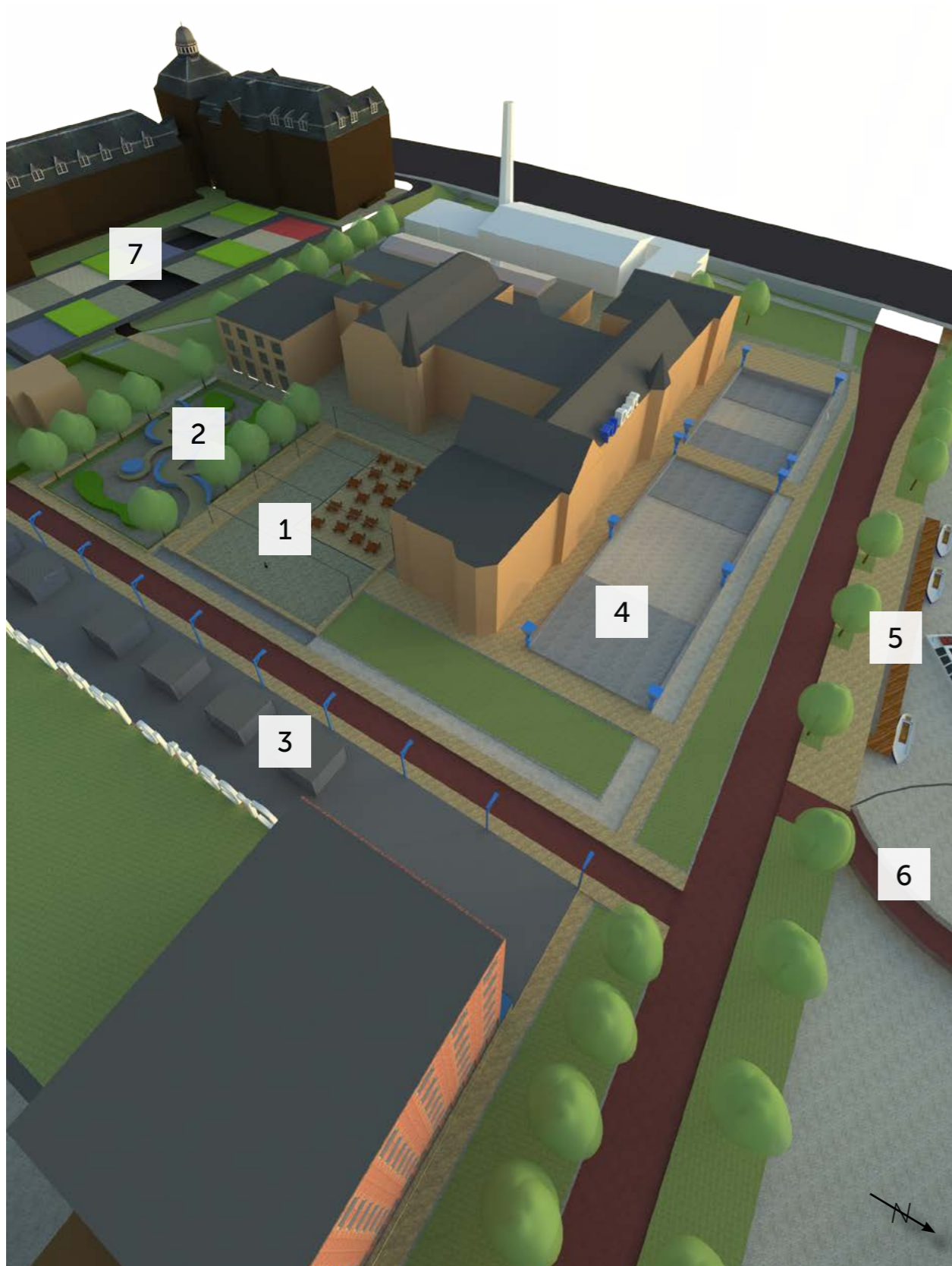
Figure 63 Extension BG [9] (source: wikipedia.org)



Figure 64 Housing and commercial functions [10] (mithun.com)

The different spaces and their requirements

- Terrace** Open, activity facilitating. Water infiltrating yet hardened.
- Water square** In relation with the more quiet function of the restaurant, however representative and utilising the visibility. Suitable for water storage. Representative, attractive for business users and inhabitants. Multifunctional for events and temporary pavilions.
- Inner court** Place where all activity comes together: during the whole day actively in use. Promoting meeting. 10 lunch spaces for 8 persons for businesses.
- Water storage** Spatial quality enhancing and promoting awareness of water problems. More quiet rendezvous places for everybody.
- Parking** Sufficient for all functions and uses. Put underground to open up space for allotment gardens.
- Facilities** Energy efficient central heating, by heat storage in the ground. Available for all users in the area.
- Existing housing** Large mixed-use building. By not only exposing what is happening at the university, but actively let inhabitants share in their facilities, a stronger link is created. For instance, restaurants and cafés run by students, shops with start-up products and cultural functions in the lecture rooms that are also accessible for non-students.
- Science Centre** Current look but more connected to other functions. Change orientation to the Creative Park.
- Extension Botanic Garden** More focused on water and awareness causes. Fitted with new climate greenhouses.
- Housing and working places** High-class mixed use building, landmark for area:
- Connection** Linking the area to the context by means of ecology and transport
- Housing** Connected to object 10, but in existing building. Second skin applied on south facade.
- Revitalised Botanic Garden** New functions, modern look. New focus on sustainability issues instead of pure research.
- Bus transport hub** Welcoming entrance to the city and area
- Existing housing** Current, high grade look. Provided with new allotment gardens.



- 1. Inner court with meeting spaces and terraces
- 2. Natural water filtration with laid back working places
- 3. Exposition places
- 4. Water square which can be used for

- markets and events in summer and in the winter as ice rink or reflection pool
- 5. Mooring spot
- 6. New slow traffic bridge
- 7. Allotment garden for inhabitants above parking garage



Figure 68 Potsdamer Platz



Figure 66 Nuna solar car (source: pointwise.com)



Figure 65 Hutspot Amsterdam (source: hutspot.nl)



Figure 67 Old lecture rooms (source: mv.tudelft.nl)

Space: Campus Showroom

This area will improve the meeting of the outcome of the university (world) and the city of the Delft and therefore be the strongest candidate to improve the liveability of the area. It will use the features of the waterfront and the spectacular architecture to do so. As design principle, a contrast with the intensely detailed buildings was sought after. This resulted in a geometrical lay-out based on the walking and bicycle routes. Robust exposition places and space reserved for temporary pavilions fill the place with innovation and science (see fFigure 66). Meanwhile new functions such as theatre in the old lecture rooms (see fFigure 67), student run restaurants and start-up shops (see Figure 65) show the positive outcome of an entrepreneurship stimulating city. For both tourists and 'normal' citizens, this area finally clears up what happens in all these interesting, yet closed-off campus buildings.

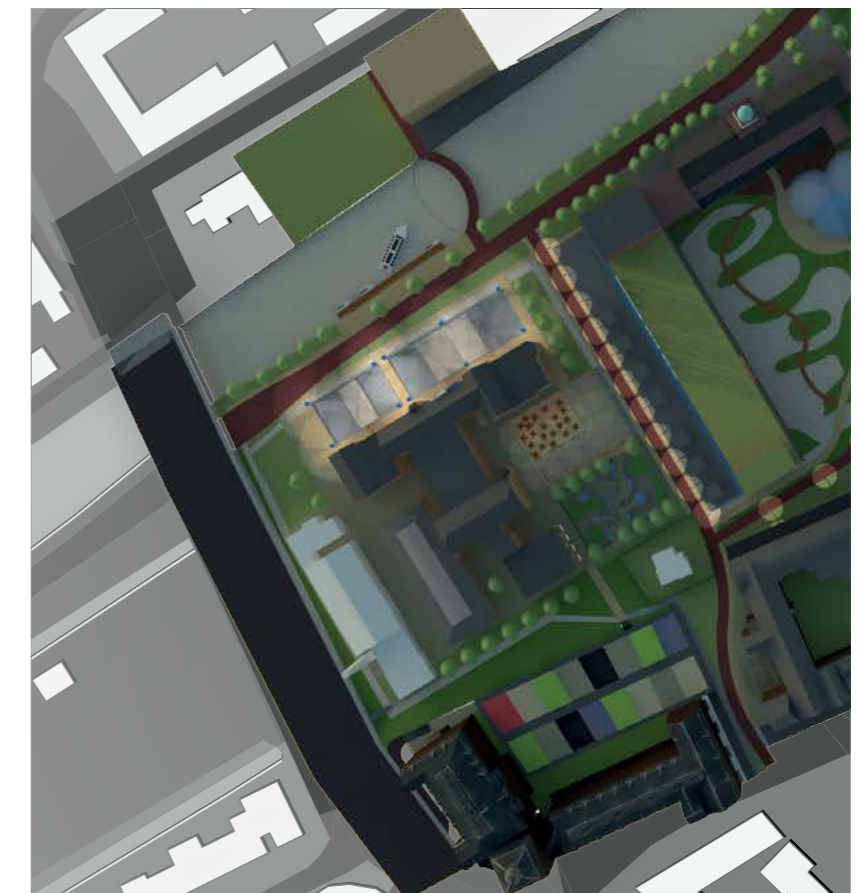


Figure 69 Plan of the area in context.



Figure 70 Inner court yard

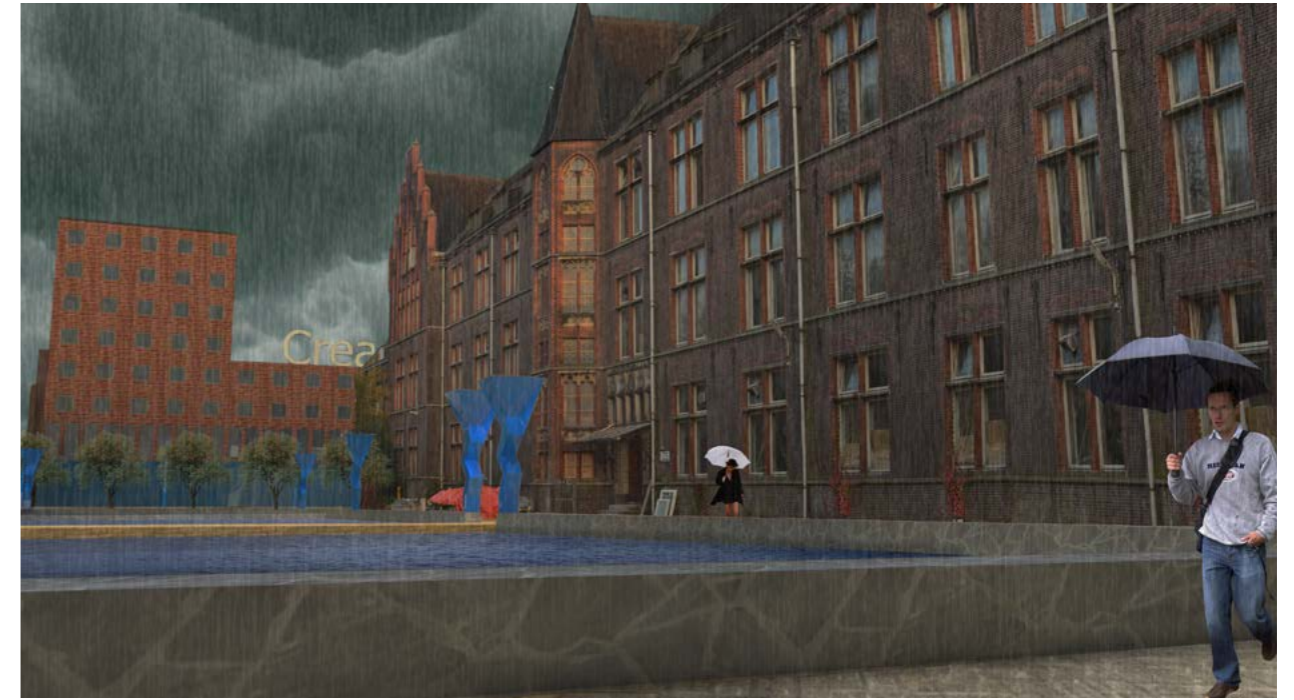


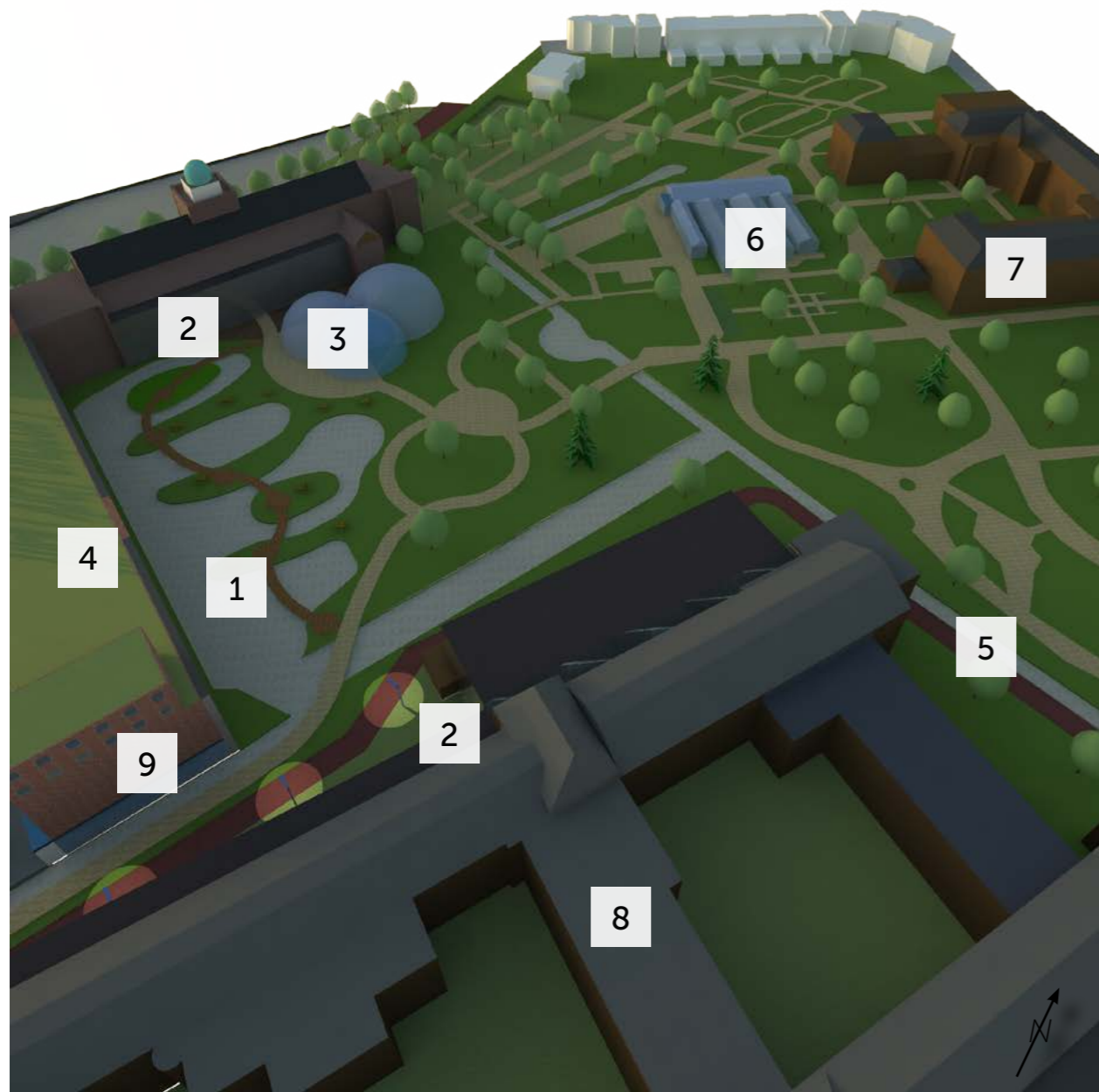
Figure 72 Water square in rainy seasons



Figure 71 Waterfront area



Figure 73 Water square in dry season



1. Natural water storage and meeting places
2. Second skin insulation
3. New greenhouse pavilions
4. Vegetation roof
5. Bicycle path
6. Monumental greenhouses, used for new functions
7. Do It Yourself office building: no monumental status, affordable start-up space
8. Small, but more representative offices
9. Modern office space with housing on top.



Figure 74 Eden Project, Cornwall (wikipedia.org)

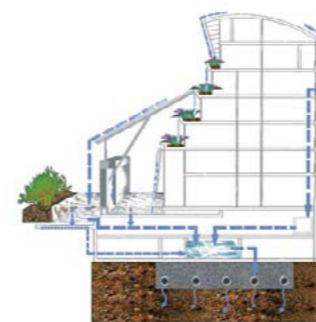


Figure 75 Nuremberg Prisma (water-in-zicht.nl)



Figure 76 Botanical Garden (vandaagopstap.nl)



Figure 77 Dagvatten canal (André Vaxelaire)

Space: Creative Park

This area hosts the Entrepreneurial Ecosystem as introduced earlier on. Delft is blessed with many start-up rooms, but not with a flexible system in which businesses can grow and shrink in the way they please. This area uses the three buildings for that measure. The former TNW faculty (currently still in use) is not a monument and used as DIY office where start-ups can build and renovate their own space. Only essential renovation is performed here. This building will function as level 1 in the ecosystem. The Science Centre already functions as business incubator, but while it is very attractive, the space in the rooms is limited. If businesses grow out of those space, they can make the final leap to level 3, a newly built building which provides ample space to grow and modern facilities.

By adding new meaning and purpose for it, the Botanical Garden is sustained for the long-term. With an expansion and a connection to the business functions, it attracts new visitors and caters to more needs. The Eden Project inspired crowd-funded greenhouse also ensures new attention to this beautiful garden. Meanwhile, a bicycle path connecting surrounding towns with the city centre ensures new visitors for the area itself. To secure the security of the area, this path can be closed off at night. By adding a second skin to the university buildings, the harsh physiological conditions are improved and sustainable water reuse is created (see Figure 75). This also makes sure that people get a glimpse of the newest renovation methods. A walking bridge connects business buildings level 2 and 3.

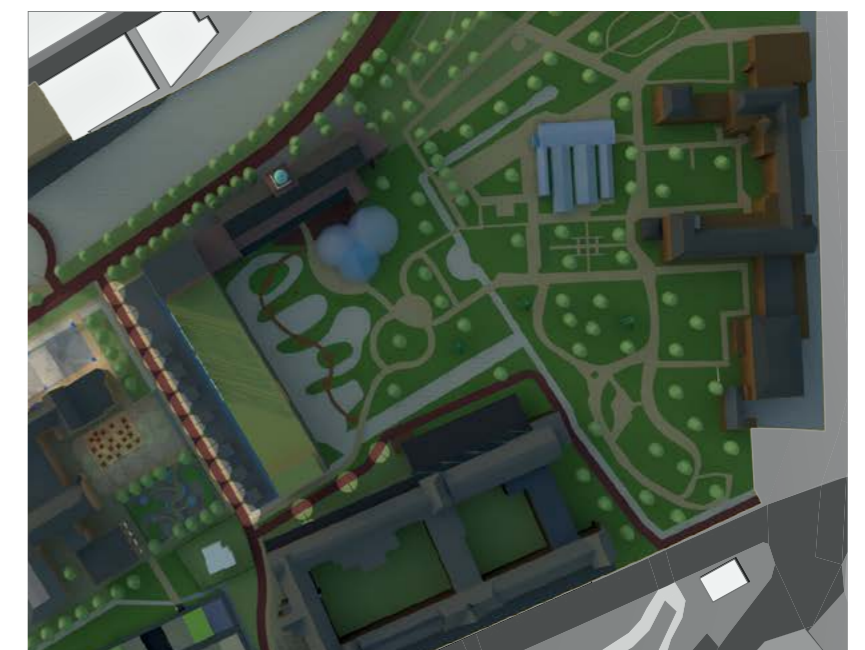


Figure 78 Plan of the area



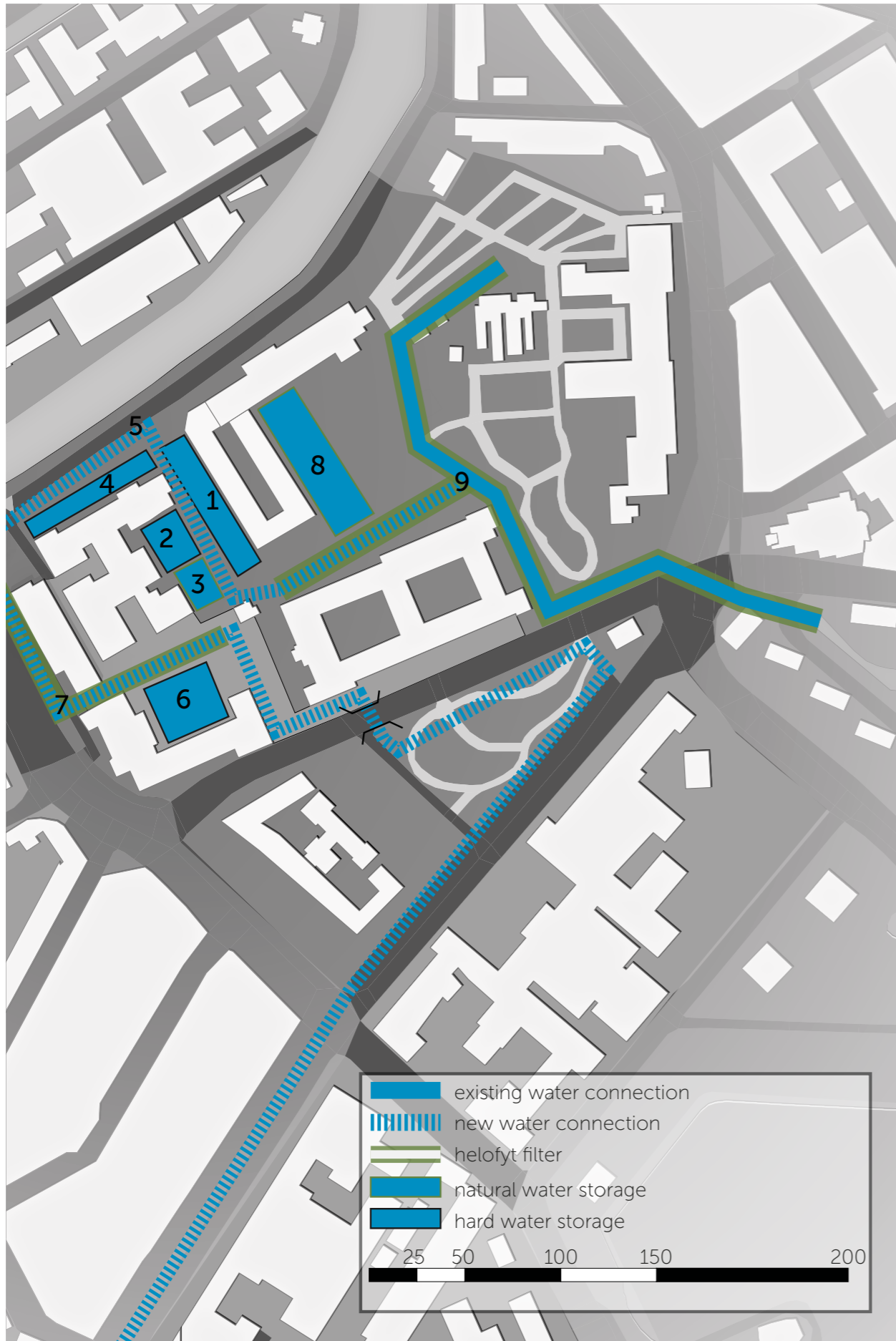


Figure 79 Water management system

Functionality: water storage and treatment



Figure 80 Water vision for the area (source: municipality)

By connecting the whole area to the water system and adding filtration, natural cleaning and circulation, the area is contributing in a large extent to water quality and storage. The water also performs an important spatial function: not only does it provide a barrier between private and public spaces, also it adds spatial quality to the areas and links them together. Last but not least: by showing these innovative applications of urban water, awareness about the subject is raised to all visitors of the area.

Figure 80 shows the wishes from the water board and the municipality. Orange indicates demanded connections and purple indicates existing underground connections. All demanded connections are made in our plan, and underground connections (which are not in favor) are reduced.

Result

The collection of water storage spaces and connections result in the following capacities (see Figure 79).

- | | |
|------------------------|------------------------------------|
| 1. 3267 m ² | Podium |
| 2. 1488 m ² | Court yard |
| 3. 1364 m ² | Natural working area |
| 4. 1050 m ² | Water square |
| 5. 522 m ² | Urban water stream |
| 6. 5742 m ² | Parking garage |
| 7. 2352 m ² | Natural water stream showroom area |
| 8. 5940 m ² | Pond in Creative Park |
| 9. 2352 m ² | Natural streams in Creative Park |

This adds to a total of 25,124 cubic meters of water storage, which meets the requirement of water storage (as stated on page 73). This means that the area can also absorb the rain water on the roofs without relying on the sewage system.

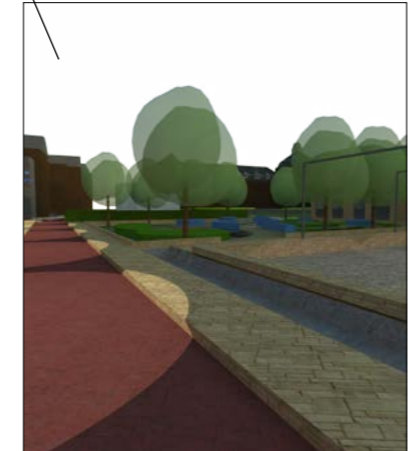
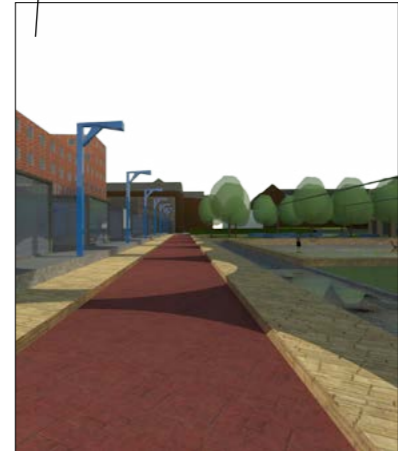
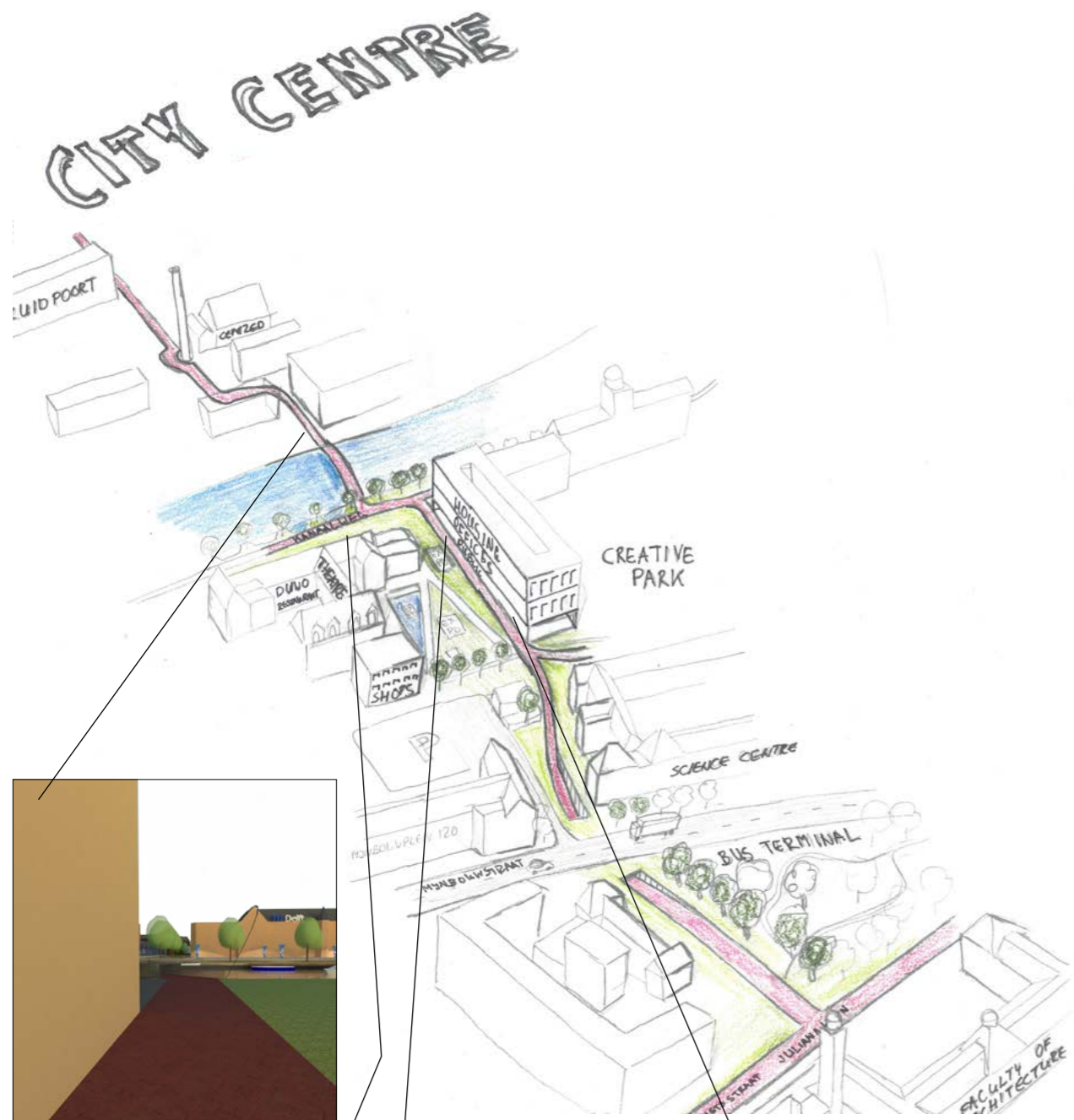


Figure 81 Office Cepezed (source: cepezed.nl)

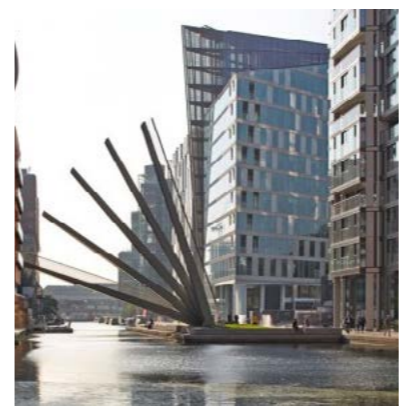


Figure 82 Slow traffic bridge (source: Knight Architects)



Figure 84 Water taxi in Delft (source: Canal Hopper)

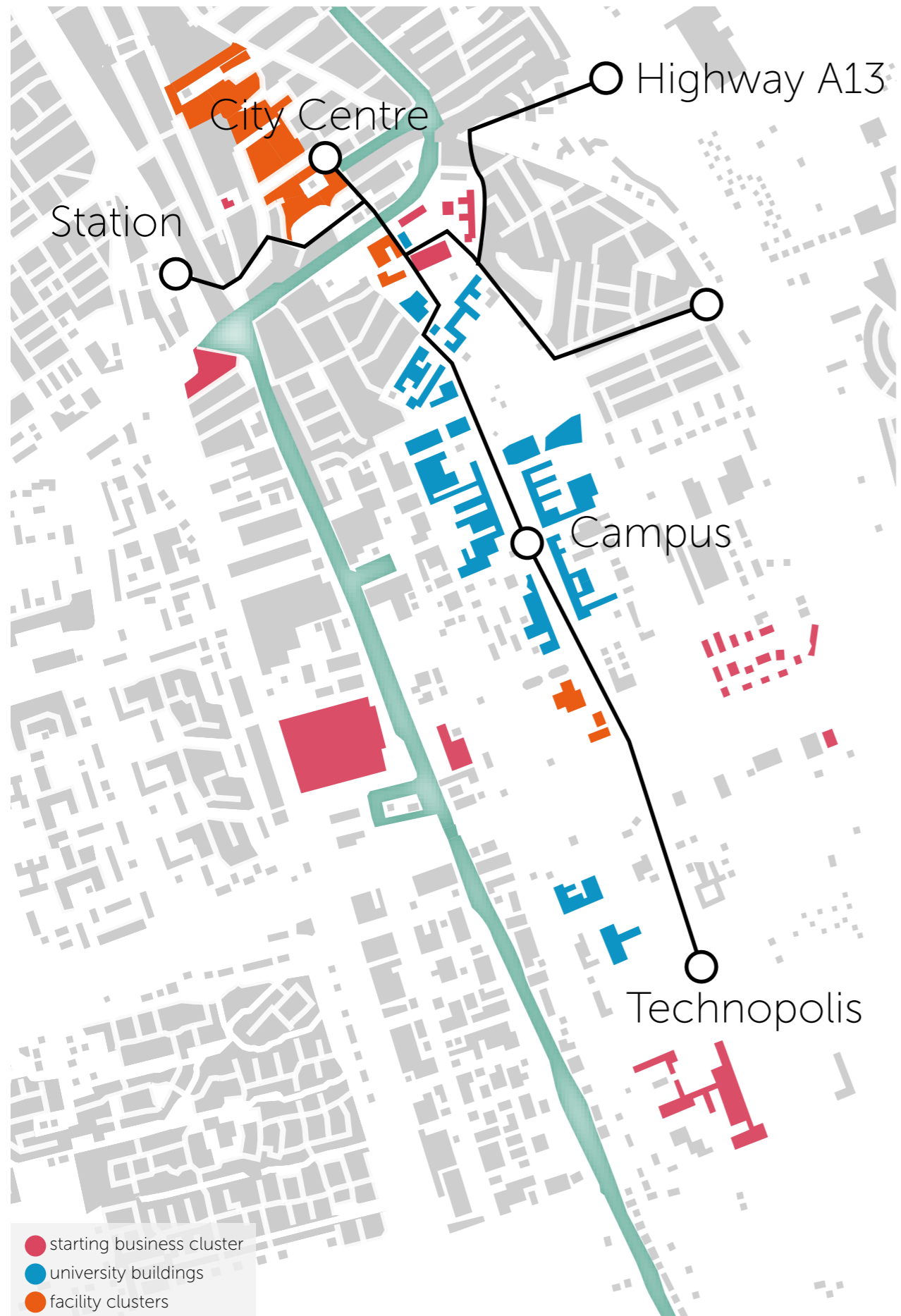


Figure 83 Royal Delft (source: royaldelft.com)

Functionality: Smart routing for everybody

By providing an alternative slow traffic route alongside the busy Sebastiaansbrug (mostly used for heavy car traffic), visitors and inhabitants can safely travel from the city centre towards the campus. They will be able to bike along the Zuidpoort shopping area and go alongside the new office of Cepezed (see Figure 81) that is already fitted with a nice bicycle route. There it will continue, using the unused space along the transformer house and cross the new bicycle bridge that can be opened quickly to not disturb the cargo boats (see Figure 82). There they will see the new water square. It goes through the area, along the Creative Park, along the podium of the Level 3 building. By getting so close, bikers get a glimpse of what is going on there. The route continues, giving a view on the showroom described before and via de Science Centre it enters a safe tunnel. By providing rentable sound-proof party space here (as seen in Hamburg), the underground space is secured via social interaction. After that the area goes by the Faculty of Architecture and connects neatly to the campus.

As a tourist, you can also use the route. They can be dropped off at the new bus terminal. This place will reduce traffic pressure on the city centre and gives a purpose to the disused de Vries van Heystplantsoen. Via the Campus Showroom they reach the city centre, but they can also choose to take a boat there and continue their trip effortlessly via the water(see Figure 84). They can also go the other way, adding the campus to their day trip or visit the tourist highlight Royal Delft, which is located close to the campus in the West (see Figure 83).



Effect on context of proposal

Larger context

By creating an interesting place which can host a sharing principle of both city as university assets, a real stepping stone between the campus and the city centre can be created. The area does so by providing services from both city and university and by creating space for a business environment, which can be only found here. The last part is an ecological link, which greatly adds to the spatial quality of the area.

Effect on existing buildings (Figure 85)

The proposal aims to retain all the buildings in the area. By revitalising them, they are sustainably preserved. There is just one residential house next to the court yard that is properly hesitant to the changes. It would be smart to look if these owners could be relocated, and the house could be used for a public function as well.



Figure 85 Renovation or redevelopment of buildings

Strategic planning

Phasing

Figure 86 shows how these interventions could be placed in time, relative to already undergoing development. Interventions are linked to each other, making them resilient for changing actors. Feasible and kick-starting projects are put at an early point, where harder to achieve interventions are placed at the horizon.

Reaction to long term trends

Figure 87 summarizes the relation between the actors, the interventions and the long-term processes they relate to. Since the amount of inhabitants of Delft will stabilise at some point and the economy is in a constant sinusoid according to Juglar, the phasing has to react to new situations.

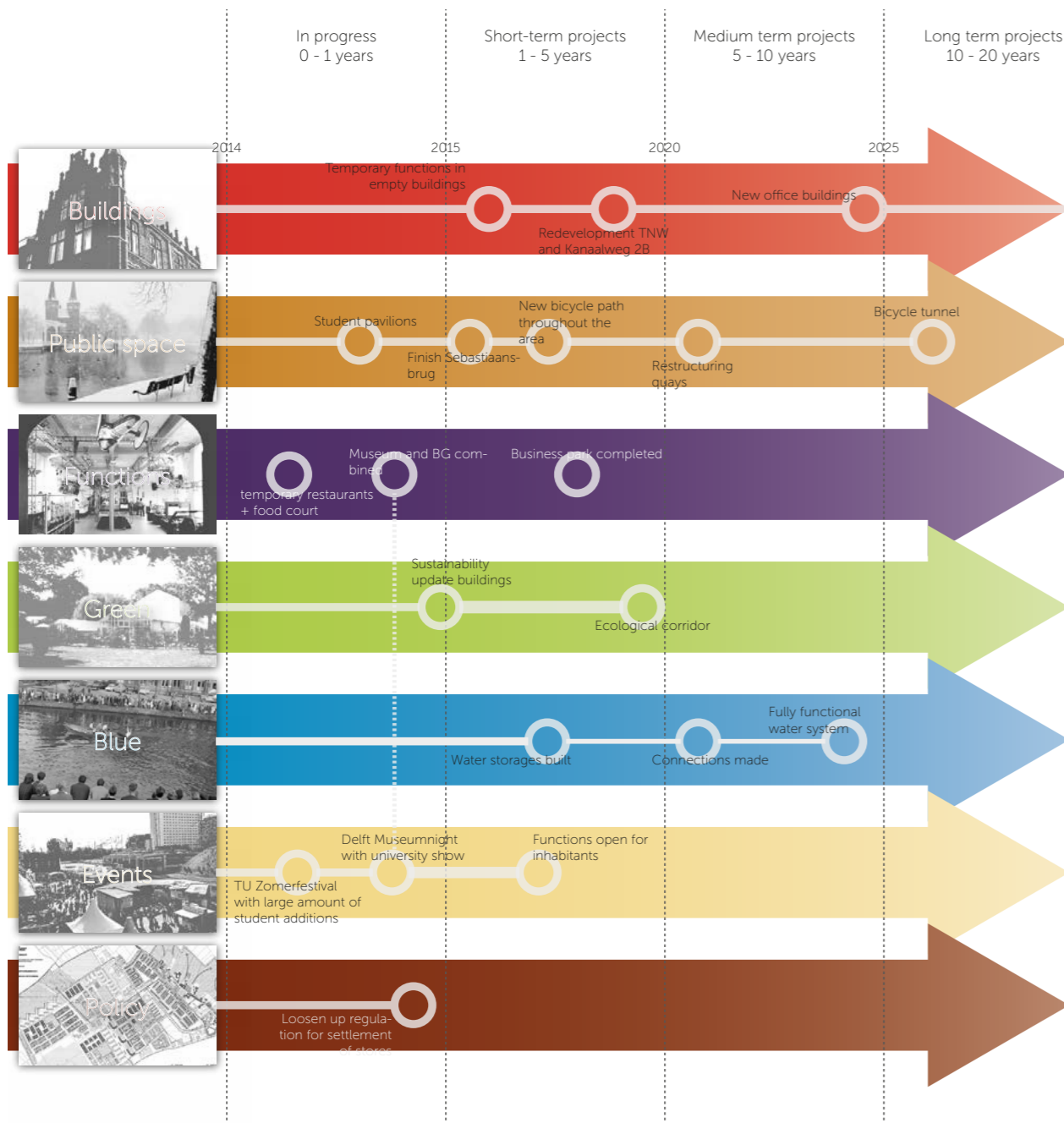


Figure 86 Phasing of interventions

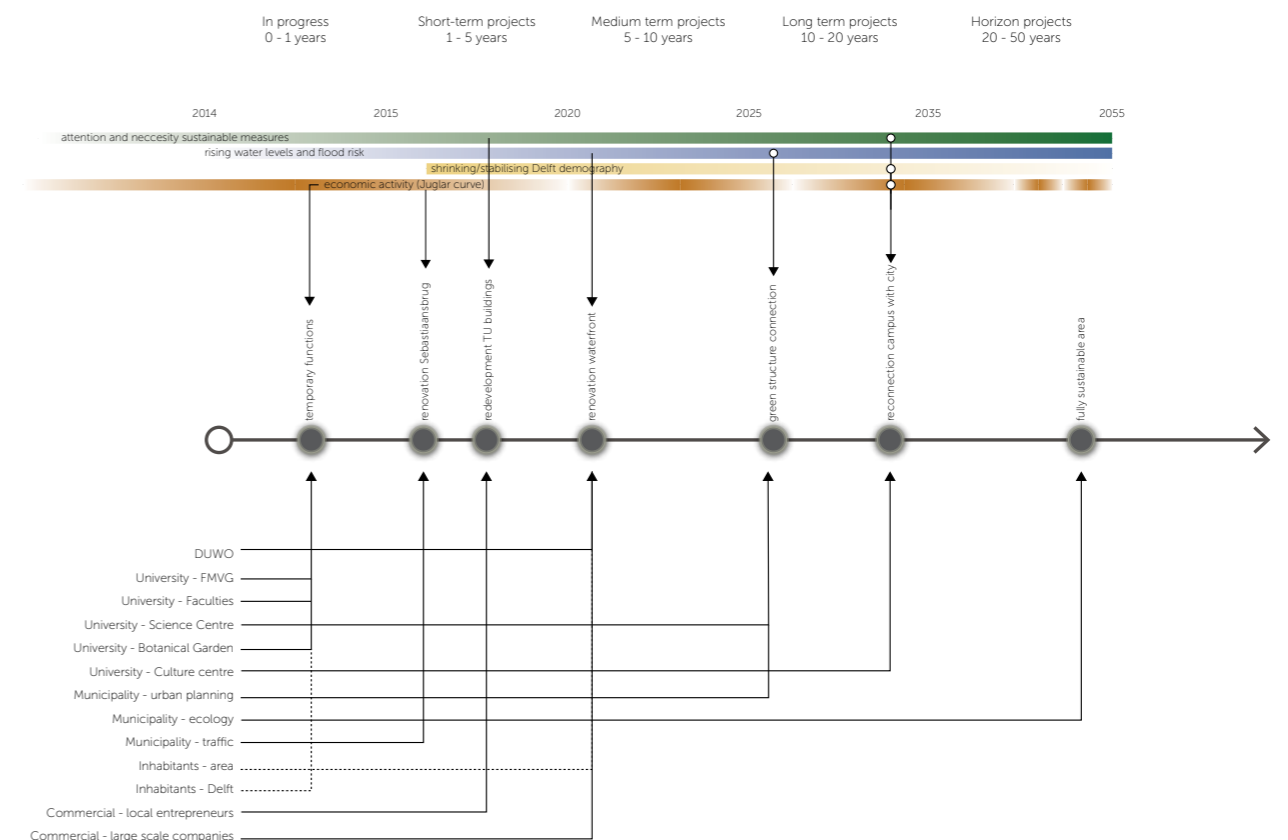


Figure 87 Relation of interventions to long-term developments

Flexibility and resilience of proposal

The proposal is based on thorough research on official policy documents, supplemented by insights derived from interviewing policy makers at the different actors. Also, previous actions and developments from actors were taken into account. When possible, the proposal was also discussed with actors as well. In short, all effort was done to make this proposal as feasible as possible by making it as strongly linked to the actors' wishes as possible. However, actors change policies, unexpected developments take place and current trends can disappear. As van Timmeren emphasised in his inaugural speech, real sustainability is organised by creating flexible solutions that can adapt and thus be resilient (2013).

To enable this proposal to respond to unforeseen developments and events, a few 'emergency exits' or possible adaptations were created in the planning. These are applied when for instance an actor doesn't commit itself enough or retracts itself from the project. The three most important described below.

Scenario 1: not enough funding is available (in general)

The largest threat for the proposal is that missing funding for the interventions. The best suitable solution for this would be to enable (large) companies to fund elements in the proposal. There are a lot of high tech companies located in Delft specifically to get in contact with technical students. In their pursuit for exposure sponsoring popular spaces would be a realistic option.

Scenario 2: water interventions cannot be funded by the water board

The most expensive interventions (and also the largest) are part of the new water management of the area. Since they are in line with the vision of the water board, they would likely be willing to support them financially. However, if they are not able to fund it (completely), the system could be made even more into a landmark project to be able to apply for innovation funds. The water management branch is considered one of the 'top branches' (topsectoren) in the Netherlands by the government (see Figure 88). This means extra funds are available to get projects feasible, if they benefit the scientific image of the Netherlands.

Scenario 3: there is no investor for the office spaces

To positively influence the local economy as much as possible, it would be best to develop the whole Creative Park as a whole. However, in reality investors could walk away from less profitable parts of this development. The university and DUWO should force themselves to be open-minded about bottom-up initiatives to develop this buildings. They could be part of a competition, a crowd-funding campaign or be provided temporarily to for instance local inhabitants.

Laborepe ratur? Quidemolut aut reria doluptat.

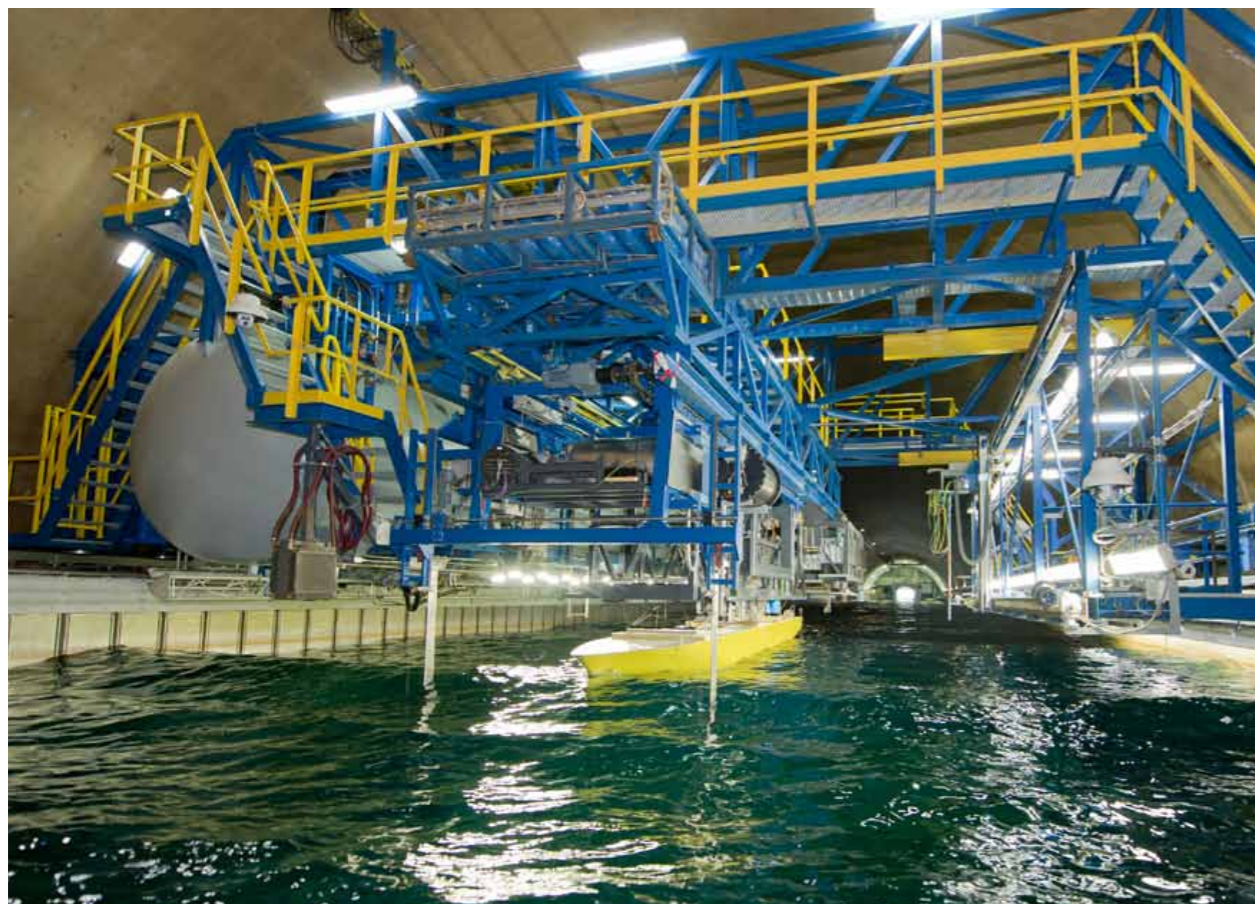


Figure 88 This 'Depressurised Wave Basin' was funded by the 'top branches' fund of the Dutch government.



Evaluation added value of plan

The described proposal is supporting on durable collaboration of the different actors to a large extent. The final plan supports this cause, by showing the added value of certain interventions and therefore the benefit of thorough spatial collaboration. In that way, this project shows the role of the current urbanist. By cleverly integrating the spatial stakes and assets of different actors and visualising the spatial potential, it evolves to be an objective catalyst for area development instead of 'just' a consultant for the local government. This is beneficial, because in that way the urbanist can focus on the maximum potential deriving from the area instead of mostly aiming at feasibility, which is the current practice of the troubled municipality in Delft.

The aim of this proposal was to connect the university campus to the city and therefore stimulating liveability, sustainability and economic prosperity. A short evaluation of these aspects will result in a conclusion of the created plan.

Liveability

By focusing on shared facilities and by creating around the clock activity in the area, a stronger cohesion between different user groups is created. Also social safety is increased in the public space. The spatial quality of the area, deriving from the water front and the outstanding architecture of the monumental buildings is brought back to a broad ensemble of inhabitants, students, professionals and tourists.

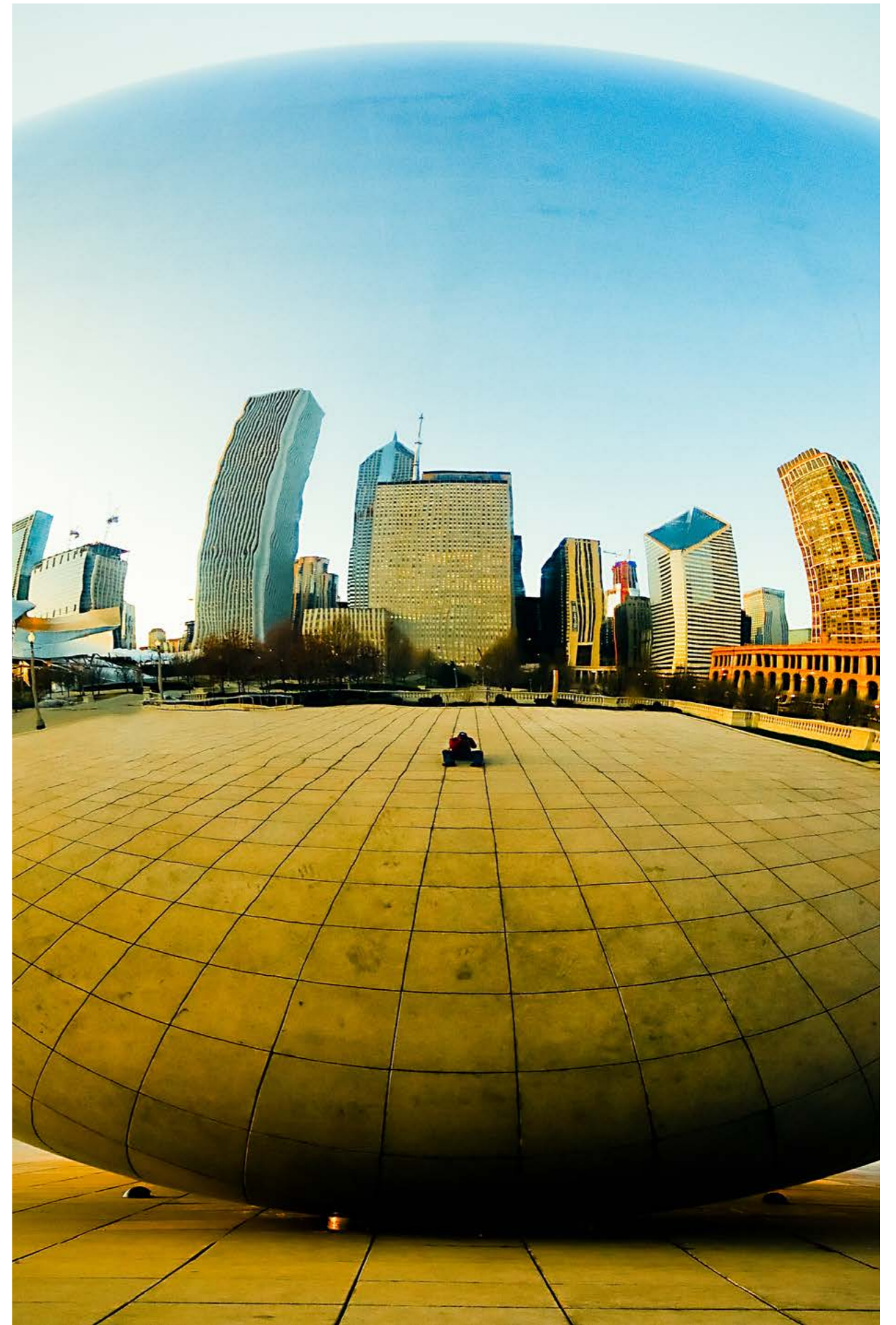
Sustainability

By mainly focusing on the water management problems of the area, the area now greatly contributes to a more durable Delft. By making these water solutions visible in the urban structure, they also contribute to the spatial quality, form natural barriers for less public spaces and most importantly raise awareness for the issues they address.

Economic prosperity

The creation of not only one building, but a complete ensemble of (start-up) business spaces and the high quality of the space connecting them, leads to a very welcome addition to the demanded knowledge economy of the city. Combined with the excellently connected location and the facilities nearby, this surely will lead to a very attractive business environment.

Reflection
A concise retrospective on the project



Reflection

With this chapter, I would like to reflect on my personal experience in this graduation project and what it meant for me. It all began in 2012. With two friends (with whom I later would run my company Pact11) I made a plan for the municipality to redevelop the waterfront at the Schie. It was enthusiastically received by the municipality alderman, but the real issue was brought up: they had no idea how they could start yet another large scale urban redevelopment. The issue of the disused waterfront was already a top priority in their policy documents, but funds were already lacking (currently they are almost bankrupt). This strategic question was the starting point for my project: I really wanted to enable the municipality to develop the waterfront with the help of the unique selection of local actors.

The waterfront development was a long time the leading theme in my graduation. However, after the P2, it started to dawn on me that this was not the most interesting theme. This was following the strong advice of my mentors and the urban planner from the municipality. It made the switch too late, and lost valuable time by holding on to it. However, when I finally focused on the real issue (the integration of the campus in the city) the progress ran much smoother. An important personal lesson considering self-reflection and the value of having a broad scope on your projects.

After the summer, I got the strong feedback that my design was falling behind. I had promised the detailed drawings much earlier before, but was still stuck in reading literature and thinking on the large scale. This resulted as well in a retake for the P4. However, I think that the project now really functions on multiple scales. The amount of details and their result on the spatial quality are a real proof of the importance of the large scale vision.

Concluding, I am very happy with the end result. Although the process was sometimes tough, I learned a great deal about keeping focus on end results and being objective about your own projects. If I look back at older products (P2 reports), I see a great difference in clarity and boldness. After finishing this project, I intend to offer it to the municipality. It will probably be presented in another form, the end vision less stubborn, but this project will be a great starting ground to effectively persuade them to be more open minded and more pro-active in creating new collaborations.

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At the end of this thesis, I would like to take the time to properly thank all the people who have been so supportive and helpful and enabled me to get to this point.

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