

MASTER

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a framework for meaningful participation in the context of self-organizing neighbourhoods

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MASTER THESIS

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A Framework for Meaningful
Participation in the Context of
Self-organizing Neighbourhoods

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28-02-2020

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EXECUTIVE SUMMARY

During the last 15 years, humanity as a whole has experienced the evolvement of a 'participatory culture'. One which advocates participation as a radical form of direct democracy and is demanding its implementation outside the traditional territory of institutional politics. This societal and political shift towards participation can also be identified in the fields of urban planning, urban design and architecture, where it is characterized by an upsurge of bottom-up approaches, often described as participatory urbanism. However, these participatory forms of urbanism are characterized by an often only temporary impact, usually on a small scale. The challenge faced in the fields of urban design and planning is finding successful ways in linking the emergent bottom-up forms of urbanism with more traditional forms of top-down planning in order to make participatory forms of urbanism have a more long lasting effect. This is especially challenging in the case of urban developments that are not build yet, as most of the literature about participation and urbanism is about transforming an existing urban environment, rather than creating a new urban environment.

This thesis investigates the concept of participation in the context of self-organizing neighbourhoods that are yet to be built. In doing so, the Brainport Smart District, located between Eindhoven and Helmond in the Netherlands, is used as a case study. The Brainport Smart District Foundation aims to create a suburban environment where new technologies are being developed, tested and used. In the development of this smart and sustainable neighbourhood there is a great emphasis on participation and self-organization of future residents. The residents play an important role in the design of their own living environment. The research done for this thesis was aimed at finding effective ways to successfully include future

residents in the design process of their living environment. A literature review on participation and self-organization shows that, in order for an effective inclusion of future residents, the focus in designing an urban development should move away from the desired end goal. Instead, it should revolve around the process of the design itself. Literature suggests that this process should be a collaboration between all different actors in the design of an urban development. In addition to this, the literature suggests that total self-organization of residents, meaning that they are responsible for every aspect of the design of their environment, is not possible. There is still a need for some amount of top-down planning.

In finding out what aspects of a design should be planned top-down and what could be left open for future residents to develop freely, a more practical research was conducted. This research consisted of a simulation of future residents developing a neighbourhood with different parameters of freedom and collaboration. This was done by designing, building and playing a large board-game, based on the principles of City Gaming. This is a collaborative and participatory design tool that was recently developed, which aims to bring together all different actors.

The results of the game, in addition with what was found in the literature review have resulted in guidelines for a physical framework that can be used in the design of self-organizing neighbourhoods with a high emphasis on participation. The results of the research done suggest that this framework should provide the basic infrastructure and public facilities. Especially those public facilities that enable residents to meet, discuss and collaborate with government officials and designers about their living environment. Implications for where to place these facilities and the design of the

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infrastructure were also identified. These outcomes were then used in a reflection on the existing masterplan for the case study of this thesis. It was found that this masterplan has some major issues in the way it is designed and can not successfully work as a framework for the self-organization of residents.

Based on the design implications of the research, this thesis proposes a different design for the framework of the Brainport Smart District. The framework consists of the design for the infrastructure of the neighbourhood, as well as the placement, design and contents of four hubs. These provide the public facilities mentioned before. Furthermore, the design proposal gives certain guidelines for the further development of the neighbourhood, that can now effectively be developed through processes of self-organization.

The design guidelines followed here, are not only applicable in the case of the Brainport Smart District, but can also be used in the design of other urban developments based on participation and self-organization.

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R E S E A R C H

1.1 INTRODUCTION

During the last 15 years, humanity as a whole has experienced the evolvement of a 'participatory culture'. One which advocates participation as a radical form of direct democracy and is demanding its implementation outside the traditional territory of institutional politics (Krivý & Kaminer, 2013). This 'participatory turn' is perfectly characterized in Barack Obama's re-election victory speech, in which he states:

"The role of citizen in our democracy does not end with your vote. America's never been about what can be done for us. It's about what can be done by us together through the hard and frustrating, but necessary work of self-government." (Obama, 2012)

The shift to a participatory culture is not limited to America, but is apparent all around the world. So, too, in the Netherlands, where, in his first speech as king, Willem-Alexander made an appeal to the Dutch inhabitants to take responsibility for their living environments and expressed the importance of a participatory society. Because local governments are getting more tasks with less finances in a world of increasingly complex and dynamic networks between the state, the market and society, participation is no longer an option, but a necessity (van Rooijen, 2015). Moreover, the idea that local, community-based participatory processes can help create solutions for the challenges of climate change, resource depletion, pollution, disease, and economic inequity in addition to technological solutions is getting more and more support (de la Peña, 2013).

This societal and political shift towards participation can also be identified in the fields of urban planning, urban design and architecture, where it is characterized by an upsurge of bottom-up approaches. Examples of these new approaches are DIY Urbanism, tactical urbanism,

guerrilla urbanism, emergent or post-modern urbanism, ephemeral or temporary urbanism and pop-up urbanism. These terms are often grouped under the common denominator of participatory urbanism (Brooke Wortham-Galvin, 2013) or urban activism (de la Peña, 2013). They are not all the same thing, but they do share some commonalities, which is why they are often grouped together like this. These commonalities are that they all refer to interventions within the urban realm that are, in one way or another, social, cultural, political and/or communal in nature. Moreover, they are all grassroots efforts, which means that they are initiated by individuals or groups of people within the local community. These kinds of interventions are not prompted by a higher authority, like the government, but are a result of needs and ambitions within the community (Miazzo, Kee, & Trancity (Organization), 2014).

The recent upsurge in participatory urbanism or urban activism is not only due to the increased attention for participation in society as a whole, but can also largely be explained as a dissatisfaction with traditional forms of urban planning and design and their ways of engaging the public. These traditional ways, since their origin in the 1800s, have resulted in an extensive, bulky and rigid system of city-making (Haydn, Temel, Arlt, Skogley, & Lindberg, 2006). The new forms of urbanism are a direct and opposite reaction to the old, traditional and institutionalized system and are usually cheap and temporary in nature. Furthermore, some of the aforementioned bottom-up approaches can even be described as having an air of anti-statism, with their activities being in the legal grey zone or even outright illegal (Brooke Wortham-Galvin, 2013; Krivý & Kaminer, 2013).

It may be clear that these purely bottom-up

approaches are not the solution, as they rarely have long lasting effects within the built environment and are usually only very small-scale (Stickells, 2011). Their existence, however, does show the demand for greater involvement of the public in the planning and development of the built environment (Miazzo et al., 2014). In other words, they show the need for greater and better implementation of systems of participation in shaping the built environment. The challenge, then, is in finding new ways in linking the emergent bottom-up approaches with the traditional top-down approaches in order to scale them up to the level of traditional urban planning and ensuring a more permanent level of effect.

This is especially interesting in the context of yet-to-be-built urban neighbourhoods, where the complete living environment of future residents is still to be developed. Because, as explained before, participatory or activist urbanism, often is the result of dissatisfaction with what there already is, with the existing built environment and the way it is being managed. In the case of neighbourhoods that are not yet built, however, there is nothing to react to yet. The idea is that greater forms of citizen participation, implemented during the first phases of a new development, can eventually lead to self-organizing neighbourhoods (Boonstra & Boelens, 2011). The question is, of course, how to successfully do this. A second aspect of interest in the case of self-organizing neighbourhoods, especially in urban developments that are built from scratch, is the balance between the level of more traditional top-down planning and the level of freedom for future residents. Should future residents be responsible for every aspect of the design of their neighbourhood, essentially giving them total control of the development? Should they have a high amount of freedom, only limited

by a simple set of rules? What are the things that should be planned or designed in a more top-down form of planning and what should be designed in more participatory forms of design? The two main research questions, central in this thesis, are as follows:

In what form should participatory processes be implemented in the development of yet-to-be-built, self-organizing neighbourhoods?

How much and what parts of the development should be planned and what should be left open for future residents to be developed through self-organization?

Possible answers to these questions have been found through a literature review on the subject of participation and self-organization in urban design. These are presented in the next paragraph of this chapter. The conclusions of the literature review are then tested and further explored through a more practical experiment based on one of the participatory tools found in literature that could prove itself useful in designing self-organizing developments. Followed by this, the results are discussed and linked with the findings of the literature review in order to come up with clear recommendations for self-organizing urban developments. These findings are then used in a critical reflection on the existing plans for the case study of this thesis. The Brainport Smart District (BSD) in Helmond. This is a highly ambitious new urban development that aims to become 'the smartest neighbourhood of the world' (Brainport Smart District, 2018). However, there are reasons to believe that these plans have some inherent flaws on the subject of participation and self-organization. A reinterpreted plan, based on the findings of this research is presented and discussed in the last few chapters of this thesis.

1.2 THEORETICAL FRAMEWORK

1.2.1 THE ORIGINS OF PARTICIPATION

The origins of civic participation in urbanism can be traced back to activism in the 1960s and 1970s (Mohammadi, 2010). The critique on modernist planning practices, by community activist Jane Jacobs and Henri Lefebvre, lead to a reform of urbanism (Stickells, 2011). This prompted professionals to become interested in more community-based design and resulted in the debut of formalized citizen participation in planning (Brooke Wortham-Galvin, 2013). While the underlying principles, those of engaging and enabling citizens, of citizen participation are intrinsically good (Day, 1997), misgivings in the actual practice of participation have existed ever since its arrival and still persist today (Innes & Booher, 2010; de la Peña, 2013). This resulted in participation being broadly accepted as necessary component of urban design. Designers, planners and politicians began to include participatory tools in projects merely out of ethical, or even legal, obligations, without knowledge and appreciation of their benefits and shortcomings (de la Peña, 2013). An example of this is the charrette, which is a participatory tool that became very popular among professionals shortly after the activism in the 1960s and 1970s. It is a term for a public meeting or workshop that is devoted to solve a problem or plan the design of something. But instead of doing this, it has become a way to achieve change in participants' perceptions and acceptance of a given, preconceived, design. The charrette is described by critics as a sales pitch coordinated by professionals, often masquerading as community-based design (Brooke Wortham-Galvin, 2013; de la Peña, 2013).

The values and strategies developed in the 1960s and 1970s have made a recurrence in contemporary social movements and urbanism

(Love, 2013; Stickells, 2011). This is illustrated by the upsurge of urban activism, as described in the introduction of this report. To learn how participatory processes can be successfully implemented during the design and realization of an urban development and to avoid mistakes in their implementation made in the past, it is important to first gain a better understanding of the concept of participation.

1.2.2 UNDERSTANDING PARTICIPATION

One of the most influential tools in envisioning the concept of citizen participation, is that of Sherry R. Arnstein. In her article "A Ladder of Participation", written in 1969, she criticizes the Model Cities Program's approach to participation. She poses that citizen participation is a categorical term for citizen power (Arnstein, 1969). She envisioned this as a ladder, shown in figure 1.1, with eight rungs. Starting on the bottom with manipulation, the most authoritarian mode. Then therapy, forming the degrees of nonparticipation together with manipulation. The rungs of informing, consultation and placation form the degrees of tokenism. Placation, partnership and citizen control are the only three rungs that Arnstein describes as degrees of citizen power, or participation.

This rather negative view of the first five rungs of the ladder, describing them as nonparticipation and tokenism, might be from the fact that in her article, Arnstein is critiquing the status quo of implemented forms of participation at the time. As such, the ladder only describes communicative actions occurring within the traditional decision-making system (de la Peña, 2013). Arnstein herself recognizes some of the limitations of her typology. The ladder is a simplification of the much more complex workings of participation: "In the real world of people and programs, there

might be 150 rungs with less sharp and pure distinctions among them" (Arnstein, 1969).

The reason, then, for including Arnstein's ladder in this report, is because of the widespread use of the ladder in other research and theory about participation. Numerous variations of Arnstein's ladder exist. One of these variations, that is of value for this research into participation and self-organization, is found in the work of David Scott de la Peña. In his dissertation "Experiments in Participatory Urbanism" he

introduces a revision of Arnstein's ladder. This reinterpreted version of the ladder of participation is one that is much more neutral (figure 1.2). The rungs are no longer numbered, indicating that total citizen control might not be the desired end goal of citizen participation, but rather one specific mode of participation (or citizen power). In de la Peña's revised ladder the categorization of the steps in the degrees of nonparticipation, tokenism and citizen power is also removed, thus taking away much of the negativity surrounding the bottom rungs, placed

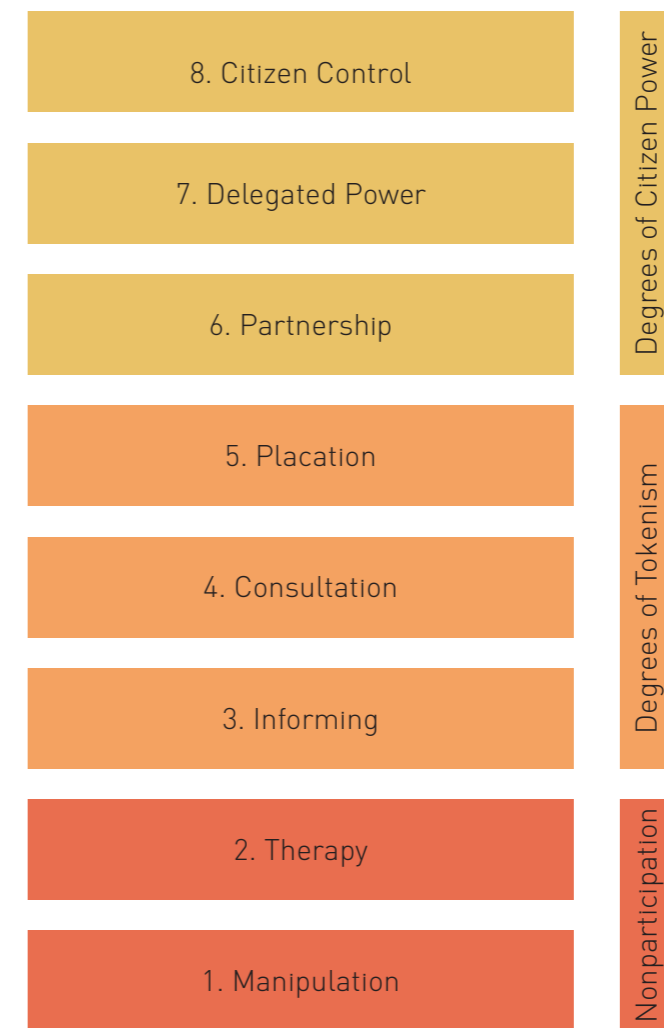


figure 1.1 Ladder of Citizen Participation (based on Arnstein, 1969)

upon them by Arnstein in her original version of the ladder. The rung of partnership is now placed in the more neutral middle ground of the ladder. In addition to the revised ladder of participation, de la Peña also introduces a second ladder. This is a ladder of action (figure 1.3). At the bottom of this ladder, the actions of closed and open dialogue are placed. These can be categorized as communicative actions. Then, through the use and claim of space, the ladder moves up to the management and construction of space, which can be categorized as material actions. The addition of this second ladder is useful, as it adds the dimension of the production of space to the dimension of power in Arnstein's original

ladder. These two ladders become especially useful when combining them together on two separate axes. This is exactly what de la Peña has done and in doing so, he created a matrix in which he was able to chart the ways that public space is produced in Barcelona, which was the location of the case studies in his research. An interpretation of this matrix can be seen in figure 1.4. It shows the various processes in which space is produced.

On one hand, there is the official process of urban design and development that goes hand in hand with the traditional process of citizen participation, which often do not do more than

inform and consult the public through public meetings and hearings (Krivý & Kaminer, 2013). These official, top-down processes are shown in the matrix as arrows that point down, indicating their top-down characteristics. By placing them in a matrix like this, de la Peña has highlighted the disconnect that exists between these two official processes. As explained in the introduction, the disconnection of these two processes and the resulting discontent of the public, has led to the emergence of bottom-up, grassroots forms of urbanism. These are shown in the matrix as arrows pointing upwards and can be categorized as unofficial processes of producing space.

Although this matrix is specific to the case of Barcelona, the various ways in which space is constructed, through official processes of urban design and planning and through more grassroots oriented processes, can be seen all around the world (Brooke Wortham-Galvin, 2013; Miazzo et al., 2014; Mohammadi, 2010; Talen, 2014). When looking at de la Peña's matrix, it can be observed that there exists a dichotomy between the official and unofficial processes of producing space. The existence of this dichotomy has already been discussed by many other researchers (Brownhill & Carpenter, 2007; Stickells, 2011; Tan, 2017), but by placing the various processes in a matrix, de

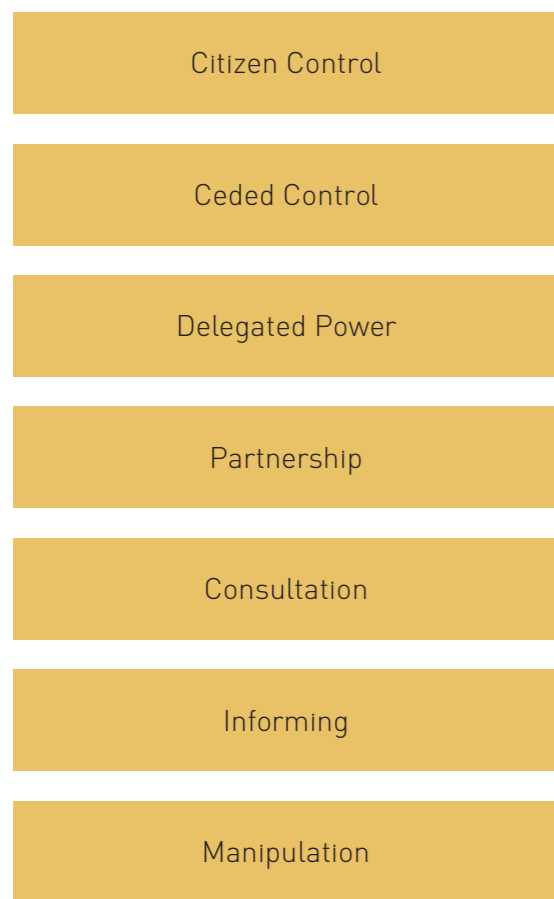


figure 1.2 Revised Ladder of Participation (based on de la Peña, 2013)

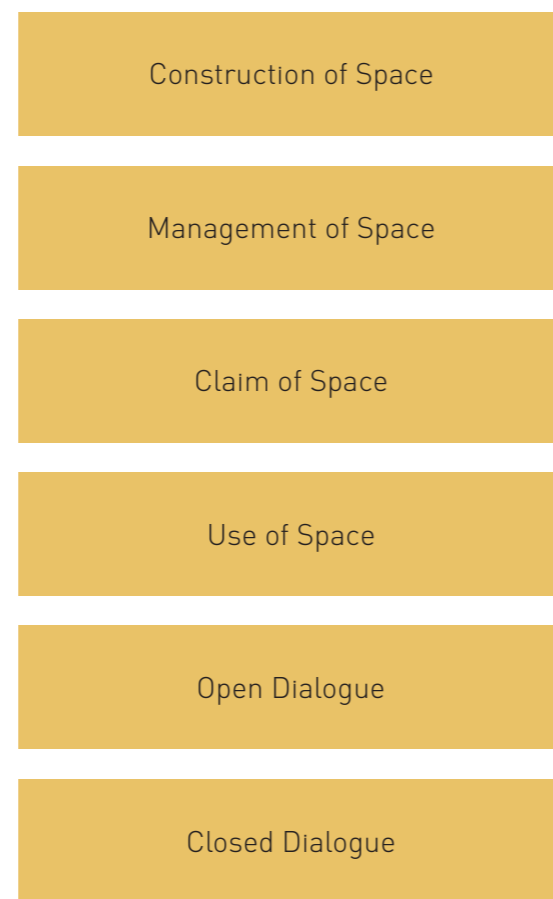


figure 1.3 Ladder of Communicative to Material Action (based on de la Peña, 2013)

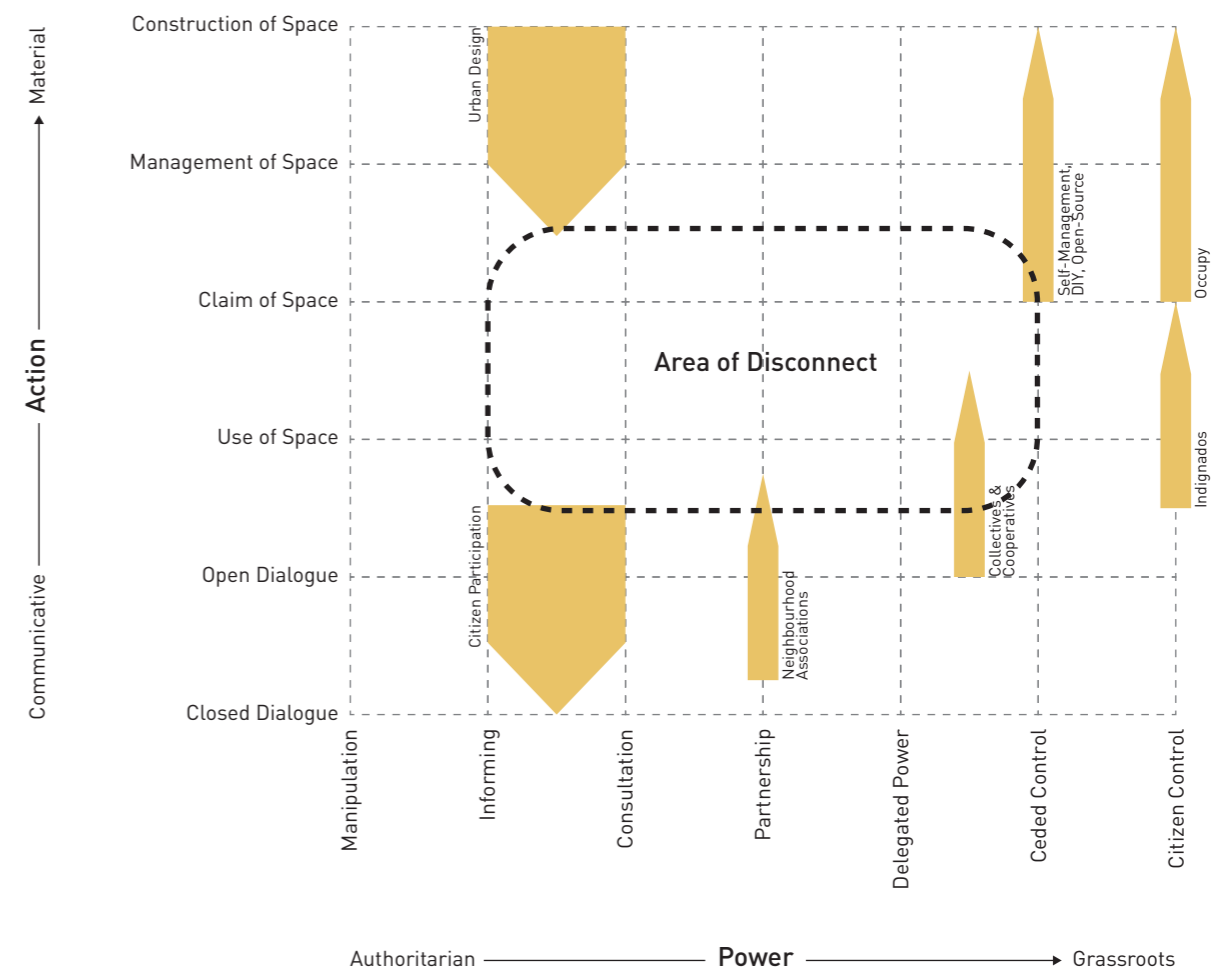


figure 1.4 Official and Unofficial Production of Public Space in Barcelona (based on de la Peña, 2013)

la Peña has revealed an area in which possible solutions to bring the top-down and the bottom-up together can be found, which is a common goal in other research about participatory forms of urbanism (Horelli, 2013; Miazzo et al., 2014; Tan, 2017). The area of disconnect is shown in the matrix with a thick dotted line. On the axis of action, the most obvious disconnect exists between the material construction of space and the more communicative actions of open and closed dialogue. On the axis of power, or participation, the disconnect exists between informing and consultation on one side and delegated power and ceded control on the other side, with partnership right in the middle. This is interesting, as it suggests that a partnership, between all actors in urban development, is the crucial link in linking official top-down processes with unofficial bottom-up processes.

1.2.3 A PROCESS OF COLLABORATION

The idea that partnership, or collaboration, between all parties involved in shaping the urban environment is crucial in achieving more meaningful forms of participation in urban design and planning is not new. It has just become more obvious through the recent debate and focus on participation (Horelli, 2013). For example, in 1997 Patsy Healy wrote about her views and ideas on collaborative planning as an answer to a globalizing world and the problems that cities were facing at the time. She stressed the need for planners to engage with actors in government, the private sector and non-governmental organizations in discussions about the role of planning in relation to the environment and cities (Healey, 1997). This importance of the collaboration between actors can also be seen in the work of Judith Innes, in which she contributed to communicative planning theory (Innes, 1995) and she believes that communicative

or collaborative planning is the best route to planning outcomes (Innes & Booher, 2010). In his research on participatory urbanism, de la Peña states that the terrain of participatory urbanism, in all cases, revolves around the relations between three sets of actors. The officials, the designers, and the citizens. He finds that the most promising results are found when these three sets of actors actively collaborate with each other, reinforcing the importance that Healy and Innes place on collaborative planning methods (de la Peña, 2013).

As mentioned before, the idea of collaboration in planning has regained much attention in recent years. Especially within the context of the designing of smart cities, whereas the design of a smart city simply cannot be done by a single design team, but should be the collaboration of designers, politicians, policymakers and scientists (van Waart, Visser, & Harbers, 2015). A model that clarifies this system was introduced by Carayannis & Campbell (2009) and is called the quadruple helix model. It is based on the triple helix model (Leydesdorff, 2011), which includes academia, industry and government and has been used to study the collaboration of these three parties in the context of innovation sciences. In the quadruple helix model, however, a fourth party is added. This fourth party consists of civil society (see figure 1.5). With this addition, the model becomes useful for the purpose of this research, as it is now within the territory of civic participation and is directly aimed at the designing of smart cities.

With this many different actors involved in the design of urban developments, the challenge lies in how to bring all actors together, while they all have different opinions, interests and concerns that could conflict with one another (van Waart et al., 2015). Various studies suggest that the

existing approach in urban design and planning are not suited to cope with this challenge. It is simply too complex (Boonstra & Boelens, 2011; Loorbach, 2007; Tan, 2017). For this reason, the debate on participation in urban design seems to focus on creating new process-based approaches that aim to establish a fruitful collaboration between the multitude of actors required for these forms of urban design. Examples of proposals for new participatory techniques are design jams, hackatons (van Waart et al., 2015) and city-gaming (Tan, 2017). Terms that are more generally used are co-design, co-creation, urban living labs, etc. What this makes clear, is that for meaningful participation in the process of

designing an urban development, a collaboration between all actors is a critical requirement and should in fact revolve around this process, instead of the final end-result (Miazzo et al., 2014). With this shift to a more collaborative, process-based design method, many researches believe that the role of the designer also shifts with it. Some say it will be more and more the facilitation of design by stakeholders, instead of designing with or for them (Lee, 2008; Sanders & Stappers, 2008). A side note that must be placed here, is that this is predominantly the case in projects with a heavy emphasis and value for participation and self-organization. Traditional forms of urbanism are of incredible importance

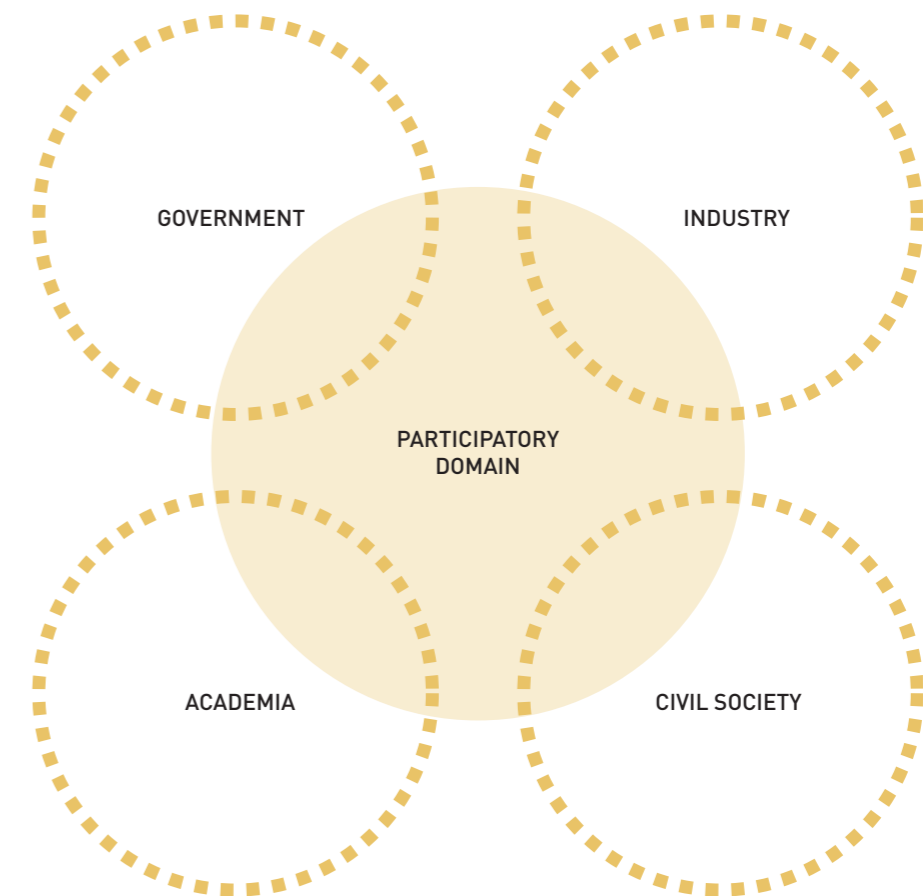


figure 1.5 The Quadruple Helix Model (based on van waart et al., 2015)

for basic necessities and amenities for cities and their people, and shouldn't be completely replaced by more participatory oriented forms. Rather, they should co-exist next to each other (Miazzo et al., 2014).

1.2.4 THE CASE OF OOSTERWOLD

One case that is of high value for this research is that of Almere Oosterwold. An experimental large-scale development in the Netherlands. Its design, or lack thereof, is based on the principles of city-gaming, one of the previously mentioned participatory tools that brings actors together to collaborate (Tan, 2017). Moreover, in the development of Oosterwold, (future) residents and their initiatives play an important role in the realization, as they have to do all of it themselves, making it an experiment in urban self-organization. There is no masterplan, no zoning map, but only a limited number of so-called 'framework-rules' (Cozzolino, Buitelaar, Moroni, & Sorel, 2017), which were tested by possible future residents, government officials and other stakeholders before the start of the project in various 'game sessions' (Tan, 2017).

These rules are generic, do not refer to specific situations or plots, but apply to the whole development area. They apply to four different issues. The choice and spatial layout of plots, permitted uses, the floor area ratio and the self-reliance of plots, which meant that plots had to be sustainable and completely self-sufficient. (Cozzolino et al., 2017). The application of a framework with such limited rules resulted in an extreme level of freedom for future residents of the area. The development of Oosterwold is presented as a collective and sustainable dream with plenty room for self-building and personal initiatives for the people living there (Maak Oosterwold, 2019). On the smaller scale, that of

the individual plots, the concept of extreme levels of self-organization and freedom in Oosterwold has produced a multitude of interesting and innovative initiatives. For example, two divorced parents have built their separate houses, connected by rooms for their children in between them (van der Molen, 2019) Or a supermarket that, as is mandatory for every development in Oosterwold, is also going to produce their own food on their plot (Omroep Flevoland, 2020). On the larger scale, however, results of this concept are far less promising. There is not much of the promised collectivity to be found. There is no sense of community whatsoever. Communal services are nowhere to be found. There are no parks, no play-gardens, no schools, no public transport and no places to meet others (Mostert, 2019). This is because residents are not only responsible for the building of their own homes, but also for everything else. Also the activities that were previously done by the government or utility companies in more traditional developments. The building and maintenance of roads, water treatment, sewerage, the collection of waste, etc. are all the responsibility of residents (van der Molen, 2019).

This has posed the residents of Oosterwold with immense challenges that they simply can not cope with themselves. The existence of these challenges were already identified in research on the framework rules used in the development of Oosterwold before the first buildings were being built (Cozzolino et al., 2017). And although knowledge of possible challenges was already available, they were still encountered in the actual development of Oosterwold. In many cases, the government had to step in to solve problems like the collection of waste and sewage, as the self-management by residents just didn't work. The building and maintenance of roads by residents has proven to be especially

problematic. This responsibility was placed on the residents as a collective responsibility at the start of the development. This resulted in the formation of different groups of residents, called 'kavelwegverenigingen', responsible for different roads. They can be interpreted as mini-governments providing in public goods for the area (van Straalen, Witte, & Buitelaar, 2017). This task, however, asks a lot of knowledge, time and negotiation skills of the residents and has resulted in a lot of discussion between residents (van der Molen, 2019). In this case, too, the government had to impose new rules for the building of roads in order to keep everything safe and accessible (van Straalen et al., 2017)

The fact that the government had to step in, is a clear indication that total self-organization does not work. Some critics even say the experiment of Oosterwold is a failure and that pure self-organization is not possible in the Netherlands. (van Straalen et al., 2017). This reinforces de la Peña's idea that the most promising forms of participation are not found at the top of Arnstein's ladder of participation, which is total citizen control (de la Peña, 2013). Although the first framework of rules for Oosterwold was created in a collaboration between the government and future residents, this collaboration ended after choosing the rules for the final framework. This indicates that collaboration is required in a much longer time-frame. This is supported in the findings of Krueger, Tuler, & Webler (2001), who have researched what a good participation process should be. They also found that the best participatory processes have built-in flexibility, as a participatory process is always a learning experience. The development of Oosterwold was an experimental process, with inherent trial and error (van Straalen et al., 2017) and as such, it might have benefited from a longer, more flexible collaboration between actors.

In addition to the importance of a prolonged and flexible process of collaboration, this investigation into the development of Oosterwold also implicates the need of a well designed physical framework. It shows that residents can't be held responsible for every element of a neighbourhood that is traditionally provided for by the government. Most obvious here is the infrastructure. Roads, sewage systems etc. simply can't be designed, built and maintained by residents.

Another important aspect that should be designed within a physical framework are public spaces for residents to meet, discuss and collaborate. Oosterwold shows that, even though people technically have the opportunity to build those, in reality they can't or won't build them.

1.2.5 TOWARDS A FRAMEWORK

In finding possible guidelines for the design of a physical framework, the work of Mehaffy, Porta, Rofè, & Salingaros has provided some interesting insights. In their article "Urban Nuclei and the geometry of streets: the 'emergent neighbourhoods' model", the authors propose a model for the development of neighbourhoods that is based on a measurement of 400 meters between urban nuclei, the cores of neighbourhoods, and thoroughfares, or main streets, connecting them. Figure 1.6 shows the model as it was proposed by Mehaffy et al. It will be further explained in the remainder of this paragraph.

In their research, which was aimed at finding out if there exists a proper location of the non-residential core, the nucleus of a neighbourhood, in relation to thoroughfares, Mehaffy et al. have found that the urban nuclei should be located in close proximity to main thoroughfares and that these thoroughfares should be conceived as a network of main streets based on the aforementioned 400-meter-rule. Urban nuclei should be located directly on this network to ensure the best potential for retail and services to grow and to serve urban communities, also in the future. The authors of this article have based their findings on the observations of cities and their urban fabrics that are both 'spontaneous' and 'planned'. They found that the distance

of 400 meters between main thoroughfares appears in all cases, due to the logics of pedestrian movement and social activity. Even in cities that are planned with a different base measurement, they find that, through processes of self-organization and evolution in time, the end-result always resembles the distance of 400 meters between central streets. The distance of 400 meters is an interesting one, as it is often used as an acceptable, walkable, distance to public transport in other research (Daniels & Mulley, 2013) and is broadly accepted worldwide as a measurement of walkability (Azmi & Karim, 2012).

To further clarify the proposed model of Mehaffy et al., the various layers of the model and the way that they form the concept together are presented in figure 1.7 to figure 1.12. The main structuring principles of the model consist of thoroughfares (figure.17) and the urban nuclei (figure 1.8). Intersections of thoroughfares are spaced 400 meters apart. Thoroughfares, in this case, are not meant as expressways, but as streets that provide both movement and access. This means that they are actively traffic-calmed at the locations of the nuclei. This is indicated in the drawings by a thicker dotted line. The nuclei are placed on these intersections and, according to the findings of Mehaffy et al., should contain the highest density of each function (commercial, residential, etc.). They should contain facilities that include mixed-use services and provide access to transit. The idea that facilities providing services should be placed in the center, or nucleus, of a neighbourhood is strengthened by other researchers, who found that community facilities can best be placed there in order for them to be most successful (Azmi & Karim, 2012). Figure 1.9 shows the pedestrian sheds as dotted red circles. They can be interpreted as the 'service area' of an urban nucleus. In the model

they have a radius of 200 meters, but certain functions could have a larger pedestrian shed. For example, access to regional public transport usually has a larger pedestrian shed, as people are willing to walk further to a train station. This distance is 1000 meters according to the CROW (2004) In the case of this model, Mehaffy et al. propose a larger pedestrian shed with a radius of 400 meters around train stations. These are, however, not shown in the figures, as this is an abstraction.

The spaces between thoroughfares and the urban nuclei are called 'sanctuary areas' by Mehaffy et al. These are spaces that are protected from the through movement of the larger streets and the busier, mixed-use centers that are the nuclei. They are predominantly residential areas and are formed by processes of self-organization through time. This is shown in figure 1.11 as different layers that overlap, forming denser and less dense areas that essentially form neighbourhoods, together with the local main roads shown in figure 1.10. Figure 1.12 show the addition of smaller services or local retail. These can be interpreted as spill-overs of the urban nuclei, or as activities that thrive in the quieter character of the sanctuary areas. According to Mehaffy et. al, the formation and change of the neighbourhoods is too complex to be shaped by top-down spatial design. This idea is reflected in many other research (Tan, 2017).

Mehaffy et al., much like the researchers discussed before, also propose a shift in the role of urban designers. If neighbourhoods are indeed too complex to shape, what is left to design? Mehaffy et al. believe that the answer to this question is the design and location of main thoroughfares, urban nuclei, pedestrian sheds and their resulting sanctuary areas.

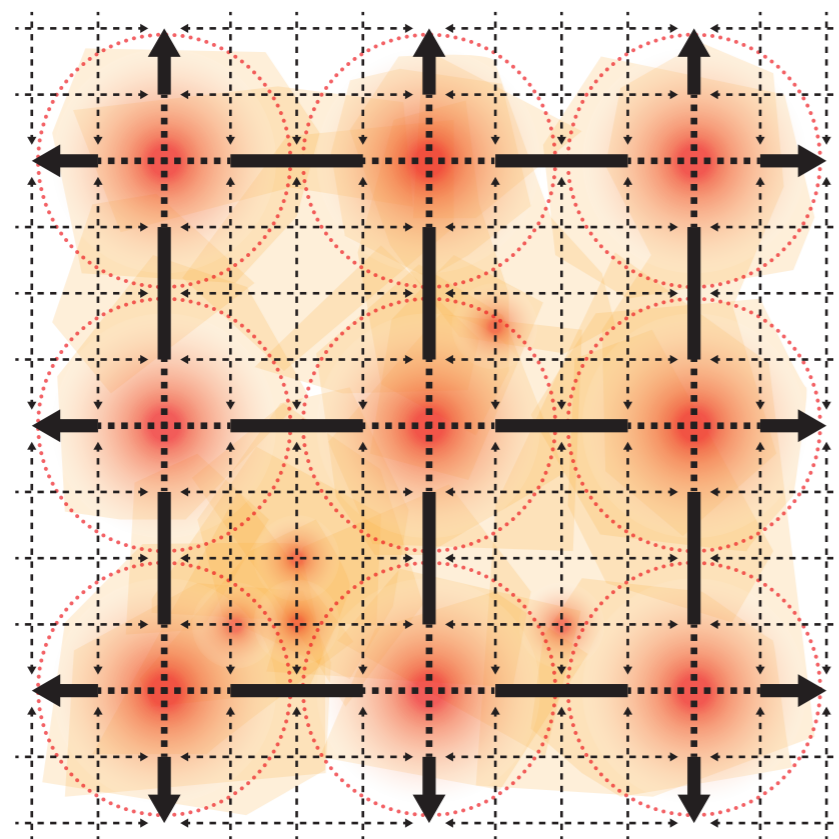


figure 1.6 The Emergent Neighbourhood Model (based on Mehaffy et al., 2010)

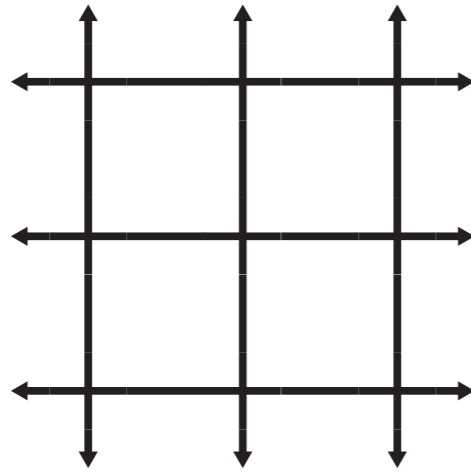


figure 1.7 Thoroughfares
(based on Mehaffy et al., 2010)

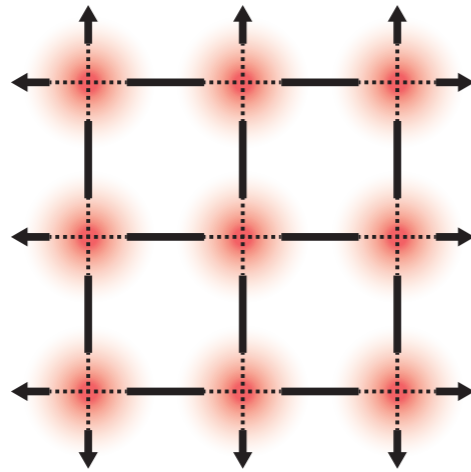


figure 1.8 Urban Nuclei
(based on Mehaffy et al., 2010)

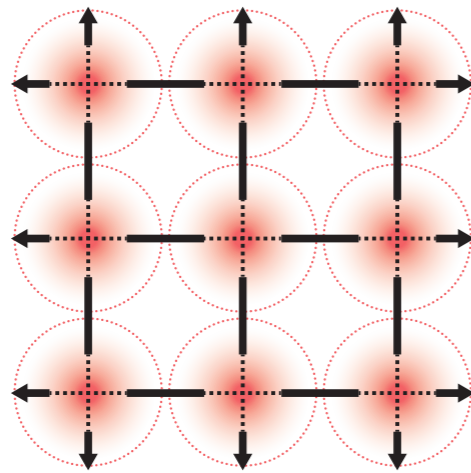


figure 1.9 Pedestrian Sheds
(based on Mehaffy et al., 2010)

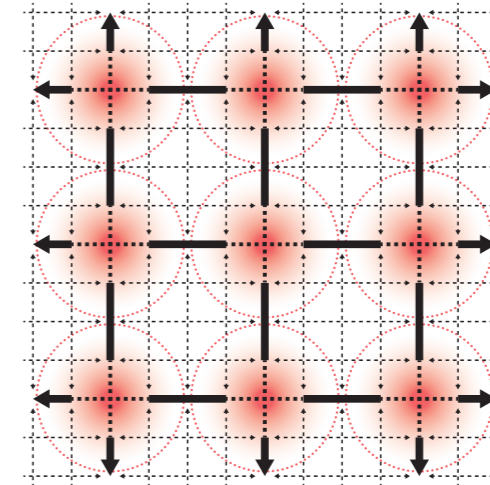


figure 1.10 Local Main Roads
(based on Mehaffy et al., 2010)

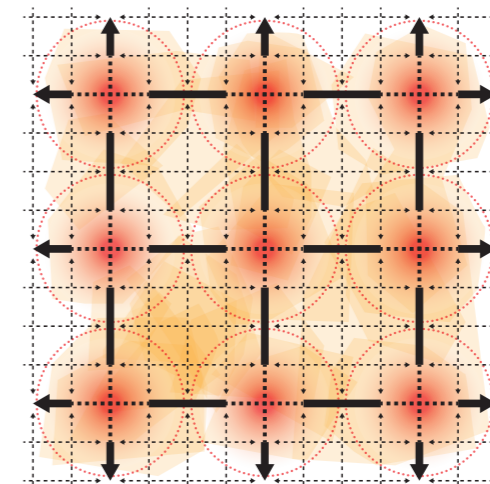


figure 1.11 Neighbourhood Development
(based on Mehaffy et al., 2010)

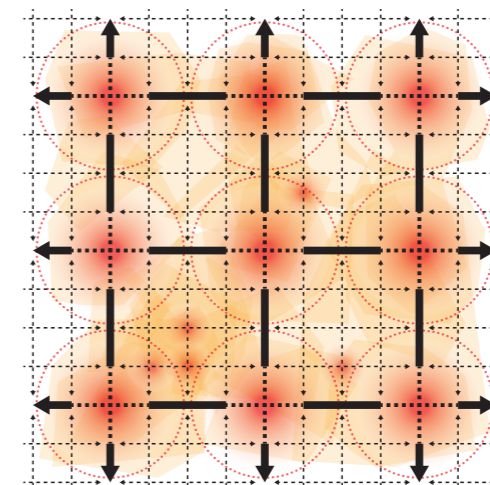


figure 1.12 Local Foci
(based on Mehaffy et al., 2010)

1.3 DESIGN IMPLICATIONS

The conclusions from the literature review, given in the form of design implications in figure 1.13, can be divided into two categories. The process on one hand, and the physical framework, required to make this process work on the other hand. Whereas the literature about participation and the inclusion of citizens in the design of their living environment shows that a collaboration between actors is a key requirement, the analysis of Oosterwold shows that collaboration during the design phase of a new development on itself is not enough.

From the literature review on participation it can be concluded that, for meaningful participation, an active collaboration between all actors involved is required. This process should, to avoid it becoming a means of achieving predetermined goals of designers or officials, not be aimed at the final end product, but instead focus on allowing everyone to be heard and have a say in the outcome of the process. Therefore, the process itself should be flexible. It must be able to adapt to changing needs and wishes of participants. Moreover, the collaboration should not only happen at the initial phases of a development, but should be implemented during a more prolonged period of time.

From the investigation into the application of a collaborative process on a self-organizing neighbourhood, Oosterwold, it can be concluded that merely making different parties work together during the initial phases of a new urban development, is not enough to achieve successful self-organizing neighbourhoods. The outcomes of the experiment done in Oosterwold, indicate that there is still a need for top-down planning, even in urban developments that are essentially self-organizing. It shows that, although on a plot-level interesting and innovative things are being done by residents, on a larger scale, residents are not

able to cope with challenges that are traditionally resolved by top-down planning. It indicates that there is a need for a physical framework in which the process of collaboration can work at its best. This framework should provide, in addition to the infrastructure, public places for people to meet, discuss and collaborate, but should also leave enough freedom for future residents. In short, the framework should concern itself with the public realm and leave possibilities for innovative initiatives on the level of individual plots.

The research of Maheffy et al. gives possible implications for the form this physical framework might take. It provides guidelines for the location and distance between so called urban nuclei, which are essentially centers of their respective neighbourhood in which the aforementioned places for meeting and collaborating can be placed. Furthermore, it gives ideas about the placement and design of the roads connecting the nuclei, in order to achieve the best results.

In the next chapter, these design implications will be further investigated. This is done through a more practical research, based on the concept of City Gaming, which was also used in the design of Oosterwold. The idea that collaboration leads to better results will be tested aswell as the idea that the top-down planning of infrastructure and centers could lead to more successful forms of self-organization.



FLEXIBLE
COLLABORATIVE

PROCESS

&

FRAMEWORK

INFRASTRUCTURE
PUBLIC FACILITIES



figure 1.13 Design Implications

2 .

C I T Y G A M E

2.1 METHODOLOGY

2.1.1 INTRODUCING THE CONCEPT

One of the more recent ideas on how cities could be planned and designed, through collaborative processes to form a link between top-down and bottom-up city-making, is that of Ekim Tan. This was already briefly discussed in the previous chapter and will be further explored here. In 2017, *Play the City - Games Informing the Urban Development*, written by Tan, was published. It poses a new approach that does not replace the traditional powers (governments, planning institutions etc.) with new ones. It aims to bring together the traditional ways of making cities with the newly emerging bottom-up approaches. She states that, in order to work within the complex urban systems of today with a multitude of urban actors, new approaches should:

"Synthesize social, economic, environmental, cultural, and political dynamics shaping the city. Include a multiplicity of urban players to incorporate society in all its complexity. Allow for smooth, jargon-free trans-disciplinary work between diverse urban actors. Assess urban patterns and rules by applying the intelligence and experiences of real human players. And reveal existing rules and observe their evolution, propose new rules, or generate others for particular urban situations in order to re-make the city" (Tan, 2017, p.8-9).

According to Tan, one of these new approaches could be the concept of city gaming. As game systems inherently support self-organization, she states that they can be used to support self-organizing urban development.

In short, City Gaming is a new way of thinking about cities and ways of reshaping it. One in which all players within the city-making process, ranging from (future) residents to designers, planners and policy makers, are brought

together through playing a game together. The characteristics of a game, with rules being fixed and easy to comprehend, could provide easier access to complex dynamics of the rule-based system of city-making.

With the goal of this research in mind, to find out how participatory processes can be successfully implemented in the design of newly built, self-organizing neighbourhoods and how much of these neighbourhoods should be planned either top-down or bottom-up, it is useful to investigate the concept of city gaming in further detail. This is done through designing and playing a city game, based on Tans concept. The next paragraphs will explain in further detail how this is done. First, some more background information on the location of the case study, which is the context of the game, is given.

2.1.2 GAME CONTEXT

As mentioned above, the game is designed in the context of a newly built, or to be built, self-organizing neighbourhood. To further define this and place it in the real world, in the context of the new Brainport extension, the Brainport Smart District (BSD), in Helmond. This new urban development is formed by a partnership between the Brainport Development, the Eindhoven University of Technology, the Tilburg University, the municipality of Helmond and the Province of Noord-Brabant. The BSD aims to become a smart living and working district in which the urban environment is designed with high values for transport, health, energy generation and storage and circular building technologies. And, the most important reason for placing the game in this context, (future) residents play an important role in designing their own living environment (Brainport Smart District, 2019).

The first steps in realizing this urban development have already been taken. Programme lines with the above mentioned values in mind have been devised. Based on these, the BSD has asked UNStudio to make an urban vision (UNStudio, 2018), which can be seen in figure 3.1. In this urban vision, the neighbourhood consists of a built area formed around a centrally located park. Between this built area, the railroad in the south and the road in the north, there will be a productive green landscape. This means that these are areas for the sustainable production of energy and food. The road network that is drawn in this urban vision consists of the existing roads in the area. These are recognizable in the drawing

as the roads that do not follow the envisioned grid structure. Part of this road structure, that cuts through the central park, is envisioned as a 'smart link'. It is meant to be used as a sort of testing ground for new forms of (smart) mobility. Through the built area, a ring road is proposed, that connects to the existing road structure. This road is called the 'service loop'. The rest of the road network, roads that connect from the ring road into the built area, are completely flexible in where they are going to be placed. Also, in this drawing, the built area is just an option of what might be built, as this is going to be designed together with future residents (Brainport Smart District, 2019).



figure 2.1 The Urban Vision for the BSD (based on Felixx, n.d.)

2.1.3 BUILDING THE CITY GAME

With a clear context in which to place the city game, the game can be designed. When building a City Game, Ekim Tan has identified 7 important steps that are to be followed in order to create the game. These steps are:

1. *Define the challenge*
2. *Engage your stakeholder network*
3. *Identify relevant data*
4. *Identify available resources*
5. *Design the game rules and conditions*
6. *Build the game interface*
7. *Play and record the game sessions*

In the next parts of this paragraph, the different design choices made in building the game will be clarified. The structure of the 7 steps is followed here.

Define the challenge

This first step provides the basis for the game and will shape the direction of all other subsequent steps. Thus it is very important that the challenge, or goal of the game, is clearly defined. It should provide constraints and gear collaborations towards meaningful outcomes. Within the context of the BSD, where future residents are going to (co)design their own living environment, the most obvious goal for the game is to gain a better understanding of the workings of collaborative design processes in general. On a less general level, there are two goals that this research through gaming aims to achieve, based on the outcomes of the literature study in the first chapter of this thesis. The first, on the level of the process, is to find if a higher level of collaboration between future residents does indeed lead to better, more creative design solutions. The second, on a more physical level,

is to find out what influence the level of top-down planning has on collaborative design. Should it be completely open? Or should there already be a preconceived plan available on the playing field like the findings of the literature study suggest? In answering these questions, the game was designed with four different frameworks, or playing fields. These are the individual unplanned framework, the individual planned framework, the collaborative unplanned framework and the collaborative planned framework. This resulted in a game with 4 'levels'. The hope was that the different results, after playing the game, of these 4 levels and their comparison could provide useful insights in planning for urban developments that are based on collaboration between stakeholders and self-organization.

Engage your stakeholder network

With the previously mentioned goals of the game, it may come as no surprise that the most important stakeholders in this game are the future residents and the planners of the area. There is of course a much larger stakeholder network, consisting of housing corporations, entrepreneurs, investment companies etc., but to keep the game simple enough to be played in a short amount of time, the decision was made to only incorporate the two most important stakeholders. Since there was no possible way to play the game with the real future residents and planners of the BSD, it was decided that these had to be simulated somehow. The choice was made to play the game with students at the Technical University in Eindhoven, who played the role of future residents. The role of planners was mostly built-in to the game in its rule system and level of planning on the playing field.

Identify relevant data and available resources

This step in Tans theory is about translating data

into physical maps and props. For the design of this game, that meant a playing field that resembled the context of the BSD. The decision was made to use the spatial setup of the urban vision for the BSD for this. The theoretical neighbourhood of the game is based on a section out of the urban vision. It had green areas on the outer edges, to resemble the park and the production landscape and a road through the middle, to resemble the ring road (or service loop). The remaining areas were the areas where future residents could build their homes. Physical props that were designed for the game consisted of blocks that represented these homes, supplemented with blocks for communal facilities, shops, green, streets and blocks without a predetermined function on which people could write down what they wanted to build if there was no block with their idea available. All blocks were available for players of the game in a range of different shapes and sizes. Depending on which playing field (framework) players were playing the game, they could build with all or some of these blocks in a specific order.

Design the game rules and conditions

Simple and clear rules were devised. People played the game according to four different sets of rules belonging to the respective framework. A table with all of the rules can be seen on the next page (table 2.1).

Build the game interface

During this step in building a City Game, all previous steps come together in one place. In the case of this game it was a large table that consisted of four parts; the four frameworks. The rules for playing the game were built into the table, as well as compartments for all the props necessary for playing the game.

Play and record the game sessions

To later interpret the results of the game

effectively, pictures of the whole playing field were made after each round. These pictures showed the growth of the neighbourhoods with each incremental step. Notes of interesting comments from players or significant moments during the game were also made.

| Step | Individual Unplanned | Individual Planned | Collaborative Free | Collaborative Planned |
|------|--|--|--|--|
| 1 | The game is played with four participants each time. There is space for 20 groups of four participants. | The game is played with four participants each time. There is space for 20 groups of four participants. | The game is played with four participants each time. There is space for 20 groups of four participants. | The game is played with four participants each time. There is space for 20 groups of four participants. |
| 2 | Determine who of the four goes first. The game is played individual, after each other. | Determine who of the four goes first. The game is played individual, after each other. | The group of four participants choose one of the group plots to build. They build this plot together. | The group of four participants choose one of the group plots to build. They build this plot together. |
| 3 | The participants places a plot and a house on the plot, on a location that's free. | The participants places a plot and a house on the plot, on a location that's free. | The group plot is built with all four participants together. There needs to be place for all four participants to live. The group can also include public facilities in the plot. | The group plot is built with all four participants together. There needs to be place for all four participants to live. The group can also include public facilities in the plot. |
| 4 | When the plots are not connected with the infrastructure, connect them using the road blocks. | The plots should connect to the existing infrastructure. There is no possibility to build extra infrastructure. | When the plot is not connected with the infrastructure, connect it using the road blocks. | The plot should connect to the existing infrastructure. There is no possibility to build extra infrastructure. |
| 5 | When all participants have built their homes, they have the possibility to design public facilities or space with each other. They are free to use all other building blocks for this. They can also use sketch materials and pens to better explain the idea behind this public facility or space. The participants explain why they build their homes and public facility/space on this location. The blocks are now fixed and stay in the model. | When all participants have built their homes, they have the possibility to design public facilities or space with each other. They are free to use all other building blocks for this. They can also use sketch materials and pens to better explain the idea behind this public facility or space. The participants explain why they build their homes and public facility/space on this location. The blocks are now fixed and stay in the model. | When all participants have built their homes, they have the possibility to design public facilities or space with each other. They are free to use all other building blocks for this. They can also use sketch materials and pens to better explain the idea behind this public facility or space. The participants explain why they build their homes and public facility/space on this location. The blocks are now fixed and stay in the model. | When all participants have built their homes, they have the possibility to design public facilities or space with each other. They are free to use all other building blocks for this. They can also use sketch materials and pens to better explain the idea behind this public facility or space. The participants explain why they build their homes and public facility/space on this location. The blocks are now fixed and stay in the model. |

table 2.1. Rules for the City Game

2.1.4 THE RESULTING GAME

The resulting City Game consisted of a large table of approximately 2 by 2 meters, with 4 models inspired by the spatial form of the urban vision for the BSD. The scale of these models is 1:200. This scale is large enough to form a whole neighbourhood and small enough for participants to distinguish between building types. The basic form of this model is the one seen in the individual unplanned framework (figure 2.2). With green strips on two sides and a road through the middle. Alterations to this base model formed the models for the other three frameworks. Both collaborative frameworks (figure 2.3 and 2.5) have added group plots, within which participants were asked to codesign their own homes. This way the collaborative process of codesign was simulated in the game. The individual frameworks (figure 2.2 and 2.4) simulated a non-collaborative process, where only communal buildings, shops or other additions to the individual planned homes were allowed to be decided upon collectively. The addition of the planned frameworks (figure 2.4 and 2.5) to the base model is a preconceived road network with the addition of a planned center along the central road. In these frameworks, participants were not allowed to build roads, like they were in the unplanned frameworks. The fourth framework was a combination of both the collaborative and the planned framework. This meant they had to choose group plots within the context of a neighbourhood with pre-planned roads and amenities. It is called the planned collaborative framework (figure 2.5). Along the edges of the models were compartments with all game props used to fill up the playing field. The rules for every framework were also located along these outer edges of the table. The whole table was designed in such a way that it could be reused. The models can easily be taken out

and replaced by others. This way the table can be used time and time again for different games, with other goals and other contexts. Pictures of the game table can be seen on the following pages. These pictures were taken during the playing of the game, the results of which will be presented and discussed in the following chapters of this paper

2.1.5 PLAYING THE CITY GAME

The game was played during the End of the Year Event for urbanism students and professors on the TU/e. It was held just before the summer holidays and it is organized by the faculty for urbanism. During this day, people can visit lectures and follow workshops, all in the field of urbanism. Students also presented their designs made for projects during their studies at the university.

The game was located near the main entrance hall to this event, where people were being welcomed and had a cup of coffee. This was a good opportunity for finding participants to play the game. During breaks, before and after lectures and presentations, people were invited to play. The day was fairly successful and the board slowly got filled up by participants. Pictures of what this looked like can be seen on page 28-33. During the day, there were enough participants for 5 full rounds of the City Game. This means that 20 participants in total have played the game. Each one of the frameworks has been played 5 times, by 5 different groups of 4 participants. Of course, it would have been preferable if there would have been more participants, but these results, with a somewhat limited group of participants, already show interesting patterns and can answer the questions posed in the previous paragraph.

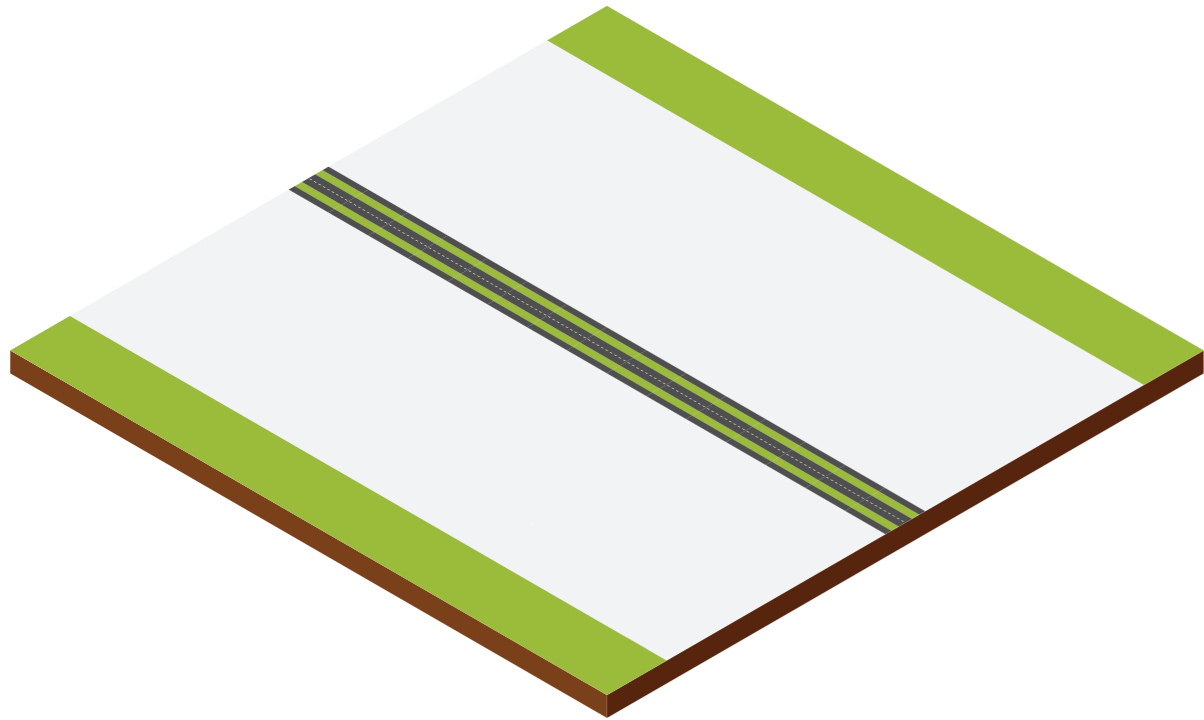


figure 2.2 Game Design - The Unplanned Individual Framework

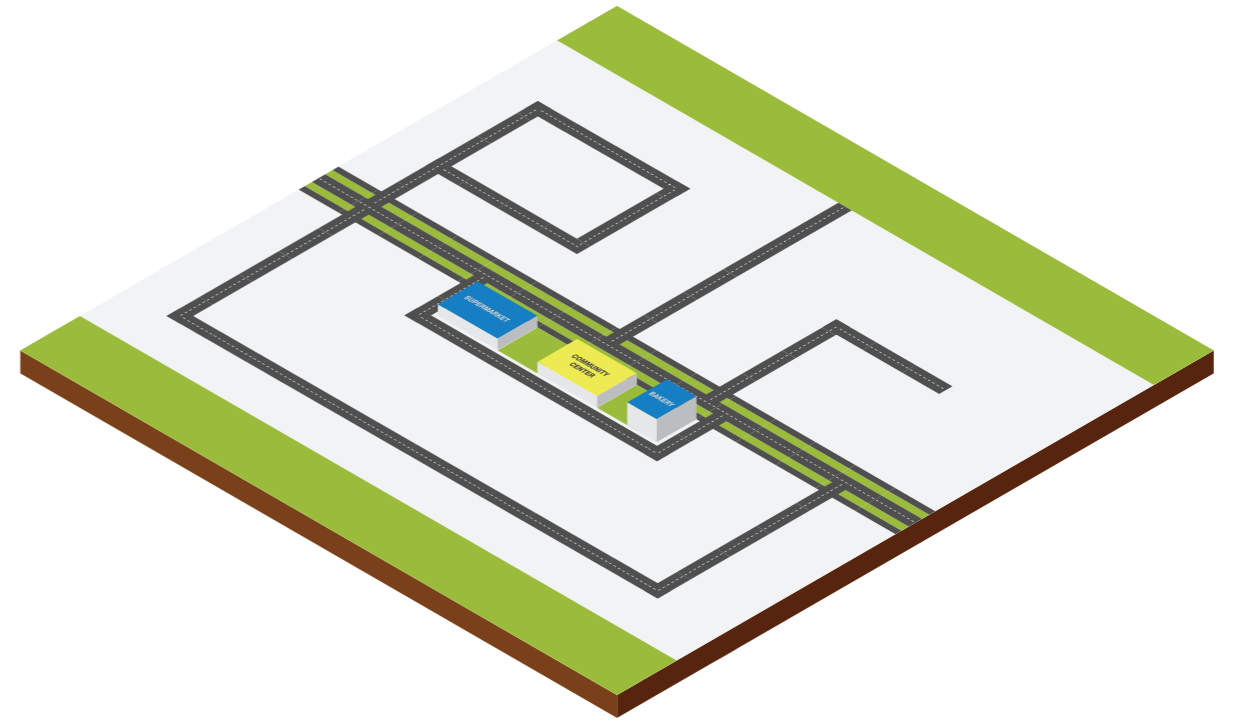


figure 2.4 Game Design - The Planned Individual Framework

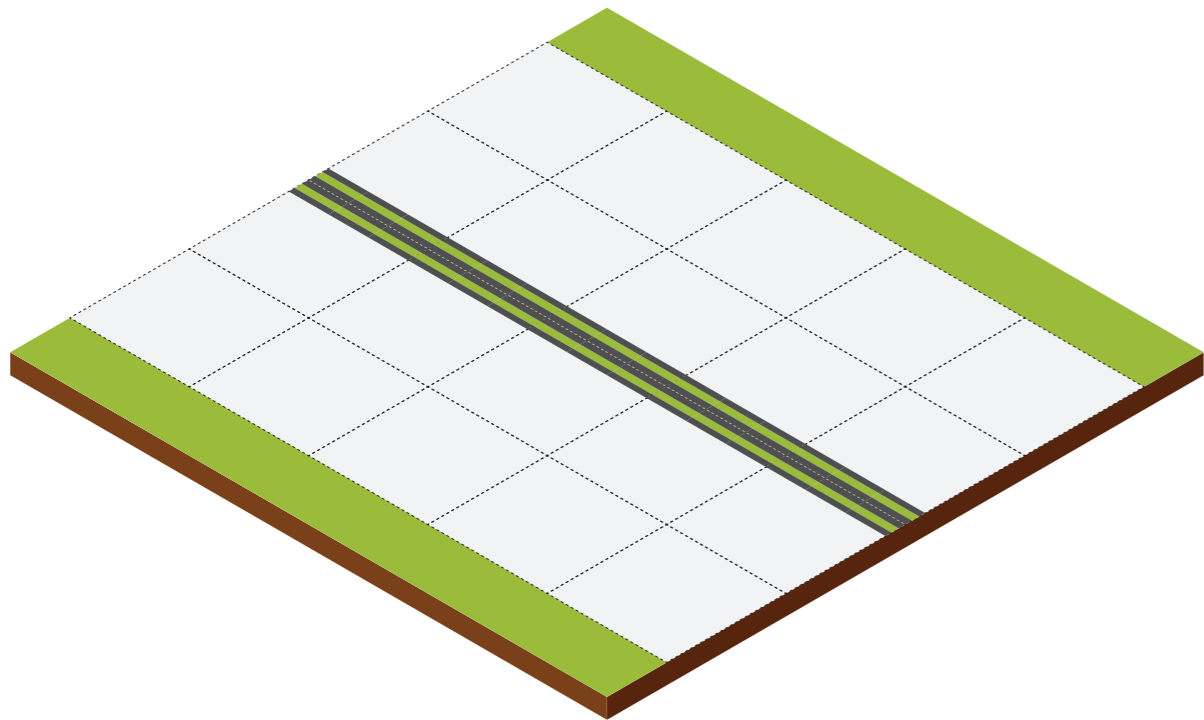


figure 2.3 Game Design - The Unplanned Collaborative Framework

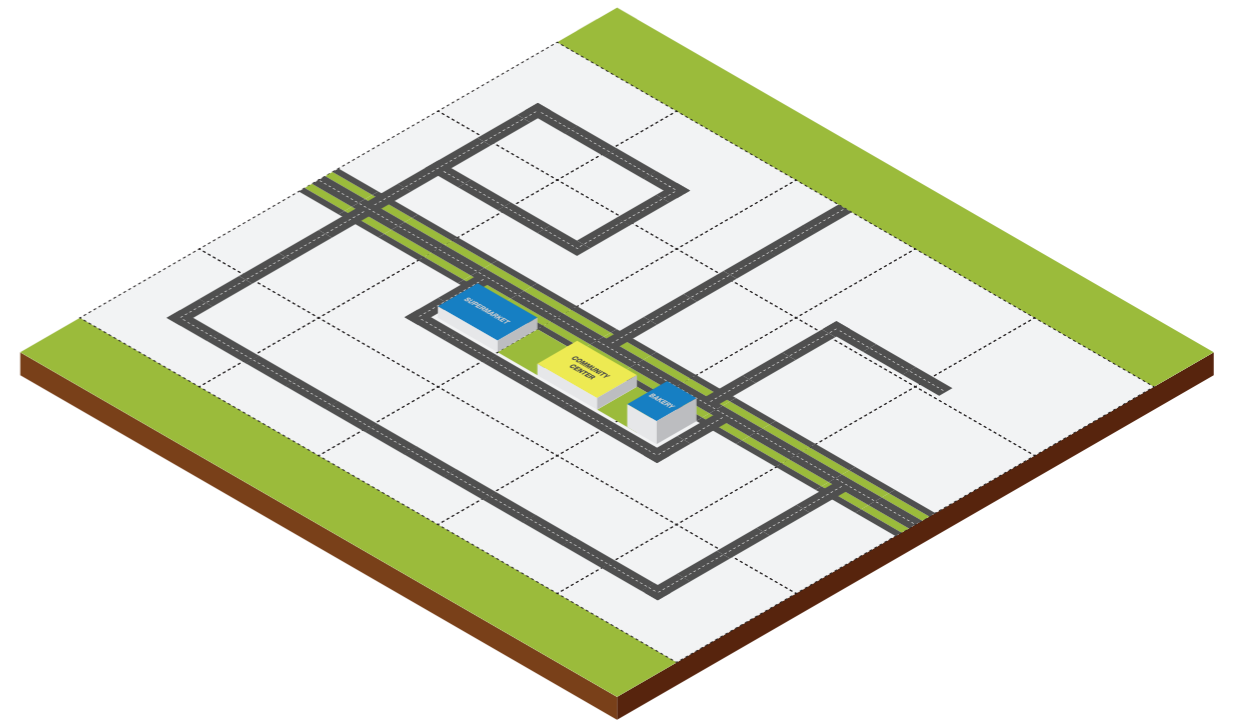


figure 2.5 Game Design - The Planned Collaborative Framework





COME PLAY THE
URBAN DESIGN GAME



END
OF THE
YEAR
EVENT

2.2 GAME RESULTS

The game has showed some interesting results. The figures presented on page 36 and 37, show the resulting neighbourhoods of all of the four frameworks. Before trying to answer the questions that lie at the basis for this game, some general observations made during the playing of the game will be given.

Participants, in all of the four frameworks, show a strong preference for building their homes as close as possible to the outer parks. Only when there is a center with shops and communal functions present, whether it being from the start in the planned frameworks or later on in the process in the unplanned ones, they start to plan their homes there too. A second trend that has been observed, is the building of larger, centrally located amenities, like supermarkets, sports facilities and community buildings along the central road. Only when the central amenities are deemed sufficient enough by participants, smaller communal services, like bars and restaurants, are built away from the central road. Another very important observation is the difference between the individual and the collaborative frameworks. In the collaborative framework we see a lot more creative and innovative ways of planning houses. We see more structured and thought out ways of filling in the joined plots. Green roofs, combined and stacked houses, joining plots in the way they are planned out etc. Overall, it can be stated that collaboration between participants leads to a more structured outcome of the neighbourhood.

Differences between the unplanned and the planned frameworks can also be observed. In both of the unplanned frameworks, where participants had to built the infrastructure themselves, the resulting road structure is disorderly.

2.3 DISCUSSION

The results of the game indicate that the suspicions raised by the conclusions of the literature review have truth in them. Collaboration indeed leads to the best results. Moreover, a good physical framework seems to be a very important requirement for the best results. The results on the aspect of a more planned framework seem to be in line with the research of Mehaffy et al., as participants in the game build centers along the central road. Only when this is sufficient, smaller communal services are built within the neighbourhood themselves, which in the emergent neighbourhood model are called the local foci. The results of the game also show the importance of the framework in the infrastructure. When there is nothing planned for this and the participants had to build roads themselves, results were disorderly and messy. Even in this simple abstraction of a real neighbourhood, problems with the design of infrastructure by residents arise, much like in the case of Oosterwold.

The design implications, given at the end of chapter 1 are confirmed by the results of the game, but now with a reinforced importance on the need of a physical framework. This is why the following chapters will take the emergent neighbourhood model as a guideline in the design of a new proposal for the physical framework of the Brainport Smart District. Before this, however, a critical reflection will be done on the existing framework for the development. This is presented in the next chapter of this thesis.

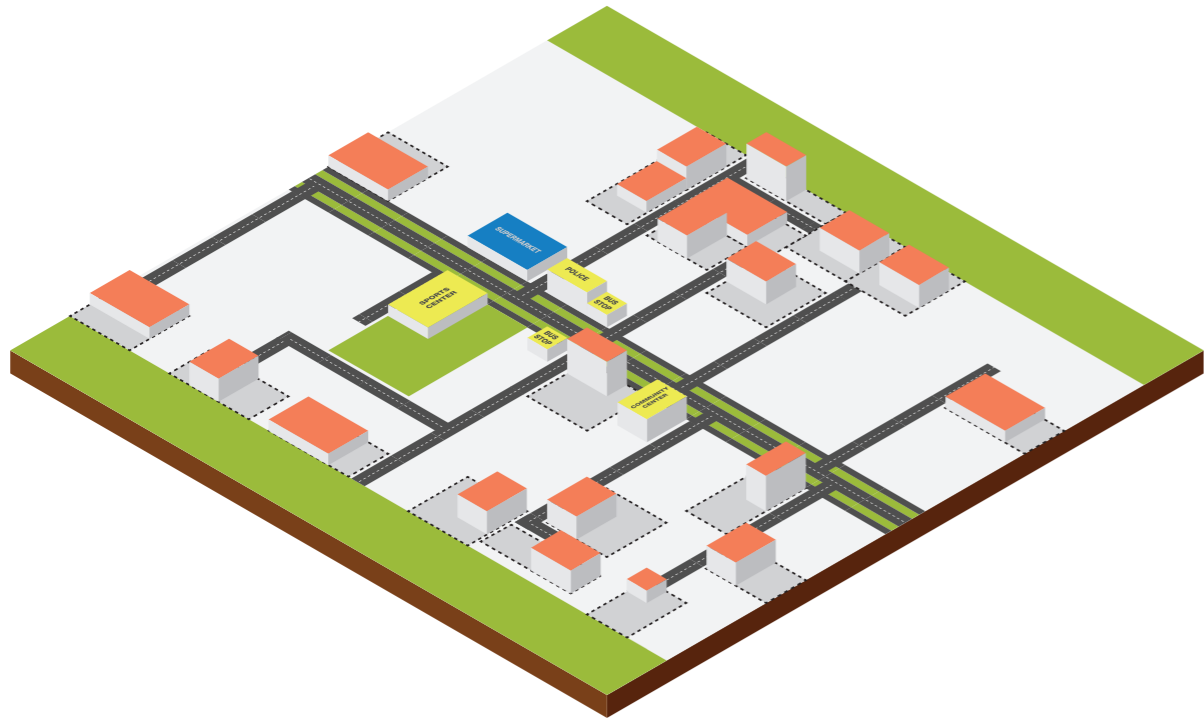


figure 2.9 Game Results - The Unplanned Individual Framework

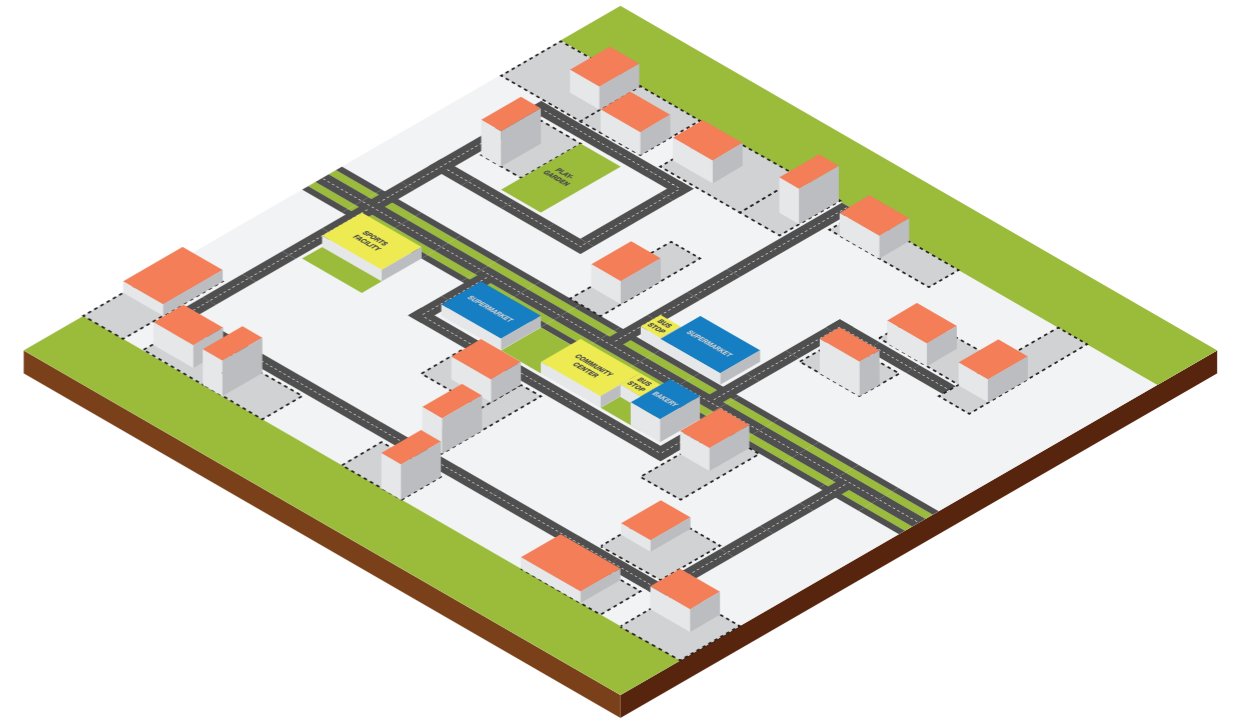


figure 2.11 Game Results - The Planned Individual Framework

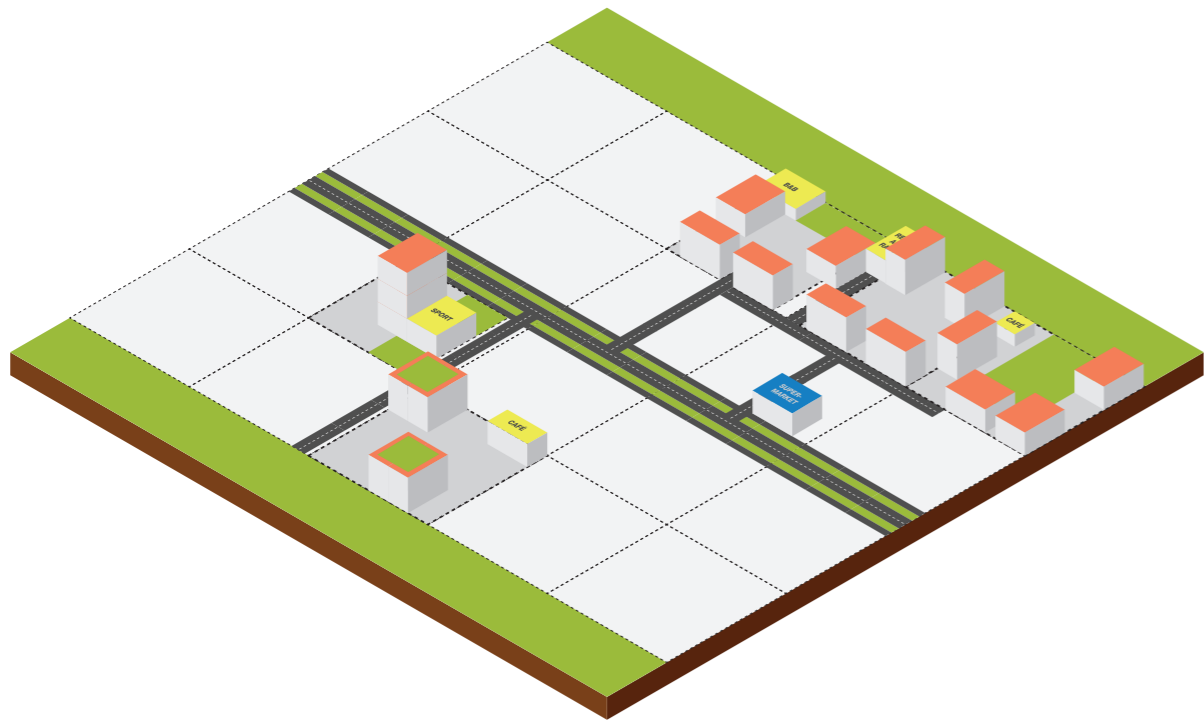


figure 2.10 Game Results - The Unplanned Collaborative Framework

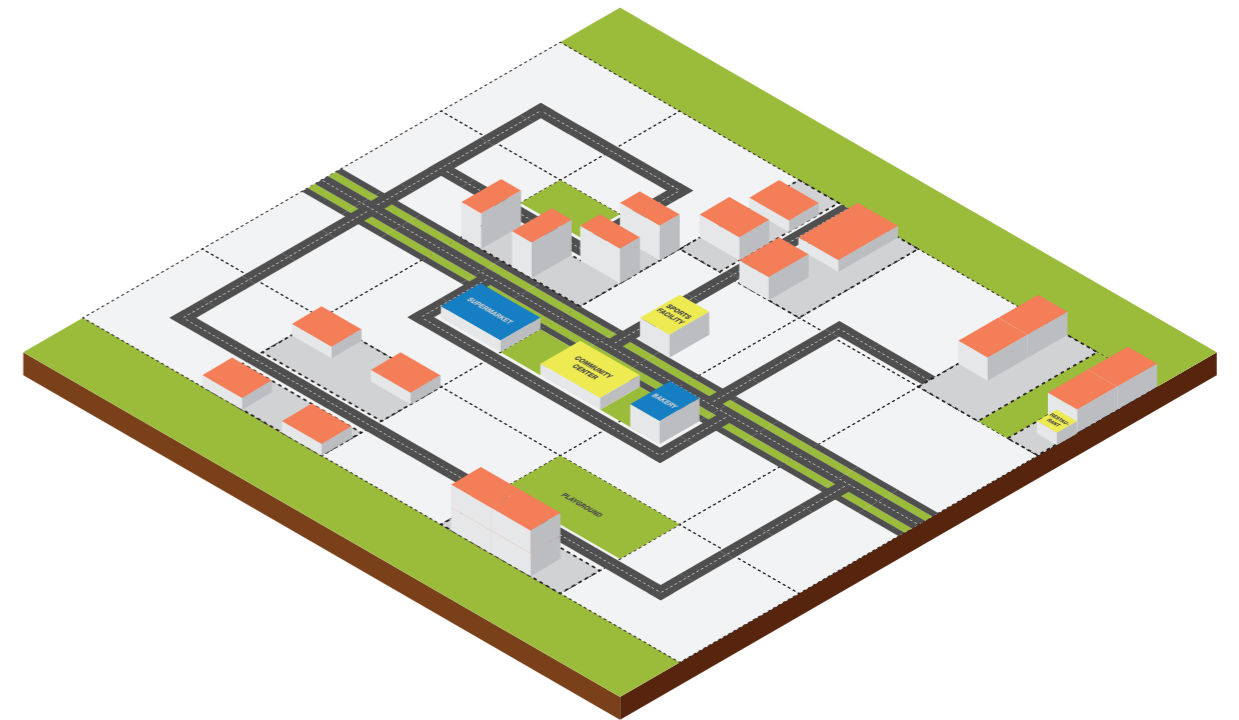


figure 2.12 Game Results - The Planned Collaborative Framework

3 .

C A S E

2.1 THE BRAINPORT SMART DISTRICT

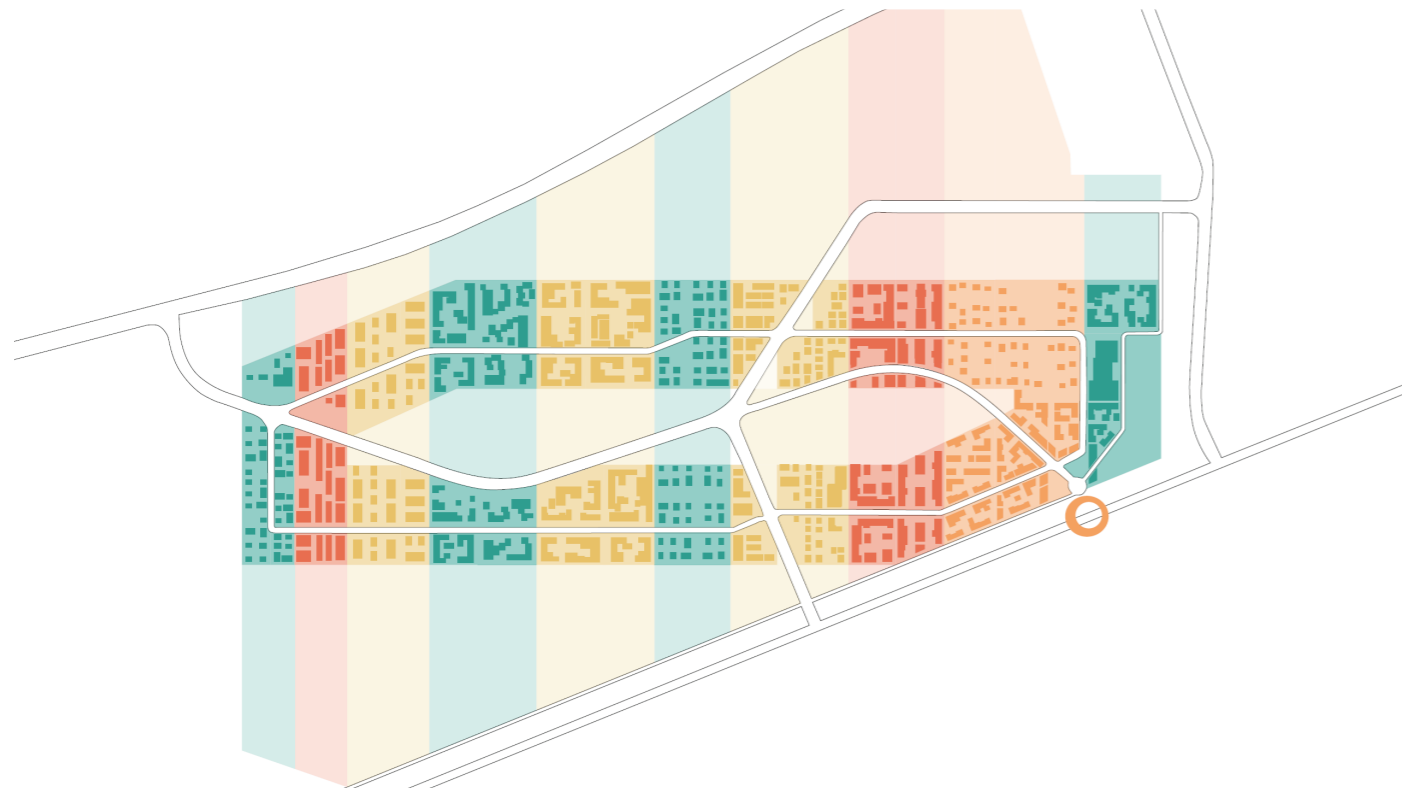


figure 3.1 The Urban Vision for the BSD (based on UNStudio, 2018)

The existing masterplan for the Brainport Smart District was already briefly discussed in the previous chapter of this thesis in order to explain the context in which the City Game was played. This chapter will further explain this masterplan and reflect on it with the results of the research. The Brainport Smart District is located between Helmond and Eindhoven, with Brandevoort directly south of it. The area is located between a highway in the north and a railway in the south. Brandevoort Station is located within the area. The aims for the district are summarized in seven programme lines. These are: circular district, participation, social and safe district, healthy district, digital district, mobile district and district with energy. Especially the programme line of participation is interesting in the development of the district, as

this means the development of the district is not done in a traditional top-down way of planning, but through initiatives by people themselves. Moreover, the notion of participation comes back in all of the other programme lines for the BSD, indicating that participation is deemed critical in the success of the district (Brainport Smart District, 2018).

A framework in which the development is going to happen has been designed by UNStudio. They have designed what they call a flexible masterplan for the area (figure 3.1). Characterizing in this masterplan are strips of urban development. These strips have different densities, ranging from a high density in red, a medium high density in orange, a medium density in yellow and a low density in blue. In the middle of the area, a big

park is planned, with the urban development in the form of a ring around it. A road, that UNStudio calls the service loop runs through this urban ring. The road that runs from the station, through the park and eventually connects to the highway is called the smart link. It is envisioned as a road where different forms of smart mobility can be tested. Outside of the urban ring are so called production grounds, where food and energy are produced.

The first developments are already being designed and built. The location of these first developments is in one of the strips (the red strip in the east of the masterplan in figure 3.1). These consisted of a group of people, called the 'pioneers'. They consisted of a range of different initiatives not designed by UNStudio, or the municipality, but by the future residents themselves. The design of these first developments was organized through a multitude of different co-design sessions between future residents, UNStudio, the municipality and the BSD. Observations made during these co-design sessions, however, show that this process does not yet work properly. Future residents had a lot of questions during these sessions, which UNStudio was unable to answer. They did not know if the district was going to be completely car-free or just a part of it. Or what happened in the developments after these first pioneers, and how high these developments were going to be. Questions about what exactly was going to happen on this smart link, also couldn't be answered, while some people were going to live right next to it. Also, differences between future residents themselves proved difficult to resolve, as they often had conflicting interests and wishes.

Part of the inability to give clear answers to questions posed by future residents during these sessions comes from the characteristics of the masterplan. By keeping basically everything

flexible in the masterplan, nothing was sure for the future residents. Many things were left up to these people themselves, but the research done shows that this isn't actually possible, as residents themselves can't or won't build large public spaces and infrastructure themselves.

As was found in the literature review of this thesis, keeping everything open in a plan, does not produce positive results. The results of the City Game reinforced these implications even more. The implications for a design from the research show that, in order for successful self-organization by future residents, a clear and well designed physical framework is required. The observations made during the co-design sessions, however, clearly show that the existing framework does not meet these requirements. That is why the design, presented in chapter 4 of this thesis consists of a new physical framework for the Brainport Smart District. Before this, however, the next paragraph of this chapter will highlight some areas in the masterplan of UNStudio that, when compared to the spatial guidelines for self-organizing developments, found in the research, prove problematic.

The main things here, are ignoring the most important intersections in the area, which the research show could provide the most successful locations for urban nuclei (or hubs), to serve the area. Furthermore, the smart link, which is presented by UNStudio as an important aspect of their masterplan, runs through the middle of a park, actually making it a barrier instead of a connection in the area. And how is the relation between the production grounds and the urban ring? The masterplan doesn't really make any statements about this at all. Why are the most dense strips placed alongside the most low density strips? And why are they even strips at all?

2.2 REFLECTION ON THE EXISTING MASTERPLAN

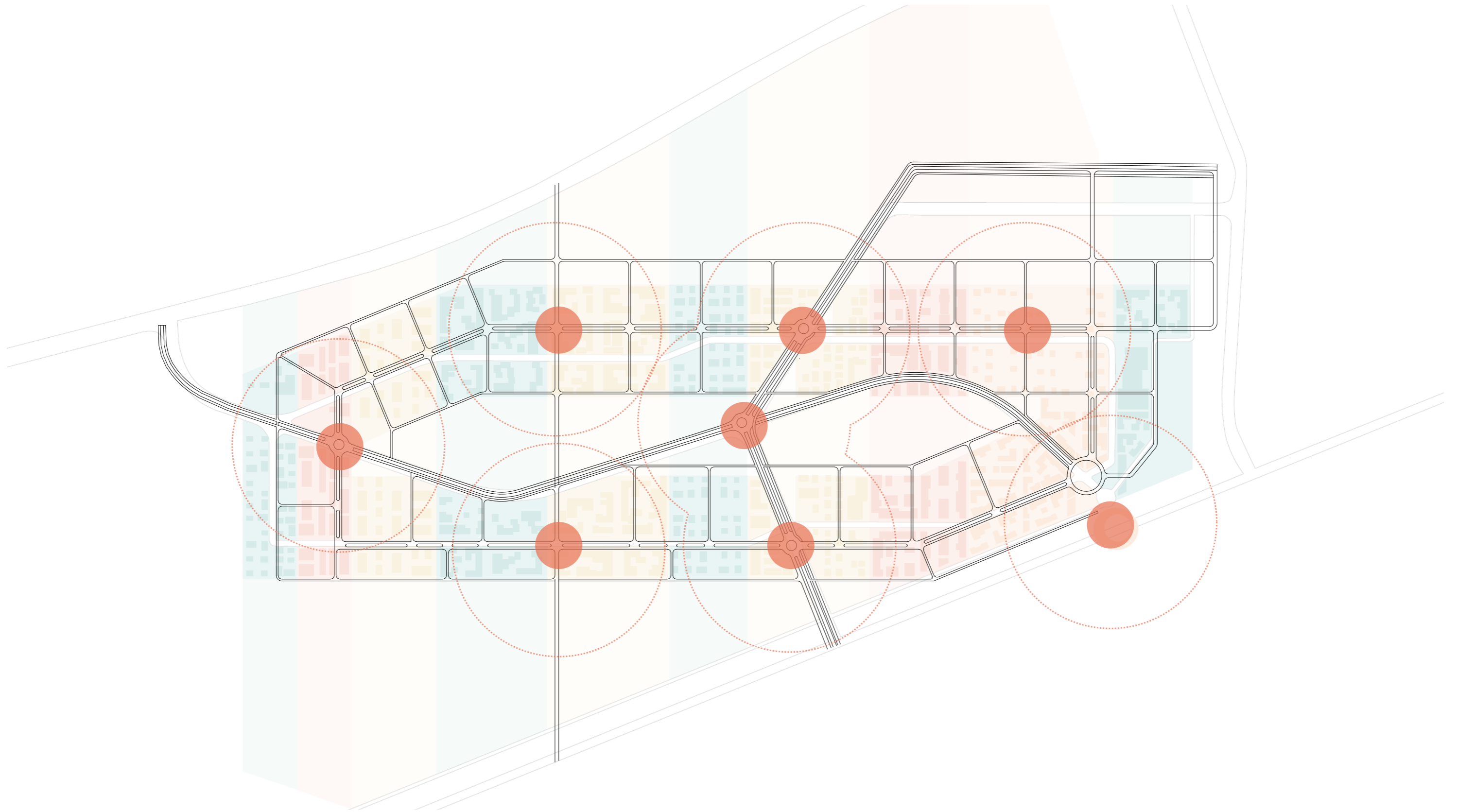


figure 3.2 Trying to find Locations for Urban Nuclei (based on UNStudio, 2018)

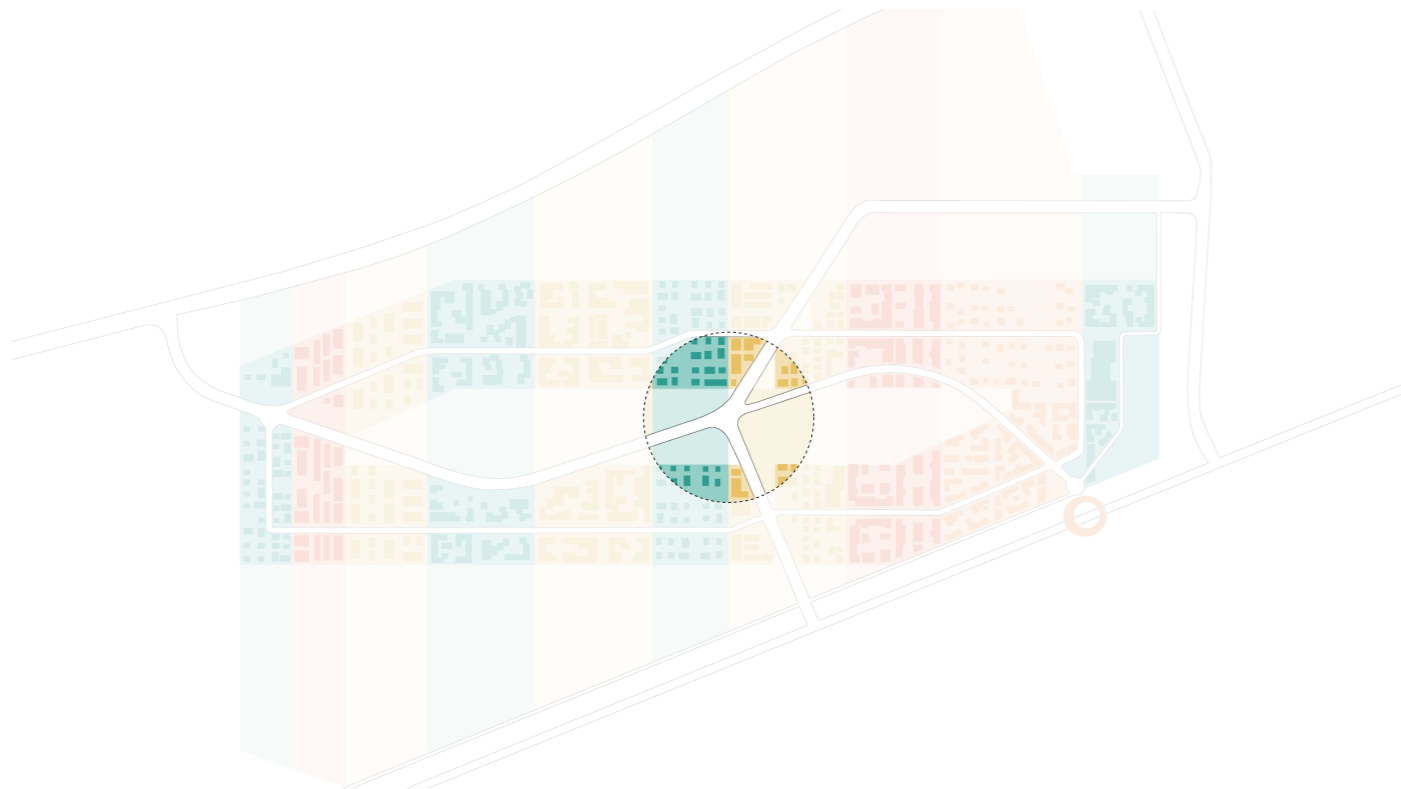


figure 3.3 The most Important Intersection (based on UNStudio, 2018)

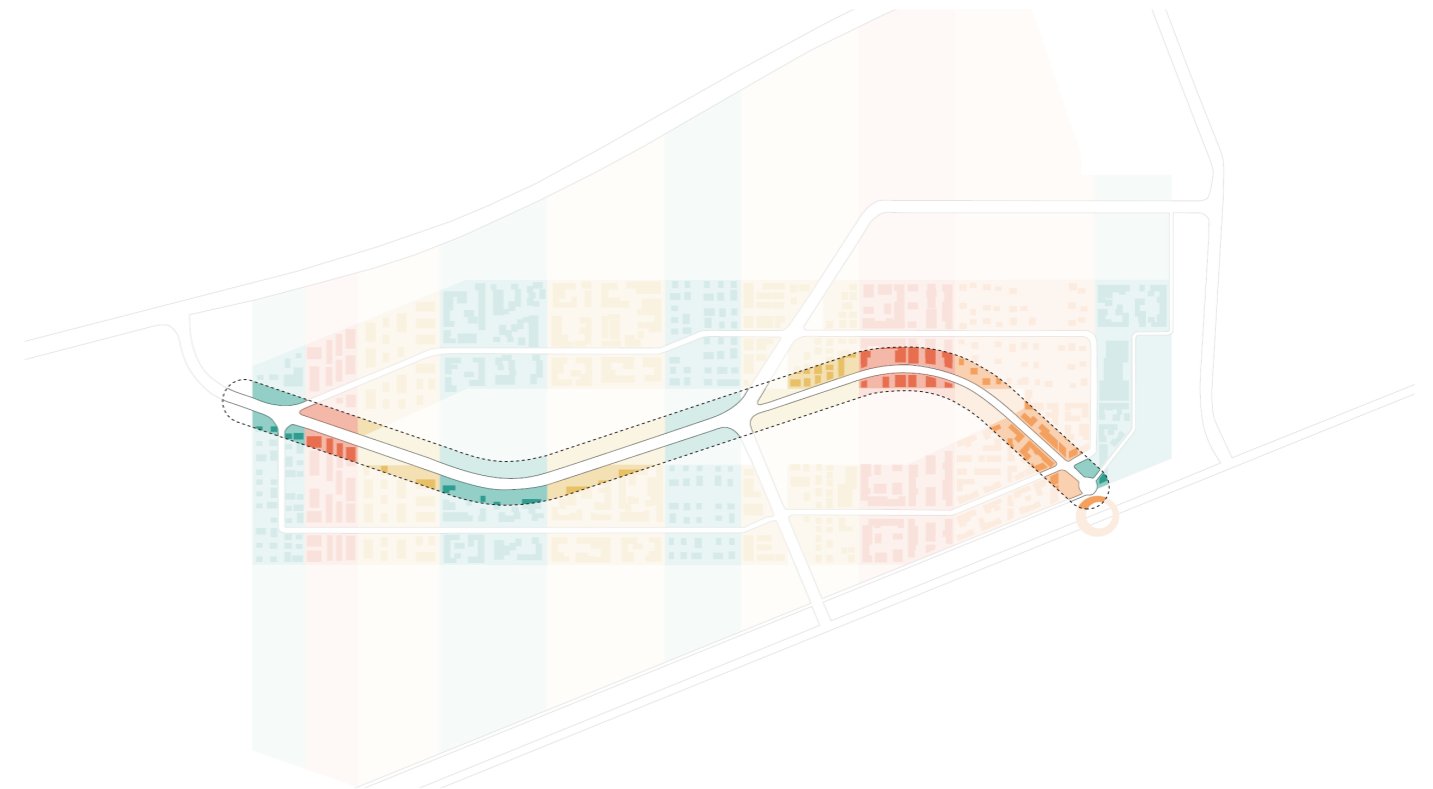


figure 3.5 Smart Link (based on UNStudio, 2018)

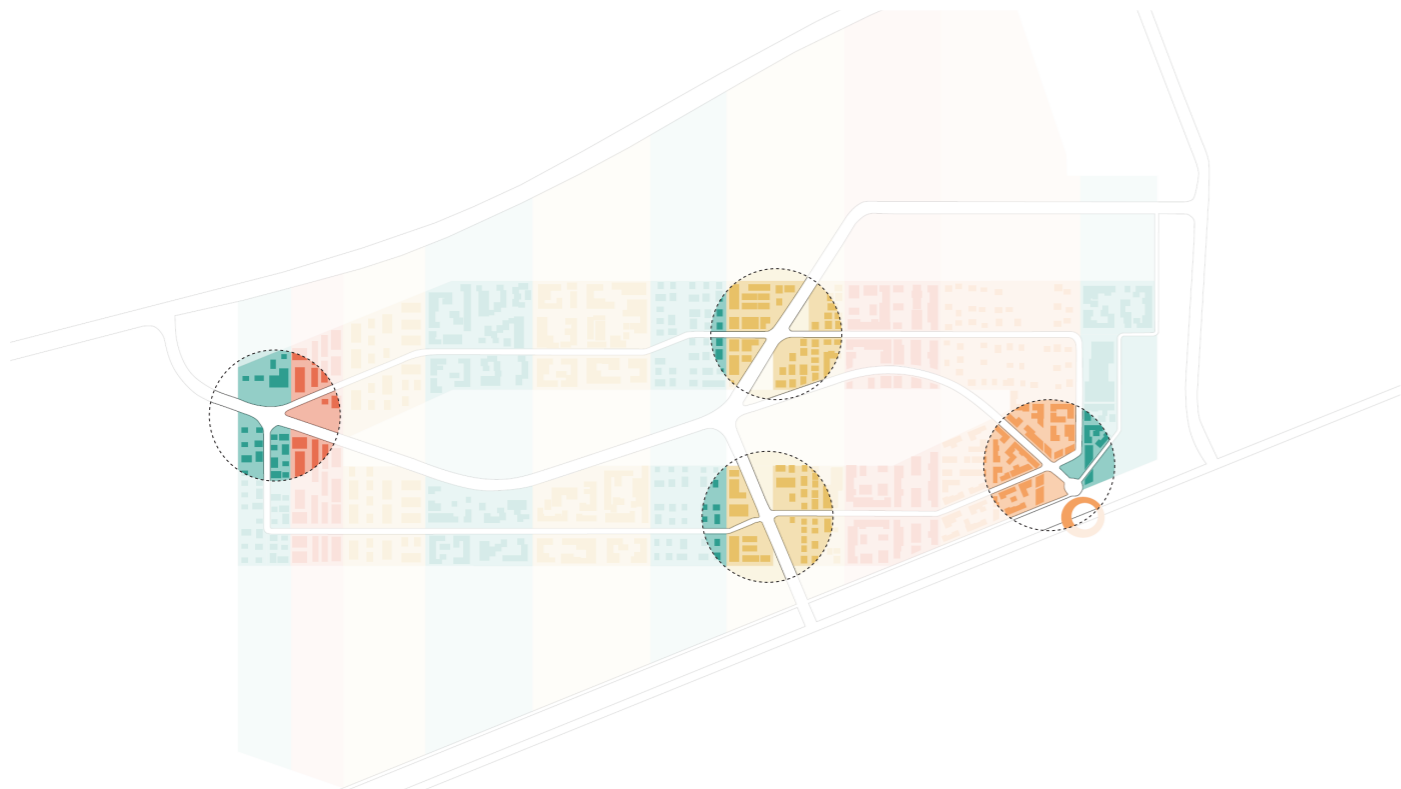


figure 3.4 Other Intersections (based on UNStudio, 2018)



figure 3.6 Park or Barrier? (based on UNStudio, 2018)

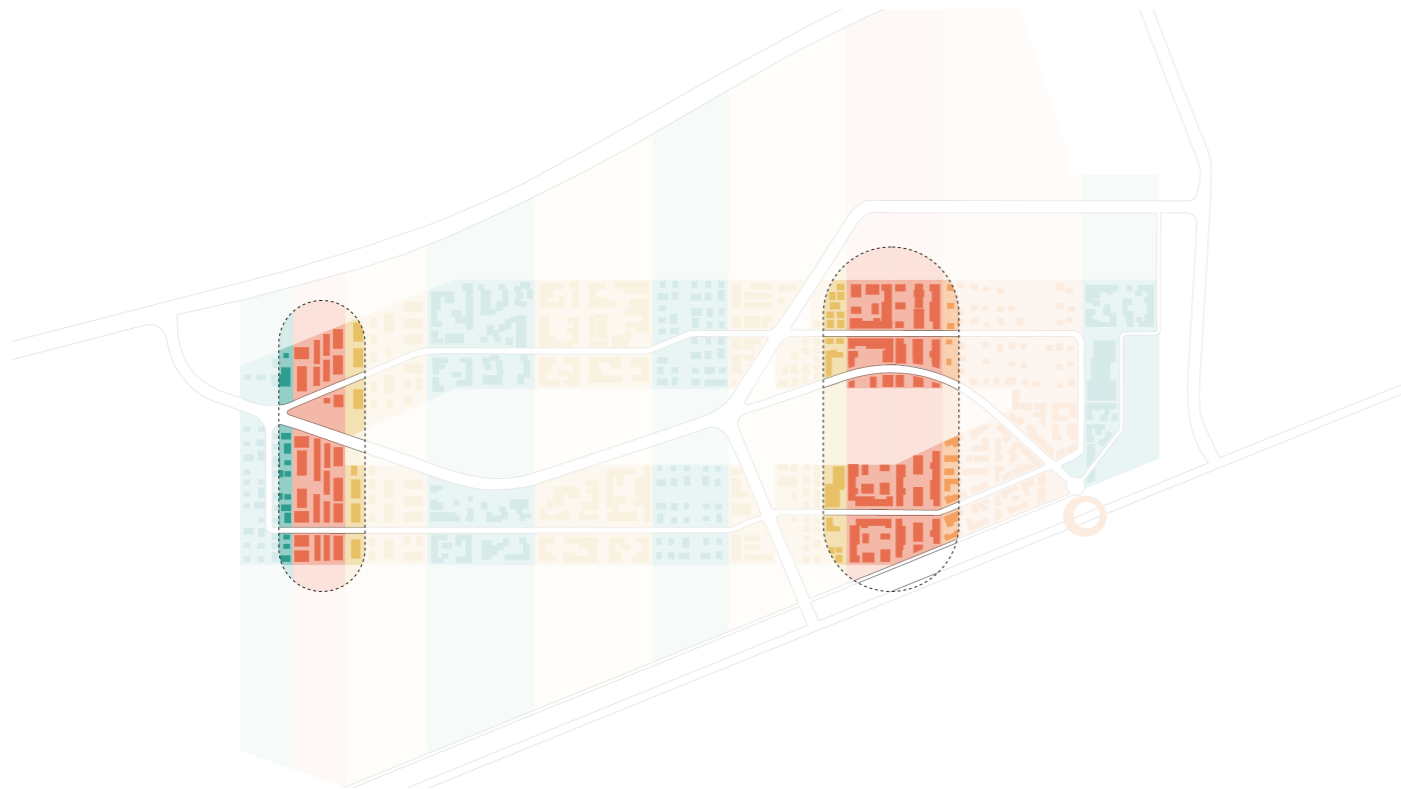


figure 3.7 High Density Strips (based on UNStudio, 2018)

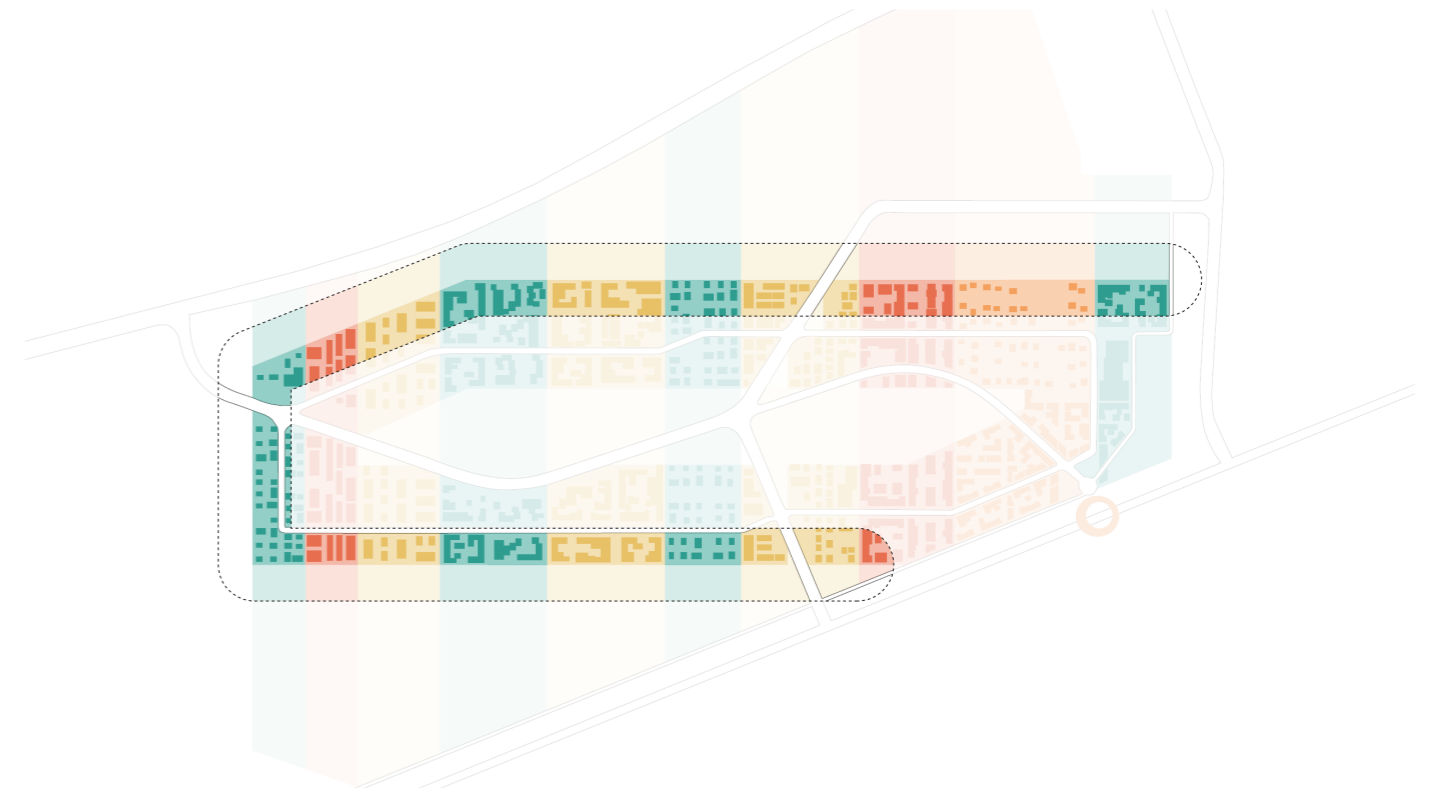


figure 3.9 Relation with the Productive Green Area (based on UNStudio, 2018)

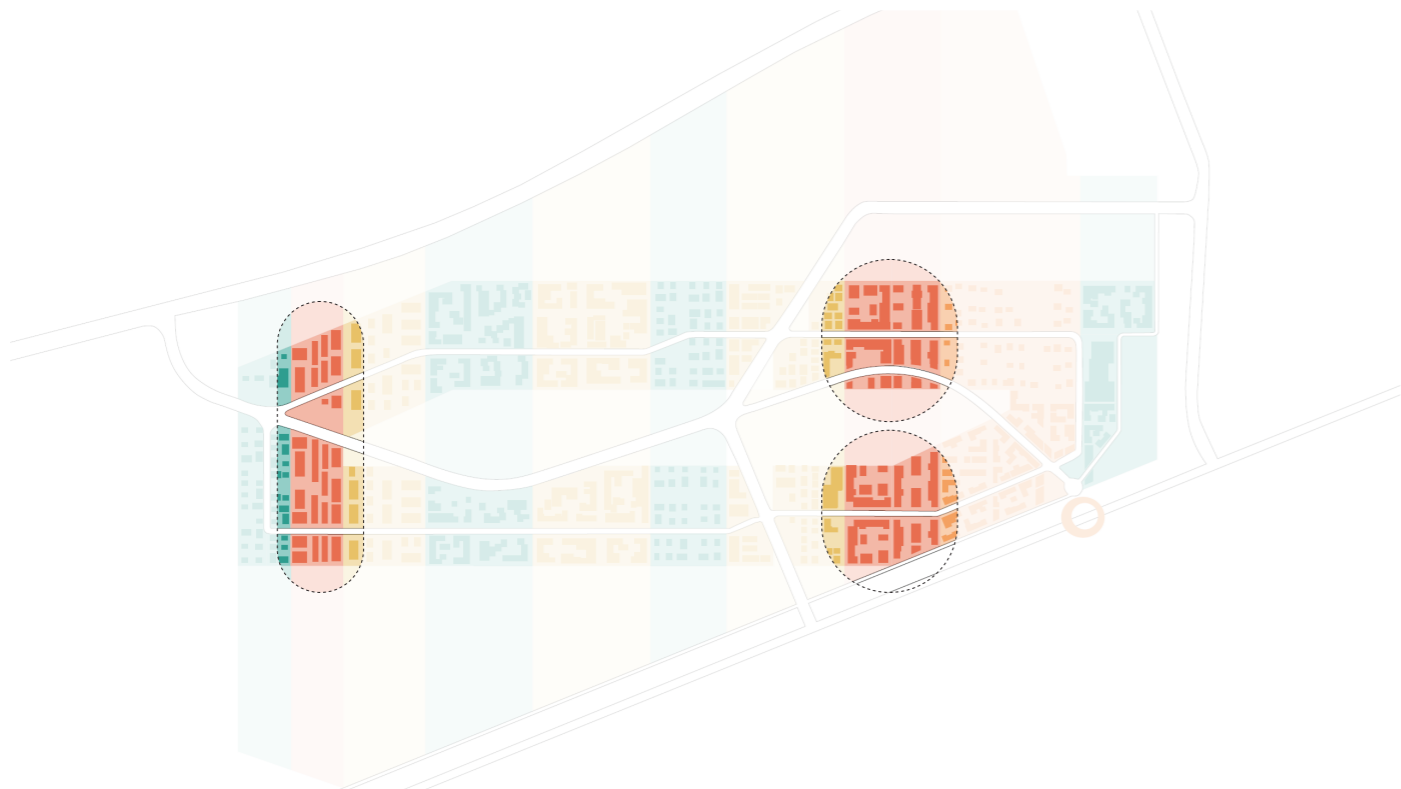


figure 3.8 Strips or Blocks? (based on UNStudio, 2018)

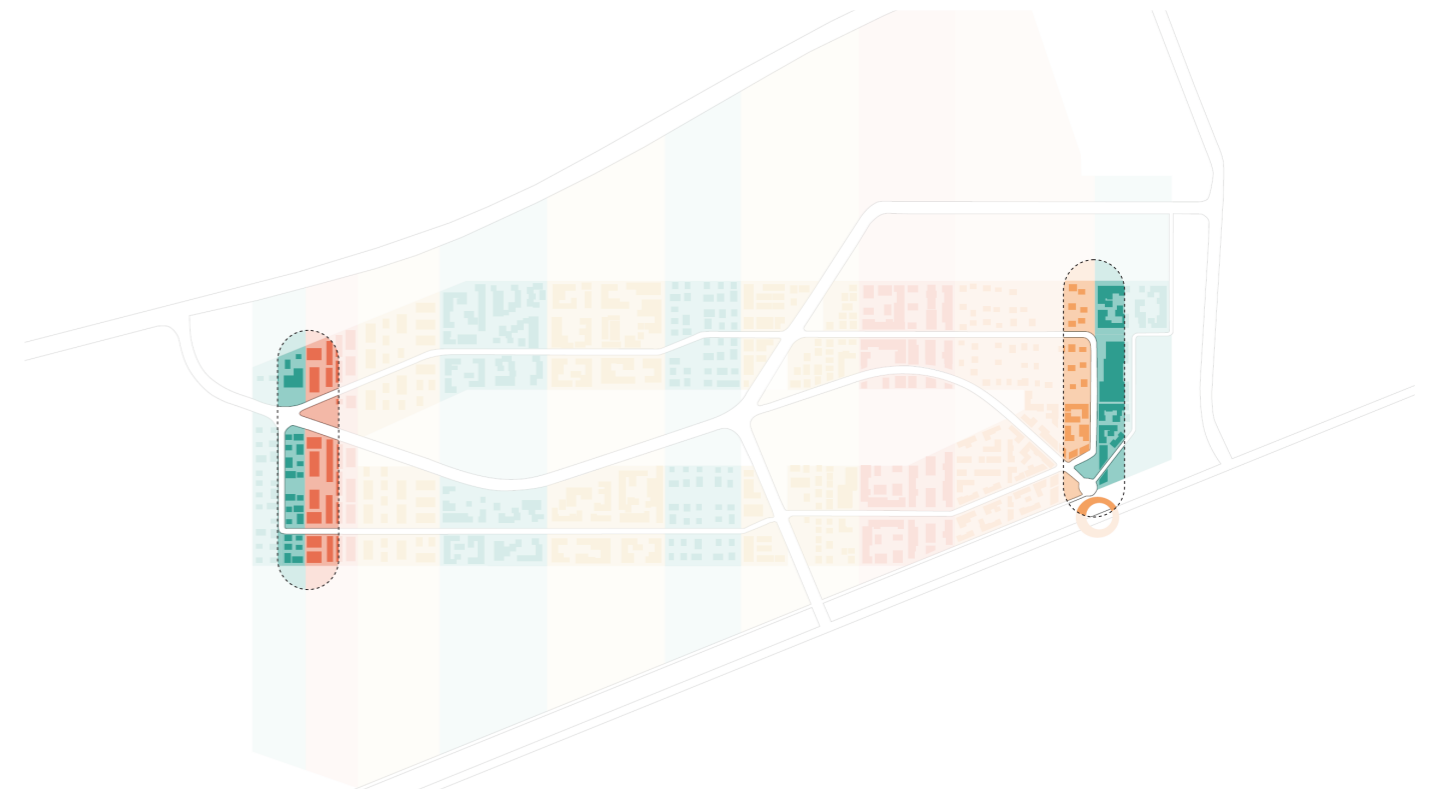


figure 3.10 Relation between High and Low Density Strips (based on UNStudio, 2018)

4 .

D E S I G N





4.1 INTRODUCTION

The design for the Brainport Smart District, shown on the previous four pages of this thesis, consists of a physical framework for the district. It can be seen as a reinterpreted version of the original framework for the area by UNStudio, which is unlikely to work well in a process of participation and self-organization, as is discussed in the previous chapter.

The presented design is called a framework and is to be interpreted as such, meaning that it provides the basic structure, based on the research done in this thesis, that is needed for a participatory development with a heavy emphasis on self-organization by residents. The exact implementation and realization of the buildings will most likely be different than what is proposed here. And it should be different, as actors will make changes as their needs and wishes change. New ideas will develop. This framework, however, has taken this into account and can adapt to these changes.

On one hand, the framework proposes fixed elements, consisting of the infrastructure and its design and the location and functional contents of four hubs, connected by a central boulevard. Basically, all of the elements that are in the public domain of the district are planned top down, and are not developed through a process of self-organization. As was found through the literature review and later confirmed and reinforced by the results of the City Game, these are the elements of an urban development that cannot be effectively developed through processes of self-organization. This does not mean that (future) residents have no say in it the design and contents of these elements. They should be actively informed and consulted in the process of designing the fixed elements. This can be done by, for example, organizing various City Gaming sessions, much like was done for the research

of this thesis. The designed framework proposes locations for community meeting centers where these sessions can be held, and as such, these places should form the first developments of the district. At some point, after the consultation of future residents, the design for the public domain of the district, should become fixed, in order to make the development of the neighbourhood possible through self-organization of different actors.

The fixed elements of the framework, the infrastructure and the hubs, provide the basis for the urban development of the district, which consist of residential buildings, offices, workspaces, etc. This is what is going to be developed by a range of different actors through more bottom-up oriented initiatives. For example by individual self-builders, cohousing groups, collective private commissioning and small to bigger developers. As mentioned before, the buildings drawn in the design of the framework are not going to be the actual buildings that are going to be developed, as it is impossible to know what exactly is going to happen in this process of self-organization. This, however, does not mean that the buildings drawn in the framework are to be taken with a grain of salt. They show guidelines for where certain initiatives can be placed in the district, in order for them to be most successful.

What these guidelines are will be explained in the remainder of this chapter. The next paragraph will first explain the structuring principles used in the design of the framework, based on the results of the research and an analysis of the location. After that, the resulting framework will be discussed in more detail and highlights of the most important elements of the framework will be given. The chapter ends with some concluding remarks and reflections on the proposed design.

4.2 STRUCTURING PRINCIPLES

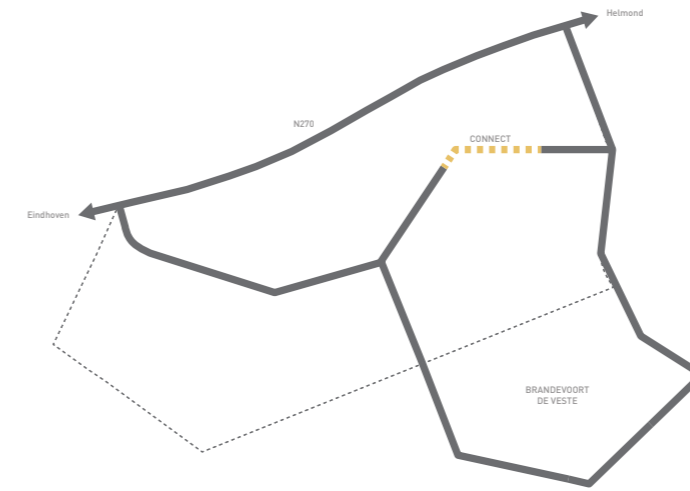


figure 4.3 Connecting existing infrastructure

Connecting Existing Infrastructure

The first step to be taken is finishing the infrastructure proposed in previous plans for the area. About 90% of this infrastructure is already there and it would be a shame not to finish this and use it in this design proposal.

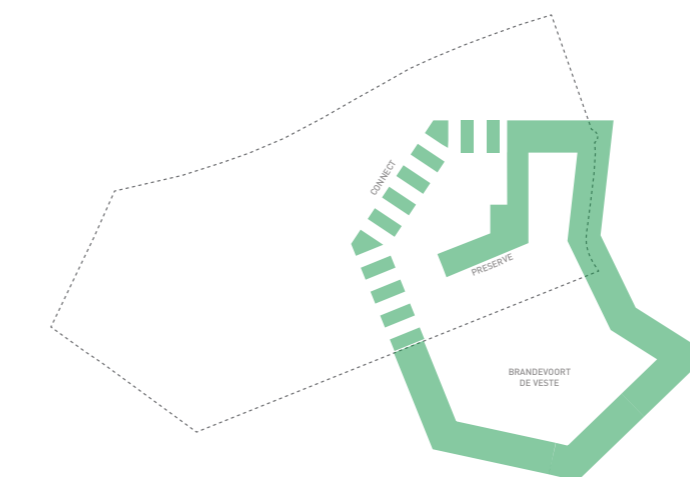


figure 4.4 Connecting the Brandevoort Park

Connecting the Brandevoort park

The same goes for the park. Part of the structure for a continuation of the Brandevoort park is already present. In addition to completing this structure, the existing green area is preserved and transformed into a park.

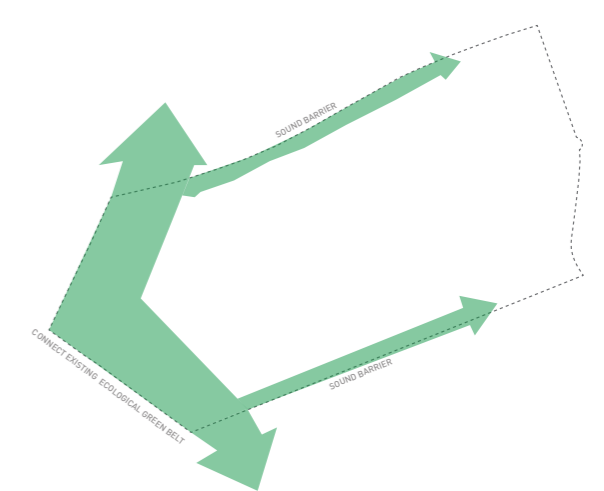


figure 4.5 Strengthen the Green Belt

Strengthen the Green Belt

The west side of the district is used in connecting existing green structures. Furthermore, continuations of this green structure are planned to provide sound barriers for the road in the north and the railroad in the south.

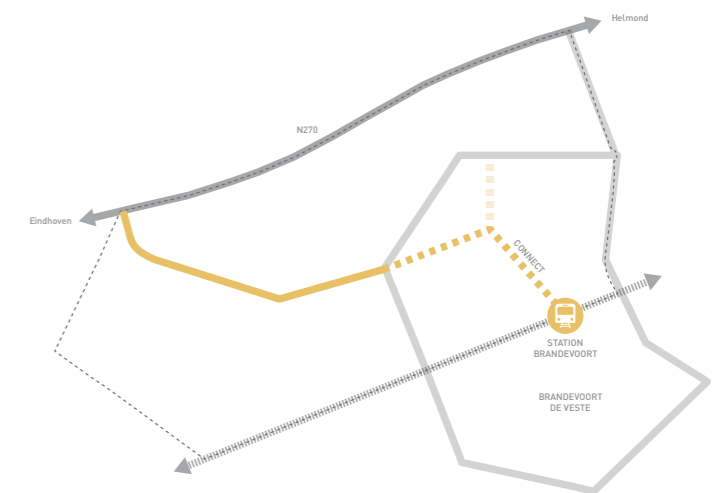


figure 4.6 Creating the Brainport Boulevard

Creating the Brainport Boulevard

The existing infrastructure is connected to the Brandevoort Station. This ensures a connection to regional public transport for the entire plan area. Therefore, this connection is designed as the main, most central, road of the area.

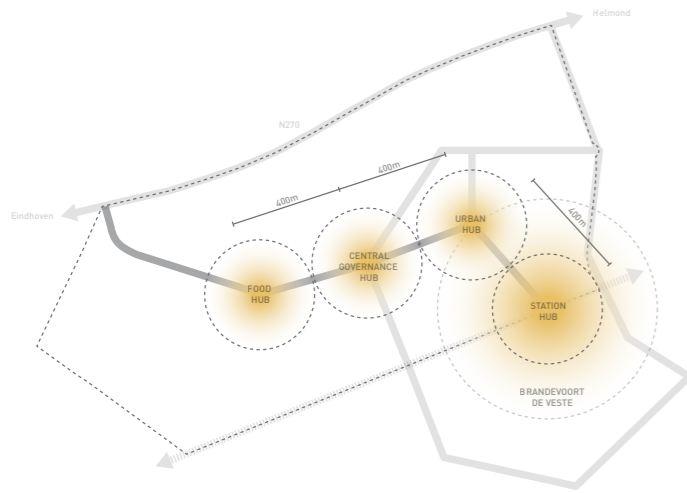


figure 4.7 Placing the Hubs

Placing the Hubs

Urban nuclei, interpreted in this design as hubs with different characters and functions, are placed directly on the boulevard and its most important intersections. According to the results of the research done, this is their best location.

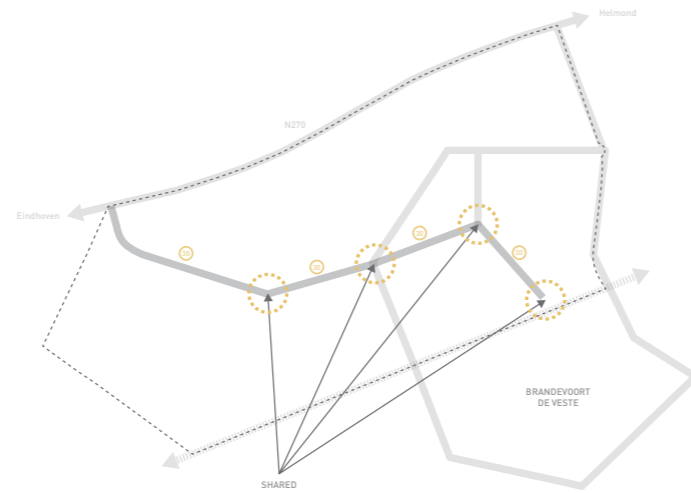


figure 4.9 Designing the Boulevard

Designing the Boulevard

The location of the hubs, directly on the boulevard, means that the boulevard has to transform in actively traffic-calmed shared spaces in these places. Furthermore, along the whole length of the boulevard, traffic speed is lowered.



figure 4.11 Neighbourhood Street Network

Neighbourhood Street Network

Thick green lines are fixed roads, accessible by car. Dotted yellow lines are roads that can either be accessible by car or car-free, depending on initiatives of future residents. The area inside the park ring is designed as completely car-free.

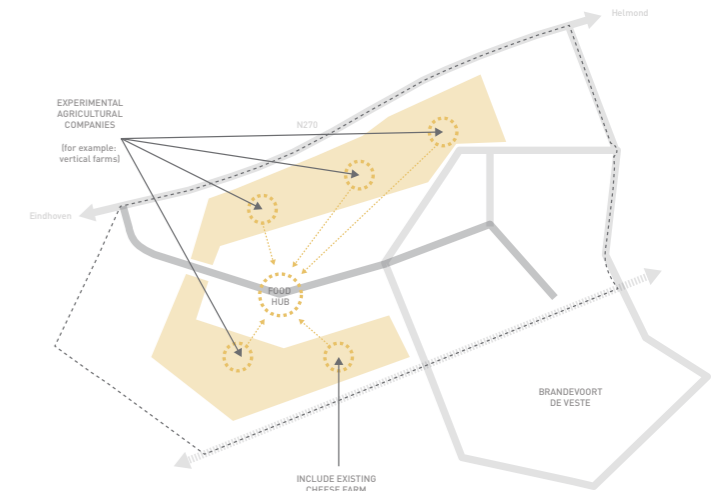


figure 4.13 Ring of Productive Activity

Ring of Productive Activity

Around the plots a ring of productive activity is planned. Activity is kick-started by planning companies experimenting with new forms of urban agriculture. The existing cheese farm is incorporated within this concept.



figure 4.8 Resulting Sanctuary Areas

Resulting Sanctuary Areas

Placing the hubs on these locations results in the creation of sanctuary areas. These are the areas that are essentially going to be formed by processes of self-organization with planned functions serving them in the hubs.



figure 4.10 Public Transport

Public Transport

Part of the boulevard is used in providing public transport for residents through a local (possibly autonomous) shuttle service, with stops and modal transfer options in the hubs. Future expansion of this shuttle service could happen.

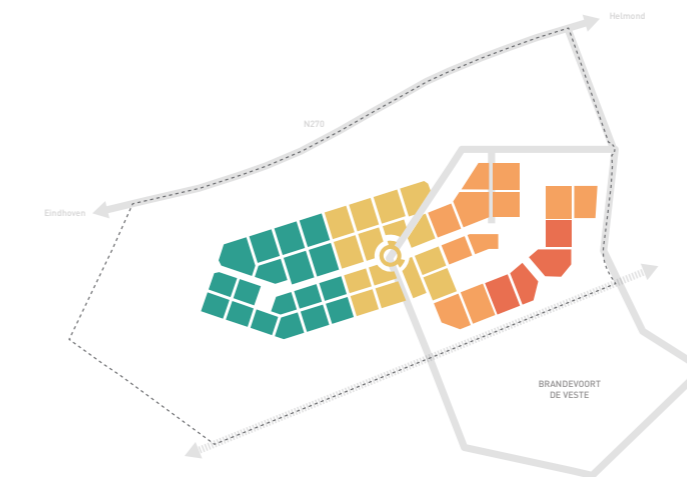


figure 4.12 Plots

Plots

The plots, developed by future residents themselves, are categorized in four different groups. This results in plots ranging from a low density, in the west, to plots with a high density in the east.

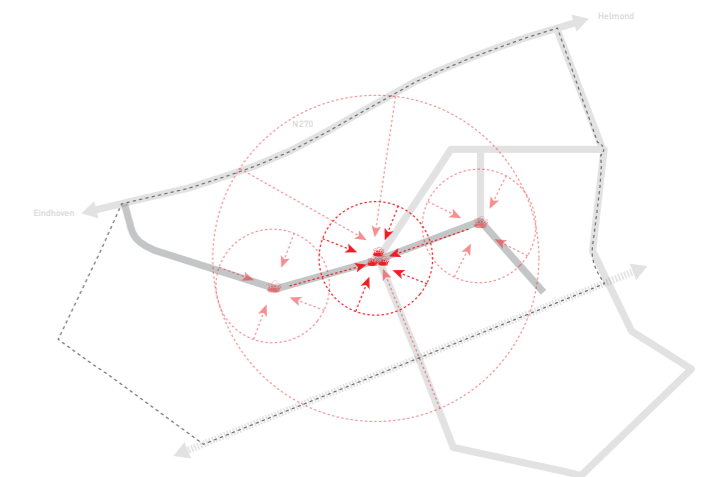


figure 4.14 Community Meeting and Participation

Community Meeting and Participation

For effective participation of residents in the long run, community meeting places are planned in three of the hubs. The central hub has a larger meeting place, where residents of the whole area and people from outside the area can meet.

4.3 RESULTING FRAMEWORK



figure 4.15 Resulting Framework - Plan View



figure 4.16 Resulting Framework - Isometric View

Combining all structuring principles presented in the previous paragraph has resulted in the design of a framework for the development of the Brainport Smart District. This framework is presented on the page on the left with a plan view and an isometric view of the whole district.

The west side of the district is used in connecting existing ecological structures, reinforcing the green belt between Eindhoven and Helmond. Continuations of this green structure along the railroad in the south of the district and the highway in the north of district provide the area with sound (and visual) barriers between these transit corridors and the built environment of the district. Part of the park structure around the urban development in the east, was already present in the area, as these are remnants of unfinished plans for the area. For the sake of continuation and to form a better connection with Brandevoort, this existing park structure is continued in this design proposal and can not only be used as a park area, but also as an area for water catchment. In addition to this, there is already highly qualitative green space present in the middle of this ring park, which is transformed into an urban park area.

The main structuring element for the built-up area consists of the most central road of the area, called the Brainport Boulevard. It consists partly of infrastructure already present in the area, which is added upon to connect it to the Brandevoort Station. It is designed as a wide boulevard, with rowed trees and a dedicated bike lane. The four hubs, that provide the residents with daily facilities and meeting places are placed directly on this boulevard. At these places, the Boulevard will transform into a shared space, where traffic is actively calmed. The hubs are placed 400 meters apart, which, according to the research done, is a distance that provides

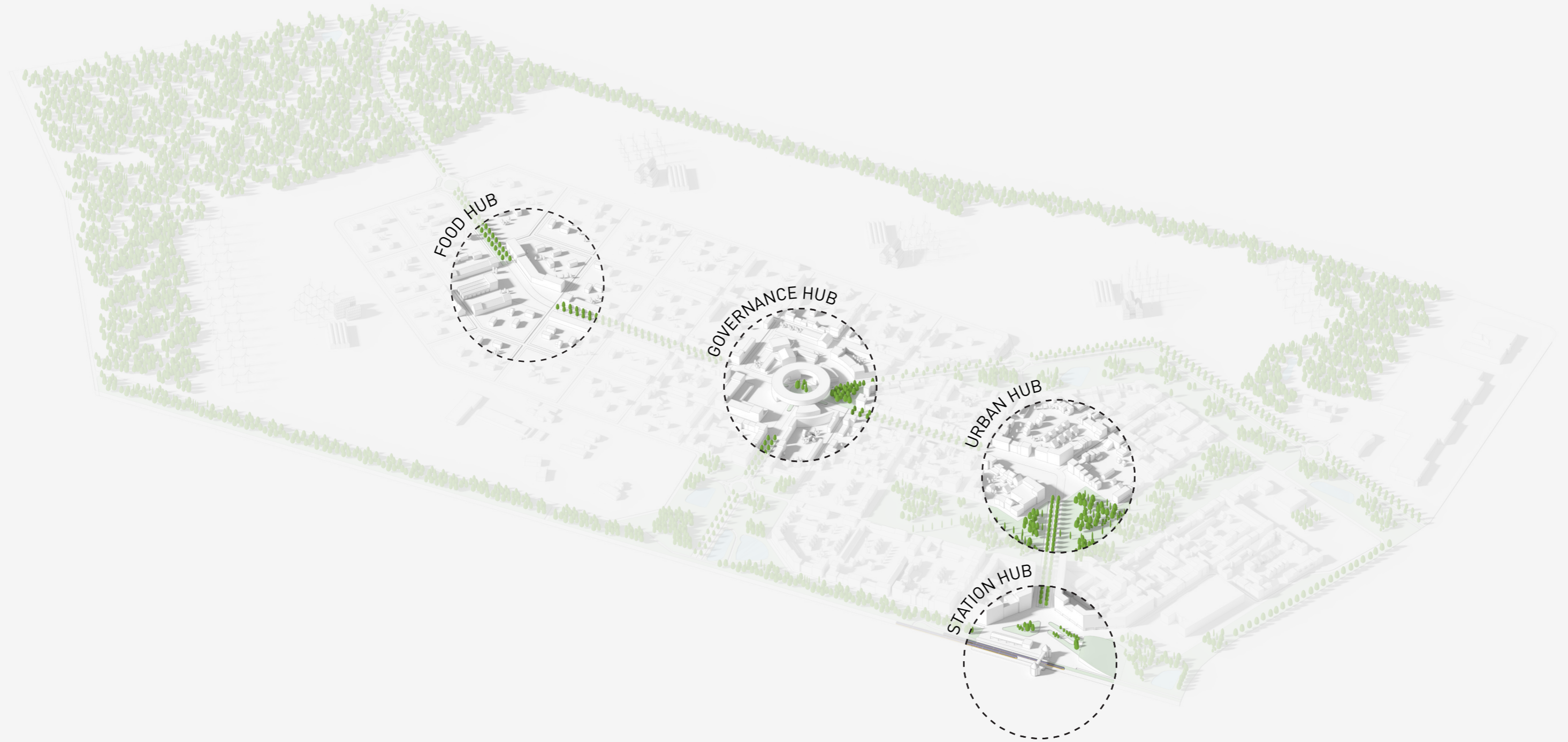
the most succesful results on the aspects of walkability and mobility for the district. All of the four hubs provide direct access to public transport, as a local shuttle service is planned to travel along the length of the boulevard, with stops and options for modal transfers in each hub. The four hubs are different in their exact functional contents. Starting in the west, there is the foodhub, the central governance hub, the urban hub and the station hub. Details of the design for the hubs will be shown in the next paragraph.

The built-up area is divided into four categories of collective plots. Again starting in the west, the suburban plots, then the transitional plots, the urban plots and finally the urban core plots. These four characters of plots ensure a development of the area that gradually grows in density, with the highest density around the station hub, where most of the offices of the area will be developed. The characters of the collective plots will be further explained in paragraph 4.7.

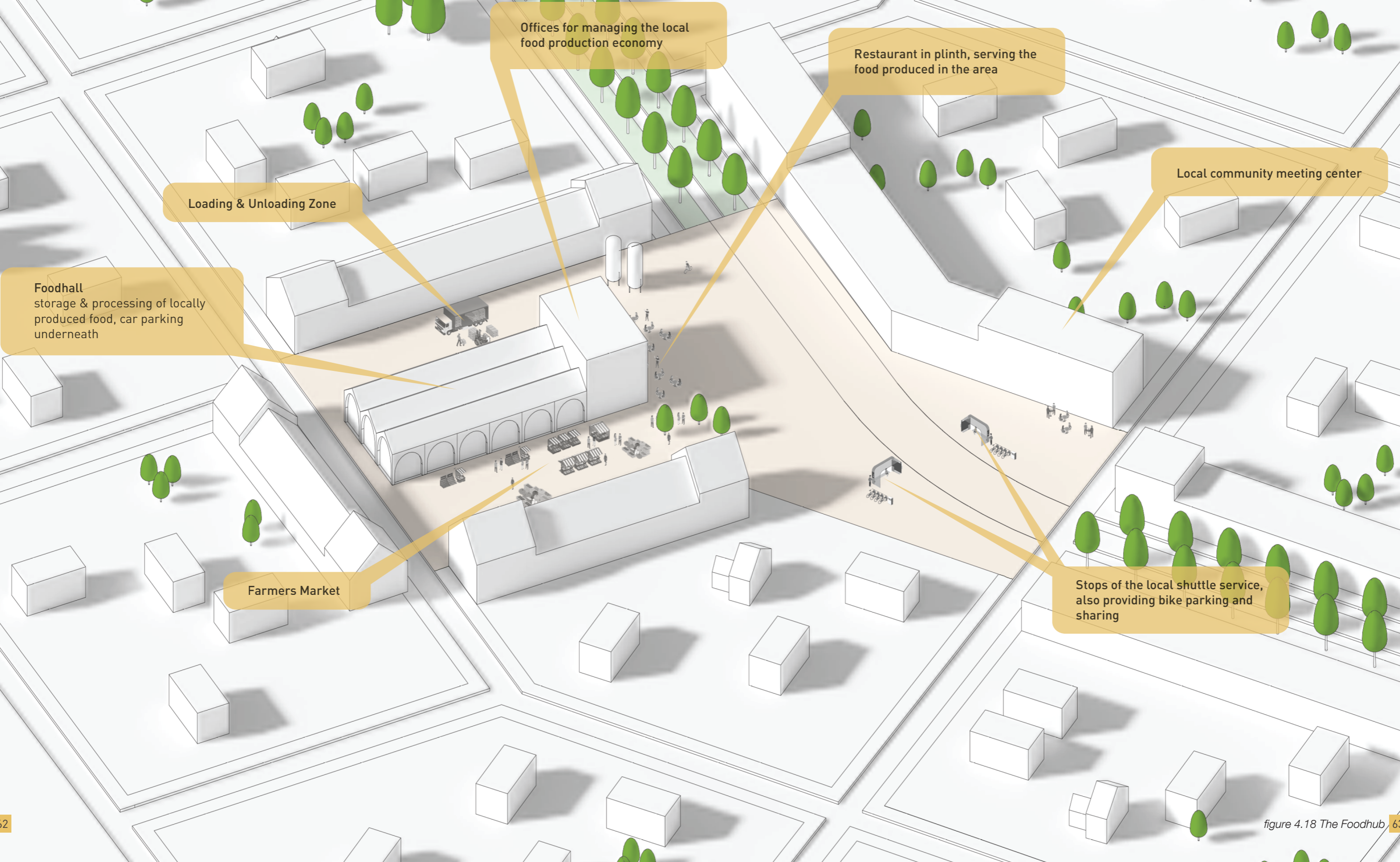
Around the built-up area is a ring of productive activity. The framework proposes the placement of four experimental vertical farms, that can kick-start the production of food (and energy) in this ring. These can provide knowledge and act as little centers for other initiatives in the ring. Food that is produced in this area is stored and processed in the foodhub, after which it is distributed into the whole area.

The coming paragraphs will highlight the most important elements of the framework. First the hubs will be discussed, then the Brainport Boulevard, the neighbourhood street network and finally the plot characters and their resulting guidelines for the development of initiatives.

4.4 HIGHLIGHT - HUBS



THE FOODHUB



THE CENTRAL GOVERNANCE HUB



Child Daycare

Housing for the Elderly

Primary School

Healthcare Facilities in Plinth

Shuttle stop & Bike sharing

Shuttle stop & Bike sharing

Apartment Building, commercial facilities and parking garage in plinth

Central Governance Hub
This building provides meeting spaces for people in the whole district, offices for managing the BSD, conference rooms, etc. This is essentially the place that ensures participation in the process of designing and managing the district is possible for every person living in the district

THE URBAN HUB

Flexible plinth, can be developed as residential, commercial or workspace

Larger Apartment Buildings as corner accents

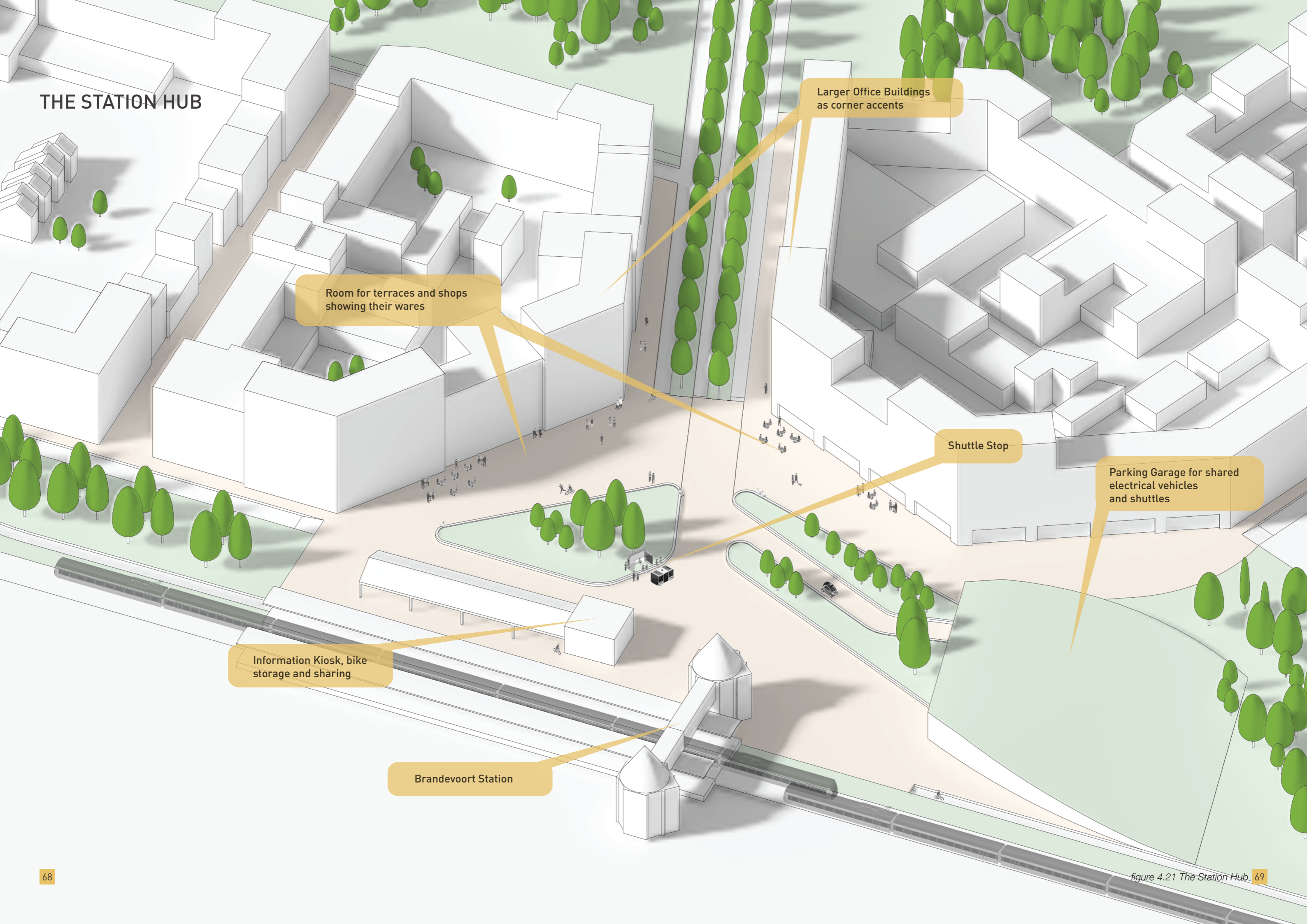
Supermarket in plinth

Plinth used for terraces

Shuttle stop & Bike sharing

Urban Sports & Community Hub
This is a multifunctional building serving the local community. It consists of a sports hall and multifunctional rooms that can be used for meeting, discussing and other things

THE STATION HUB



Room for terraces and shops showing their wares

Larger Office Buildings as corner accents

Shuttle Stop

Parking Garage for shared electrical vehicles and shuttles

Information Kiosk, bike storage and sharing

Brandevoort Station

4.5 HIGHLIGHT - BRAINPORT BOULEVARD



The sections on the following pages illustrate how, following the rules and possible building typologies for the plots (presented in paragraph 4.7), the central boulevard that connects the four hubs could be developed. This results in a boulevard that, if traveled along, will take you through all the different characters that the BSD has to offer. From natural reserves and agricultural production grounds to a suburban zone, then gradually scaling up in density to, eventually, an urban core zone around the station hub.

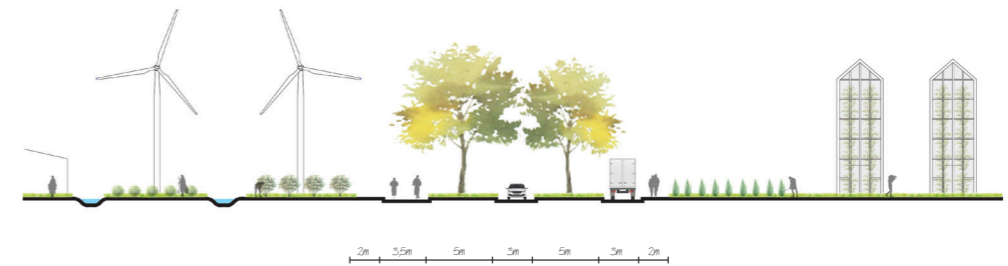


figure 4.24 Boulevard Section - Ring of Productive Activity



figure 4.23 Boulevard Section - Natural

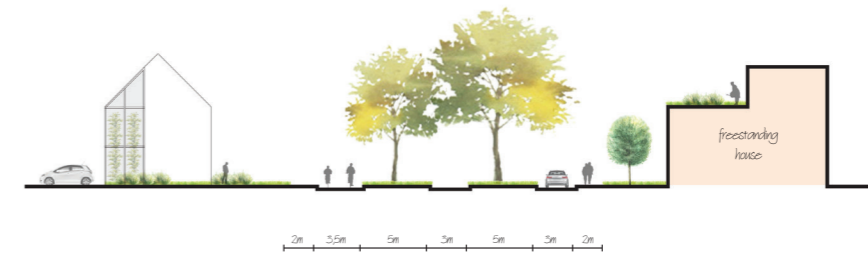


figure 4.25 Boulevard Section - Suburban Area

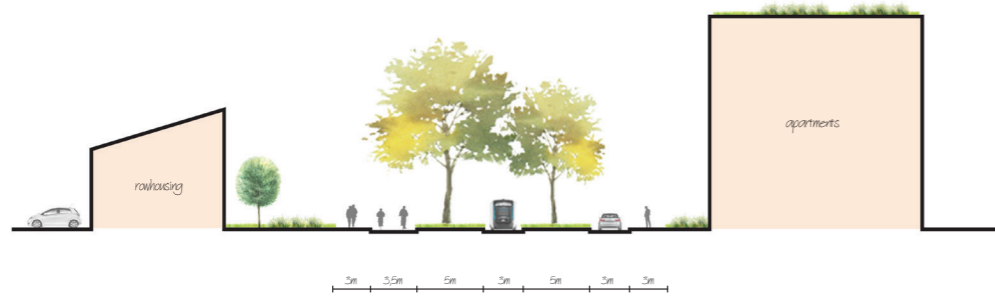


figure 4.26 Boulevard Section - Transition Area

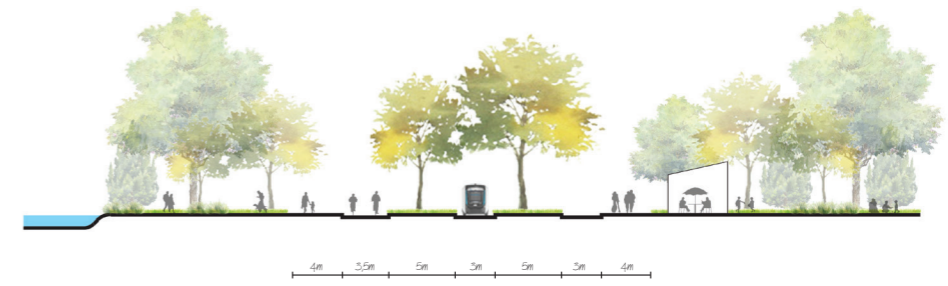


figure 4.28 Boulevard Section - Park

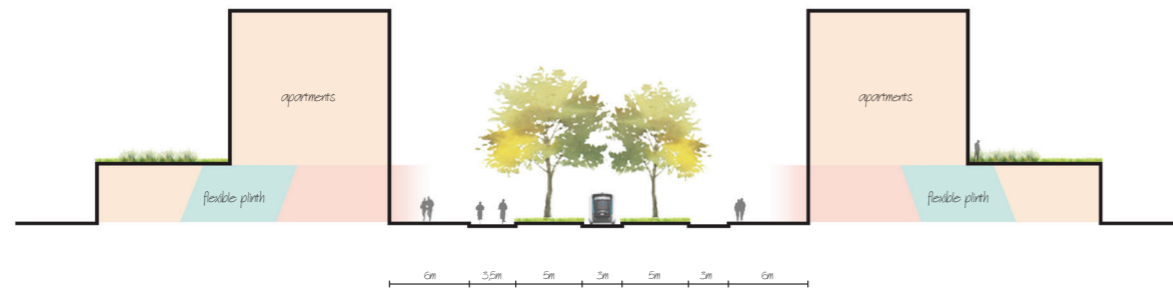


figure 4.27 Boulevard Section - Urban Center

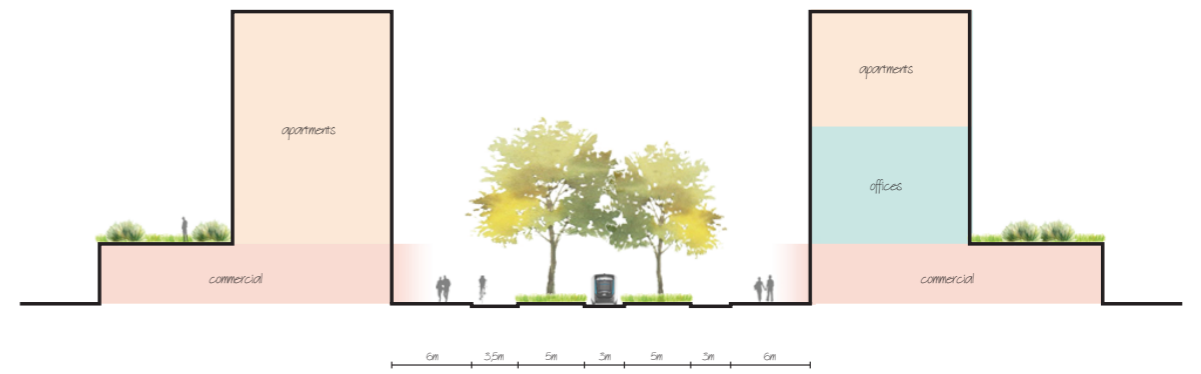


figure 4.29 Boulevard Section - Urban Core

4.6 HIGHLIGHT - NEIGHBOURHOOD STREETS



The built-up area of the district is divided into two zones. A zone that is accessible by car and a car free zone (figure 4.31). Accessibility in the car free zone for services is ensured for each plot by service roads (figure 4.35). Parking in this area is situated by developing parking garages on the plots along the service roads.

In the middle of these two zones is the park structure, and the existing road, which in this design is called the Brandevoort Connection (figure 4.32). The zone that is accessible by car has two types of street. The first type are the fixed neighbourhood streets. These ensure accessibility to each plot. The second type are the flexible neighbourhood streets. These streets can, depending on the actual initiatives placed on the plots, become car-free streets or not.



figure 4.31 Car Accessibility

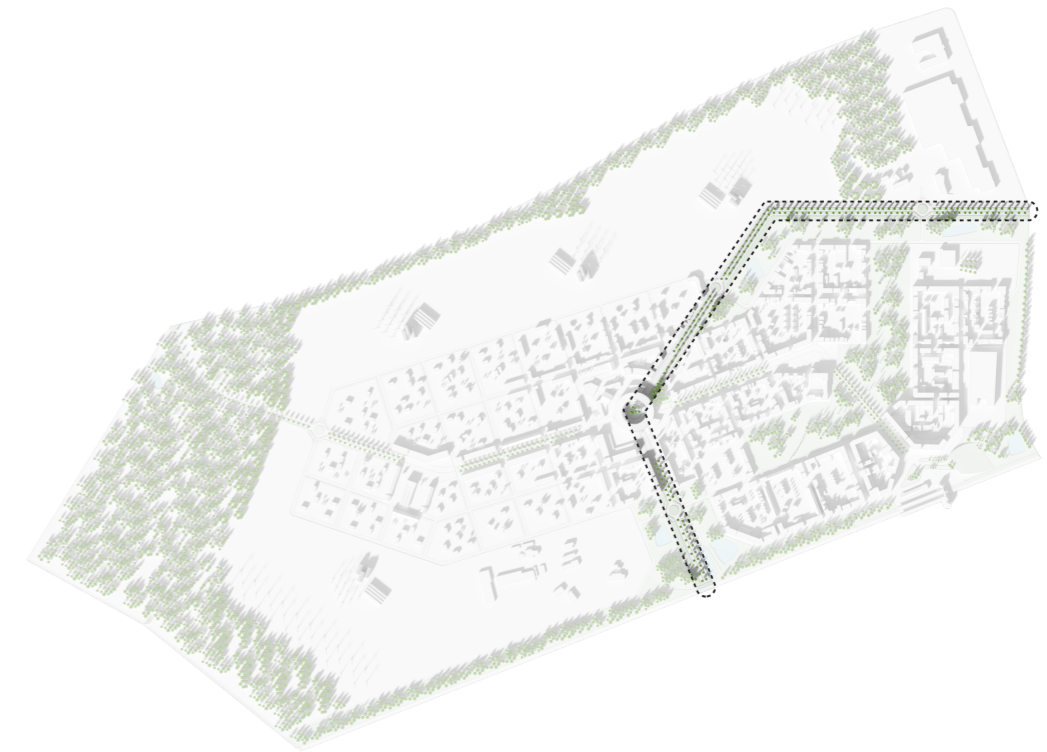


figure 4.32 The Brandevoort Connection

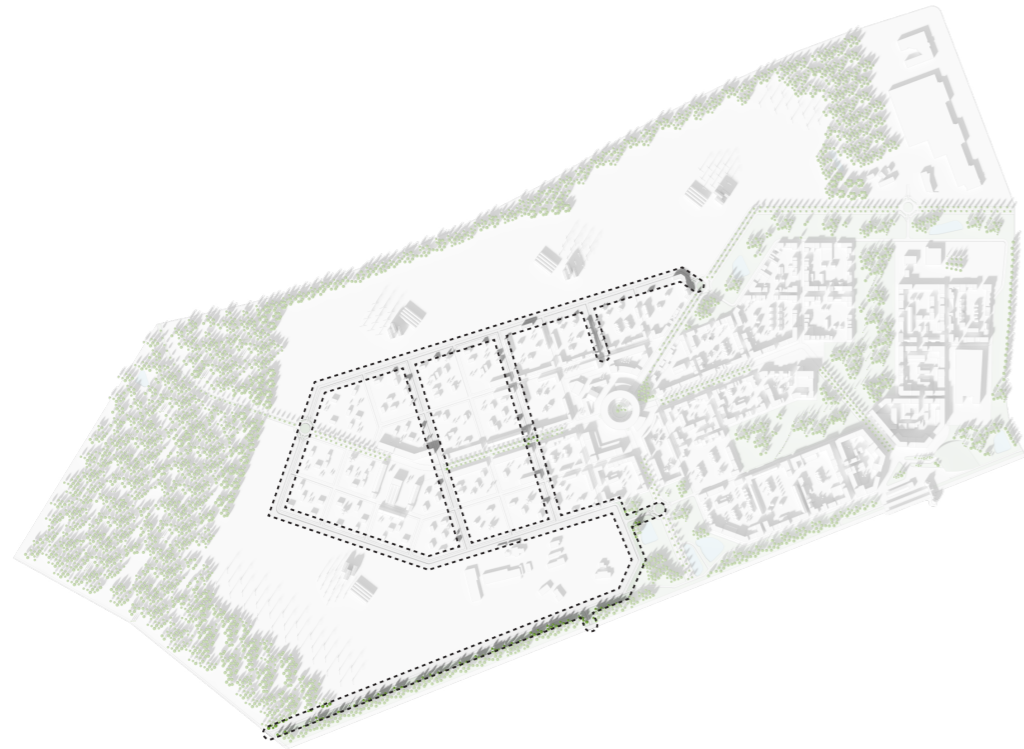


figure 4.33 Fixed Neighbourhood Streets

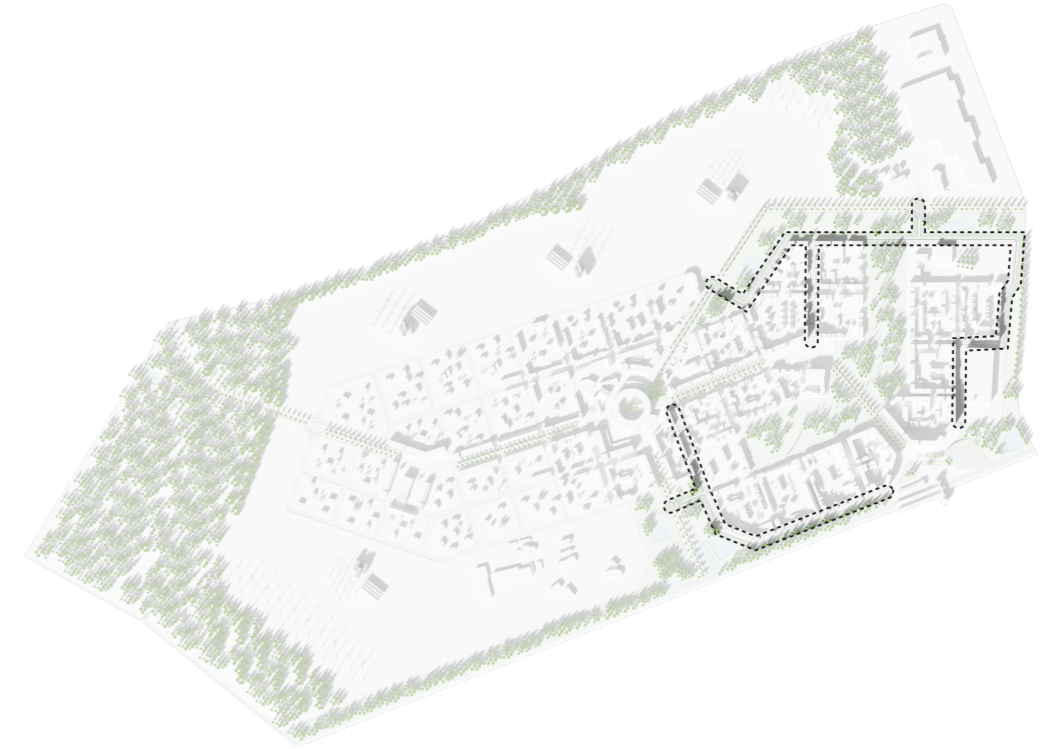


figure 4.35 Service Roads in Car Free Zone

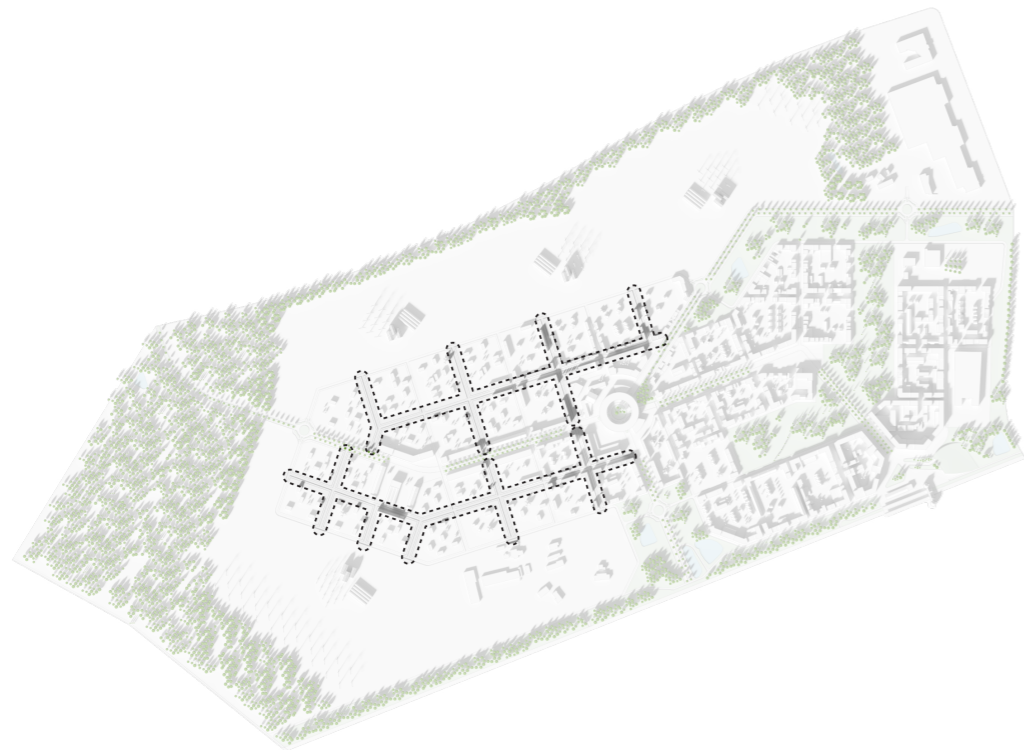


figure 4.34 Flexible Neighbourhood Streets



figure 4.36 Car Free Living Streets

4.7 HIGHLIGHT - PLOT CHARACTERS



The areas that are going to be built up with different initiatives are divided into a range of collective plots. This means that the people living on the plots are collectively responsible for their respective collective plot. The sizes of these plots are roughly based on the dimensions of 100 by 100 meter. This ensures that a scala of different initiatives, ranging from big to small, is possible, as the plots are large enough for this. They are, however, still small enough for residents to be able to manage a plot.

Figure 4.38 and 4.39 show how the collective plots are grouped and categorized in four different characters. The suburban plots in blue. The transition plots, transition from a suburban character to an urban character, in yellow. The urban plots in orange and the urban core plots in red. The gradual growth in density can be observed in these images. Especially in figure 4.39, where the building height increases towards the station hub.

As mentioned before, the development of these plots is mainly done through initiatives by future residents and developers. Only around the location of the hubs are some developments planned top-down beforehand. The categorization of plots in different characters, however, gives guidelines in where certain initiatives should be placed.

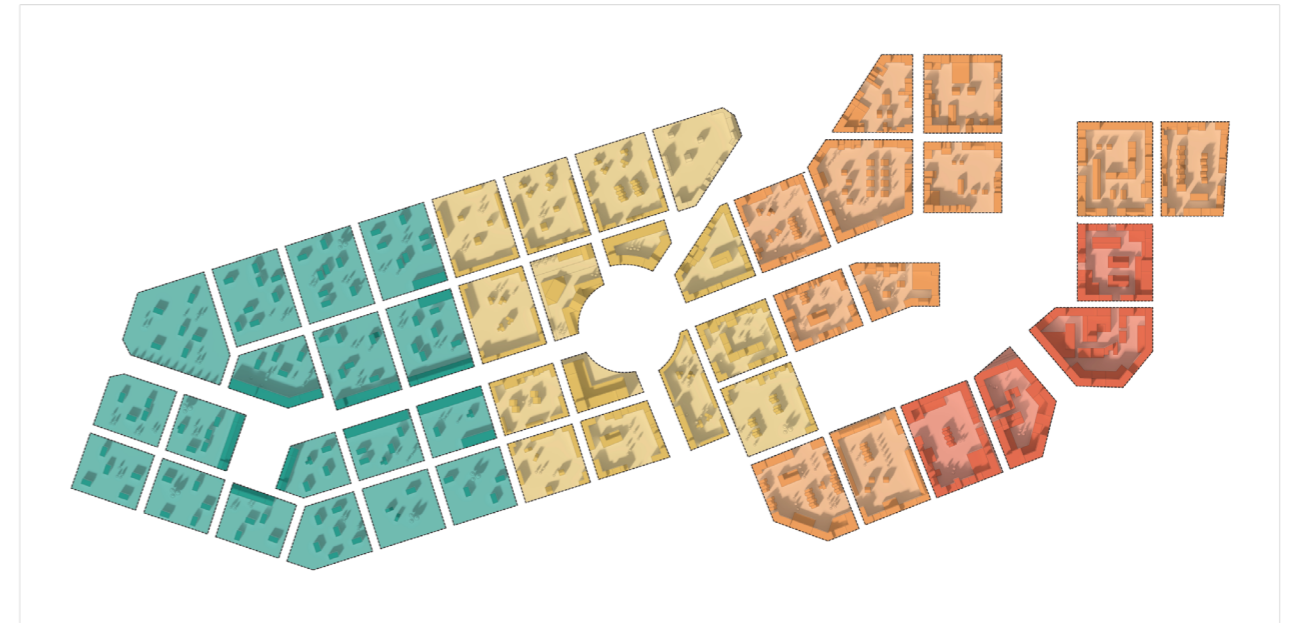


figure 4.38 Plot Characters - Plan View

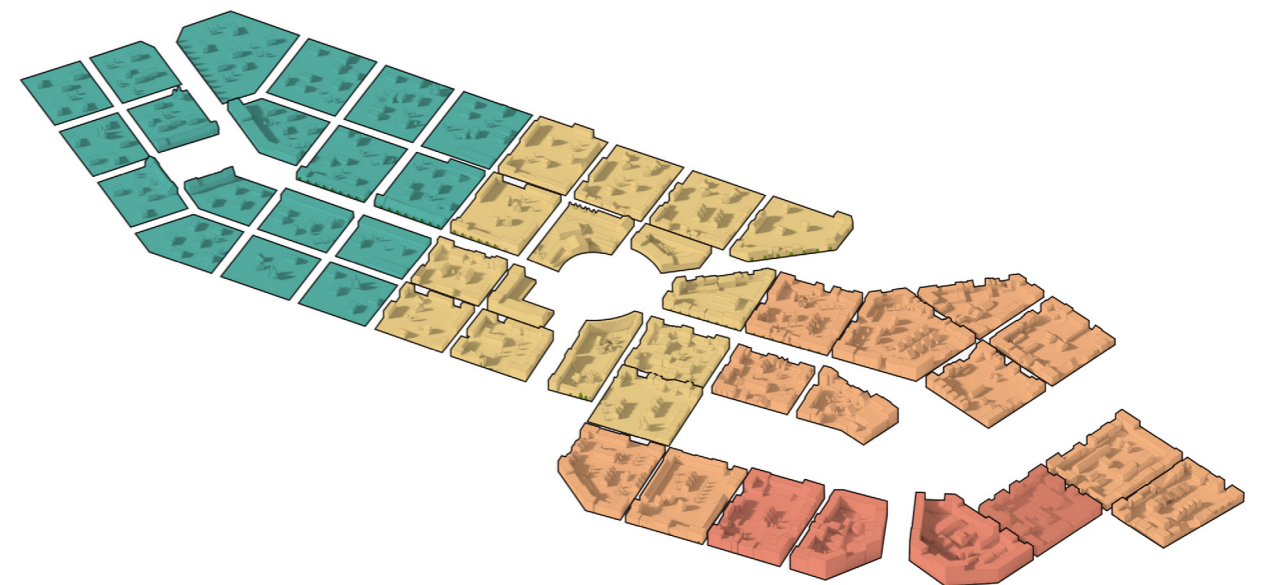


figure 4.39 Plot Characters - Isometric View

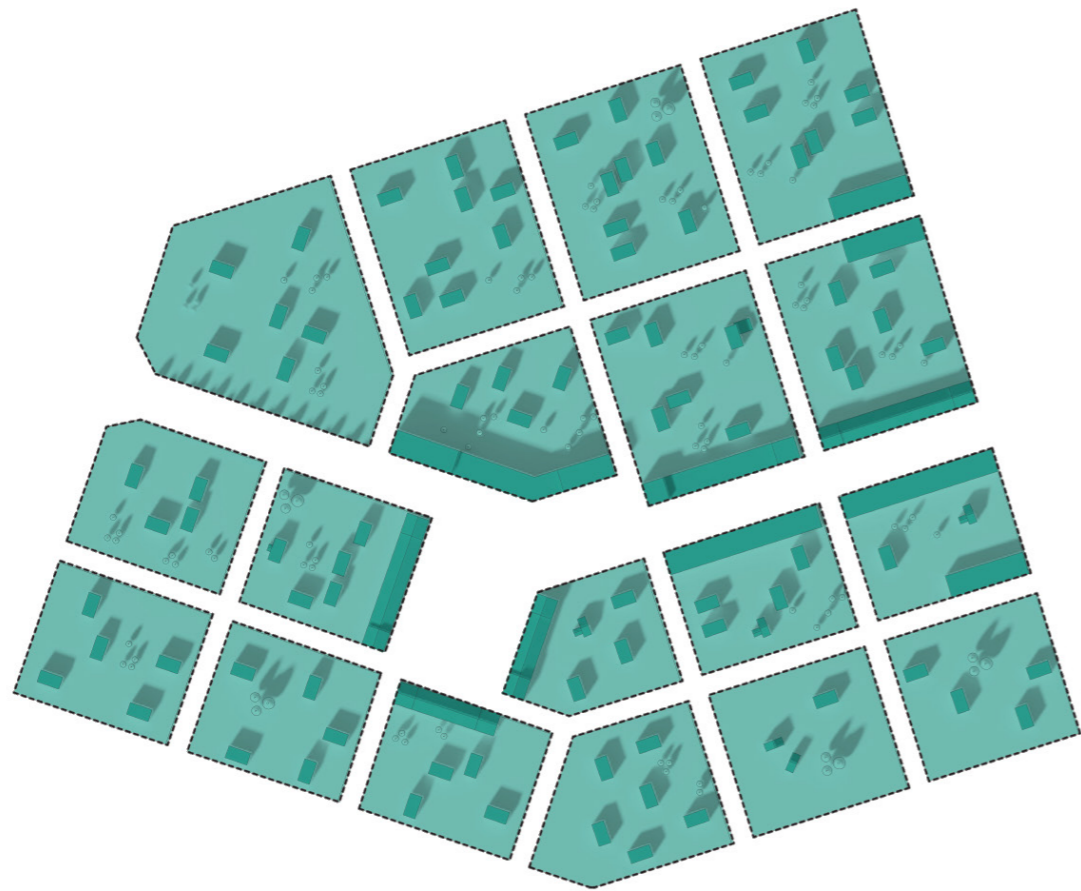


figure 4.40 Suburban Plots

Suburban Plots

The initiatives that can be placed in this area, will exist out of very low dense developments. Mostly consisting out of freestanding homes and duplex houses. Only along the boulevard and around the foodhub, some rowed houses and small apartment buildings are allowed. The plots on the outer edge of this area, those adjacent to the ring of productive activity, can be joined together to allow larger initiatives. For example, a large cohousing group or a developer that wants to

plan a bigger development. The aims for this area is that there is at least some amount of food production on each plot. Especially on the plots next to the agricultural ring.

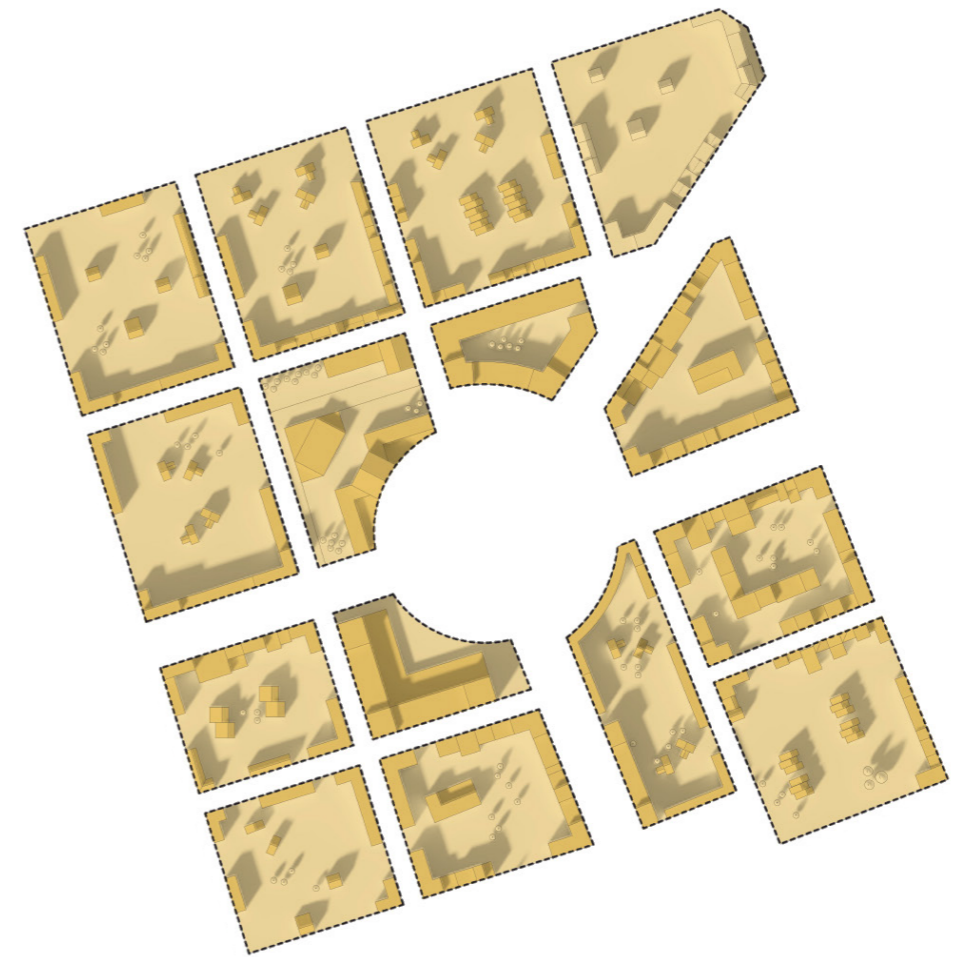


figure 4.41 Transition Plots

Transition Plots

The plots in this area form the transition from a more suburban character to an urban character. That means that the developments in this area have the highest mix of housing typologies. Freestanding homes, duplexes, rowed houses, apartment buildings can all be developed in this area. The lowest density is located along the north and south edges, with the highest density around the central governance hub. The plots directly adjacent to the central governance

hub are mostly planned beforehand, ensuring facilities like a school, healthcare, parking and child daycare in the most central location of the district.

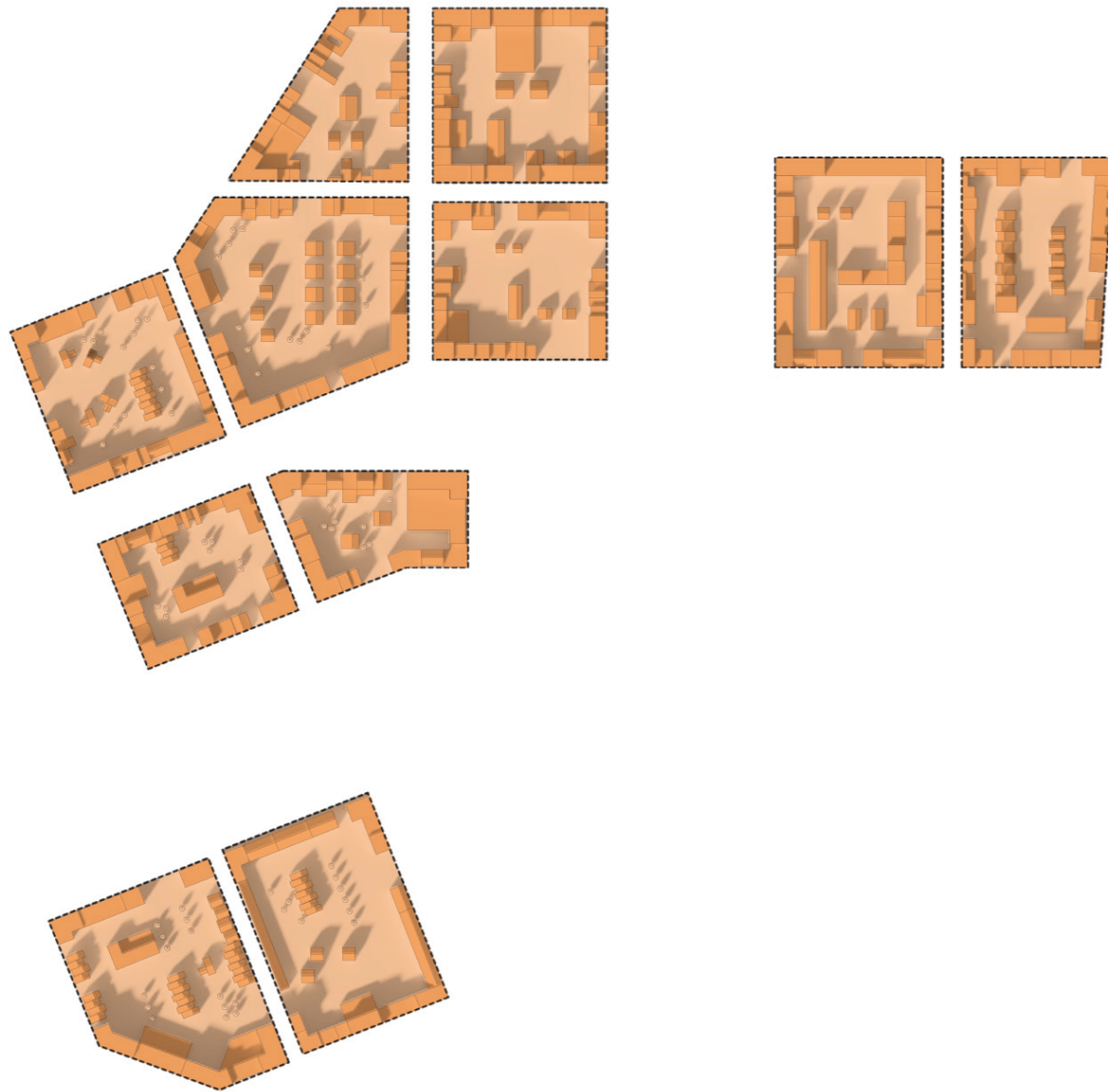


figure 4.42 Urban Plots

Urban Plots

These plots are of a more, typically urban character. This means that they mostly form closed blocks, with a more open and permeable edge when they are adjacent to the park. Developments that can be placed here are rowed housing and apartment buildings, with larger buildings placed on the corners of each plot as accents. Along the central boulevard, work or commercial related initiatives can be placed. The plots are large enough that they can

be opened up on the inside, allowing smaller developments inside them. Furthermore, by opening up the blocks in certain places and opening up neighbouring blocks on the same places, a network of semi-private public spaces can be created.

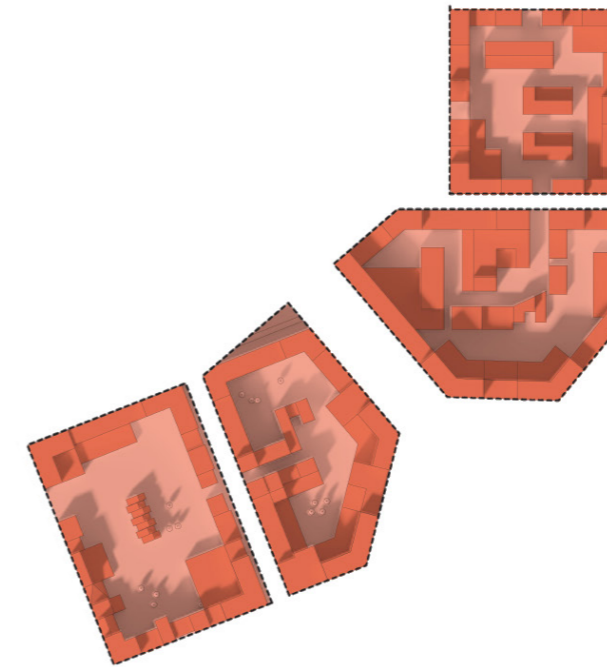


figure 4.43 Urban Core Plots

Urban Core Plots

The last group of plot characters consists of the urban core plots. These plots, which are located around the station hub, have the highest density of the entire district, with a maximum building height of 7 layers. Developments that are placed in these plots mainly consist of apartment buildings and offices. Offices are especially placed around the south-side of these plots, essentially forming a small office district around the station hub. On the ground floor of these

offices, retail and leisure functions are placed, creating a commercial zone around the station hub.

4.8 CONCLUDING REMARKS

By planning in the way proposed in this design, self-organization of residents becomes a collaboration between all actors. By using a framework that proposes a fixed infrastructure and hubs in logical, well-working, places and giving guidelines for collective plots, it becomes possible to place certain initiatives of future residents and developers in locations that is best suited for those initiatives. In short, it becomes possible to manage self-organization within a framework that is designed on the principles of self-organization.

The first initiatives of the BSD, the pioneers, introduced in chapter 3 could now be placed in different locations. Where they were first placed all inside the same strip, it is now possible to assign them a location, best suited for their respective wishes. This could also make the process of co-design sessions a lot easier, as the questions that the pioneers had, can now be answered. Also, conflicting ideas between them could be resolved more easily as they are now placed in locations that already suits them better.

The design guidelines followed here, are not only applicable in the case of the Brainport Smart District, but can also be used in the design of other urban developments based on participation and self-organization.

5 .

B I B L I O G R A P H Y

LIST OF REFERENCES

- Arnstein, S. R. (1969). A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>
- Azmi, D. I., & Karim, H. A. (2012). Implications of Walkability Towards Promoting Sustainable Urban Neighbourhood. *Procedia - Social and Behavioral Sciences*, 50, 204–213. <https://doi.org/10.1016/j.sbspro.2012.08.028>
- Boonstra, B., & Boelens, L. (2011). Self-organization in urban development: towards a new perspective on spatial planning. *Urban Research & Practice*, 4(2), 99–122. <https://doi.org/10.1080/17535069.2011.579767>
- Brainport Smart District. (2019, July 1). Home. Retrieved December 13, 2019, from <https://brainportsmartdistrict.nl/en/>
- Brooke Wortham-Galvin, D. (2013). An Anthropology of Urbanism: How People Make Places (and What Designers and Planners Might Learn from It). *FOOTPRINT*, 7(2), 21–400. <https://doi.org/10.7480/footprint.7.2.766>
- Brownill, S., & Carpenter, J. (2007). Participation and planning: Dichotomies, rationalities and strategies for power. *Town Planning Review*, 78(4), 401–428. <https://doi.org/10.3828/tpr.78.4.2>
- Carayannis, E. G., & Campbell, D. F. J. (2009). “Mode 3” and “Quadruple Helix”: toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3/4), 201. <https://doi.org/10.1504/ijtm.2009.023374>
- Cozzolino, S., Buitelaar, E., Moroni, S., & Sorel, N. (2017). Experimenting in Urban Self-organization. Framework-rules and Emerging Orders in Oosterwold (Almere, The Netherlands). *Cosmos + Taxis*, 4(2), 49–59.
- CROW (2004). ASVV 2004 - Aanbevelingen voor verkeersvoorzieningen binnen de bebouwde kom. CROW, Ede.
- Daniels, R., & Mulley, C. (2013). Explaining walking distance to public transport: The dominance of public transport supply. *Journal of Transport and Land Use*, 6(2), 5. <https://doi.org/10.5198/jtlu.v6i2.308>
- Day, D. (1997). Citizen Participation in the Planning Process: An Essentially Contested Concept? *Journal of Planning Literature*, 11(3), 421–434. <https://doi.org/10.1177/088541229701100309>
- de la Peña, D. S. (2013). Experiments in Participatory Urbanism. Retrieved from https://digitalassets.lib.berkeley.edu/etd/ucb/text/delaPena_berkeley_0028E_13352.pdf
- Felixx. (n.d.). Brainport Smart District Helmond [Illustration]. Retrieved from <https://www.felixx.nl/projects/brainport-smart-district-helmond.html>
- Haydn, F., Temel, R., Arlt, P., Skogley, D., & Lindberg, S. (2006). *Temporary Urban Spaces: Concepts for the Use of City Spaces*. Basel: CHRONICLE BOOKS.
- Healey, P. (1997). *Collaborative Planning: Shaping Places in Fragmented Societies*. London: Palgrave.
- Horelli, L. (2013). *New Approaches to Urban Planning - Insights from Participatory Communities*. Helsinki: Aalto University.
- Innes, J. E., & Booher, D. E. (2010). *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy* (1st ed.). New York: Routledge.
- Innes, Judith E. (1995). Planning Theory’s Emerging Paradigm: Communicative Action and Interactive Practice. *Journal of Planning Education and Research*, 14(3), 183–189. <https://doi.org/10.1177/0739456x9501400307>
- Krivý, M., & Kaminer, T. (2013). Introduction: The Participatory Turn in Urbanism. *FOOTPRINT*, 7(2), 1–6. <https://doi.org/10.7480/footprint.7.2.766>
- Krueger, R., Tuler, S., & Webler, T. (2001). What Is a Good Public Participation Process? Five Perspectives from the Public. *Environmental Management*, 27(3), 435–450. <https://doi.org/10.1007/s002670010160>
- Lee, Y. (2008). Design participation tactics: the challenges and new roles for designers in the co-design process. *CoDesign*, 4(1), 31–50. <https://doi.org/10.1080/15710880701875613>
- Leydesdorff, L., & Deakin, M. (2011). The Triple-Helix Model of Smart Cities: A Neo-Evolutionary Perspective. *Journal of Urban Technology*, 18(2), 53–63. <https://doi.org/10.1080/10630732.2011.601111>
- Loorbach, D. A. (2007, June 7). *Transition Management: new mode of governance for sustainable development*. Retrieved from <http://hdl.handle.net/1765/10200>
- Love, R. (2013). Aporia of Participatory Planning: Framing Local Action in the Entrepreneurial City. *Footprint*, 7(2). Retrieved from <https://journals.open.tudelft.nl/footprint/article/view/Love>
- Maak Oosterwold. (2019). Retrieved February 14, 2020, from <https://maakooosterwold.nl/>
- Mehaffy, M., Porta, S., Rofè, Y., & Salingaros, N. (2010). Urban nuclei and the geometry of streets: The ‘emergent neighborhoods’ model. *URBAN DESIGN International*, 15(1), 22–46. <https://doi.org/10.1057/udi.2009.26>
- Miazzo, F., Kee, T., & Trancity (Organization). (2014). *We Own the City: Enabling Community Practice in Architecture and Urban Planning*. Haarlem: Trancity.
- Mohammadi, H. (2010). *Citizen Participation in Urban Planning and Management: The Case of Iran, Shiraz City, Saadi Community*. Kassel: Kassel University Press.
- Mostert, K. (2019, February 26). De illusie van Oosterwold. Retrieved February 14, 2020, from <https://www.oneworld.nl/lezen/opinie/de-illusie-van-oosterwold/>
- Obama, B. H. (2012, November 7). Text: Obama’s re-election victory speech in Chicago. Retrieved December 12, 2019, from <https://www.reuters.com/article/usa-election-obama-speech-text/text-obamas-re-election-victory-speech-in-chicago-idINDEE8A60BA20121107>
- Omroep Flevoland. (2020, January 11). Lidl bouwt winkel in Oosterwold. Retrieved February 14, 2020, from <https://www.omroepflevoland.nl/nieuws/177332/lidl-bouwt-winkel-in-oosterwold>
- Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18. <https://doi.org/10.1080/15710880701875068>
- Stickells, L. (2011). The Right To The City: Rethinking Architecture’s Social Significance. *Architectural Theory Review*, 16(3), 213–227. <https://doi.org/10.1080/13264826.2011.628633>

Talen, E. (2014). Do-it-Yourself Urbanism. *Journal of Planning History*, 14(2), 135–148. <https://doi.org/10.1177/1538513214549325>

Tan, E. (2017). *Play the City: Games Informing the Urban Development*. Heijningen: Jap Sam Books.

UNStudio. (2018). Brainport Smart District. Retrieved December 24, 2019, from <https://www.unstudio.com/en/page/11722/brainport-smart-district>

van der Molen, F. (2019, July). De lessen van Oosterwold | NUL20. Retrieved February 14, 2020, from <https://www.nul20.nl/dossiers/lessen-van-oosterwold>

van Rooijen, M. (2015). Burgerparticipatie en overheidsparticipatie bij stedelijke herontwikkeling. Retrieved from <https://dspace.library.uu.nl/handle/1874/318145>

van Straalen, F. M., Witte, P., & Buitelaar, E. (2017). Self-Organisation in Oosterwold, Almere: Challenges with Public Goods and Externalities. *Tijdschrift Voor Economische En Sociale Geografie*, 108(4), 503–511. <https://doi.org/10.1111/tesg.12267>

van Waart, P., Visser, E., & Harbers, M. (2015). Value Sensitive Design of Smart Cities. Retrieved from <https://www.hogeschoolrotterdam.nl/onderzoek/projecten-en-publicaties/pub/value-sensitive-design-of-smart-cities/4841ea8d-0e83-443a-bb08-c5851f5225d1/>

