

The added value of mixed-use

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An exploratory study into the added value of mixed-use real estate development in the Netherlands.

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(Photograph by Ossip van Duivenbode)

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## Preface

This thesis is the final submission of the graduation process for the Management in the Built Environment master track of the Architecture, Urbanism & Building Sciences curriculum at Delft University of Technology. This study is part of the Adaptive Re-Use studio of the Real Estate Management chair.

Through the research conducted in this thesis, I hope to make my contribution to the academic discourse of the urban development field. Moreover, I hope to provide further insight into the discussion between real estate developers, investors, and public parties, and their perception of value.

I would like to express particular gratitude to H.T. Remøy PhD MSc, Associate Professor of Real Estate Management and E.W.T.M. Heurkens PhD MSc, Assistant Professor of Urban Development Management, who tutored me throughout the writing of this thesis. They have guided me through the perils of doing qualitative empirical research and helped me make sense of the status-quo of literature on the studied topics.

Furthermore, I would like to thank everyone who contributed to this research. My gratitude goes out to the interviewees, lecturers, and companies who were kind enough to share their expert insights.

Bon voyage on your venture through this thesis!

*Max Emile Appels*  
*Roosendaal, June 2022*

## Abstract

Due to the changing role of the private sector in the Dutch land development process, real estate developers are increasingly involved in realising the interests of the direct surroundings of their redevelopment projects. To incorporate the seemingly unprofitable space-use in their project, developers increasingly opt for mixed-use real estate. The chosen mix of space-uses directly impacts the business case and the area. However, the relationship between these two is unclear, leading to the formulation of the research question: How can mixed-use generate value for both the area and the redevelopment business case?

The aim of this research is to make explicit the mutual value generated by the mix of space-uses in redevelopment projects. It attempts to fill this knowledge gap through analysis of literature, exploratory interviews with field experts, and an embedded multiple case study. The non-holistic case study method consists of the individual descriptive analyses of three cases, among which two phenomena are studied as units of comparison: added value to the area; and added value to the business case. These phenomena are substantiated through literature and compared among the cases through a cross-case analysis. The exploratory interviews provide context for the interpretation of case results.

The study identifies several benefits of mixed-use and the incorporation of particular space-uses. However, many of the benefits for the area do not end up with their investor. Moreover, assessing the extent of the benefits is difficult as they cannot be measured quantitatively, and stakeholders interpret their value differently. Additionally, mixed-use real estate falls outside of the asset classes of investors, and investor attitude towards the product type varies due to identified risks, but benefits in return are not assessed appropriately.

By broadening the business case alternative value streams can be included using which the business case profits from the additional space-uses. Meaning qualitative benefits are also considered. The benefits from mixed-use can be categorised in primary, secondary and even tertiary value streams. The first of which is the direct impact of the additional urban function through compensation of the investment costs. The secondary value stream is based on the indirect value added through synergies between urban functions, increased marketability of the primary space-uses, and loosened project constraints. Furthermore, the study finds that some of the benefits for the developing party actually lie outside of the business case, thereby providing a tertiary value stream of positive exposure of the firm and strengthened relationships with public parties.

What results is a comprehensive understanding of the mutual character of benefits that result from incorporation of a mix of space-uses in real estate objects. Their opportunity to generate value is not mutually exclusive to either the area or the business case, as project value is based on the vibrancy of the area it is situated in.

### Key terms:

Real estate, space-use, mixed-use, land-use, value creation, area development, value capturing, placemaking, function, developer, investor, corporate social responsibility

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## **Glossary**

### **Spin-off**

A positive side-effect or by-product.

### **Spill-over**

The spreading of an effect or influence outside of the project's boundaries.

### **Space-use**

The type of activity that (part of) the building caters to. This is a three-dimensional interpretation of the two-dimensional notion of 'land-use'. Space-use can also be called 'urban function'.

### **Placemaking**

A marketing strategy that can be employed to make an area or real estate object more distinct and well-known.

### **Branding**

A marketing strategy that can be employed to make an area or real estate object more attractive to a target audience.

### **Mixed-Use**

Real estate consisting of multiple functions (e.g., commercial, residential, office, etc.) in one building. Usually, this mix consists of a main function combined with additional amenities. Further definition can be found in the literature review.

### **(Urban) Function**

The use case activity of spaces or buildings (e.g., office space, leisure, etc.). Urban function can also be called space-use.

### **Additional function / accessory function**

A real estate use (for which space is reserved specifically) outside of the main use of the building. This includes, but is not limited to: Amenities, services, public space, or simply a building of mixed asset-classes, or even one of the main types

### **Asset-class**

The characteristic type of the asset, by which assets can be grouped. For example: Office buildings, residential buildings, etc.

### **Triangulation**

The use of more than one method or source of data in the study of a social phenomenon so that findings may be cross-checked. (Bryman, 2016)

## Executive summary

### Introduction

Due to the changing role of the private sector in the Dutch land development process, real estate developers are increasingly involved in realising the interests of the direct surroundings of their redevelopment projects. New developments can integrate amenities and services that the area demands (De Zeeuw, 2018), boosting surrounding real estate value through their spin-off (Heurkens et al., 2020). To incorporate the seemingly unprofitable space-use in their project, developers increasingly opt for mixed-use real estate. The positive impact to the city of the intertwining and mixing of land-uses has been commonly outlined by Jacobs (1992).

### Problem

The hypothesis is that these urban functions can also provide a shared value increase, for both the area and the business case, even though individually they may not be the most profitable space-use when solely considering the rate of return of that rentable space in particular. Heurkens et al. (2020) state that the ordinary business case generally does not acknowledge value that is not cashed directly through rent prices. This leaves the question whether other value streams can be tapped into.

### Aim

The aim of this research is to identify and make explicit qualitatively the value generated by the mix of space-uses in real estate projects. Part of this value may lie within the area, external to the investment made in the business case. Other value created through mixed-use may contribute to the business case directly. By expressing these normally disregarded streams of added value into words and figures they are better understood, enabling stakeholders to more effectively generate and capture value in mixed-use projects.

### Research question

The problem statement leads to the formulation of the central research question:

*How can mixed-use real estate generate value for both the area and the redevelopment business case?*

This question is subdivided into four research questions, which together provide a comprehensive answer to the central research question:

- *What are the benefits and downsides of mixed-use?*
- *How can mixed-use add value to the area?*
- *How can mixed-use contribute to the business case?*
- *How can the added value for the area be captured for the business case?*

All four of these research sub-questions are answered both theoretically through literature research and empirically through case research.

Figure A shows the framework accompanying the research question, displaying both the hypothetical disregarded value streams. This diagram depicts a simplified cash-flow diagram of the development business case in which an initial investment generates a future return. The extra investment into accessory functions, meaning space-uses outside of the main project component, hypothetically generates added value.

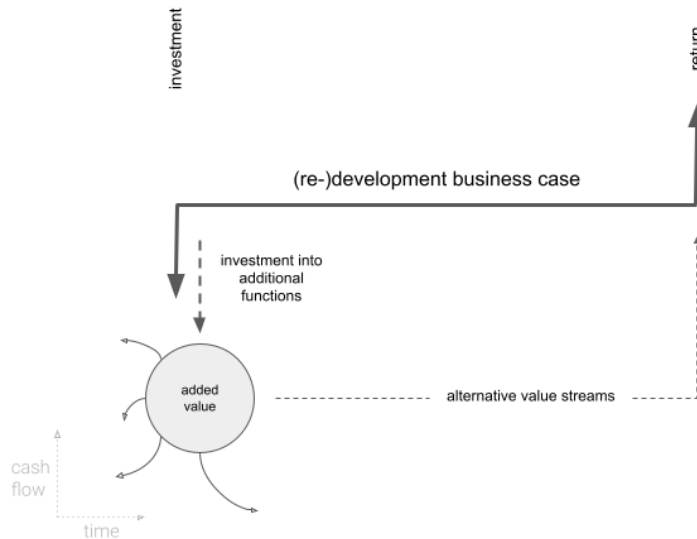


Figure A: Conceptual framework of to be researched value streams

The diagram of figure A indicates how this added value is believed to spread over the area. However, this thesis hypothesises that at least part of the outflowing value can be reclaimed through alternative value streams, providing additional return on investment. This research will assess and make explicit the actual value that is generated and distributed in these streams, and what influence the developers can have on these. It thereby tests the hypothesis.

## Method

This study attempts to fill the knowledge gap through analysis of literature, exploratory interviews with field experts, case studies and a cross-case comparison. The methodological model for this research is an embedded multiple-case study, as shown in figure B. According to Yin (2003) this research type enables analysis of phenomena within and across cases. It consists of the individual descriptive analyses of three cases (non-holistic). Among these cases, two phenomena are studied as units of comparison. Analysis of contrasts in results helps comprehend the studied phenomenon. Moreover, conclusions based on similarities between multiple cases can be used to augur similar results based on familiar reasons (Yin, 2003). By studying multiple cases and crosschecking and comparing results triangulation is achieved (Bryman, 2016).

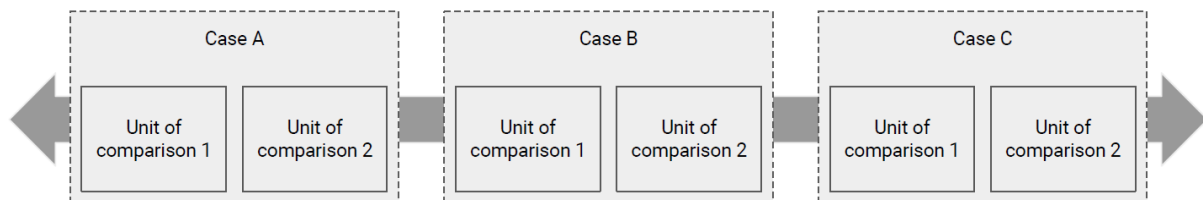
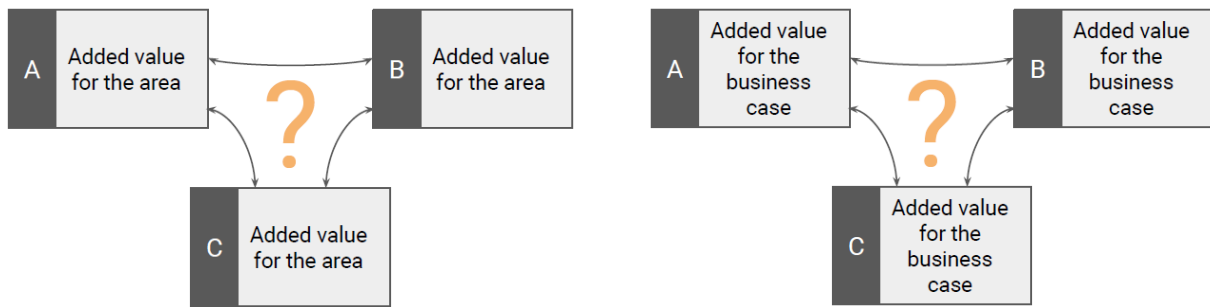


Figure B: The embedded multiple-case study model. (Own illustration.)

Through a cross-case analysis, the cases are compared on these embedded phenomena, shown in figures C and D.



Figures C (left) and D (right): Cross-case analyses for the two studied phenomena. (Own illustration.)

Prior to studying the case projects the context in which they operate is studied extensively. Yin (2003) mentions the importance of interpretation of case studies within their context in order for them to be analysed appropriately. Therefore, the phenomena studied as unit of comparison in the embedded multiple case study are first explored in non-case specific interviews. Related policies and regulations are explored too.

## Results

Consequential to factors of industrialisation, single-use zoning became the norm and is still dominant to this day (Mumford, 1961; Jackson, 1985; Bruegmann, 2005; Grant, 2007; Mandelker, 2008; Herndon, 2011). However, the issues of pollution and nuisance that drove this change have largely been resolved and several of the arguments for monofunctional areas are outdated. Modern cities are struck with new problems created by car dependency, daily commuting traffic and a general lack of vibrancy during office hours characteristic of single-use zoning (Rowley, 1996; Downs, 2005; Hoppenbrouwer & Louw, 2005; Rabianski, 2009; Herndon, 2011).

Urban planning is reconsidering mixed-use development as a remedy for these problems and identifies several positive effects relating to day-round vitality of the area, mobility, and environmental sustainability (Herndon, 2011). Coupland (1997) and the British Department of the Environment (1995a) state a list of consequential benefits originating in the concentration and diversity of activities produced by mixed-use. The relationships between benefits are illustrated in figure E (DoE, 1995b).

Unfortunately, many benefits do not directly end up with the investor. Thus, attempts are made to reclaim some of it. The positive impact of (social) additional project components on the area surrounding the development is hardly quantifiable. It is therefore incredibly difficult, if not impossible, to express the financial value of benefits. However, these benefits can be considered qualitatively.

Although convincingly beneficial, mixed-use development does come with certain downsides and hindrances. Hoppenbrouwer & Louw (2005) point out that mixed-use development is not a single solution to all societal problems. They describe it as a tool to create better urban environments. There are certain preconditions to properly apply mixed-use development in order for any positive impact to be released (Jane Jacobs, 1992; Rowley, 1996; Coupland, 1997; Grant, 2002; Rabianski, 2009).

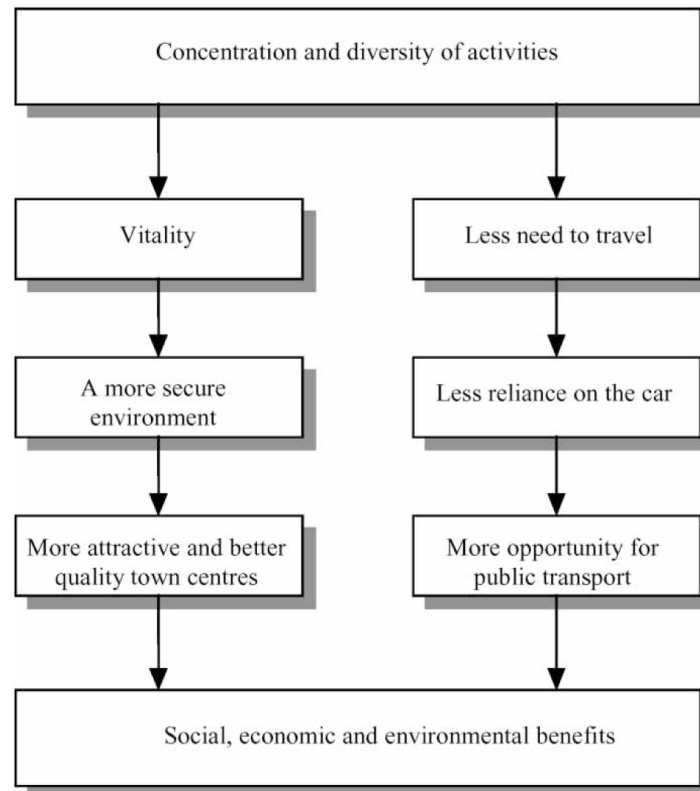


Figure E: Relationships between benefits of mixed-use development (DoE, 1995b).

Many of the benefits rely on synergy of urban functions and are therefore interdependent. This increases risk as poor timing may lead to vacancy and low rents (Rabianski, 2009). Independent financial feasibility of the project components may mitigate the risks accompanying mixed-use development, but that would mean that cornerstone land-uses cannot compensate for other urban functions. (Schwanke, 2003).

It should be recognised that many of the downsides are not necessarily a consequence of mixed-use but a product of the real estate development practice being geared towards single-use development ever since the industrial era. The investment statutes and financier's acceptance, regulations, policies, and land-use plans may form obstacles to mixed-use development (Rabianski, 2009; CRA, 2021; Hobma & Jong, 2016). Interviews strongly note the prescriptive impact these aspects have. However, these downsides may diminish when mixed-use becomes more common.

### Context

Before heading into the case studies, a first round of exploratory non-case specific interviews was held. The results sketch the context that the cases operate in and provide a background to the studied phenomena. This ensures valid interpretation of case research results.

It turns out the urban functions of the project mix are not only dictated just by zoning, regulations, and local market demand. There are other factors that play a role into the selection of project components that can be realised. The following topics were specifically addressed by interviewees of the exploratory interviews: fiscality, parking regulations, overzealous land-use plans, optimal placement of space-uses, importance of public space, a conflict in interest with corporate strategy and the strict boundaries of real estate funds.

A difference in perspective emerged between developers and investors. The developer perceives the greater control over the area and marketability of the asset as risk mitigation, while the investor may see additional project components as by-catch or an increased management risk. Moreover, the main limitation for financial support of mixed-use developments are the investment fund criteria set in place by investors. Investment models do not consider qualitative benefits to the area. Nevertheless, due to the demands of cities and the resulting urban planning policies mixed-use projects are increasingly more common. Investment managers have to adapt and are changing their perspective on mixed-use assets.

### **Case studies**

The studied cases are carefully selected based on a set of requirements. Most importantly they have to be redevelopments of inner-city sites that incorporate space-uses that (at first sight seem to) connect to their surroundings. This led to the following three case projects:

#### *Fenix I*

Situated on the Katendrecht peninsula in Rotterdam, this historic expedition warehouse was transformed to a wide variety of space-uses and topped-up with a vast residential block. To pay homage to the industrial legacy of the building and the Katendrecht docks the rough character remained to the delight of local citizens.

This redevelopment project was part of a larger revitalisation of Katendrecht, which was a very rough crime- and prostitution-ridden neighbourhood at the time. To accompany this private investment the municipality invested into public spaces and expropriation. The municipality had the ambition to also house several cultural initiatives and social urban functions in the building. However, the risky investment deemed unfeasible. Due to their great interest in the project, the municipality was willing to sign a long-term lease agreement for the transformed warehouse spaces mitigating the risk of these hard to let unprofitable spaces.

#### *Haasje Over*

This extravagant building is part of the currently materialising redevelopment of the Strijp-S site, in which gated Philips factories are re-integrated into the city of Eindhoven. The slender tower is accompanied by a 50-metre-long two-story-high bridge construction spanning over an old production facility. The retired factory hall housed a skating community as an important placemaking aspect in temporary use of the site.

The site was destined for demolition to make room for a large social housing project. However, the impact on the character and attraction of the desired local community made the skate hall an essential element of Strijp-S. Therefore, the skating community was housed permanently. This seriously impacted the business case of the redevelopment project, which was compensated by the municipality based on residual land value calculation. The compensation of profitable space followed the initiative of the developing party, which had the intrinsic motivation to invest in sustaining the local community.

#### *KJ Residences*

The Koningin Juliana square is the entrance to the city and all of its attractions from the central station. However, this public space and the connection to the station hall was very unpleasant and demanded redevelopment. In a tender the municipality invited developers to come up with design plans for a new building on this square, including a public entrance hall and redesign of the square.

In the tender criteria, the design and quality of stay elements of the public hall and square carried more weight than the land bid. Therefore, the land-price was compensated automatically in the tender. However, in later stages of project development the plan became unfeasible despite the realisation of two residential towers above the public plinth. The high interest of the municipality, accompanied with the increased difficulty of building overtop the underground parking garage, meant the municipality settled with the developer on a financial compensation.

### Cross-case analysis

According to the methodological model the three cases are compared on the basis of two units of comparison, being: added value to the area; and added value to the business case. These comparisons were based on the information gathered through in-depth interviews and document research. After careful inventorisation of answers the results can be categorised based on similarities or striking differences. These are presented schematically in figures F and G.

	Fenix I	Haasje Over	KJ Residences
Provides space for local cultural initiatives	●	●	
Attracts new user groups (young families / creatives)	●	●	
More diverse housing stock retains families	●		
(New) strong identity & brand of the area	●	●	●
Spark rapid increase in surrounding real estate prices	●	●	
Improve quality of stay & character of public space	●		●
Incorporation of extraordinary space-use as placemaking	●	●	●
Engages with / includes local community through social / cultural space-use	●	●	
Shift in local attitude towards redevelopment	●		
Strong identity strengthens brand of the area	●	●	●
Increased preservation of industrial legacy	●	●	
Increase traffic flow on foot			●
Origin of investment:	<b>Concession</b> , as inclusion of social space-uses was a municipal demand	<b>Intrinsic motivation</b> , to engage with local communities out of social responsibility	<b>Concession</b> , the design and quality of use of the public hall were tender assessment criteria
Associated public investments:	Part of the urban renewal of Katendrecht. The municipality was willing to invest in public space as developer helped realise their ambitions.	The municipality takes part in a Special Purpose Company for allotment of land.	Redesign of KJ square, large underground bicycle parking and connection to Koekamp park.

Figure F: Categorisation of cross-case analysis results for the added value to the area (Own illustration)

	Fenix I	Haasje Over	KJ Residences
Rebranding causes increased demand and new user groups	●	●	
Long-term investment met with high yield for pioneers	●	●	
Improved quality of public space improves marketability			●
Land bid compensated for loss of buildable land / space profitability		in settlement	in tender
Long-term financial commitment of municipality	lease contract		
Freedom in temporary use			
Great municipal interest loosens 'soft' restrictions	●		●
Increased attractiveness (not expressed monetarily) due to greater vibrancy of the area	●	●	●
Improved marketability due to service level provided by additional space-uses			●
Strengthened relationship with (public) project parties	reference for acquisition	novel character	reference for acquisition
Mixed-use development may favour strategy of the firm over optimised business-case			●

Figure G: Categorisation of cross-case analysis results for the added value to the business case (Own illustration)

## Conclusion

Consequentially to the gathering of results, the four sub-questions collectively answer the central research question: *How can mixed-use real estate generate value for both the area and the redevelopment business case?*

The findings indicate several benefits that can be interpreted as value streams to the business case. These are insufficiently considered in the business case as we know it, as they are difficult to express monetarily and may often be qualitative. By broadening the business case these alternative value streams can be included using which the business case profits from the additional space-uses. This means qualitative benefits are also considered.

The benefits from mixed-use can be categorised in primary, secondary and even tertiary value streams. These can be abstracted into investments and returns on a cash-flow diagram as in the conceptual framework. This results in the cash-flow diagram of figure Z. In this diagram, the added space-uses bring about an additional investment and a series of additional returns.

The first of which is the direct impact of the additional urban function through compensation of the investment costs, and the marginal rent income of the added urban functions. The secondary value stream is based on the indirect value added through synergies space-uses, increased marketability of the primary space-use, and looser project constraints. Furthermore, the study finds that some of the benefits for the developing party actually lie outside of the business case, thereby providing a tertiary value stream of positive exposure of the firm and strengthened relationships with public parties.



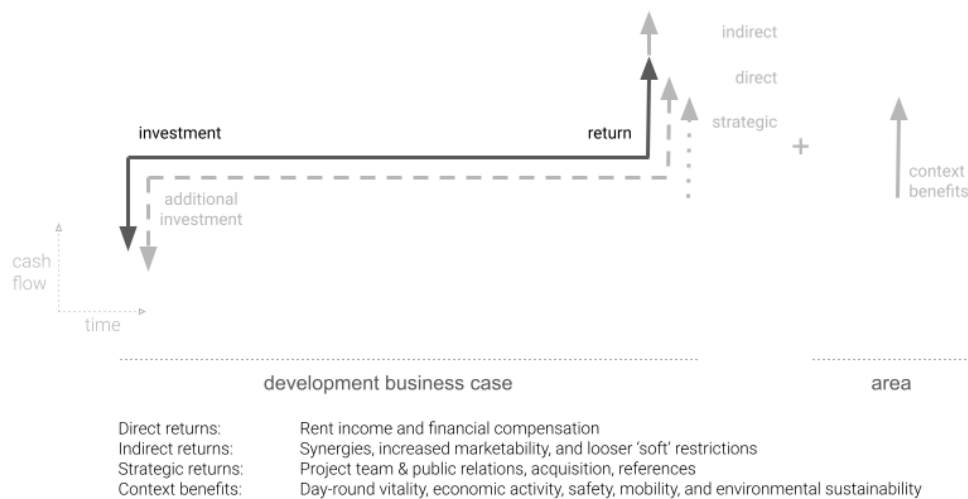


Figure H: An abstraction of the cash-flow diagram of the development business case, showing the total of values for both the area and the business case, that result from mixed-use. (Own illustration)

The cash-flow diagram of figure H shows no scales on the axes as the extents of additional benefits and investments differ between projects. Moreover, as these benefits are qualitative stakeholders may value benefits differently, making their value relative.

What has come forward is that the value of a real estate asset is (highly) reliant on the vibrancy of the area in which it is situated. Its contribution to this vibrancy through the inclusion of social urban functions in the mix of space-uses therefore impacts the asset itself. In short, added value to the area and added value to the business case are connected in multiple ways. The two are absolutely not mutually exclusive, and should be seen not only as benefits, but as arguments in negotiation with other parties too.

In tenders the inclusion of certain urban functions can be commanded, but these mandatory components may be compensated for if land-bid is a less weighty assessment criterium. When land price is calculated residually a compensation for the less or unprofitable space-use can be negotiated. Although the extra investment or marginal rent income of a particular project component is mostly compensated for by the increased attractiveness of the main function. This is believed to result in a higher rent income on the main project component. Raising the marketability of the main space-use through the mix of urban functions is thus prioritised by the developer.

## Discussion

Monetary assessment of benefits proves insufficient in providing insight into the creation of added value in real estate development. Fundamentally, this goes to show how the real estate industry has an incomplete perception of urban reality. Expanding this perspective with a qualitative approach provides the opportunity for better assessment of both the feasibility of the project and the realisation of what is socially desirable for the area.

The empirical research advocates the importance of qualitative assessment of added value and argues that quantitative or monetary valuation is often incredibly difficult if not outright impossible. Literature backs this argument and advises early estimation of the impact that project components can make. The current development business case does not encompass the value streams that mixed-use can trigger. Besides, the models of investment managers do not sufficiently cover context variables and location vibrancy parameters.

Therefore, the effects of mixed-use are implicit in practice and remain unrecognised until after project realisation. Ultimately, the value added to the area through mixed-use can be remunerated in the business case by including the three degrees of alternative value streams studied in this thesis. They provide ways in which the qualitative benefits can be considered. Thus, broadening the idea of the business case opens opportunities for added value.

Practice itself seems divided between developing parties that have recognised the benefits and advocate mixed-use development, and investment managers that are bound to more conservative perspectives on real estate management. Among investors yield-based thinking results from their approach of financial assessment models. The developer has a value-based approach, which is much more sensitive to the qualitative values that impact the project. However, investors are becoming increasingly aware of the (positive) impact the attractiveness of the area has to their asset, meaning a paradigm-shift is occurring.

As was found in the exploratory interviews, the main problem lies in the strict criteria of real estate funds. Mixed-use developments adapt to the local demand of the area. They rarely fit in any of the funds managed by investors due to their unique nature. By adapting investment fund criteria many of the blockades can be overcome. Similar to financing difficulties, the listed downsides of mixed-use development found in the exploratory interviews are indicative of how the built environment and its policies are still unfamiliar with mixed-use property and zoning. These problems can be overcome as mixed-use becomes more common and redeems itself as an effective value contributing asset type.

Social and/or individually unfeasible space-uses are most often the result of concessions rather than motivations. However, interviews with industry professionals do point out that in some scenarios an inherent motivation or corporate social responsibility underlies the realised mix of urban functions. The real estate development firm gains a strategic advantage from corporate social responsibility, improved public relations, and remarkable reference projects. However, this can hinder maximisation of the business case. Thus, there may be conflicting interests between strategic and operational levels of the firm.

### **Recommendations for use in practice**

Single-use zoning is still dominant in the built environment. Rules and regulations are geared towards monofunctional areas and buildings. In order for the benefits of mixed-use to come available, changes must be made to the policies that are in place. This change of perspective must also seep into the real estate investment world in order for mixed-use to really take flight. A great way to affect the attitude that stakeholders have on the mix of urban functions is by measuring project impact beforehand, however difficult this may be, as the willingness to invest can be increased if the yields can emerge in advance.

The overview of alternative value streams that the business case can be expanded with can aid in discussions between developers and investors. By understanding the ways in which value can be added to the project or the firm stronger alignment between these actors may be reached. Moreover, the benefits of mixed-use on inner-city locations may persuade investors to evaluate their future assessment of asset acquisition.

Lastly, the available literature seems to overlook the importance of local communities to the vibrancy of the area and adoption of the project, which ultimately is the source of many of the discussed benefits. This should be better paid attention to.

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# Problem.

# 1 Introduction

## *Redevelopment in the city*

The Dutch planning practice is characterised by a pragmatic planning culture as a result of its high ambitions and scarce resources (Faludi & Van der Valk, 1994). Most of this scarcity comes from the low availability of land, leading the government to aim for compact cities (Dieleman & Wegener, 2004). Meanwhile, market pressure is continuously increasing in Dutch cities due to a housing shortage (ABF research, 2019, 2021). Therefore, policy makers are aiming to intensify land use in cities (Verheul et al., 2017). This leads to an increase in the redevelopment of brownfield sites and vacant or underused buildings in and around the city.

This comes with all sorts of complications from users currently active in the area. This means long-term commitment and cooperation is quintessential to the success of the project (De Zeeuw, 2018). Moreover, a series of legal, governmental, and financial barriers must be overcome, as listed by Verheul et al. (2017). These include restrictive national laws and regulations; extensive procedures to change a land-use and difficulties to acquire a building permit; a lack of political continuity or undescribed ambition for the area; and potentially high costs for expropriation, infrastructure, and soil decontamination. Moreover, due to costly land acquisition more expensive real estate may take the overhand in dense urban areas, causing gentrification or a mismatch with local demand.

However, there are several advantages in contrast to those barriers. Vacant buildings and underused areas regain their relevance, and additional housing stock can be added where demand is high. De Zeeuw (2018) continues their list with theoretical advantages, such as a strengthened economic agglomeration from densification, clustering, and function mixing; Moreover, companies in the 'new economy' gain a chance to establish themselves. Lastly, it promotes preservation of green land, and a decrease in commuting traffic.

Thus, redevelopment projects can contribute to the thriving of the area in which they are located. Not only by taking away the negative effects of vacancy or urban decay, but also by introducing a land-use that the area may lack (Alonso, 1964) and demand (De Zeeuw, 2018). At the same time, the investor for the redeveloped asset is looking to maximise the return of his business case (Van Gool et al., 2007; Peek & Gehner, 2018). We must not assume that these are mutually exclusive, although the relationship between these two is unclear.

Meanwhile, the Ministry of Housing, Spatial Planning and the Environment gave up its tasks to other ministries and left responsibility for appointing city expansion locations to municipalities. These municipalities themselves adopted a more facilitating role instead of an imposing role (De Zeeuw, 2018) as explained in greater detail in paragraph 1.5. The developer has to take on a role with more initiative, responding to the demands of the market directly. This means that the developer is confronted with the assessment and decision-making process of the barriers and opportunities for area through their project.

## 1.1 Problem statement

Developers are increasingly more involved onto the realisation of public ambitions and ideals; they therefore must explicitly look for ways in which value can be added successfully. New developments can integrate amenities and services that the area demands (De Zeeuw, 2018), boosting real estate value through their spin-off (Heurkens et al., 2020). Developers thereby combine a mixture of land-uses within a single building. The positive impact to the city of the intertwining and mixing of land-uses has been commonly outlined by Jacobs (1992). Establishing the right mix of space-uses for the project may mark it particularly valuable to the (revitalisation of) its neighbourhood.

The hypothesis is that these urban functions can also provide a shared value increase, for both the area and the business case, even though individually they may not be the most profitable space-use when solely considering the rate of return of that rentable space in particular. Heurkens et al. (2020) state that the ordinary business case generally does not acknowledge value that is not cashed directly through rent prices. This leaves the question whether other value streams can be tapped into.

Thus, the relationship between value for the area and value for the business case is somewhat blurry in these mixed-use projects, as indicated by figure 1.1. Developers may not be fully aware on how to positively influence the project's surroundings and reap the benefits of this. Alternatively, they may instinctively do so, but these principles have not sufficiently been made explicit. To further understand this principle of value creation for both the area and the developer, research into the relation between both is needed.

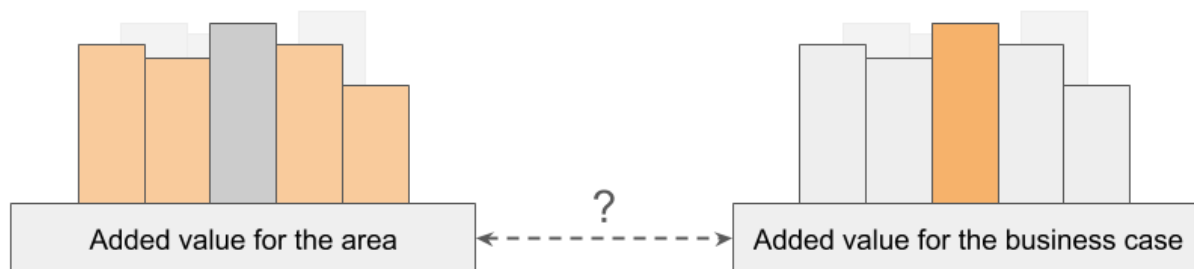


Figure 1.1 Blurry relation between added value for the area and for the business case

The gap for mechanisms that generate and (re-)capture value for both the area and the redevelopment business case itself seems rather large. In redevelopment of vacant real estate, a place is given a new urban function. Increasingly more often, developers serve the interests of the direct surroundings of this redevelopment. What results is a mix of accessory functions outside of the main use of the building. The decision process, however, is seemingly instinctive. Therefore, this research is scoped down to mixed-use projects in the city; Thereby attempting to grasp the added value gained through addition of functions that 'serve' the project and/or area.

Although this topic itself is under increasing interest research is still scarce (Rabianski, Gibler, Tidwell & Clements, 2009). This thesis tethers to the available literature on mixed-use real estate and studies on the impact of redevelopment on the context, although the latter often takes on a broader approach on the area development level. The knowledge gap on the building level or individual plot remains.

### 1.3 Societal relevance

A certain degree of building vacancy is imminent as buildings age, user demands change, and businesses move location. For the office market, a 3 to 8 percent vacancy is seen as a normal rate (Wheaton, 1999; Shilling, Sirmans & Corgel, 1992). However, in the post financial crisis era, many cities throughout the world saw a rise in vacant office real estate. For the Dutch office real estate market, the vacancy rate increased to 15% in the year 2013 (Remøy & van der Voordt, 2014). The analysis of market trends (paragraph 1.2) shows that even today the approach to overcoming -and potentially even preventing- real estate obsolescence remains relevant. This relevance is underlined by the aggravated impact that the built environment has on problems of sustainability, being responsible for 40% of global greenhouse gas emissions (JLL, 2020).

Further social and economic relevance is presented by Remøy (2010, p.16), who describes structural vacancy as “a societal problem of economic and social decay”, as vacant offices are prone to squatting, break-ins, vandalism, and graffiti. Besides these direct effects, real estate investors are hit through the negative consequences that vacancy has on the surrounding real estate market.

Also, aside from tackling the negative consequences of abandonment of obsolete buildings. Redevelopment on itself can also bring potentially positive effects to the area. For instance, a value increase and the accompanying gentrification effect may contribute to a higher level of social sustainability (Galster and Peacock, 1985). This study may be part of a wider basis for discussion of this controversial topic.

As such, the re-use of vacant real estate is significant today and in the future; The findings of this research aim to help overcome the negative consequences by recommending developers on their actions. More specifically, it may help them gain an insight into the ways in which they can optimally redevelop brownfield sites in the city, in such ways that all stakeholders profit. By making explicit the opportunities and accompanied considerations of mixed-use it can serve developers in their judgement.

Moreover, by unveiling value streams new benefits of function mixing and socially driven development could be found for the business case. This may expose ‘what is in it for the developer or investor’. In turn, that may guide real estate developers and investors into deliberate Environmental, Social & Governance (ESG) decision making for the future.

### 1.4 Scientific relevance

Literature on added value in area development is available. Literature too, provides insight in the developer’s perspective and their business case. Moreover, redevelopment as a topic is widely described in real estate literature. However, the ways in which these relate to each other remains somewhat unclear. Some sources (Urban Land Institute, 2018; NEPROM, 2018; Heurkens et al. 2020) do attempt to fill part of this gap by studying which means do lead to equitable and shared value creation. However, the factors they mention mainly focus on area development. Here, land ownership is significantly less fragmented, and the investor may hold a share into the total area. The question is whether the same findings are true for redevelopment projects individually.

Moreover, publications on mixed-use real estate call for further research of the mixing of functions in real estate assets (Rabianski et al., 2009). This segment of the real estate research field is underexposed, in spite of its increasing popularity in urban planning. This study aims to recognise and take into account the available literature and study the case of equitable value through function mixing in practice.

## 1.5 Professional relevance

Since the financial crisis, many elements of the public role have moved to the private side through a shift towards lighter and more flexible collaborations (Heurkens et al., 2020). According to De Zeeuw (2018) municipalities no longer value extensive masterplans and adapt a more facilitating role instead of an imposing role. They are also decreasingly involved in investing themselves, and instead let developers take on risks and tasks. As a consequence, developers shift forward into the land development process (De Zeeuw, 2018; Heurkens, 2019). Therefore, they are increasingly involved with realising public ideals and ambitions and try to contribute to the community with their projects in the hopes to add and retain value for their project.

Adams, Croudace & Tiesdell (2012) have found that when the built environment relies heavily on the private development sector, policy makers tend to largely neglect the risk-taking entrepreneurial character of the developer. More specifically they point out the naivety of the expectation that the developer engages more fully with local communities, produces higher-quality designs, and is more likely to contribute financially to activities for societal, rather than merely private benefit.

Adams et al. (2012) found that the private sector was generally seen as a source of funding, sometimes even replacing the public purse of public-led development as it takes on risk. The same is true for Dutch land development, which according to De Zeeuw (2018) is increasingly privatised to transfer financial risk. A question that arises, is whether such investments into 'public good' are actually desirable for private developers. Verheul et al. (2017) question whether the traditional cost recovery methods suffice for such expenses in redevelopment projects. Research into mixed-use as a method of value creation for both the area and the redevelopment business case may help developers achieve successful projects. Special attention towards ways besides the traditional cost recovery methods in which value can be recaptured as private benefit may be particularly useful to developers and investors.



## 2 Research questions

### 2.1 Research aim

The aim of this research is to identify and make explicit qualitatively the value generated by the mix of space-uses in real estate projects. Part of this value may lie within the area, external to the investment made in the business case. Other value created through mixed-use may contribute to the business case directly. By expressing these normally disregarded streams of added value into words and figures they are better understood, enabling stakeholders to more effectively generate and capture value in mixed-use projects. Developers, investors, and public parties may align their ambitions based on the perspective gained through this research.

### 2.2 Main research question

Based on the problem statement, research aim, and identified knowledge gap the to be answered research question states as follows:

*How can mixed-use real estate generate value for both the area and the redevelopment business case?*

Terms that remain unclear or demand clarification are defined in the glossary at the start of this thesis or explored more extensively in the literature review.

### 2.3 Conceptual framework

Figure 2.1 shows the framework accompanying the research question, displaying both the hypothetical disregarded value streams. This diagram depicts a simplified cash-flow diagram of the development business case in which an initial investment generates a return. The extra investment into accessory functions, meaning space-uses outside of the main project component, hypothetically generates added value.

The diagram of figure 2.1 indicates how this added value is believed to spread over the area. However, this thesis hypothesises that at least part of the outflowing value can be reclaimed through the alternative value streams, providing additional return on investment. This research will assess and make explicit the actual value that is generated and distributed in these streams, and what influence the developers can have on these. It thereby tests the hypotheses.

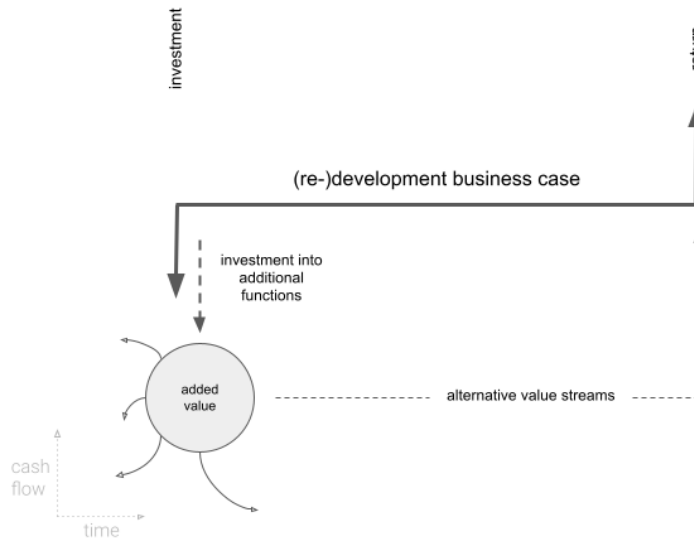


Figure 2.1 Conceptual framework of to be researched value streams

There are potentially several ways in which added value can be generated for both the area and the business case. However, this thesis solely focusses on the prospective mutual benefits of the mixing of space-uses specifically.

The scope of this research becomes clearer through the research sub-questions of paragraph 2.4 and the methodology of chapter 3. The definition and discussion of key terms used in this thesis can be found in chapter 4: Literature Review. This chapter examines the status-quo of research on the topic and provides context of the general scientific and professional consensus. Furthermore, it provides assumptions and insights that this empirical research is based upon.

## 2.4 Research sub questions

The topic is divided into a series of sub-questions that conjointly provide a comprehensive answer to the main question. This enables the use of adequate research methodology for each of the elements to the answer. The following paragraphs will each outline the sub-question, its purpose, and its method of data collection. Figures 2.2 and 2.3 indicate the relation of sub-questions to the conceptual framework.

The first research sub-question directs its attention towards the characteristics of mixed-use itself. Related to this, the opportunity for positive impact to the area is studied in the second sub-question. Figure 2.2 shows where this part of the research lies within the conceptual framework.

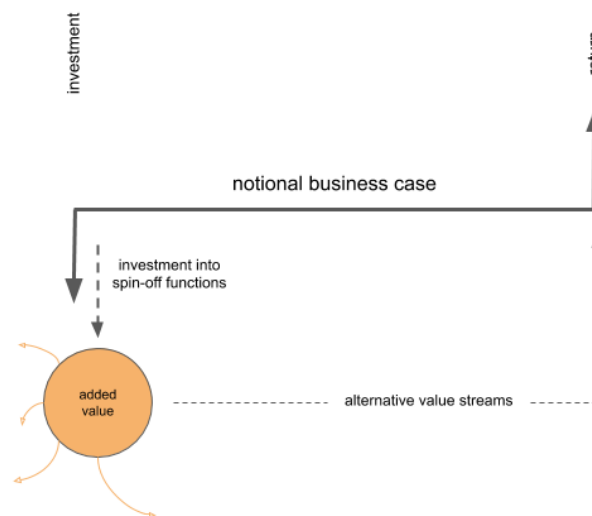


Figure 2.2 Contribution to the area, coloured orange in the conceptual framework

**SQ1:** *What are the benefits and downsides of mixed-use?*

Purpose: Understand the integration of several urban functions

Data collection method: Literature review and interviews

**SQ2:** *How can mixed-use add value to the area?*

Purpose: Comprehend and assimilate the principles and functions of successful placemaking

Data collection method: Literature review, case studies and interviews

In connection to the conceptual framework, the next two sub-question focus on the value streams for the business case. Figure 2.3 highlights this conceptual relation.

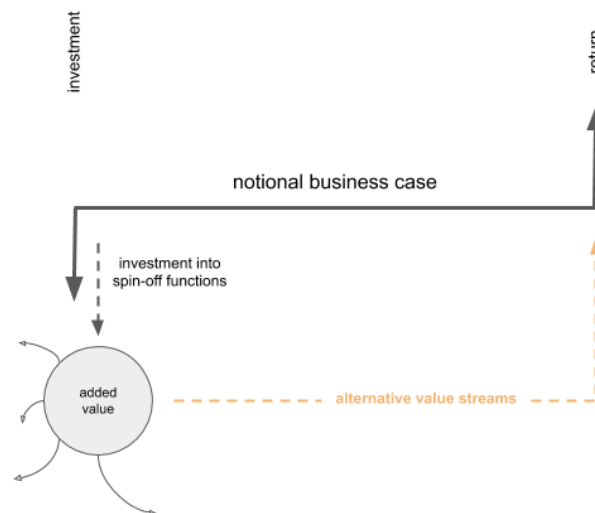


Figure 2.3 (Alternative) contribution to the business case, outlined in the conceptual framework

**SQ3:** *How can mixed-use contribute to the business case?*

Purpose: Understand the notional business case, and open up to alternate or concealed value streams that mixed-use can bring  
 Data collection method: Literature review, case studies and interviews

**SQ4:** *How can the added value for the area be captured for the business case?*

Purpose: Discover new ways in which the business case can gain value from the benefits that flow out to the area  
 Data collection method: Literature review, case studies and interviews

## Parts I and II

These four research sub-questions will be used in both part I and part II. The phasing of two parts for methodological purposes is clarified in chapter 3. In part I, the sub-questions are studied through a literature review. Through this literature study a theoretical background will be set, and a first theoretical answer will be formulated to the research sub-questions. Part II answers the same four research sub-questions, but through a series of interviews and case studies. The theoretical answers of part I are thereby tested against practise. The case studies illustrate the explanations of part I and prove or refute the outcomes. The interviews that provide context to the cases may also provide a better understanding of how the theory is put into practice.

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# Method.

### 3 Research method

The previous chapter discussed the research questions and their accompanying data collection approach. This chapter will discuss the exact research methodology in greater detail, entailing the appropriate methodological approach, data collection techniques and analysis processes. Furthermore, it will set out a data plan and discuss ethical considerations of this research approach. The chapter ends with research phasing.

#### 3.1 Methodological approach

The research questions of part I provide the foundation on which the empirical research of part II relies. This first part is theoretical and states and explains the phenomena of added value and mixed-use. Through literature research key terms are defined and literary context is provided. A first round of exploratory interviews provides insights from practise, shaping the empirical research of part II.

Part II consists of qualitative empirical research. This part consists of case study research. Robson (1993, p.146) defines this research method as:

*"A strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence."*

This research method is exploratory as not enough is known about the phenomena and theory is scarce. Through this primarily descriptive case research, practices are made explicit and the concepts of part I are illustrated. Therefore, it is focused on analysis of 'the outcome'; 'What value was added for the area, and what value was added to the business case?'. By studying multiple cases and crosschecking and comparing results triangulation is achieved (Bryman, 2016). To adhere to the systemic approach of answering a knowledge question as described by Barendse et al. (2012), the results of the empirical research must be compared, and are in this case tested against the available literature. This will be done in the conclusion and discussion.

The methodological model shown in figure 3.1 is an embedded multiple-case study. According to Yin (2003) this enables analysis of phenomena within and across cases. It consists of the individual descriptive analyses of three cases (non-holistic). Among these cases, two phenomena are studied as units of comparison. Analysis of contrasts in results helps comprehend the studied phenomenon. Moreover, conclusions based on similarities between multiple cases can be used to augur similar results based on familiar reasons (Yin, 2003).

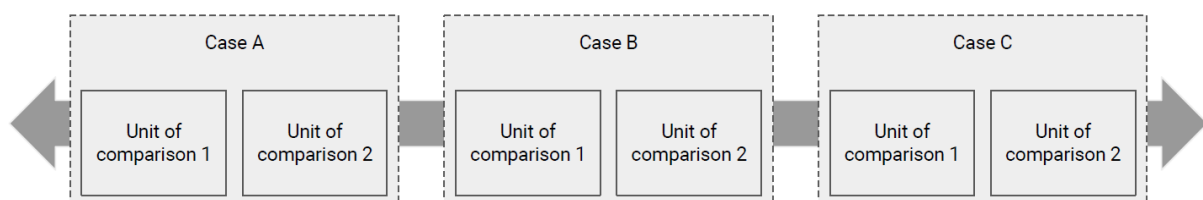
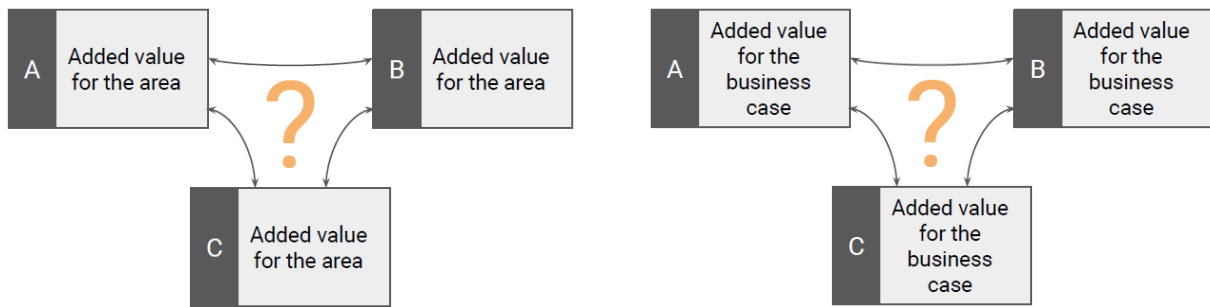


Figure 3.1: The embedded multiple-case study model. (Own illustration.)

Through a cross-case analysis, the cases are compared on these embedded phenomena, shown in figures 3.2a and 3.2b.



Figures 3.2a (left) and 3.2b (right): Cross-case analyses for the two studied phenomena. (Own illustration.)

Prior to studying the case projects the context in which they operate is studied extensively. Yin (2003) mentions the importance of interpretation of case studies within their context in order for them to be analysed appropriately. The phenomena studied as unit of comparison in the embedded multiple case study are first explored in non-case specific interviews. Related policies and regulations are explored too.

## 3.2 Methods and techniques

Before getting into the research questions, definitions of terms and a context of the subjects is set out by literature. This literature research provides the basis for understanding the material dealt with in the following sub-questions:

### 3.2.1 Sub-question one: *the benefits and downsides of mixed-use*

This first sub-question is answered through desk research of the available literature. By understanding the history of land-use and zoning, mixed-use can be placed within the area and real estate development context. Literature provides characteristics of mixed-use through which a conceptualisation and definition can be formed. The other research questions relate to the phenomenon of mixed-use described in this first sub-question.

### 3.2.2 Sub-question two: *Added value to the area*

This research question is first dealt with through the literature review. The answer from theory may not hold up to the context factors of practise. Therefore, the empirical research of part II deals with this question again in greater detail. Thus, the research sub-question is answered both theoretically and empirically. The case studies illustrate or refute statements and explanations on value streams to the area. By comparing multiple cases on a common unit of comparison -the value added to the area- a pattern or common factor may be found.

### 3.2.3 Sub-question three: *Contribution to the business case*

This is the first of two questions aimed to look at the other side of project impact: The business case. Forming the basis for this next segment, literature provides insight into the ordinary redevelopment business case through basic principles of finance. The context is substantiated through explorative interviews, pointing out what to look for in the case studies. The main method of data inquiry for the empirical element is a set of semi-structured interviews related to the cases. These interviews followed a semi-structured approach using the interview protocol found in appendix A.



The conversations go into depth on the contributions originating from additional functions can make on the redevelopment business case. The aim is to make these contributions explicit and understand the decisions that are made when opting for these additional functions. To dig deeper into the trade-offs that developers make, probe questions will be used when further explanation of answers is needed (Bryman, 2016). The empirical evidence of the interviews is offset against the somewhat scarce literature that is available. The embedded multiple-case study compares the perspectives on how the business case may benefit from mixed-use.

#### 3.2.4 Sub-question four: *(Re-)capturing value of the area*

As a follow-up to the previous question, this sub-question shifts towards a broader perspective of added value to the developer. It considers the aforementioned trade-offs and tries to comprehend the drivers that push decisions. Thus, data for this sub-question is again collected by consulting the experts from practice in interviews for the cases. However, to understand what questions to ask a certain understanding of business decisions is required. This is set out in the empirical context provided through exploratory interviews. These will also touch upon the dilemma of operational effectiveness and strategic advantage, and social corporate sustainability. The interviews for the case studies that follow adhere to a similar approach as the in-depth interview questions of the other research questions.

### 3.3 Data collection & Analysis

As mentioned earlier in this chapter, case selection is based on the context set through literature and the exploratory interviews conducted. Moreover, adequate cases need to meet the following requirement:

- Must be a redevelopment of urban real estate, preferably inner-city
- Must be a mixed-use project
- Must have a considerable impact on its surroundings
- Preferably, cases vary in mix of land-uses

The motivations for these requirements can be found in the introduction of chapter 6 along with a more comprehensive overview of selection criteria. These selection criteria establish a certain comparability between cases.

In total, three cases will be selected. This is the minimum number to achieve sufficient triangulation between results and avert interpretation errors. The cases will be studied on their own, within their context as provided in the first segment of empirical research, and within the context of literature. Case documentation will be gathered and studied through desk research. To add to this, interviews will be held with the developers, investors and/or public parties involved in these cases. This will help find qualitative evidence in the form of their descriptions, interpretations, and reasoning behind their choices. A cross-case analysis compares the studied cases and attempts to extract commonalities and noteworthy differences.

Some of the interviews will be conducted with developers and directors of the firms responsible for the selected redevelopment cases. Other interviews are non-case specific and provide the context in which case results are to be interpreted. These interviewees are subject to certain requirements as well, being:

- Must be working at a Dutch real estate development or investment company
- Must have thorough experience with real estate (re-)development
- Is experienced enough to illustrate their remarks with examples
- Is preferably able to oversee the strategic decisions of the company
- Is preferably strongly engaged with their social corporate responsibility

The interview is split into two parts, part one of which dives into mixed-use and subsequently answers sub-question 2, supplementing and clarifying the evidence found on added value for the area through the literature review. The second part of the interview answers questions 3 and 4 and goes into greater depth on the business case. Both parts will follow a semi-structured approach using a set of predetermined questions for guidance. This allows for the use of probe questions that more directly scrutinise answers given by interviewees. All conducted interviews will be recorded. Transcriptions will not be made. However, after every interview a conversation note is made and presented as an appendix.

### 3.4 Data plan

Wilkinson et al. (2016) portray the urgent need for improvement in the infrastructure supporting the reuse of scholarly data. Emphasis is put on the findability of data in data-rich research environments. They speak of FAIR guiding principles, where FAIR is an abbreviation for: Findable, Accessible, Interoperable and Reusable. The data of this research will be handled and made available with respect to these guiding principles.

In support of these principles, this thesis will be published in the TU Delft repository after completion of the study. Furthermore, all sources used throughout this research are mentioned in the text and listed in chapter 11: references. Here, scientific references will be accompanied by a DOI or repository link where possible. For other documents the sources from where they were retrieved are mentioned as well. All referencing will be done through the widely recognised APA format.

Data inquiry is done in either Dutch or English where possible. To ensure data is interoperable and reusable, all input will be carefully translated to English.

### 3.5 Ethical considerations

First and foremost, as part of informed consent and debriefing: All participants of any data inquiry or validation in this research are informed on the objective and method of this research and asked for their consent to partake. Participants are given the possibility to back out of the study at any point in time. Moreover, they keep the right to have their answers omitted from the results.

Some of the gathered data may be part of the competitive advantage that interviewees have. Therefore, careful handling of their information is quintessential for them to release 'what they have'. Any data that cannot be published due to ethical considerations or the wishes of partaking interviewees will be omitted from the publication on the basis of confidentiality.

Any results given by participants may not be altered by the researcher in any way. Moreover, the researcher is obliged to acknowledge the context in which answers were given as to avoid deception.

Lastly, participants can at all times appeal to remain anonymous. In which case, their results will be stated as anonymous contribution.

**This repository version does not include the interview notes due to the unfiltered sensitive project information that may be in there. For the original notes please contact the author of this thesis through the contact information. The data can only be released with permission of the interviewees involved. Furthermore, in this repository version any in-text mentioning of interviewees as data sources has been anonymised. Their identity can only be revealed at their discretion.**

### 3.6 Phasing of research

In essence, this study has three phases of research after the introductory problem formulation, as shown in figure 3.1:

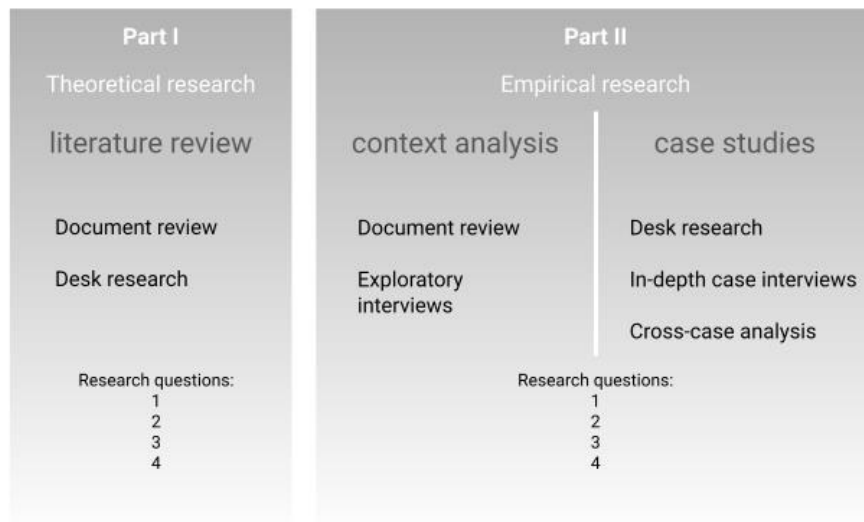


Figure 3.1 Phasing of research methods and sub-questions (own illustration)

**Part I** of this thesis explores the topic in theory. Through desk research of the available literature and documents, theoretical evidence is found to answer the four research questions. The studied phenomena are defined and conceptualised in this part.

**Part II** studies the same four questions, this time through empirical research. It thereby illustrates and confirms or denies the answers formulated through part I. It does so through the research of three cases, in which the added value of mixed-use is studied. To prepare for the case interviews and cross-case analysis, the context of the cases is studied beforehand. This splits part II in two phases.

The first phase consists of document research and exploratory interviews. The most important aspects to compare and look for in cases will emerge, and the right questions for case interviews can be formed. This feedback is supportive of the credibility of the study, as interpretation errors can be averted through this understanding of the case context (Bryman, 2016). The second phase consists of the actual case studies. This is done through desk research of case documents, a series of in-depth case interviews, and a cross-case analysis based on the units of comparison mentioned in figures 3.2a and b.

Together, the two segments provide an insight into the relation of mixed-use value creation to the area, and to the business case. The findings help developers understand the ways in which this mutual value generation can be reached in redevelopment projects, ultimately answering the main research question of this thesis.

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# Theory.

## 4 Literature review

To fully understand the conceptual framework of this study, the key terms are defined, and the boundaries of the research scope are set in this chapter. The following paragraphs introduce concepts or terms that require more comprehensive explanation than provided by the glossary. Moreover, desk research on literature available on these key concepts provides an understanding of the status-quo in these fields. This in turn sets the basis of this study and provides a starting point for the empirical research.

### Urban Functions

#### Definition

The first and most quintessential term used in this research, refers to the specific use-case of spaces within a real estate object. This includes, but is not limited to; Residential, Office, Retail, Industry and Leisure. Historically, these categories would correspond with 'land-use'. However, throughout the years many new land-uses have emerged, and urban space has evolved to incorporate these on a fine grain. Hence, several stakeholders in the real estate development process utilise different terms for this concept. Architects may speak of 'architectural programming' or 'space uses', while investors adhere to terms like 'asset-class'.

These types, or categories of real estate are characterised by the specific functionality that they provide. Therefore, this research will adhere to the terms 'urban functions' and 'space-use' for its perspective on types of real estate within the built environment.

The definition above may give the impression that all real estate objects are categorised by a single urban function; monofunctional. Increasingly popular over the past decades however is the concept of mixed-use, taking form in movements such as New Urbanism, Smart Growth, and the Compact City (Herndon, 2011). However, the principle of mixed and heterogenous land-use is not new to cities. This type of real estate shelters several urban functions under the same roof.

#### History

Back when walking was the primary means of transportation, the distance between places that people would visit daily could not exceed what could reasonably be traversed on foot. Therefore, the size of cities was severely limited and urban density was relatively high compared to outside of the cities. Consequently, the distance between places of residence, socialising, and production and exchange of goods was short. Hence, these land-uses were often intermingled (Morris, 1994).

Land-use was not only mixed throughout the city, but also on the individual building scale, as a large portion of the residents in the city worked in the same building as they lived in.

## **Monofunctional**

The rapid advances in production techniques of the industrial revolution sparked a paradigm shift in the built environment through five factors: industrialisation, urbanisation, transportation, zoning, and rise of bourgeoisie.

*Industrialisation:* Advances in production methods, mechanisation, and division of labour vastly increased productivity of farm labour and allowed for mass production of goods. Society was no longer predominantly based on agriculture and converted towards the manufacturing of goods. The industrialisation brought specialisation and economies of scale. Consequently, small workshops were replaced by large factories. The workers that these factories lured into the cities had to be housed. Moreover, economies of scale and the specialisation of work also meant that the need for clustered office space increased. These factors carried implications for the city; This was the first time that there was demand for functions to be clustered into individual buildings or even districts (Mumford, 1961).

*Urbanisation:* The decline of farm labour and rise of factory employment meant workers migrated to cities. These cities expanded horizontally, as the amount of required farmland decreased; and horizontally, facilitated by advances in building construction. Cities could not cope with the rapid increase in population. This, in tandem with the industrialisation, meant cities became synonymous with filth, pollution, noise and disease (Herndon, 2011).

*Transportation:* Meanwhile, transportation advances such as the streetcar prepared the city for larger distances between residence and work. Even more impactful was the introduction of the automobile, which provided the means to travel large distances between land-uses (Mandelker, 2008). When the automobile became affordable and widely available to the working class, this altered the horizontal scale of the built environment entirely (Herndon, 2011; Jackson, 1985).

*Zoning:* As a consequence of the above, governmental land-use plans detached residential areas from the noisy and polluted areas of production. Zoning forbid industry in residential neighbourhoods and vice versa. The result is single-use zoning, also called Euclidian zoning in the US, after the court case that established its constitutionality in Euclid, Ohio v. Ambler Realty Co. 272 U.S. 365 (1926). This monofunctional implementation only allows for one kind of land-use per area, initiating specialisation of districts due to economies of agglomeration (Mandelker, 2008). This 'new' type of zoning ultimately outlawed mixed-use in major parts of the built environment (Grant, 2007; Mandelker, 2008).

*Rise of bourgeoisie:* As a consequence to the higher productivity -achieved through industrialisation- a subsequent rise in affluence of the middle class resulted in increased home ownership and a demand for larger homes detached from the filth and noisy of the city. This further encouraged the horizontal growth of the city, flattening the population curve and causing further sprawl of the population (Bruegmann, 2005).



### **Change in perspective**

The arguments to move away from densely packed cities with mixed land-uses was apparent during the rise of the industrial era. However, reasons for the re-emergence of the pre-industrial urban principles are increasing, and include several factors on the environmental, social, and economical scales. Now that the sanitation and infrastructural issues of industrialisation have largely been addressed, planners, developers and policy makers realise that the negative outcomes of the past may not weigh up to the benefits of pre-industrial planning (Herndon, 2011). In hindsight, many of the problems of the built environment have shifted with the change to monofunctional planning.

Segregated single-use zoning and sprawl have contributed to undesirable growth patterns. The low-density horizontal growth led to large-scale development of -environmentally sensitive- greenfields. Downs (2005) states how these low densities lead to large amounts of traffic to reach amenities. The accompanying infrastructure expansion is costly, and the increased transportation and commuting causes traffic congestion and decreased air quality. Moreover, the coverage of public transportation becomes increasingly difficult, and neighbourhoods become isolated and lack vibrancy during large parts of the day.

Mixed-use development revolves around altering this growth pattern. While the currently rising 'new' approach to urbanism takes its inspiration from pre-industrial times, it does differentiate itself in the fact that new developments are planned and come to be in a short period of time instead of the organic and gradual growth of the past (Schwanke, 2003). The key concept, however, still lies in the mixing of land-uses. Although modern mixed-use may also be mixing single-use tiles on the district level, as opposed to a mix of several land-uses on single plots. Therefore, the grain of the land-use has also become topic of discussion (Hoppenbrouwer & Louw, 2005; Rowley, 1996).

The change in paradigm means the concept of mixed-use can nowadays be seen as the remedy to modern problems that the built environment is confronted with. Although a seemingly straightforward concept, the definition of post-industrial 'mixed-use' may not be entirely clear. Many researchers mention the imprecise definition of the multi-faceted concept and call for research (Rowley, 1996; Coupland, 1997; Hoppenbrouwer, 2005; Grant, 2007; Rabianski, 2009).

## **Mixed-use**

Most interpretations of mixed-use in literature rely on the definition of the term in the ULI's Mixed-Use Development Handbook. It characterises mixed-use through the following three factors (Schwanke, 2003):

- The project must encompass three or more significant revenue-producing (land)uses that are mutually supporting
- Significant physical and functional integration of project components (and relatively close-knit and intensive land use) including uninterrupted pedestrian connections
- The project is developed in conformance with a coherent plan that stipulates scale and density

Moreover, it differentiates between 'mixed-use' development and 'multi-use' development. While largely similar, multi-use development lacks the integration and compatibility of urban functions that create a walkable community between components. Also, the ULI definition states that mixed-use must include three or more integrated land-uses that each of them must be substantial enough to individually attract a market, thereby excluding amenities for the primary urban function (Schwanke, 2003). Thus, the ULI definition relies heavily on the integration of the urban functions and their position within their specific markets.

Another definition that literature relies on is found in practise through an industry-wide cross-organisational survey performed in 2006. It states the following:

*"A mixed-use development is a real estate project with planned integration of some combination of retail, office, residential, hotel, recreation or other functions. It is pedestrian-oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression and tends to mitigate traffic and sprawl"* (Niemira, 2007).

In conclusion, the most regarded definitions overlap over the following themes that distinguish mixed-use from single-use and multi-use development. The project must:

- 1 - consist of multiple self-sustaining urban functions that are integrated both functionally and physically.
- 2 - be dense and shaped to be traversed by pedestrians.
- 3 - conform to an overarching plan.

## Conceptualisation of mixed-use

The principles used in its definition demonstrate the multi-faceted character of mixed-use as a concept. This conceptualisation, too, involves multiple factors, and lacks consensus in literature. Although several conceptual models can be found, those of Rowley (1996) and Hoppenbrouwer & Louw (2005) are referenced most. The following paragraphs look into these models chronologically, then pointing out the differences and evolvments.

Alan Rowley (1996) bases his conceptual model on the urban texture of settlements. He proposes this texture is based on grain, density, and permeability. These are depicted on the z-axis in his model in figure 4.1.

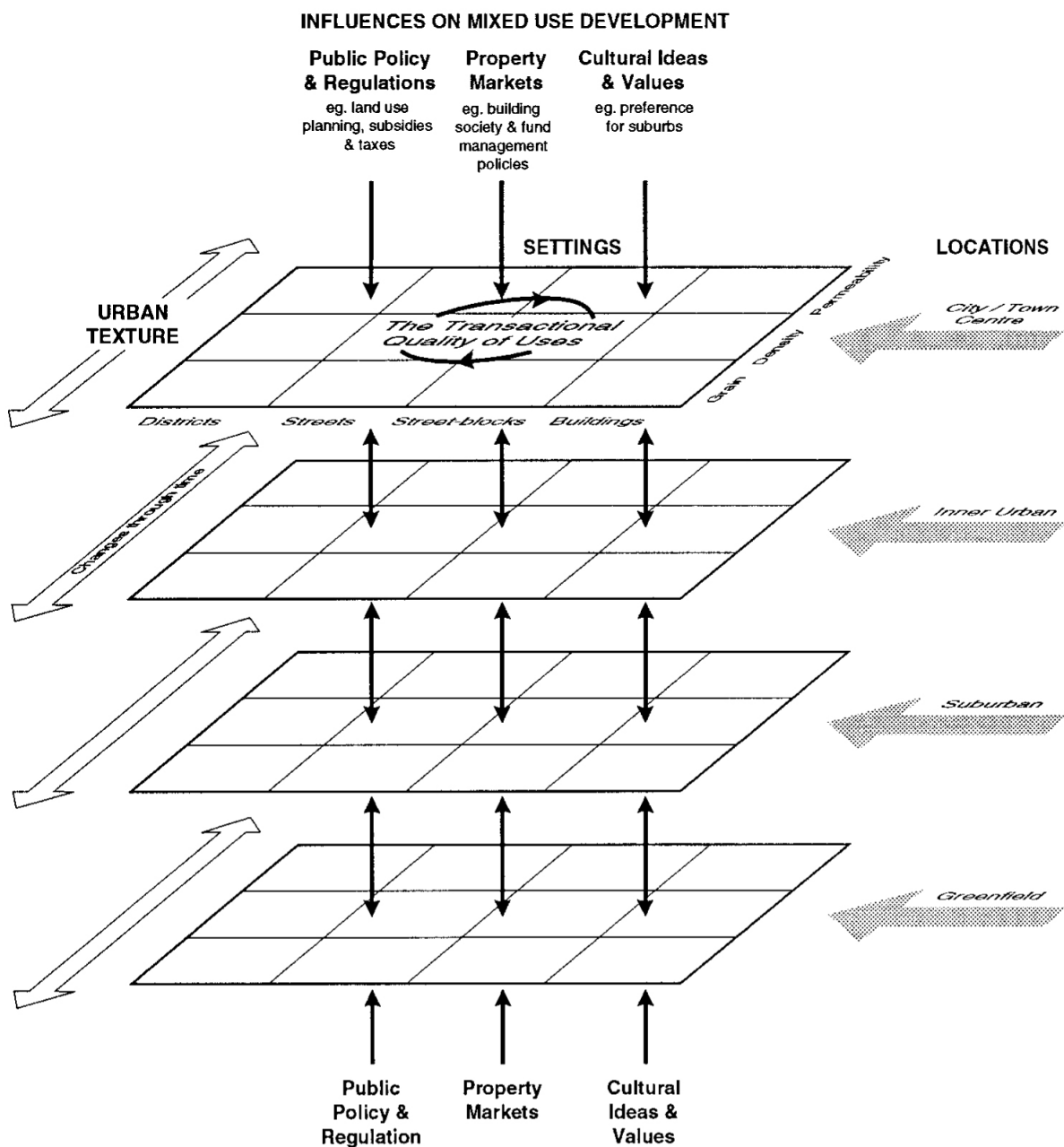


Figure 4.1: Conceptual model of mixed land-use and development (Rowley, 1996)

In his model, the grain refers to the degree in which the various urban functions are fragmented and mixed amongst each other. This means a land-use is more fragmented in fine grain, whereas groups of urban functions that are alike would form a courser grain.

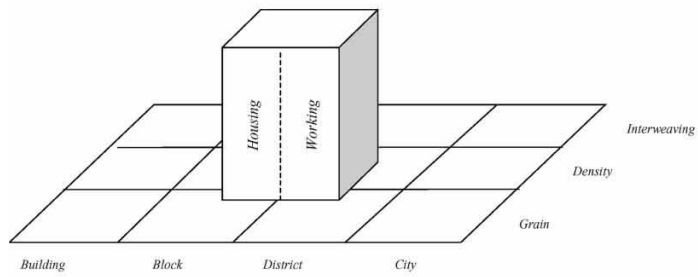
Hoppenbrouwer (2005) adds to this the degree of transition, meaning a sharp grain is an abrupt transition from large plots of single land-use to a fine grain area. A blurred grain would be a gradual transition.

Rowley (1996) sees density as a measure of the intensity of land-use. It refers to the amount of realised space within an area. The third element to urban texture, permeability, refers to the number of routes through the area that are available to pedestrians. It closely relates to density as the permeability is determined by block size and shape, and the layout of roads and public space.

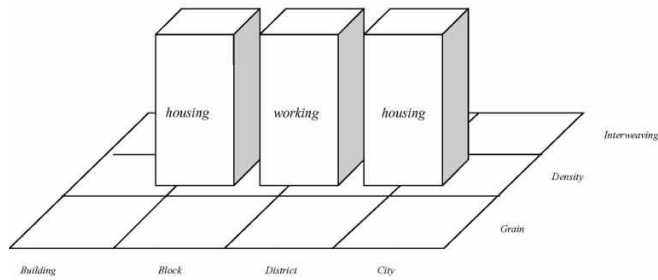
The model differentiates scales through 'settings' on the x-axis, distinguishing between dimensions of mixed-use developments. The z-axis too refers to the area but distinguishes between locations where mixed-use developments could occur. Furthermore, through the z-axis, Rowley (1996) points out three external factors that influence mixed-use development: public policy and regulations, property markets, and cultural ideas and values. The model depicts how these factors move through the location types and scales of the model.

Within the horizontal plane, he points out 'the transactional quality of uses', essentially hinting at the vitality generated by the urban functions and the positive effect this may have on them. Lastly, Rowley mentions the dimension of urban texture -on the z-axis in the model- is not permanent, and susceptible to change over time.

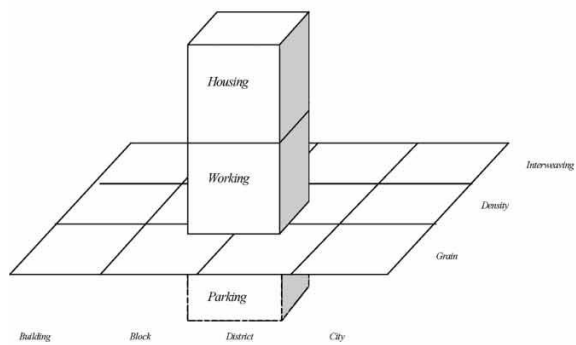
### I. Shared premises dimension (point)



### II. Horizontal dimension



### III. Vertical dimension



### IV. Time dimension

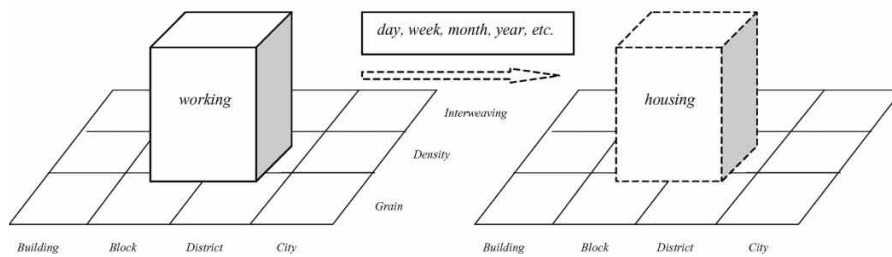


Figure 4.2: Conceptual model of mixed land-use for four dimensions (Hoppenbrouwer & Louw, 2005)

Hoppenbrouwer & Louw (2005) expand upon the ideas portrayed by Rowley (1996) in their model of four-dimensions, shown in figure 4.2. This model is based on a spatial perspective, in which different land-uses are 'function' components placed within Rowley's planes of urban texture. However, permeability has been substituted by interweaving of functions as a measurement of 'integration' of land-uses. The types 'housing' and 'working' are examples that can be substituted by any urban function present in mixed-use development.

In his model [figure 4.1], Rowley (1996) solely regarded the density of the area on its own, whereas the shared premise dimension of Hoppenbrouwer (2005) recognises the concept of mixed-use development on a single plot, as opposed to mixing on the area or district level. Moreover, Hoppenbrouwer (2005) goes into further depth by conceptualising the 'vertical dimension' [figure 4.2].

Rowley (1996) did acknowledge the dimension of time being the activity produced on varying time schedules of urban functions. However, Hoppenbrouwer & Louw (2005) expand on this by recognising that the usage of space itself -and the activity it caters to- can alternate throughout time. This essentially expands the facets on which urban functions can be mixed in multi-functional structures and areas.

Rabianski (2007) concludes that mixed-use development cannot be characterised as a standardised product. Its nature is unique due to the combination of urban functions, the dimensions and grain in which they are mixed, the scale and location of the development and the urban texture of the area. Moreover, acknowledging the dimension of time means the concept of mixed-use is not static; It is subject to change over time.

### Benefits and downsides of mixed-use development

As mentioned previously, the concept of mixed-use is often regarded as a remedy to the problems that segregated single-use zoning has brought to the modern city. Therefore, the concept of mixing land-uses is part of several new urban movements. According to Rabianski (2009) "City planners have been attracted to the idea of mixing uses because of their desire to limit sprawl, preserve open space, reduce automobile dependence, limit the expense of providing and maintaining infrastructure in low density environments, achieve housing and employment goals, and increase sustainability (Walker, 1997; American Planning Association, 1998; Leinberger, 1998; Filion, 2003; Leinberger and Kozloff, 2003; Song and Knaap, 2004; Kozloff, 2005; and Williams and Dair, 2007)." The consensus among these movements is that development of a mixture of uses is more sustainable on a social, economic, and environmental plane.

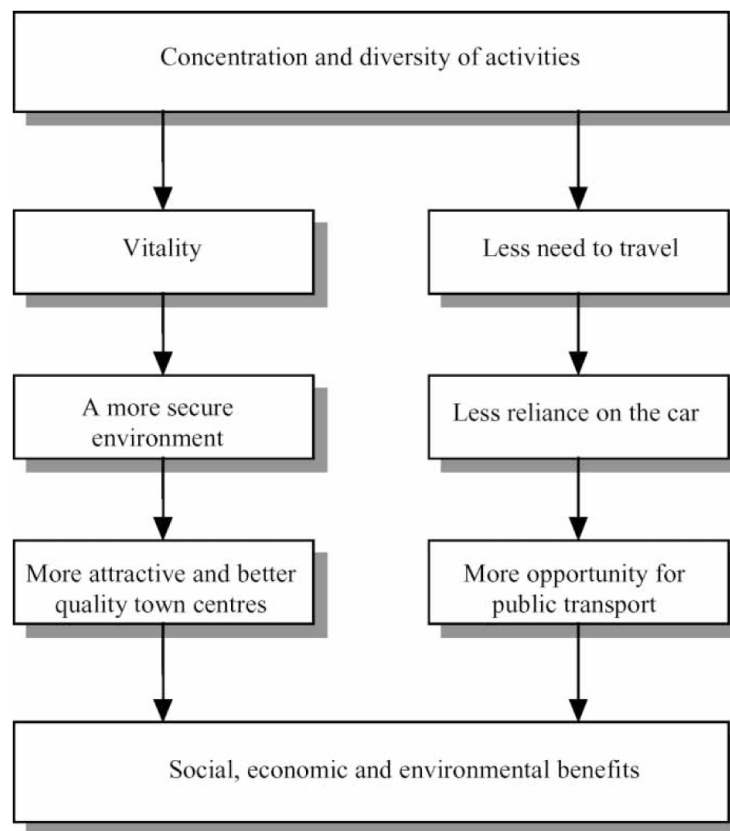


Figure 4.3: Relationships between benefits of mixed-use development (DoE, 1995b).

Coupland (1997) and the British Department of the Environment (1995a) state a list of benefits that are consequential to one another, originating in the concentration and diversity of activities produced by mixed-use. Consequently, this rise in vitality improves safety of the environment. The complementary urban functions make the area more attractive to residents, employees, entrepreneurs, and visitors during longer parts of the day. The closer integration of different land-uses decreases the need to travel, shifting car reliance to increased opportunity for public transportation. Moreover, the distance travelled decreases, conserving energy, and lowering pollution of the area (Hoppenbrouwer & Louw, 2005). Some publications even extrapolate to improved health and greater economic activity (Grant, 2002). Altogether, the believed results are social, economic, and environmental benefits. The relationships between the benefits of mixed-use development are illustrated in figure 4.3 (DoE, 1995b).

## Nuances

Coupland (1997) does mention that some advantages are absolute, but others may only be realised under certain circumstances. For instance, a decrease in car traffic, congestion and pollution relies on the assumptions that the uses within the mixed-use development align in fulfilling the needs of local residents, and the area is easily traversed on foot.

Hoppenbrouwer & Louw (2005) add to this by pointing out that mixed-use development is not a single solution to all societal problems. They describe it as a tool to create better urban environments.

To properly apply mixed-use development, Jane Jacobs (1992) prescribes certain preconditions. She stood on the forefront of the revival of mixed-use in the built environment in 1961 by advocating fine grain mixing of uses within the city (Grant, 2002; Rabianski, 2009, Rowley, 1996). Rabianski, et al. (2009) summarise the 'four indispensable conditions for integrated diversity' she described in her works as follows:

- 1 The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common.
- 2 Most blocks must be short; that is, streets and opportunities to turn corners must be frequent.
- 3 The district must mingle buildings that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield that they produce. This mingling must be fairly close-grained.
- 4 There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence.

Mixed-use conditions of Jane Jacobs (1992), summarised by Rabianski, et al. (2009)

## Public space

The Urban Land Institute (Schwanke, 2003) stresses the importance of incorporating an engaging public realm into mixed-use development for it has the ability to shape the interrelationship of urban functions within the project. Furthermore, it embeds the land-uses in their environment and amplifies the visual connection between spaces, statements also supported by Gehl (2010). Angotti & Hanhardt (2001) state that in mixed-use projects the design and situation of streets and public spaces is equally important as the design and location of buildings. Moreover, Field (2008) specifies that successful placemaking in mixed-use development often lies in the details of its public space.

Placing varying urban functions within close proximity requires comprehension of their building and infrastructure requirements. To unlock the potential of mixed-use development to create synergy between urban functions is capitalised if the project components align (Herndon, 2011). Positioning complementary functions around public spaces and separating land-uses that attract more people encourage pedestrian traffic and vitality throughout the project.



## **Synergy**

The theoretical upside of mixed-use development is apparent, but the conditions to realise these benefits can be cumbersome. Moreover, the assessment of benefits beforehand is difficult as many benefits cannot be expressed monetarily.

Rabianski (2009) mentions how market analysis is more complicated for a variety of functions together, as each of the uses should suffice in attracting their own market demand to become financially feasible. Assessing a synergy between these urban functions beforehand is difficult as their impact cannot always be quantified.

The Urban Land Institute (Schwanke, 2003) identifies three types of synergy between urban functions in mixed-use projects, ranging from direct influence on neighbouring land-uses to indirect benefits for the area:

- 1) The direct market support between functions, where residents, employees or visitors make use of more than one of the available urban function of the project.
- 2) The indirect benefits where one urban function can provide amenities or services for another, vertically integrating the chain of supply.
- 3) A benefit derived from the unique sense of place within the urban landscape established by the mix of land-uses that are in place.

Rabianski (2009) mentions that relying on the synergy of functions is seen as a large risk in feasibility analyses, as poor timing of component delivery may lead to increased vacancy and low rents. The added complexity and longer development timespan further increase this risk. Feasibility of functions independently mitigates this risk but means that cornerstone land-uses cannot compensate the return of other urban functions (Schwanke, 2003).

## **Placemaking**

As mentioned in the historical timeline, former mixed-use areas evolved organically. Modern mixed-use projects are challenged to hit the ground running due to their high carrying cost and pre-planned synergies (Herndon, 2011). Therefore, it must provide a unique sense of place and possess the characteristics to sustain the urban functions it embodies from the get-go. To do so, marketing of the project typically starts early. A way to manage and attract market demand for the project, is through branding and placemaking (Peek & Gehner, 2018). In this way, the project possesses its own identity and recognisable attributes.

The Urban Land Institute describes placemaking as “the creation of vibrant, distinctive, pedestrian-friendly urban environments through the effective design and integration of a mix of uses” (Schwanke, 2003). Peek & Hopstaken 2018 (Ed. Peek & Gehner, p196) describe placemaking as a means of context management that takes place when both the physical context and the social context are somewhat undefined. More specifically, this does not limit itself to temporary use or redecorating facades. It is about generating reasons for people to be there.

The ‘Project for Public Places’ (n.d.) state that there should be at least ten reasons in place to make people visit or stay in an area. These reasons can vary greatly, ranging from being able to comfortably sit or lay down, to experiencing the history of that site (Peek & Hopstaken, 2018; PPS, n.d.). The Project for Public Places has made a diagram to assess the attractiveness of a place, shown in figure 4.4. In this figure the key attributes of places lie in the inner circle; the

accompanying intangible qualities assemble the middle circle; the measurable data of which lies on the outer circle.

## What Makes a Great Place?

Project  
for Public  
Spaces

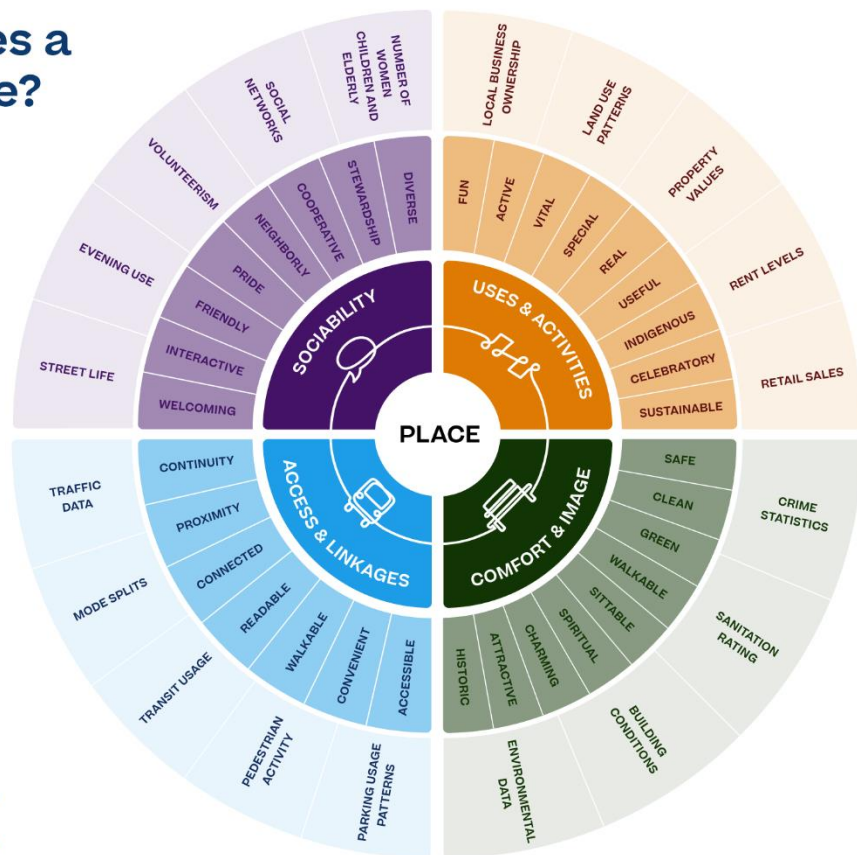


Figure 4.4: The Place Diagram. A tool to help evaluate places. (Project for Public Spaces, n.d.)

Through the chosen mix of space-uses within the project can provide (more of) these reasons to stay for a certain place or area. Moreover, the synergies, unique sense of place, and greater justification for investment in public space associated with mixed-use real estate provide greater opportunity for effective placemaking.

### Branding

Aforementioned description explained that placemaking can take place when social and physical context are somewhat undefined. However, when the project does not gain any value from its social and physical context, the context management shifts to 'branding' (Peek & Gehner, 2018). This, in a sense, is quite similar to placemaking in that it aims to shape or define the social and physical context. Branding is based on a set of associations that the customer should get with the product. Developers can use this to manage expectations and audience.

Moreover, it is an instrument of stakeholder management. A strong vision helps adhere all parties to the project (Peek & Hopstaken, 2018); The effort of stakeholders pertains to the brand. Keeping all parties on board is especially important in the lengthy development process of mixed-use projects. In these projects, urban functions may be somewhat interdependent, and cohesion of these components can come from a strong brand identity.

### **Ownership structure**

Mixed-use developments often require larger capital requirements and more financing sources than most single-use projects (Schwanke, 2003). Moreover, the higher equity requirements, complex underwriting, extensive development period, and possible financial involvement from the public sector means mixed-use projects have greater difficulty securing capital. According to Leinberger (2003) this is in part due to their composition of multiple real estate types. This means they do not fit into any of the single-use asset classes that have been standardised in investment practices. Investment funds are based on these real estate asset classes almost exclusively.

Besides a greater difficulty in acquiring financing, investors demand more complex ownership structures. These are often composed of several special purpose entities for the different urban functions. This enables exit strategies for separate project components (Rabianski, 2009). Essentially, this means mixed-use projects are financially split up into several single-use spaces, even if they co-exist within the same building. According to Marsh (2006) fragmented ownership can be a burden for facility upkeep and property management, especially in mixed-use projects where each component has different demands, budgets, and separate investment cycles.

Responsibility for the management of the optimal operations and maintenance of the mixed-use structure is not easily designated among each major component of the project. Especially when stakeholders do not align. This becomes increasingly difficult if the project is composed of privately-owned and public components. Thus, mixed-use properties require complex management structures (Schwanke, 2003).

### **Regulatory hindrance**

The strategic development of mixed-use is often hindered in its implementation as the processes, governmental regulations, and guidelines still tailor to the single-use real estate of the past (Herndon, 2011). For instance, building codes can dictate different values and restrictions for each building component, adding complexity in the design and construction of the project.

Another common obstacle for mixed-use development is the zoning plans in which one single land-use is allowed exclusively. A mixture of urban functions means zoning for the plot must be changed. Rabianski (2009) states that the rezoning process for mixed-use development is lengthy, more complicated, and often meets opposition from 'nimbyism' of locals. Moreover, the urban design that is prescribed for mixed-use -with its tight walkable streets and shorter building blocks- does not meet municipal regulations for the site. The Urban Land Institute mentions that these regulations are often geared towards automobile use instead of on-foot traffic, resulting in parking requirements that are difficult to incorporate in mixed-use projects (Schwanke, 2003).

## Added value for the area

### Definition

The added value for the area is the total of any gains, beneficial turn of events or outcome for society within a certain area (of development) that is a direct or indirect result from the developed mix of urban functions. This benefit can be financial or socioeconomical of nature but can also lie in the quality of experiences of building users in the area (CRA, 2020). Moreover, added value may also lie in solving the urban problems of the area. Within the Dutch context municipalities are responsible for controlling and maintaining value for the area through policies, zoning and the land and services they make available (De Zeeuw, 2018). However, private parties are increasingly involved in realising benefits for society as the municipality has little tools to steer inner-city redevelopments (Rodrigo, 2021)

An increase in real estate price often causes wave of price increases known as the 'ripple effect'. Price levels are connected, and the value increase spreads to surrounding areas. Empirical studies of Holly, Hashem Pesaran & Yamagata (2011) found connections in housing prices on both the transnational level, between New York City and London, and on a more regional scale, where price fluctuations in London had effect on the prices of residential real estate in surrounding areas.

According to Heurkens et al. (2020) to comprehend all streams of added value in redevelopment, it must be understood that redevelopment does not serve a single purpose of increasing yield on the investment. The project serves multiple interests. These interests may include cultural values or opportunities for employment or entrepreneurship. The spin-off of the project lies in the many opportunities for value creation that it brings to the area, making such investments worthwhile.

### Assessment

According to Rodrigo (2021) measuring the delivered value can be a strategy to gain a better insight into the financial and social returns of investments. Private parties need to estimate the financial impact of the social value on their development. Public parties need to be able to test the values against the conditions set for the development in order to evaluate them. The willingness to invest can be increased if these yields can emerge in advance, as then they can be incorporated into project decision making. Rodrigo (2021) provides examples of measurements, such as: added greenery, air quality, or (a decrease in) vehicle movements. However, the soft effects that create social values are often difficult to capture in figures. As these soft effects cannot be quantified in similar ways, expressing them monetarily can help compare their impact.

A social cost-benefit analysis is a commonly used instrument to quantify social returns in the built environment (Gietema et. al., 2018). As the name implies, it weighs the cost of investments against the benefits they deliver to society. It considers all direct and indirect effects from now until the far future by expressing their output monetarily, so they are weighed in a common unit of comparison. This method does not necessarily measure the redistribution of wealth gain and loss within the project and its context (Schoor, 2010). It merely measures total benefits and their accompanied costs. Moreover, it may be hard to link a single benefit to a single cost, as their effects may be interdependent, compound or overlap. Therefore, this analysis can only be used to weigh the total of costs and benefits.

Although some of the added value can be expressed monetarily, a lot of the social benefits can be hard to express in cash as stakeholders interpret and value benefits differently (Schoor, 2010). Moreover, the benefits may take a long time to become available. These longer periods make their value uncertain and hard to estimate, especially when the benefits lie embedded in the local context (Rodrigo, 2021). Moreover, some of the opportunities may spill-over to other areas. Heurkens et al. (2020) illustrate this with the example that the employment provided by a project may be fulfilled by otherwise unemployed workers outside of that neighbourhood. Benefits may therefore spread out of the direct context.

Alternative to the cost-benefit analysis, performance indicators can be measured with which the effects of the development on quality of life can be determined (CPB, 2020). Rodrigo (2021) gives the example of measuring the increase in house prices as a key indicator for the neighbourhood. Assessment of social yield can be incorporated in investment decisions by measuring key performance indicators for the surrounding area. These key performance indicators do not have to be financial of nature. For example, measuring the ratio of pedestrian traffic to car traffic can help test whether the projected benefits are actually achieved.

The problem with both methods is that they do not distinguish between the different aspects of liveability (Ecorys, 2020). Herndon (2011) illustrates by stating that these methods may measure the (cost savings of) increased safety, but cannot measure the impact of the feeling of safety. What becomes clear is that not all effects can be quantified. Lieshout (2021) argues that for this very reason, qualitative yield of societal values should be weighed independently. A social impact analysis can help assess the qualitative benefits to the area.

Typical for a lot of the social benefits for the area is that the investments are not necessarily made by the actors who benefit from the value created (CRA, 2020). Financing societal value creation can thus be cumbersome, as the positive impact is not always directly received by the stakeholders who pay. This further complicates the development business case (Gietema et al., 2018).

## Added value for the business case

### For the business case

The added value for the business case here is the 'return' on investment of the mix of urban functions. But especially focussed on the value that is (re-)gained for the business case, as a consequence to the inclusion of the additional (less profitable) space uses. This benefit to the business case goes beyond the financial gain from higher service levels and relates to the value recaptured from societal benefits too.

### Feasibility

The basis for the business case of any (re-)development project is the financial feasibility of the project. First and foremost, the project should generate a return that sufficiently compensates the cost of realising, maintaining, and operating the realised assets. However, certain financially infeasible aspects may be realised using subsidies or financial compensation for the generated public benefit (Peek & Gehner, 2018).

The basis on which project feasibility is calculated, is the Net Present Value (NPV) of the project. This is the total sum of costs and returns, discounted for today. Or in other words: Today's total value of all future cash streams generated by the project, minus the total investment costs (Brealey et al., 2019).

$$\text{Net Present Value} = \text{Present Value} - \text{Investment}$$

In this formula, PV is the present value of all future returns. By calculating today's value of a future cashflow, they can be added up. Bringing values back in time means they must be discounted for the time value of money (Brealey et al., 2019). In the following formula, the *rate of return* is a percentage of value change that the *cashflow* undergoes when discounted to today. This equals the *present value*.

$$\text{Present Value} = \text{Cashflow} / (1 + \text{rate of return})$$

The rate of return  $r$  of the project, sometimes called discount rate or hurdle rate, is calculated through Net Present Value equals zero. This means that the discounted cashflows equal the total cost of investment. Whether this rate of return is acceptable for this type of project, is based on the opportunity cost of capital; The rate of return the market offers for an equally risky project (Brealey et al., 2019). So, to conclude, the rate of return is based on the level of risk of the investment. This means that financial considerations for the attractiveness of investing in the asset lie not only in increasing returns, but also in decreasing risks. Therefore, decreasing the level of risk of the business case can be of great interest to the investor.



### Bid rent theory

De Zeeuw (2018 ch11) states that a more direct adaptation of the different supplied functions to the market demand can help financial feasibility. However, not all functions are equally efficient in achieving a financial yield for the asset. This is often based on the location of the project. Alonso's (1964) famous bid rent theory dictates that the willingness-to-pay for a certain location determines the function of the real estate, as shown in figure 4.5. Historically, commerce -and nowadays office space- profits from highly accessible inner-city locations and are therefore willing to pay the corresponding premium. Moving out from this economic epicentre, price drops and land becomes cheaper. Functions that do not necessarily profit from high accessibility are more commonly found here.

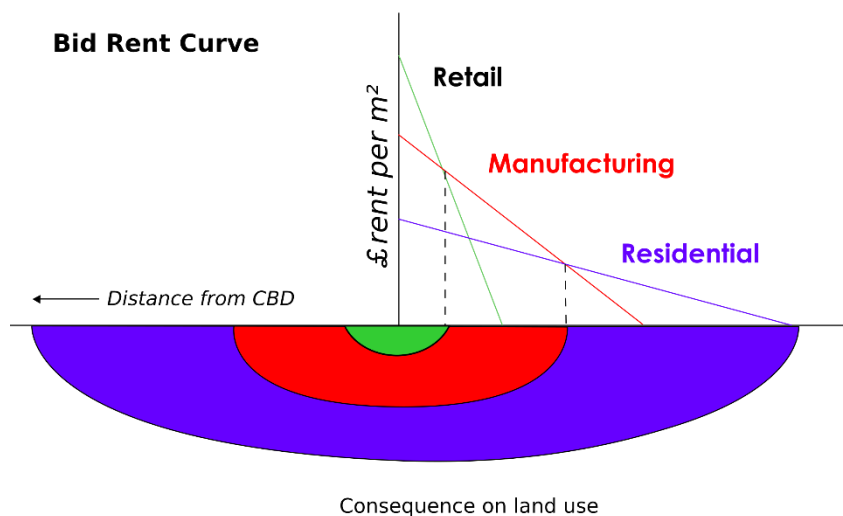


Figure 4.5: A simplified diagram of bid rent curves based on distance from city centre, illustrating bidders' willingness to pay based on land-use. (Source: SyntaxError55, 2008 [Wikipedia Creative Commons])

However, the absence of some functions due to the locational price premium can be undesirable, tainting the area as bland or lacking liveability (Jacobs, 1992). It thereby does not provide a complete understanding of the appropriate choice of urban functions. Also, reinvestments into vacant or unappealing buildings based solely of the profitability of functions can incur a process of gentrification (Galster & Peacock, 1985). The desired value increase that this brings about may potentially result in displacement of local communities as their ability to compete with the risen prices diminishes (Bates, 2013). This is politically sensitive and provides consequences to investments that must carefully be considered. To look beyond profitability when deliberating space-uses for a property, it is important to acknowledge the ways that urban functions can impact value for the project.

## **Utility**

First and foremost, any action that impacts the demand for the real estate product itself results in a higher value through increased rent or purchase prices, increasing the revenue. The desirability of the product is largely impacted by the service level it provides to the user. Therefore, the inclusion of services and amenities that positively impact the utility provided to the user has a direct impact on the value of the product.

In mixed-use projects, the functions are not only self-sustaining, but mutually supporting too (Schwanke, 2003). Through their functional integration, a higher utility is offered to the real estate user. This value of this utility is easily expressed in cash worth. Weterings et al. (2009) mention how this near vicinity of other urban functions does impact rent price directly, but to a lesser degree than location and its accessibility. Moreover, they acknowledge the impact of the other urban functions to the recognisability of the area. Schuur (2010) reinforces this argument and states that amenities and urban functions such as retail for groceries, catering and leisure have a positive effect on office rent prices.

What should be noted, is that the other land-uses may also have a negative impact on price levels, as some urban functions may cause nuisance and thereby decrease attractiveness to some user groups (Weterings et al., 2009).

## **Public space**

The importance of quality public space mentioned in previous paragraphs can be justified by the positive effects it has on the neighbouring real estate. Positioning complementary functions around public spaces and separating land-uses that attract more people encourage pedestrian traffic and vitality throughout the project. Public space and events are usually not included in the business case, but may have considerable positive effects on publicity, appeal, and real estate value (Verheul et al. 2019). Adams & Tiesdell (2013) claim a direct result between desirable public spaces and housing market values. Investing in quality public space can therefore directly benefit the real estate value of the project.

## **Private gain from value creation for the area**

Part of the added value generated by the project seems to flow out to the area, ending up external to the business case. This leaves the investor not benefitting from the value created (CRA, 2020). Financial gain may be skimmed off of the value for the area. Looking beyond the direct benefits means these alternative value streams must be tapped into.

The Urban Land Institute (2018) provided an overview of considerations for private parties to keep in mind when evaluating their business case. Heurkens et al. (2020) unfold these considerations, forming the following list of potential private benefits for a wider interpretation of the business case:

- Private parties can benefit from investment in communal values and public functions through a rise in real estate value and increased economic activity
- The municipality may be inclined to contribute financially when an area is strengthened through a contribution to health, wellbeing and welfare of the local community that is invested in
- Communal/citizen initiatives in the area may be supported through the investment, raising market value of projects through increased resilience and positive identity
- Investment in public amenities and services can help earn government trust, which may in turn result in financial contribution or support for further projects



- Private investment into sustainable aspirations is increasingly seen as part of a corporate social responsibility

What should be noted is that most of these considerations, if not all, are to be interpreted through the perspective of area development. Thus, benefits that are regained through having a share in the area may not be relevant to redevelopment projects of a single plot. Inner cities are often characterised by their heterogeneous neighbourhoods in which ownership is fragmented (PBL, 2008). The unsynchronised investment cycle of this fragmented land ownership hinders integral area development, decreasing the impact of redevelopment on the communal initiatives and economic activity of the area (Buitelaar, 2008; Peek & Gehner, 2018). However, the list also mentions unforeseen returns through image and municipal contribution, which may still provide value to the investor or developer if captured successfully.

### **Value capturing**

Value capturing is a tool by which an actor can reclaim (part of) the external value that is redeemed through an activity or investment (de Koning, 2020). It essentially covers a financial deficit for an investment that generates shared gains. Or, more specifically, a means to reclaim the developer's contribution through value increases. Some of these value streams may lay outside of the familiar business case of real estate redevelopment.

The municipality is responsible for a sufficient level of services and amenities in an area. The cost of which is recovered through selling plots of land or through agreements with developers (Peek & Gehner, 2018). The municipality does not realise or operate many of the urban functions that it desires to have in an area. Thus, it negotiates with private parties to realise public ambitions.

In some redevelopment projects, the municipality gains ownership of the land and premises through land sale, expropriation, or an expiring ground lease. The intrinsic value of these plots may then change due to zoning applied by the municipality. The revenue made by the sale of this land covers the expenses of acquiring and preparing the land. The value of the plots is calculated residually, thus the price for which the land is then sold to the developer can be reduced if the project benefits its surroundings. By doing so, the municipality reimburses the developer for their contribution to attaining public ambitions.

In other situations where the municipality is not the landowner, a contribution for public services and amenities is still asked from developers. This is usually done through an anterior agreement, in which the developer contributes to these functions (Peek & Gehner, 2018). If both parties cannot come to an agreement, the municipality can legally force the developer to pay through an exploitation plan. Contrary to a situation where land is bought from the municipality, unprofitable functions are not discounted through calculating the land price residually. However, if the project of the developer itself contributes to realising exactly those amenities and public functions, the developer can bargain for a lower contribution in the anterior agreement. The reduced price of the agreement is also a way in which value can be recaptured financially by the developer.

## Conclusions from literature

After having studied the specific concepts and definitions of topics that this thesis relates to, it is time to draw conclusions from the status quo of literature. In doing so, the research sub-questions will be revisited and answered through the knowledge gained from the desk research of papers and documents. This provides a primary understanding of the topics, and a theoretical answer to the research questions preliminary to the empirical research.

The first sub-question relates to the mix of functions itself:  
*What are the benefits and downsides of mixed-use?*

First of all, it is important to understand that there have been shifts between mixed-use and periods of single-use land exploitation in history. Before the industrial era, mixed-use was simply a product of the gradual development of towns. Several land-uses mixed on small grain organically as distances had to be traversed mostly on foot. Due to industrialisation, changes in transportation, urbanisation, zoning, and a rise of the middle-class, urban functions became segregated. This had to do with sanitary issues and the rise of the automobile.

Nowadays, several arguments for single-use areas are outdated and urban planning movements reconsider mixed-use development. Moreover, problems created by car dependency, daily commuting traffic and lack of vibrancy during office hours characterise single-use zoning and tackling these issues is seen as the challenge of the modern city. Mixed-use is often regarded as a remedy, and a list can be made of the positive effects of mixed-use. The larger concentration and diversity of activities, means the area becomes:

- More vital during different parts of the day
- Safer and more secure through increased social control
- More coherent through vertical integration
- More attractive to its users
- Less car reliant

Moreover:

- The need to travel or commute diminishes
- The opportunity to expand public transport connections emerges
- Investments into public space are better justified and better integrated
- Synergy between urban functions means they become more financially feasible
- The project gains a stronger sense of place and adopts a unique identity that can be used for placemaking or branding of the project

The list compiled above provides a theoretical answer to sub-question two as well. *How can mixed-use add value to the area?*

Many of the benefits of mixed-use listed above relate to the context of the project. The list of benefits relates to social, economic, and environmental improvements for the area. Either through hard (quantifiable) changes such as lower traffic count and a direct rise in real estate value of neighbouring buildings, or through soft factors such as safety and vitality.

These benefits do come with side notes and potential downsides that nuance the use of mixed-use as a remedy. For instance:

- The complex ownership structure of mixed-use projects hinders maintenance and facility upkeep.
- Fragmented ownership could lead to differences in the (re-)investment cycle of project components
- If urban functions are interdependent, the project needs to be pre-planned completely and hit the ground running, this means initial investment is high
- Relying on synergy of functions is risky as poor timing may lead to vacancy and low rents
- The added complexity and longer development timespan increase this risk and add costs

However:

- Independent financial feasibility of the project components mitigates this risk but means that cornerstone land-uses cannot compensate for other urban functions.

Other downsides are not necessarily a consequence of mixed-use but are a product of the real estate development practice being geared towards single-use development ever since the industrial era. This means that:

- Mixed-use projects have greater difficulty securing capital than single-use projects
- Many regulations and land-use plans form obstacles for mixed-use real estate

However, these downsides may diminish when mixed-use becomes more common in the real estate development industry and both public parties and investors become more acquainted with this product.

The third sub-question can now also be answered through the studied literature:  
*How can mixed-use contribute to the business case?*

First of all, there is a direct return through the added utility of the mix of functions. Although each of the uses should be self-sustaining, a synergy effect can occur where the urban functions are mutually supporting. This synergy occurs on three levels:

- A direct market support between project components as users use more than one of the available urban functions
- An indirect support between urban functions through vertical integration, where they provide amenities and services to each other
- An indirect benefit from the unique sense of place within the urban landscape established by the mix of land-uses that are in place

The consequence of the effects above, is that settling in this place has become more desirable for businesses and residents. The near vicinity of the other urban functions and recognisability of the project impacts the rent price.

Secondly, some of the land-use mix can be deployed for placemaking or branding of the project. This is a type of marketing for the lettable spaces. Moreover, the identity it shapes can help align stakeholders through the lengthy development timeline of mixed-use projects.

Another indirect value stream is based on public space, which turns out to be one of the preconditions of successful mixed-use projects. The adjacent mix of functions supports this and justifies the extra investment. Although it is rarely included in the business case, public space can positively impact the rent levels of the building.

Other ways in which mixed-use can contribute to the business case are dependent on the social effects it establishes for the area. What has become clear is that many benefits of opting for mixed-use lie within the area, but the positive impact of a lot of the social benefits is not always directly received by the stakeholders who pay. Research sub-question four looks into how the business case can profit from social value:

*How can the added value for the area be captured for the business case?*

The most common social benefits that can be accredited to mixed-use development lie within public wellbeing, welfare and the realisation of local ambitions, something which the municipality is generally responsible for. Thus, the realisation of societal benefits may grant the developer the opportunity to negotiate land discounts or bargain for a favour in return. To assess the proportionality for reimbursement or negotiations, the social effects of the development must be measured before they can be captured.

Unfortunately, many of the social effects for the area cannot easily be reclaimed by the developer or investor as they are hardly quantifiable. A social cost-benefit analysis is a commonly used instrument to quantify social returns in the built environment. However, a lot of the social benefits can be hard to express in cash as stakeholders interpret and value benefits differently. Some of the generated opportunities for value creation in the area may spill-over to other areas. Moreover, the benefits may take a long time to become available, obscuring valuation.

Alternative to the cost-benefit analysis, non-financial performance indicators can be measured with which the effects of the development on quality of life can be determined. Assessment of social yield can be incorporated in investment decisions by measuring key performance indicators for the surrounding area. The problem with both methods is that they do not distinguish between the different qualitative aspects of liveability. A social impact analysis can help assess the qualitative benefits to the area.

Lastly, private investment into sustainable and social aspirations is increasingly seen as part of a corporate social responsibility. This does not necessarily affect the business case, but it positively impacts the development business itself. Investing in corporate social responsibility contributes to a positive public image and provides reference for future work. Thus, the business case may not provide maximum return on the investment, but the competitive advantage gained can outweigh the extra cost.

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# Context.

## 5 Context analysis

Before heading into the case studies, a first round of exploratory non-case specific interviews was held. The results sketch the context that developers operate in and provide a background to the cases studied. Moreover, phenomena of interest and topics of discussion for the case research emerge. These interviews followed a semi-structured approach using the interview protocol found in appendix A.

The cases do not only operate in a realm of private perspectives. Therefore, some acknowledgements have to be made regarding the regulatory aspects of mixed-use development. A brief study was conducted besides the exploratory interviews. It provides a quick insight into policies and public visions, documents, and regulations ranging in scale from overarching national advice reports to plot specific urban planning instruments.

### Policy context

#### **Public perspective**

According to CRA (2019) the mixing of urban functions in the city will become the new norm after decades of monofunctional urban planning. They base this off many of the same benefits that have been found in the literature review. This indicates that the perspective of public parties, and especially urban planners, is changing. Moreover, they acknowledge that technical advances and design solutions enable projects to overcome the environmental barriers.

#### **Zoning and regulations**

The land-uses incorporated in the development are not only dictated by the land-use plan. While zoning is one of the constrictive regulations for mixed-use, especially in areas that undergo transformation, many of the obstructions actually come from other regulations. Environmental effect reports (milieueffectrapportages) and strict rules for smell and noise can prohibit the introduction of certain urban functions as project components (Hobma & Jong, 2016). CRA (2021) state that these regulations are often overzealous in protecting vulnerable land-uses such as housing, childcare, and education.

Besides choice of urban functions, the building outline and inclusion of public space is often dictated by plans that are not kept up to date throughout time. Developers can deviate from the land-use plan through extensive legal procedures (Peek & Gehner, 2018). To simplify these processes and provide market parties with more space to adapt plans to local market demands the many planning regulations and permits will soon be replaced. Although the introduction has already been postponed several times, the Dutch government is planning to substitute the land-use plan and its accompanying laws and processes by the new environment and planning act (omgevingswet).

## Practise context

It turns out the urban functions of the project mix are not only dictated by zoning, regulations, and local market demand. There are other factors that play a role into the selection of project components that can be realised. The following topics were specifically addressed by interviewees of the exploratory interviews:

### **Fiscality**

The introduction of social urban functions as project components is difficult when they do not financially contribute to the business case sufficiently. Often times this is not merely limited to rent paid by the tenant. Interviewee K (2021, personal interview) mentions that fiscality often hinders the introduction of socially desirable tenants. For example, a dentist may be a high-quality tenant with a strong local demand but the rent income for the business case is still too low for this location due to the fiscal situation of healthcare professionals. Many social, medical, and public organisations are exempt from value added tax (Belastingdienst, 2020). The tax-free rent makes them not as interesting to the business case as other commercial functions would be, making it harder to justify them as project components (Peek & Gehner, 2018).

### **Parking**

Another problem that emerged from the interviews was the great influence of car parking regulations on projects (Interviewee M, 2022; Interviewee K, 2021; Interviewee E, 2021; personal interviews). The municipality sets ratios for the minimum amount of parking spaces per surface area of a given land-use. This often dictates the types of functions that can be realised in the project.

According to Herndon (2011) it is much more complex to estimate the total demand for parking in mixed-use projects due to the different activity cycles for each of the land-uses. Shared parking facilities can be an appealing solution both financially and logistically (Rombouts, 2006). Some 'default' synergy combinations have come-up in practise, as parking demand of certain uses could overlap. For instance, combining work and residence into a single building enables the developer to decrease parking requirements as these functions use parking space during different hours (Interviewee M, 2022, personal interview). Moreover, the presence of users is spread over larger parts of the day, aiding in safety of the area.

Therefore, Interviewee M (2022, personal interview) endorses these solutions and claims that municipalities are increasingly adapting their parking policies to mixed-use projects. New inner-city parking regulations may include options for shared parking spaces or even incorporate shared mobility as new mobility concepts hit the city. Especially near public transit hubs municipalities aim to overcome automobile dependency and decrease car traffic movement.

Exemptions from parking policy can be made as exceptions, only when the project itself provides sufficient means to eliminate car traffic (Interviewee M, 2022, personal interview). This assessment is mostly based on location and target audience. For instance, student housing near a well-connected metro stop would comply with sufficient bicycle parking.



## Real estate funds

An interview with Interviewee I (2021, personal interview) reveals that investor demand for mixed-use is low. Investment managers see mixed-use buildings as riskier than their single-use counterparts. Moreover, the by-catch of project components is seen as a burden with its unique problems outside of the main investment opportunity. As the share of this additional function increases in comparison to their desired function investors may find it increasingly more difficult to justify investing in the building. Many investors have a strong focus towards a specific type of real estate.

As mentioned in earlier paragraphs, the return of the project is connected to the accompanying level of risk. This is mostly determined by how sure the investor can be that the project is fully leased. The vacancy rate of a specific type of real estate is based on the market it is part of. Changes in the demand -both quantitatively and qualitatively- or a sudden change in supply, may result in varied levels of vacancy. Some risks that influence an asset are specific to that one market and can therefore be managed by diversification (Brealey et al., 2019). A fully diversified portfolio brings down the risk level to the *systemic risk* level otherwise known as *market risk*, which comes down to economywide perils that threaten the real estate markets as a whole. Figure 5.1 shows how a sufficiently diversified portfolio can optimally combine risk and return.

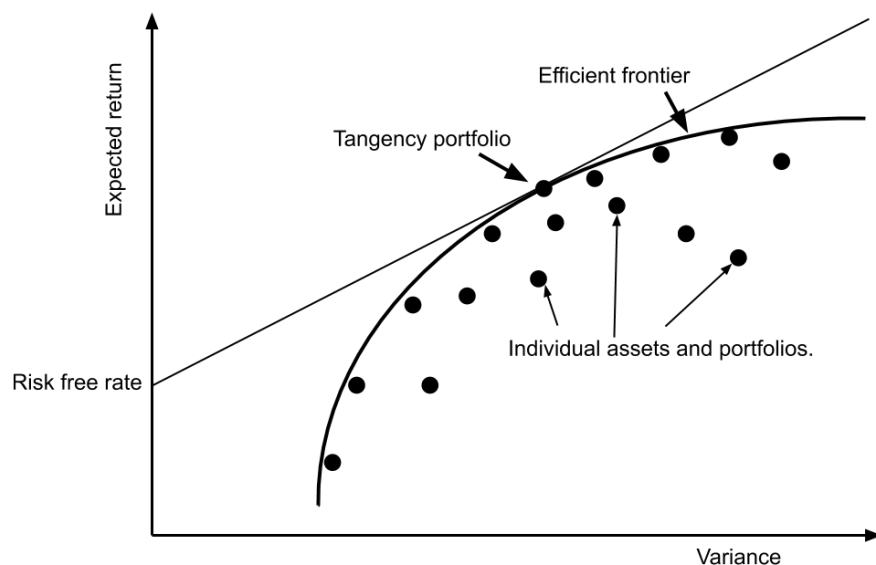


Figure 5.1: A diagram of efficient portfolio diversification, showing the IRR of different investments in relation to their variance. (Source: Brealey et al., 2019).

According to portfolio theory, risk for the investor can potentially be decreased by operating in several markets. Interviewee I (2021, personal interview) acknowledges this, but mentions that investment managers greatly prefer to steer on a fund level for their portfolios, as the adaptation of buildings is more complex. Moreover, investment manager merely governs these funds for their investors. The investors themselves diversify through several asset classes.

## Paradigm

According to Interviewee E (2021, personal interview), ownership of the other urban functions should be seen as an opportunity to gain control over the project and eliminate risks that could negatively impact occupancy levels or rent prices. As a developer, he experiences a completely different perspective on the risks involved in mixed-use property. This paradigm is acknowledged by several other developers as they approach projects from a different perspective (Interviewee I, 2021; Interviewee L, 2021; Interviewee J, 2022; personal interviews).

Interviewee J (2022, personal interview) mentions that the functional segregation by investors is one of the main obstacles of real estate that incorporates multiple uses. He raises the argument that investors provide fund conditions to their investment managers in order to control the way their capital is invested. They are likely to demand safe and familiar specifications due to their risk-averse nature. Often, mixed-use property does not fit the conditions of these funds and is therefore hardly accepted by investors.

However, the composition of funds is changing, and Interviewee J (2022, personal interview) mentions two reasons:

- The demand for real estate objects to invest in is very high as supply of capital is abundant. Meanwhile, the real estate projects that are available are scarce and increasingly more often step away from the single-use building types of the past as the city demands mixing of land-uses, especially on inner-city locations. This causes the supply of single-use buildings to drop.
- The other more complex reason has to do with the fact that investors and investment managers are starting to realise benefits that may come with buildings that serve several purposes, especially relating to the impact of the vibrancy of the area. Therefore, they become more eager to invest in mixed-use buildings. Interviewee L (2021), Interviewee E (2021) and Interviewee H (2022) reinforce this perspective.

If the investor wishes to buy only part of the mixed-use project, they may be able to place that element in their fund. However, they are now also part of an owner's association for the building, as the other parts of the building are sold to separate investors, residents, or entrepreneurs. This means the willingness to invest into maintenance differs and the investment cycle of the owners may become asynchronous (Interviewee H, 2022, personal interview). Total ownership of the building means total control over the building. Not just relating to reinvestments, servicing, and maintenance. As owner of the entire building the investor remains in absolute control over who they let their spaces to, lowering the risk of incompatible tenants. The overall greater level of control that is gained is regarded as an effective way to decrease investment risk among real estate professionals (Interviewee F, 2021; Interviewee L, 2021; Interviewee E, 2021; Interviewee H, 2022; Interviewee J, 2022; personal interviews).

These experts mention that the ways in which total ownership of the building is managed may differ. Some investment managers have a 'mixed-use investment fund' with less strict conditions in their articles of association. This means they can justify higher ratios of 'bycatch' from buildings in this fund. A more common solution though is to cut up ownership of the building into each of the individual urban functions. These components are then placed in their corresponding funds internally. These funds together take part in an owner's association. In this way, management of the asset remains internal to the investment manager even though ownership is split-up. Whether mixed-use or multi-use, shared spaces and amenities are

generally only viable if management of the building is centralised and unobstructed from fragmented ownership (Interviewee E, 2021; Interviewee H, 2022; personal interview).

### **Paradigm shift**

The implied paradigm shift of the investor is an ongoing process, as can be understood from the outlook on 2020-2022 of major institutional investment manager Syntrus Achmea (SAREF, 2019). In their forecasts, they state that the low long-term interest rate has caused investors to look for assets with a core profile. However, the residential, commercial, and office products on A-locations that normally make up this core profile have become relatively expensive due to the low initial yield they offer. This limits investment opportunity. Owing to their slightly higher risk premium, mixed-use real estate has become a viable alternative as their yield-to-risk ratio is believed to be similar as those of the individual asset classes. Moreover, the availability of this asset type is relatively high, and increases as urbanisation continues. Lastly, they believe mixed-use as an asset class can still provide growth in value, whereas traditional assets have moved further along the real estate cycle.

### **Corporate strategy**

According to the literature review several of the contributions of mixed-use lie on the individual project business-case side. However, benefits to the firm itself may also occur. A strong company image, created through strong corporate social responsibility, benefits the competitive advantage of the firm. Moreover, the aforementioned benefit of closer ties with the municipality exceeds the project alone and benefits the firm as a whole. Building a strong and sustainable network in this way benefits further projects. All interviewed developers recognise this consideration, albeit to differing degrees.

Figure 5.2 shows the concept, in which optimisation of the individual project business case is increasing operational effectiveness. However, the benefits to the firm are acted upon through corporate strategy, a level that exceeds the operational level. Some of the listed considerations disclose an underlying incongruity between the individual business case and the company itself, which thrives of several projects simultaneously. A developer has a focus for maximisation of operational effectiveness on a project level, whereas a director may be more inclined to assess value on a corporate strategy level (Interviewee J, 2022). This influences the perspective on the impact of the social space-uses in a mix of urban functions.

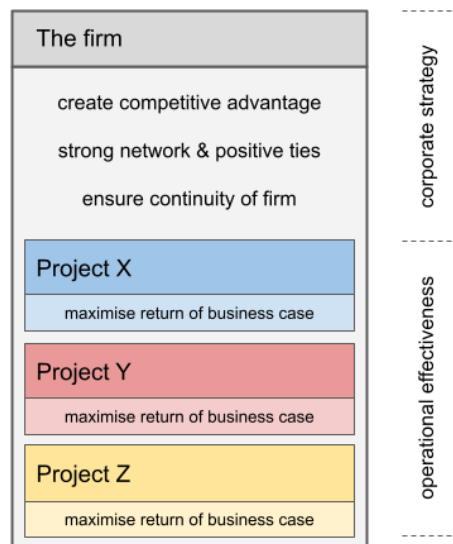


Figure 5.2: Projects as part of the firm (Own illustration)

Optimisation of the business case means profit is maximised and solely regards the Net Present Value and Internal Rate of Return (Van Gool et al., 2007). Some investments into social or communal ideals may tamper with the profitability of the business case on itself. Their upsides, however, are the aforementioned gain in public relations, support, and potentially future cooperation from the municipality (Interviewee F, 2021; Interviewee E, 2021; Interviewee J, 2022). Each of these provide a strategic advantage for the company. Thus, the considerations lie within the conflict between operational and strategic management.

### Placement

Interviewee K (2021, personal interview) mentions how the placement of certain 'main attractors' is quintessential to the success of commercial real estate uses that surround it. For instance, supermarkets may be an exclusive criterium for shopkeepers and entrepreneurs to open their stores. Interviewee H (2022, personal interview) adds to this the importance of combining this with the right public space, which allows certain types of shops to settle in the spaces. Both interviewees point out the importance of placing project components in exactly the right place to tap into their potential synergy.

Lastly, not only the individual placement of components is significant. The interviews recognise the importance of the overall placement of the project within the fabric of the city. The intertwining of space-uses was deemed mostly unfit for locations with low building densities such as suburbs, whereas mixed-use becomes almost inevitable on dense inner-city sites.

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# Results.

## 6 Case research

### 6.1 Preparation

In this final segment of parts I and II the aim is to illustrate the given explanations or contradict the claims if applicable. The empirical evidence behind the statements made in earlier chapters comes from a series of cases. These cases are indicative of (how to tackle) the problems as described in the introduction.

To successfully execute case research, the process must be organised and well-prepared. This preparation consists of selecting cases, establishing data collection and analysis methods, and setting up a framework for the comparison of cases.

#### **Case selection**

As this thesis specifically studies the Dutch real estate practice and its increasingly privatised initiatives, all cases must be located in The Netherlands and developed by Dutch parties. This means that all collected data, albeit case documentation or interviews, is in Dutch and translated where necessary.

Part of the data collection for this case research lies in the in-depth interviews conducted with developers. As in these interviews, participants are asked to illustrate their explanations with examples from their own experience. Their examples can be a starting point for case selection and data collection.

Cutting back on variables can be difficult as project-based work is inherently unique (Winch, 2010). Nevertheless, an attempt is made by sticking to Dutch inner-city redevelopment projects that realise generally unprofitable or less profitable functions within their function mix. This enables cross-case analysis based on the specific units of comparison as discussed in chapter 3.

A complete set of case selection criteria is given in table 6.1.

Criteria	Motivations
The case projects must be <b>redevelopment projects</b> .	The problem statement specifically states redevelopment projects as these (often inner-city) locations demand new stimulus in order for value to increase. This demand driven perspective is important for understanding how the case projects came to be.
The case projects must be <b>located in The Netherlands</b> .	The scope of this research is limited to the Dutch real estate practice for the sake of comparability of the cases and their economic and juridical similarity.
The <b>developers</b> of the case projects must be <b>based in The Netherlands</b> .	Once more, this limit is placed to minimise political and cultural differences for the sake of case comparability.
The case projects must either <b>introduce or retain an unprofitable function</b> to the site.	The thesis aims to study the synergy of unprofitable and profitable functions for the area and the business case. However, the interventions that enable unprofitable functions to sustain their existence in the area are also viewed as successful spin-off redevelopment cases.
The initiators of the case projects ideally differ in type of <b>real estate development company</b> .	To assess a wider variety of perspectives within the limited scope and timeframe of this research, it may be interesting to analyse the perspective of stakeholders with different but comparable backgrounds.
The case projects must be <b>comparable in type</b> .	These factors ensure comparability of the cases; excluding entangling variables in the analysis.
The case projects <b>must be mixed-use</b> , but the exact functions may differ.	
The case projects must be <b>recent</b> , with initiation or execution within the last 5 to 10 years.	

Table 6.1: Case selection criteria



## **Data collection**

This part of the empirical research entails two types of data collection. First, desk research of case documentation and news articles point out the characteristics and particularities of each of the cases. After this concise analysis, case-specific interviews are conducted to validate findings and discuss the extent of the realised 'value'. These interviews follow a somewhat looser approach, basing questions on the 'novel issues' that arise from studying the case documentation (Bryman, 2016, p.476). In some cases, the case information may follow from the in-depth interviews conducted with developers or attended lectures from project team stakeholders.

Together, these data collection methods provide insight into each of the cases individually. Conclusions and recommendations may arise. In succession to internal analysis of the cases, external analysis studies the similarities and differences between cases. This is done through a cross-case analysis. The most interesting themes and conclusions emerge. Moreover, the valuation and means to trigger these streams may follow from connecting the cross-case analysis and the interviews. Lastly, the analysed urban functions may formulate a frame of reference of value creation opportunities.

### Data

Each interview was conducted with permission of the subject and only recorded if they allowed it. The interviews are available for further study but will not be transcribed. However, conversation notes of all interviews are available in English in appendix B.

The interviews follow a semi-structured approach, in which probe-questions provide further guidance to the conversation. The first half of the interview focusses on added value (or spin-off) from the additional functions for the area. Participants are asked to illustrate their answers with their own examples. The second half focusses on the business case, and how the additional functions contribute there. This can be either the development business case or the exploitation business case, depending on the interviewee's role as a real estate developer or investor.

### Formulating analysis

To properly compare the cases in chapter 7, and to reach triangulation in the results, several details and phenomena must be studied. This includes general information on the building itself, the types of space-uses, and the development process, but mainly focusses on the value that was added to the area and how this was compensated financially in the business case. Also, the motivation for the inclusion of space-uses and the impact on risks are discussed where applicable.

## 6.2 Case A: Fenix I

The first case of notably interesting mixed-use real estate analysed in this thesis is the Fenixloods in Rotterdam. The project consists of a former warehouse, topped-up with a new residential block, totalling 45000m<sup>2</sup> of mixed-use space in a complicated steel structure. The lower segment is based on the former industrial Fenix warehouse offering a characteristic connection with the ground floor and the heritage of the area.



Figure 6.1: Fenix I after project delivery in 2019. (Source: Mei Architecten, 2019)

The project transformed a 100 year old warehouse into residential, commercial, and cultural spaces. The building houses the 'culture cluster', existing of Codarts Circus Arts School, Conny Janssen Danst and Circus Rotjeknor. The building houses 212 loft apartments, of which 78 rental apartments and 134 condominiums, offering 23000m<sup>2</sup> of residential floor area. Cultural and culinary programming in the historic plinth sum up to 8500m<sup>2</sup>, and the 225 parking lots come down to 9000m<sup>2</sup> of floor area. These main functions and their dimensions are the result of the negotiations and collaboration between project developer Heijmans (Proper Stok at the time) and the Municipality of Rotterdam.

The project architect, Mei architects and planners, joined the project in 2013. The building was delivered in 2019, marking the end of a complex and much-discussed project timeline. However, the project itself is part of the initiative to transform the Katendrecht peninsula to a safer and socially more sustainable and attractive neighbourhood.



### Case background

The lands of the small towns of Katendrecht and Charlois were annexed by Rotterdam in 1895. The wealthy farmers town of Katendrecht had to make room for port expansions of the big city. After realisation of the first -and later second- 'Katendrechtse haven' ports, the much larger port 'Rijnhaven' was dug in 1894. On its docks, shipping and warehousing companies settled. Later, in 1905, the 'Maashaven' port was finished, effectively making Katendrecht a peninsula. The Maashaven area surrounded itself with industry and Katendrecht became an isolated neighbourhood surrounded by warehouses, docks, and cargo transhipment (Stichting Historisch Katendrecht, 2016).

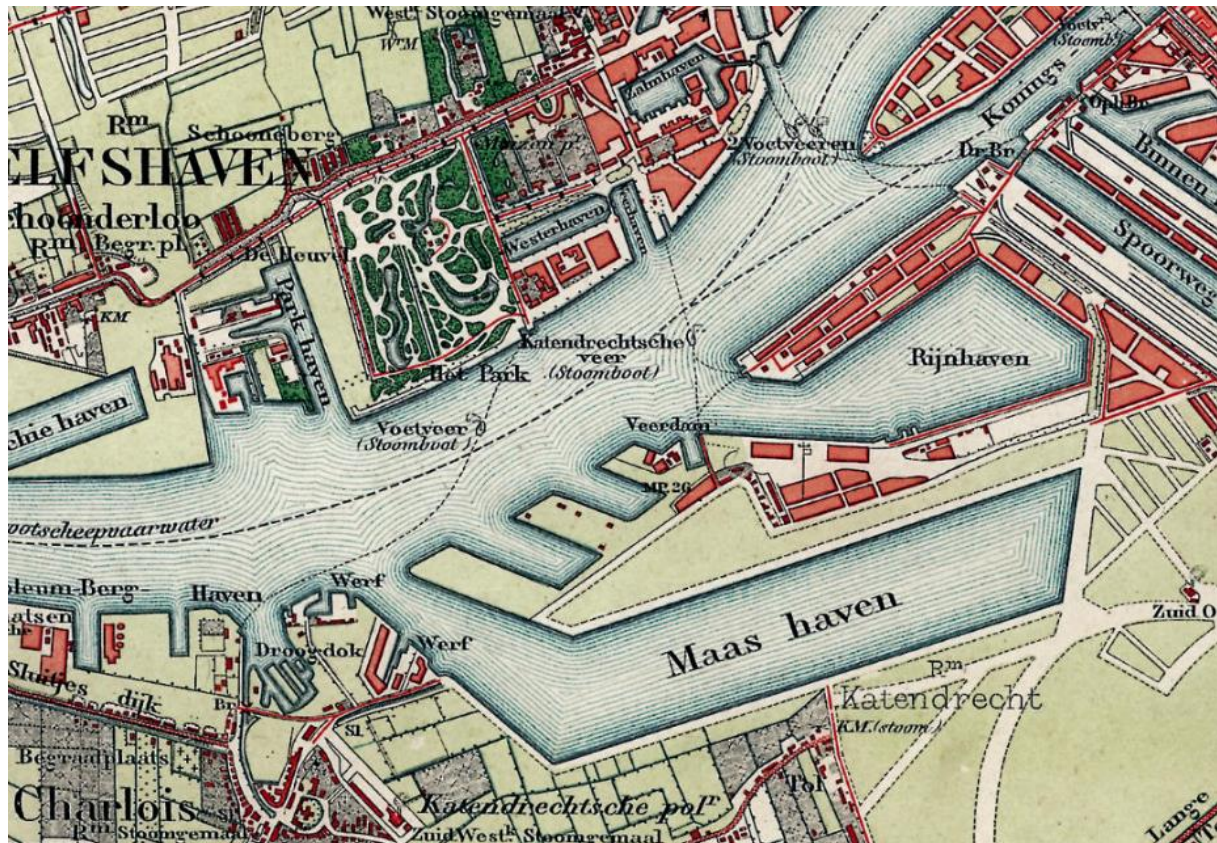


Figure 6.2: Part of a map of Rotterdam in 1907, right after realisation of the Maashaven. The first warehouses were built on the Katendrecht peninsula. (Source: topotijdreis.nl)

As part of the Holland America Line [HAL] a vast warehouse facility was built on the south bank of the Rijnhaven port entrance, called the San Fransisco warehouse. Realised in 1923, the 360-meter-long warehouse was the biggest of the world and facilitated storage for the migration boat line to the Americas (Interviewee B, 2022). The Katendrecht peninsula itself attracted many migrants and lower-class workers. In this neighbourhood conditions were poor, and workers sought leisure in bars and cafés. The influx of cheap port labour also brought prostitution to the area (Stichting Historisch Katendrecht, 2016).





Figure 6.3: Part of a map of Rotterdam in 1940, right before the bombardment of Rotterdam. The San Fransisco warehouse can be seen along the south bank of the Rijnhaven port entrance. (Source: topotijdreis.nl)

After the bombardment of Rotterdam in 1940, part of the city centre was left in ruins. German soldiers were ordered to not enter the Katendrecht peninsula for sanitary and moral reasons. Thus, Rotterdam nightlife moved to the bars of Katendrecht, and it became a busy part of town (Interviewee B, 2022). At the end of the war, in 1944, the Germans blew up the docks and part of the San Fransisco warehouse. Later repairs after a major fire were deemed unsuccessful.

In 1954, the two remaining parts of the warehouse were rebuilt and got the name Fenix I and II, referring to the mythical bird that rises from the ashes. The port function remained. Throughout the following decades prostitution and crime rates were high in Katendrecht (Interviewee A, 2022).

Several attempts of the municipality to revitalise the infamous neighbourhood had failed. Meanwhile, the Erasmus bridge had connected the 'Kop van Zuid' area to the city centre and transformed that pier on the north bank of the Rijnhaven into a vibrant neighbourhood, all directed by the plans of Riek Bakker (Interviewee B, 2022).

These plans also contained a future bridge across the Rijnhaven towards Katendrecht as a means to incorporate Katendrecht into the revitalisation of the southern side of the river. At the time, inhabitants of the Kop van Zuid pier were not happy with the bridge as they were afraid the new connection would bring the criminals from Katendrecht into their neighbourhood (Interviewee A, 2022). This goes to show the image the neighbourhood had at that time.

Interviewee B (2022) states that in 2007 the physical transformation of Katendrecht started. Earlier attempts to revitalise the neighbourhood throughout the seventies and nineties had failed and left part of the area in disuse. This was a last attempt, now on a bigger scale with multiple investments at the same time. He lists the examples of the 'Deliplein', which was revitalised by the municipality. The municipality also invested in public space for the area and developed a new primary school to attract younger families. Lastly, a playground and a park were developed along with that.

At the time, the quays were privately owned and still used by some of the companies operating from the warehouses. To be able to realise the Rijnhavenbrug and connect Katendrecht to Kop van Zuid, the municipality had to buy the Fenix warehouses to get access to the quays. As soon as they owned the warehouses, the municipality was contacted by companies explaining their ideas for the site. (Walhalla, student associations, investors, and entrepreneurs) The economic and social value of the warehouses became clearer, whereas originally the idea was to demolish them and build towers like on Kop van Zuid.

A key motive of the municipality was to keep families in the city, as a lot of families who could afford to do so were moving out of the city towards Barendrecht and Berkel (Interviewee B, 2022). One of the places the municipality could affect that, was on Katendrecht. However, developers were not interested in the neighbourhood as risks were too high and prices too low. Proper Stok, now part of Heijmans, was the only party willing to take on the risks. In 2009 their collaboration starts. The municipality and Heijmans worked together in a scheme that financially worked for both of them (Interviewee A, 2022).

### **Added value for the area**

According to van Interviewee B (2022) the revival of Katendrecht was an absolute top-down development. The municipality bought a lot of land and buildings. There were plans for demolition and new developments similar to Kop van Zuid. These plans were confronted by the current residents, who were initially not too happy with developments in their beloved neighbourhood. At the time there were large safety and hygiene issues in the streets. Drug dealing was common, and people urinated on the sidewalks. However, the existing residents of Katendrecht were really proud of their neighbourhood and its history. They were not welcoming to new developments, as they believed these were only for the rich. The inhabitants were scared that their identity would get lost. Moreover, they were concerned that they would be driven out of the neighbourhood if the social housing was replaced.

Their opinions were later taken into account, especially in the temporary programming of the warehouses. Transforming the warehouses was more expensive than demolishing them and building something new. However, Interviewee B (2022) believes the character of the warehouses was a key success factor to the new branding of Katendrecht and was therefore priceless. This branding has resulted in a new identity for the neighbourhood, capturing young families and a wider variety of income groups.

For Fenix I, both Heijmans and the municipality had their conditions for a partnership. The municipality gave Heijmans space to come up with an identity and concept for the development. In return, the municipality handed them a project brief containing their requirements that had to be met. The brief focussed mainly on the social urban functions that the municipality wished to permanently house in Katendrecht. Through these conditions, the inclusion of these functions as project components was forced onto the project.

In terms of placemaking, the main objective was to give back the water to Katendrecht. This was done through de-privatising the quays. The municipality condoned a lot of the temporary uses of the Fenix warehouses, as they were already glad that Heijmans was willing to take on the risk of revitalising the neighbourhood. Earlier, there were two more developers for Katendrecht, but the other two did not dare to proceed with the plans.

In the end, the development process took Heijmans and the municipality 14 years. The result is an iconic pioneering project initiating change of the area. To this day, Katendrecht is still undergoing transition. The net amount of social housing remained the same. The addition of housing stock lies in other market segments, and therefore brings a more balanced mix to the neighbourhood. Moreover, the quay became open to the public and in new plans for the Rijnhaven a large park will be introduced. The cultural programming of the plinth of Fenix I makes Katendrecht more attractive to young families and aids the rebranding that the neighbourhood has undergone.

In conclusion, it is this rebranding that has had the most effect on the social and economic vitality of Katendrecht. Katendrecht has become a safer and more attractive place through the combined effects of: placemaking in the warehouses, temporary functions and activities, the inclusion of social urban functions, and the introduction of new housing by densification.

### **Added value for the business case**

At the time, a financial crisis broke out and the risks and uncertainties of the project were so high that the board of directors of Heijmans decided to split up the project (Interviewee A, 2022). They formulated the following conditions in order for the project to proceed:

- The parking garage must be sold separately
- 78 apartments must be sold to an investor
- 35 pioneers must be found to move to the area. They would receive a discount based on the amount of space they wished to occupy, and they would be able to live on Katendrecht for less than 100k euros. This was an extreme attempt to lure in the first new residents as ambassadors of the project.

To lure in newcomers, the slogan 'Kun jij de kaap aan?' (*Can you handle the cape?*) was made. Branding Katendrecht this way meant they challenged people to come live in the rough environment. The ones that did, have seen an immense price change since. It is not the developer's business case, but the investor's business case that profits from the extreme value increase of Katendrecht. The complete transformation and rebranding of the area have driven real estate prices up several times (Interviewee A, 2022).

The municipality wanted a permanent location for Conny Janssen Danst, Codarts, and Circus Rotjeknor. The ambition was to house these cultural functions in the warehouses. Therefore, the municipality wanted to sell and lease back the warehouse space. This made them one of the first major tenants. They themselves had decided that the financial risk of owning the warehouses was too high, especially at that time. However, they knew that the project was under pressure for the developer, as the financial crisis had raised risk levels and tampered with feasibility of the business case (Interviewee B, 2022). As the municipality had major interest in the success of the project, they were willing to aid in its realisation. This meant that within their collaboration, a lot was negotiable.

Both Interviewee B (2022) and Interviewee A (2022) claim this project has strengthened their mutual relationship immensely. Heijmans is active in several locations across Rotterdam (Interviewee A, 2022). The closer ties with the municipality can help the developer with future acquisition and negotiations with the municipality. Moreover, gaining credits with the municipality eased development procedures that the project has undergone.

## 6.3 Case B: Haasje Over

The second case of mixed-use real estate analysed in this thesis is Haasje Over in Eindhoven. This project encompasses a slender 70-metre-tall tower and a 50-metre long two-storey high steel construction bridging over an old factory hall. The building totals 18241 square metres, most of which is residential space (Pintos, 2021). The 19-floor high tower offers 137 studios, two communal areas, and storage spaces for all apartments (Trudo, n.d.). The bridge consists of 48 maisonettes surrounding a 'levitated' courtyard. A commercial plinth divided into 3 spaces connects the building to the street. The building was delivered in 2021.



Figure 6.4: The tower of Haasje Over and its two bridges, one connecting it to the building beside it (left) and the other consisting of 48 maisonettes spanning over the old industrial hall (right). (Source: van der Burg, 2021)

The project is part of the area development of Strijp-S, a former industrial site that is being transformed into a vibrant mixed-use neighbourhood by developer and contractor Stam + De Koning [SDK]. SDK is part of construction conglomerate Volker Wessels, who is the investor behind the entire area development. Many new residential buildings are added to the ensemble of transformed and renovated offices and factory halls. The target audience is fairly young and outgoing, and the architecture tries to embody that while still paying homage to the robust industrial heritage of the site. For instance, the chimney and overhead pipes in the streets remain. The design of Haasje Over is courtesy of VMX Architects.

In the land contracts a requirement was that the building must be built by a VolkerWessels company (Interviewee D, 2022, personal interview). In this case Stam+De Koning is the local contractor responsible for most of the Eindhoven region. Thus, SDK was the contractor for this building. Interestingly, SDK also has a real estate development company which is active in Strijp-S. However, for this project SDK was only involved in building.



In line with the target audience, strategy for the area, and agreements with the municipality, a large portion of the area falls under the regulated price levels of social housing. The units of this building in particular are rental apartments for single- or two person households. Thus, the client of this project is the local social housing association Trudo.

It is rather interesting that the building itself does not incorporate any car parking, nor does it have a dedicated terrain for parking. This has to do with the target audience of students and young professionals, the high level of services and amenities in the very near vicinity, and the small unit size easing municipal parking regulations.



Figure 6.5: The maisonettes in the steel bridge construction of Haasje Over. (Source: van der Burg, 2021)

### Case background

In 1892 the Philips family opened a small lightbulb factory in Eindhoven. The demand for lightbulbs was low at the time but increased quickly throughout the following years. To become independent of suppliers Philips built several facilities in the early 20<sup>th</sup> century. Besides a glass factory and production facilities for packaging, laboratories for physics experiments (NatLab) and gas factories were built too. This is how Strijp-S became a large industrial site. Following research in the NatLab, new inventions led to expansion of the product line further expanding the Philips industrial site. Factories for the production of radio's, televisions and household appliances were built consequently in the years 1927, 1929 and 1930. Strijp-S was one of the three industrial areas built by the Philips company, the others being Strijp-T and Strijp-R (Strijp-S, n.d.).

The Strijp-S complex became fully self-sufficient, from production of materials and components to packaging and distribution. This also meant Strijp-S became closed off from

the city. Eindhoven residents gave the gated industrial enclave the nickname *forbidden city*, even though thousands of local workers entered and exited Strijp-S every day (Strijp-S, n.d.).

After several decades the Philips company gradually moves their activities to other parts of the world. It stations their headquarters in Amsterdam. In the year 2002, the municipality is ready to reintegrate Strijp-S with the city and plans are made to buy the site back. The municipality partners with construction conglomerate VolkerWessels and Strijp-S is bought from Philips, who rents it from them for the following years as production activity gradually migrates (Strijp-S, n.d.).

The buying parties establish a Public-Private Partnership with a corresponding special purpose company. This company is set to govern the area and is tasked to transform it to the new creative centre of Eindhoven. Throughout the following years urban plans are made for the neighbourhood. Many of the buildings have become monuments throughout the years and deserve special attention in planning. The aim of the plans is to create a metropolitan mixed-use area for living, working, and several social functions and gatherings.

The urban plans are turned into a land-use plan. Using the now established zoning, partners can be found for realisation of the ambitions. VolkerWessels remains in charge of area development but is in search of clients for project components. The Special Purpose Vehicle issues plots of land for development. Trudo is one of the parties to develop buildings on these issued plots.

Some of the existing buildings are split off and used to initiate the transformation of the area. The old synthetic plastic factory 'Klokgebouw' becomes a venue for concerts and festivals and the glass factory 'Glasgebouw' becomes flexible office space. Temporary functions are housed in the empty factories, such as the 'AREA51' skate park in the hall opposing the 'Klokgebouw'. Along with this, several events are planned for the open spaces between buildings. Together, the investments into the area manage to pull in the Dutch Design Week, who picks Strijp-S as their home, thereby portraying its image as a centre for creativity.

Following the projects of social housing provider Woonbedrijf, Trudo starts transformation of the row of monumental factories along the central axis of Strijp-S. Through the SPC investments are made into mobility concepts (Mobility-S) and public transit. Furthermore, an area-wide aquifer thermal energy storage system (Sanergy) is realised and a fund for creative placemaking initiatives is founded (Fond-S).

In the period of 2004-2008 the first plans for the Haasje Over site were made (Interviewee D, 2022, personal interview). The land for Haasje Over was also bought in the end of that period. At that time, housing corporations were allowed to develop housing in all market segments and not just social rent. Trudo aimed to build projects with mixed price levels. However, with the introduction of the 'woningwet' social housing providers are bound to only developing rental apartments with regulated rent prices. This meant the plans in Strijp-S also had to be changed.

Trudo has renovated and transformed the industrial monuments before starting on new construction of Haasje Over and the Trudotower. Throughout this process, it became clear to the project team that Strijp-S needed something out of the ordinary, not just a brick block. The bold design of Haasje Over was the answer to that demand.



Figure 6.6: The central area of Strijp-S after realisation of new buildings 'Trudo tower', and Haasje Over crossing over the skate hall. (Source: van der Burg, 2021)

The project partners together realise about 2000 new dwellings and an addition of 25000m<sup>2</sup> new space for creative entrepreneurs, further densifying Strijp-S (Strijp-S.nl). The new buildings and public space are arranged in conformance to the existing (monumental) real estate and local communities. Symbolic of this adaptation is Haasje Over, a prime example of how densification adapts to the old buildings and local community as the building literally bridges over the skate hall.

### **Added value for the area**

Initially, the plans for Strijp-S looked quite different. Many of the old buildings would be demolished, leaving only the monumental ones intact. The middle triangle would be divided into building plots for new residential blocks.

Haasje Over is built over the skate hall. This was an industrial production location of Philips. This building itself had little to no design or historic value and was destined for demolition. However, since the start of Strijp-S the skaters have been active in this building. Their social impact has brought immense interest and culture to the area (Interviewee D, 2022, personal interview). Trudo concluded that therefore, the hall and its functions should be preserved. If the skaters did not want to stay in this building, it would have been demolished.

The investment in the skate hall is believed to have a positive effect on the prices of Haasje Over and other neighbouring buildings (Interviewee D, 2022). The whole neighbourhood benefits here. According to Pintos (2021) "It ensures a vibrant and diverse urban area of a certain grittiness and coolness that belongs there. A character that is often removed from these areas when 'the new' comes."

Even more important is the effect the temporary uses had on the area. Despite the financial crisis many new creative entrepreneurs found their way to Strijp-S. This was due to the marginal rent prices of the empty factories. The temporary anti-squatting nature of the urban functions turns into a more permanent space for working and leisure.

The success of this approach lies in the strong focus on the local communities. This led the developing parties to commit to changes of the plan. Several of the buildings housing successful communities would no longer be demolished. Following these decisions, many new residents were attracted to the neighbourhood.

According to Interviewee D (2022) convincing the municipality of preserving the skate hall was difficult. They recognised the importance of the skate community to the area, but also knew this could cost them money as they have to finance sports activities. The skate hall was seen as an element of placemaking for the area and attracted one of the target audiences that landed in Strijp-S.

The success of the additional urban functions lies in large part in the support it gets from local communities. Strijp-S proves this point with the temporary functions that become permanent. However, this also means that it is very important to get the right stakeholders together in a project. For instance, in a primarily residential development, certain additions in the mix of urban functions can only be sustained if the inhabitants together provide the demand for that function (Interviewee E, 2021, personal interview). In projects like Haasje Over a type of balloting is used to pick the right tenants, as parasitic behaviour of a tenant that does not belong in the target audience can have detrimental effects on the synergy between the residence and the added land-uses.





Figure 6.7: The inside of the transformed factory hall. Besides the skate hall, the building also houses other cultural activities such as art exhibitions and dancing classes. (Photograph by Sem Wijnhoven/DCI Media)

In Strijp-S every building is mixed-use. The plinth is always engaged with public space and provides retail, hospitality, and social uses to create a vibrant neighbourhood. Throughout Strijp-S it is allowed to use the lowest 1 to 3 floors of the building for other functions than the main functions, which are office and residential. This means that several urban functions, such as retail and leisure, can be incorporated freely. Interviewee E (2021) mentions that it is fairly easy to find the right occupants for these spaces, and only the edges of Strijp-S may find some difficulty in finding tenants.

In literature, mixed-use is either described horizontally in areas, or vertically in a single building. What makes Haasje Over interesting is that it is mixed-use on a single plot of land, but in more than one building. Haasje Over does not correspond to the strict definition of Mixed-use. However, one could argue that the project does incorporate several land-uses in its unique design thus making it mixed-use development.

### **Added value for the business case**

In a response to losing buildable land, the design team came up with the plan to build overtop of the old hall, leading to the bridge construction. Through early and close involvement of the contractor the project remained feasible. SDK and Trudo have a longstanding relationship that is tightened by unique projects like these. If this project had been tendered, it would not have existed, or at least not been delivered in its current extremity.

Interviewee D (2022, personal interview) mentions that the final cost of the building was not higher than was expected. Trudo knew the price would be slightly higher due to the complex bridge construction and anticipated on this. Therefore, they compensated the extreme building costs of the bridge with a cost-effective construction concept that was contrived early in the process. Prices of the units were kept low through:

- Standardisation of façade and prefab building components. There is just one 'open' type and one 'closed' type
- Low-cost dyed concrete façade elements
- The amount of window space is rather low
- Load-bearing walls and columns were standardised and placed most efficiently
- Very barebones interior finishes. A lot of profiled concrete was used.

Trudo has invested into the structure of the factory hall beneath the building, extending its lifespan. Moreover, they have negotiated with the municipality and came to the agreement that their land price for Haasje Over was compensated by this social investment. In other words: They came to a deal where the price that they would have otherwise paid for the land, could now be invested in preserving the skate hall.

Trudo and the municipality negotiated the land price for Haasje Over. Part of the discount was because of the investments that were made into the local community. However, the main reason for compensation was because the amount of buildable land had decreased. This opened the discussion for financial compensation. The social investment was merely an argument in negotiation. It should be noted that Trudo had bought and received the land in a very early stage. At the time it was not yet entirely clear what would eventually be realised on the plots. The land was sold against market price and not residually. Compensation was therefore based on the actual costs and residually calculated in a later stage.

The tenants in the hall do pay rent. However, this is quite a marginal rent price due to the social nature of the housed uses. The municipality does not contribute to the rent prices. In the long-term the direct return from rent may compensate for the investment, but that would far exceed the normal business case time frame. The extra value for the area and the other buildings cannot be quantified and is very hard to assess, therefore it cannot be included in business case calculations even though a positive effect may be there.

Interviewee D (2022, personal interview) mentions that even though the benefit may not be included quantitatively c.q. financially, it should still be taken into account qualitatively. She argues that in the development process, it is always important to look for what a project can do for its surroundings. Moreover, she mentions that commercial developers are also realising that the value of their building depends on the vibrancy of the area they are in. In the past developers (and especially investors) did not consider this effect, but they are increasingly doing so now. The most common way this is done, is through accepting lower rent levels for the plinth of the building. This opens opportunity for socially engaging functions that could

otherwise not be there. On larger projects it is also easier to accept and/or compensate this decreased rent income. Thereby the social investment is not just out of ESG and image for the company but can actually provide value to the project business case.

The investment in the skate hall is believed to have a positive effect on the prices of Haasje Over and other neighbouring buildings. The justification for the investment was in part socially driven, but also a somewhat riskier long-term investment for Trudo. This can also be observed in the projects Anton & Gerard (transformed factory buildings 'de hoge rug') which were delivered in 2014. Here, Trudo invested above cost price level because they hoped returns would increase over time. Now that parts of the building are being sold, this value increase can be redeemed amply due to a much higher than average value increase in the Strijp-S area.

What should be noted, is that this is only interesting if you have a long-term perspective for the area, like Trudo has. Moreover, selling parts of projects over time is a regular strategy for Trudo, as they aim for what they call a 'healthy' mix in their neighbourhoods. They base this on their desire to enable tenants to move up the chain by buying their home through a smart contract where they cannot flip it immediately. Thus, the dwelling remains in the social housing stock and Trudo has the right to be first in line when the resident wants to sell.

For Haasje Over, even though there are many common areas, this strategy also applies and Trudo is likely to gradually sell-off units eventually. The shared facilities may bring a challenge to an owner's association, especially when Trudo loses total control over the building. At this time, the inhabitants share the responsibility to keep the common spaces clean and tidy. As of yet, this seems to go well. Trudo aims to let loose and let the inhabitants manage even after they sell part of the units. To them it would make no difference whether they have full ownership or a 50 per cent share in the owner's association. According to Interviewee E (2021, personal interview) the likelihood of Trudo selling the building increase as real estate prices increase in Strijp-S. Selling the prestigious building to an investor for a major profit may enable the realisation of more dwellings.

When asked about the paradigm clash of the developer and the investor regarding the risks or opportunities of additional urban functions, Interviewee D (2022, personal interview) takes the stance that this depends on the project phase. In earlier years of development of an area, it is wise to keep the steering wheel to yourself and own the entire building(s). However, as the building and the area mature project components can be sold separately.

Especially as a housing corporation it is not part of core business to house other functions than residential, hence the other components are often sold as soon as they are stable. Social or vulnerable spaces may be kept in ownership of the housing association, such as the skate hall which would otherwise probably not exist. Retail plinths can be sold as Trudo does not want to carry a responsible for these. Moreover, it is desirable to provide local entrepreneurs the opportunity to take ownership of the spaces they occupy.

## 6.4 Case C: KJ Residences

The third case is a yet unconstructed building in The Hague. KJ plein, short for *Koningin Julianaplein* (Queen Juliana square), is arguably the most central location of The Hague, and regarded as a gateway to the city. The current development exists of an L-shaped building, consisting of two 90-metre-tall towers that connect to form a valley in the middle. The project is built right up against The Hague Central Station. The estimated size of around 48000 square metres primarily consists of residential space, with prominent public space and occasional commercial space on the ground floor (Powerhouse Company, 2021).



Figure 6.8: An artist impression of KJ Residences and the central station building behind it. (Source: Powerhouse Architects)

A total of 400 apartments will be built. 200 condominiums for sale, 150 market rent apartments and 50 apartments under the regulated social rent price. The investors for the rental apartments will be Amvest Residential Core Fund and Woningstichting Arcade respectively. The latter of the two is a social housing provider in the area. The project was initially developed by Synchroon, who won the tender. In a later phase a partnership was formed and Amvest partakes in the special purpose company created for this development; *Ontwikkelcombinatie Koning Julianaplein* [OCKJ]. (Synchroon, 2022).

The building also provides commercial space of around 2400 m<sup>2</sup>, half of which is at ground level, while the total footprint of the building is about 3000 square metres. This means the majority of the ground floor is used for the passageway to the station building. This passageway is the new entrance of the city centre for passengers of public transportation. Powerhouse Company is the architect responsible for the building as prominent new city entrance, and Delva landscape architects embedded the building in a newly designed public space (Synchroon, 2022).



The commercial spaces shaped by the empty space between the walking routes are quite small and restricted by many conditions. One of the commercial units is around 550m<sup>2</sup>. Even though several parties can be found for such a space, the land-use plan does not allow for units of this size and thus the space is split up into smaller units. The maximum unit size for retail units is 200m<sup>2</sup>. Hospitality does not have this limit on unit size, but a total limit of 965m<sup>2</sup> is imposed. Much of this is already taken up by the pavilion that will be realised on the square (Interviewee F, 2021, personal interview).

Even though for the KJ tender the criteria were broad, the land-use plan still has an imposing role on what can be realised. For instance, the catering and hospitality services that the developer envisioned with tables and a welcoming place to stay may not correspond with the fast and transit-minded type of catering that the current station-oriented zoning was written for.

KJ Residences is targeted to people that rely heavily on public transportation. As such, no parking space will be realised for the inhabitants. Parking is still available external to the project by buying or renting a spot in a garage. The level of service of the building lies in other factors. For instance, the elevator lets you know whether your train is delayed. If that is the case, it may be more interesting to take a few trains later and just work from the coffee bar. Therefore, the urban functions of the plinth must be of added value to the space above. Thus, the investor must understand that the project operates as a whole, due to the services that the added urban functions provide. Through this synergy the mixed-use aspect of a project gets an entirely different value by playing a serving role to the main project component. This also means that the spaces for these additional services do not have to be very profitable, as the benefits lie with the main urban function.

The people who will live in this building will have a specific lifestyle that this building caters to. Therefore, the location and mix of function is tailor-made for this project. Interviewee F (2021) believes this also means that the investor has a higher willingness to invest in the building as a whole. He also believes a project like this would not stand a chance in a different location, and investors would not allow for the functions to be included. Here, the location steers the land-uses.

### Case background

Redevelopment of the Koningin Julianaplein location has been a topic of discussion for The Hague for more than fifteen years. This side of the station building was a very unappealing exit. The site was highly complex due to the many traffic streams and safety regulations for emergency situations. By order of the municipality, the construction of a bicycle parking garage under the KJ square started. In 2016, a tender was held for a residential building on the site (Interviewee G, 2022, personal interview). Moreover, through this tender the municipality consulted market parties to come up with design solutions for the square and its connection to the 'Koekamp' park and the rest of the city. Market initiatives could help steer the municipality towards a more integrated refurbishment of the site and its traffic streams.

In 2017 an agreement was reached with Synchroon, who had made the winning submission, and contracts were signed. The structure of the vast 8500-space bicycle garage was altered to accommodate for the larger forces of the building that would be realised above (Interviewee G, 2022). The realisation of the bicycle garage had become a debacle, with delays and cost overruns starting in 2018 and progressively worsening throughout the following years (Omroep West, 2021). Finally, the parking garage opened on the first of July 2020. The entrances did

require temporary roofing as construction of the building overtop has also been delayed several times and is yet to start.

Throughout the years negotiations with stakeholders surrounding the project had stiffened, and the developer had difficulty finding a contractor. The Dutch national railway company NS owns the station building and agreements between the developer and NS were made in order for the project to continue. The project was under great pressure financially as building costs had risen rapidly. By springtime of 2021 the business case had worsened so much that a new agreement with the municipality was made, and the land price was recalculated and settled. This settlement was necessary for the project to be realised, and the municipality had great interest in faster completion of the location, as it has been a very unappealing construction site right at the entrance of the city for years now (Interviewee G, 2022).

Interviewee F (2021) argues that on one hand, this plan was better for the site than the submissions of others. On the other hand, their projects would have probably been realised already, and this project got stuck with long processes of discussion with the municipality and the surrounding stakeholders. That is a result of the vision for the site, which complicates the development process.

### Added value for the area

For the plot on the KJ square the tender criteria were quite broad and relied heavily on the ingenuity of market parties. Interestingly, the added value for the area was not part of tender assessment. The flow and quality of the plinth were much more important. The entrance of the city demanded its own identity, any additions would be supplementary. Interviewee G (2022) mentions how a total of 100 points could be earned through three assessment criteria:

- 20 points for the bid price itself, especially with inclusion of social housing
- 40 points for the design (of the entrance area)
- 40 points for the vision on the site and the integration of public spaces

Synchroon submitted a bid based on a plan that allowed sunlight to pass over the valley in between the two towers, even though this deviated from the starting point of the municipality. Other building shapes and heights would block out the sun. In doing so, the design allows for terraces in the sun on the square. The vision of Synchroon is to change the Koningin Juliana square from a transit crossing to a place to stay at (Interviewee F, 2021).

The Hague CS has two routes out of the station building, one is called the red carpet, which heads right into the ministries through a busy and highly functional traffic artery of the city. The other is the route of the tourist, who is not part of this business route. The route to the KJ square is highly unattractive now, even though it leads to the main attractions of the city. The plan for KJ Residences is to shape a new entrance of the city/the station, using a space that opens up with a rising ceiling. Visitors are given enough space to pleasantly enter the city and be greeted by the greenery of the park. Synchroon calls this route the green carpet for its unique connection with the Koekamp park right outside the station.



Figure 6.9 The public city entrance under KJ Residences, and the entrance to the bicycle parking facilities.  
(Source: Powerhouse Architects)

The building shapes itself around the walking routes of this entrance. This means a lot of the ground floor and first few levels is lost to a large city hall that guides visitors into the city centre. The few spaces that are left, can be filled with commercial space that makes the hall and KJ square a pleasant place to stay. A pavilion on the square can provide catering to visitors on the square and thereby improves the quality of stay of the square.

The last aspect of the tender assessment criteria was somewhat vague as to give market parties a chance to bring their perspective to the table. Also, the heft of this last assessment criterium in the overall balance means that the tender leaned heavily on private initiative for the area.

Noteworthy is that the relationship of KJ Residences with the surrounding offices was not prioritised, and any benefits would be by-catch. There was no research into the amenities or uses that these offices demand specifically. Market demand was studied area-wide and prioritised the relationship between station and square over the rest of the context. Added value for the area lies mostly in the entrance, and the traffic flow out of this entrance. The city is given a valuable entry point and commercial spaces adjacent to the traffic generated can profit greatly.

Interviewee F (2021) mentions that even for projects that benefit their surroundings, nimbyism complicates the development process. Entrepreneurs want to be compensated for the decrease in traffic during construction. But completely ignore the gain in passing customers when traffic is increased after project delivery. Who will compensate the investor or developer for that benefit? It lies completely outside of the business case. Compensation during the construction period is guided by national law. Developers also acknowledge the temporary damage that a construction site may do to local businesses. However, there is always room for negotiation to adapt the plan or come up to a deal.

### **Added value for the business case**

For the KJ tender, there was a minimum land price. A higher bid would grant more points, but the assessment criterium of the entrance to the city had a higher share of points. Through the balance of these points, the developer is compensated for their investments into benefits for the area and the city by reduction of the land price.

Interviewee F (2021) makes a more general remark that the land price is traditionally determined residually. This automatically reduces the land price if socially desirable functions are incorporated against their marginal rent income. However, municipalities may have minimum land values that they want to achieve. The price must also be competitive within the market.

Synchroon aims to include urban functions that improve the marketability of the main function. This often results in functions that provide a higher service level for residential units or offices. This is a type of risk mitigation from the developer. A municipality is not always willing to financially compensate for that, as they think this already benefits the project itself. This leaves quite some space for negotiations. If price is not negotiable, the softer demands and restrictions are almost always up for discussion. In the end, the municipality also has an interest in the realisation of the project. When feasibility issues were raised, the municipality agreed to recalculation and settlement of the land price (Interviewee G, 2022).

Quite interestingly, the application for a building permit did not include the pavilion. It was also not built beforehand as an attraction for the site, as it would be inaccessible on the building site during construction of the main building. Moreover, the site is already well-known and does not need any placemaking. It can be very tempting to just leave it out, especially as it is not profitable. Especially in this case as the project is under severe pressure financially. That means that the future of the pavilion is not certain.

Interestingly, Interviewee F (2021) sees importance in also finishing such parts of a vision, as this provides better references during acquisition of new projects. Mixed-use may not always maximise the return in a single business case. However, it provides a very strong strategic advantage for the company in acquisition of future projects. Playing a socially involved role improves image and relations with other (public) parties. It could be argued that this aspect is a product of the long-term ambitions and longevity of the company. For Synchroon, this even goes beyond the company itself, as they play a pioneering role for the rest of the TBI group. This conglomerate of construction and development companies can profit from the lessons that Synchroon learns in their developments. This is motivation rather than concession.

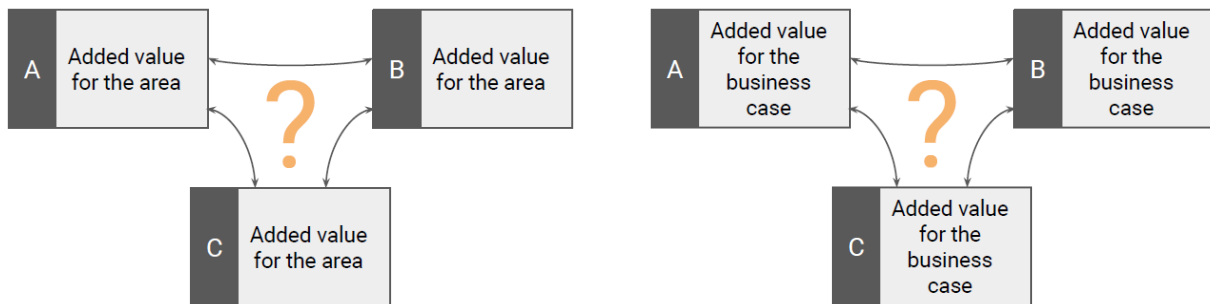




Figure 6.10: An artist impression of KJ Residences from the Koekamp park. (Source: Powerhouse Architects)

## 7 Cross-case analysis

This last part of the empirical research compares the cases on the basis of two units of comparison, following the research model of the embedded multiple case study discussed in chapter 3. Figure 7.1a & 7.1b visualise the comparison of the three cases based on the 'added value for the area' and the 'added value for the business case'. After having gathered information in the case studies individually, arranging the evidence based on these two units of comparison enables analysis of the similarities and differences. This helps comprehend in what manners these two factors are dealt with in practise.



Figures 7.1a (left) and 7.1b (right): Cross-case analyses for the two studied phenomena. (Own illustration.)

The results of the analyses based on the formulated units of comparison are described extensively in table 7.1, which can be found later in this chapter. The results of this comparison can be categorised based on similarities or interesting differences that were found. Figures 7.2 and 7.3 depict similarities in results across cases. Sometimes an extra remark or explanation is given in text.

What should be noted is that these findings are not characteristics that projects were tested on, it is a categorisation of the results. Case research results were obtained independently. Any common factors have been sought in the cross-case comparison afterwards. Therefore, figures 7.2 and 7.3 are categorised depictions of table 7.1. Full explanations can be found in the table, and contextual information and reasoning can be found in the individual case-specific paragraphs of chapter 6.

## Unit of comparison: added value for the area

	Fenix I	Haasje Over	KJ Residences
Provides space for local cultural initiatives	●	●	
Attracts new user groups (young families / creatives)	●	●	
More diverse housing stock retains families	●		
(New) strong identity & brand of the area	●	●	●
Spark rapid increase in surrounding real estate prices	●	●	
Improve quality of stay & character of public space	●		●
Incorporation of extraordinary space-use as placemaking	●	●	●
Engages with / includes local community through social / cultural space-use	●	●	
Shift in local attitude towards redevelopment	●		
Strong identity strengthens brand of the area	●	●	●
Increased preservation of industrial legacy	●	●	
Increase traffic flow on foot			●
Origin of investment:	<b>Concession</b> , as inclusion of social space-uses was a municipal demand	<b>Intrinsic motivation</b> , to engage with local communities out of social responsibility	<b>Concession</b> , the design and quality of use of the public hall were tender assessment criteria
Associated public investments:	Part of the urban renewal of Katendrecht. The municipality was willing to invest in public space as developer helped realise their ambitions.	The municipality takes part in a Special Purpose Company for allotment of land.	Redesign of KJ square, large underground bicycle parking and connection to Koekamp park.

Figure 7.2 Categorisation of cross-case analysis results for the added value to the area (Own illustration)



## Unit of comparison: added value for the business case

	Fenix I	Haasje Over	KJ Residences
Rebranding causes increased demand and new user groups	●	●	
Long-term investment met with high yield for pioneers	●	●	
Improved quality of public space improves marketability			●
Land bid compensated for loss of buildable land / space profitability		in settlement	in tender
Long-term financial commitment of municipality	lease contract		
Freedom in temporary use	●		
Great municipal interest loosens 'soft' restrictions	●		●
Increased attractiveness (not expressed monetarily) due to greater vibrancy of the area	●	●	●
Improved marketability due to service level provided by additional space-uses			●
Strengthened relationship with (public) project parties	reference for acquisition	novel character	reference for acquisition
Mixed-use development may favour strategy of the firm over optimised business-case			●

Figure 7.3 Categorisation of cross-case analysis results for the added value to the business case (Own illustration)

<b>Case:</b>	Fenix I	Haasje Over	KJ Residences
<b>Location</b>	Katendrecht, Rotterdam	Strijp-S, Eindhoven	Koningin Julianaplein, The Hague
<b>Size</b>	45000 m2	18241 m2	48000 m2
<b>Urban Functions (excl. parking)</b>	Residential, leisure, hospitality, cultural space	Residential, leisure, social/community space	Residential, retail, hospitality, public space
	Mixed-use realised within the plinth	Multiple uses on single plot of land, building bridges over another	Building is raised over public hall as a mixed-use plinth
<b>Developer</b>	Heijmans	Trudo	Synchroon, Amvest
<b>Relation to area</b>	Part of a larger urban area (re-)development to revitalise the neighbourhood.	Part of a larger urban area (re-)development to reincorporate the industrial site into the city.	On the ground floor level, the building is the new entrance to an established part of the city.
<b>Unit of comparison I: Added value for the area</b>	<ul style="list-style-type: none"> <li>- A breakthrough in local residents' attitude towards urban renewal of the area.</li> <li>- Attract young families and a wider variety of income groups</li> <li>- The social uses engage with the local communities and attract users.</li> <li>- Regained access to the quays by de-privatisation.</li> <li>- A more diverse housing stock bringing more balance to the neighbourhood and attracting young families.</li> </ul>	<ul style="list-style-type: none"> <li>- Provides space for cultural initiatives.</li> <li>- Strong identity reinforcing the brand of Strijp-S.</li> <li>- Inclusion of local community.</li> <li>- Attracts young creatives for the businesses in the area.</li> <li>- As an element of placemaking, the skate hall characterises the area and attracts new residents.</li> <li>- The public function of the skate hall sparks an increase in real estate prices in the surrounding buildings.</li> <li>- The space-use led to even more preservation of the industrial legacy of the site.</li> </ul>	<ul style="list-style-type: none"> <li>- An alluring new entrance to the city and its main attractions.</li> <li>- Positively changes the public space of KJ square from point of transit to place to stay, enabling leisure and encounter.</li> <li>- Part of a new face for the neighbourhood and the city.</li> <li>- Increased traffic flow generated by the new entrance, boosting local businesses.</li> </ul>
<b>Origin:</b>	Concession: The inclusion of socially responsible urban functions was demanded by the municipality. Moreover, the urban renewal of Katendrecht was a joint effort. This meant that the municipality was willing to invest into the revival of public space in the area as long as the developer was willing to (help) realise municipal ambitions in their projects.	Intrinsic motivation: The success of Strijp-S lies in the strong focus on the local communities that were built in the temporary usage of the buildings. Leading the developing parties to commit to changes of their plans. Following these decisions, many new residents were attracted towards the renewed neighbourhood. The housing association desires to engage with local communities out of social responsibility and tries to support them through saving the skate hall. This was their own initiative, as demolition of the old factory hall was proposed by the municipality.	Concession: The new city entrance as an extension of the station hall was a fixed demand in the tender assignment. It was also the main assessment criterium for winning the tender and was therefore a priority for participating developers.
<b>Associated public investments</b>	Several investments in public space. Very close cooperation with the municipality to rebrand the Katendrecht peninsula.	The municipality takes part in a Special Purpose Company for allotment of land. No public investment related to the project.	Redesign of the KJ square; public space forming a better connection to the Koekamp park. The municipality invested in a bicycle parking garage underneath the square, infamous for the delays and construction cost overruns.

<b>Unit of comparison II: Added value for the business case</b>	<ul style="list-style-type: none"> <li>- Rebranding resulted in a large demand, bringing in many new residents.</li> <li>- The pioneers of the Katendrecht peninsula saw an extreme property value increase, bringing the risky investments their high returns.</li> <li>- The municipality signing a first lease agreement greatly decreased the risks of the developer's business case, which was under high pressure at the time.</li> <li>- The municipality's great interest in the realisation of the project meant the developer gained more freedom on the 'softer' sides of development, and the municipality was more agreeable.</li> <li>- The developer gained a lot of freedom for temporary use of the warehouses for rebranding of the area.</li> <li>- Strengthened relationship between developer and public parties, now easing development procedures, and for the future aiding in project acquisitions, tenders and negotiations.</li> </ul>	<ul style="list-style-type: none"> <li>- Although not expressed financially, the marketability of the property is affected as its value depends on the vibrancy of the area it is in.</li> <li>- The investment in the skate hall is believed to have a positive effect on the prices of Haasje Over and other neighbouring buildings owned by the housing association. The justification for the investment was in part socially driven, but also a risky long-term investment. Now that parts of the surrounding buildings are being sold this value increase can be redeemed amply due to the exceptional value increase in the Strijp-S area.</li> <li>- The preservation of the skate hall caused a loss of buildable land, which was compensated by the municipality through the residual land price. This compensated for the investment costs of the social uses, that only offer marginal rent prices.</li> <li>- The spanning bridge design that characterises the building is a direct result of the loss of buildable land. The complex construction process and recognisability of the design are factors that further tighten the relationship of the project team.</li> </ul>	<ul style="list-style-type: none"> <li>- Through balance of the tender assessment points besides the land bid, the developer is compensated for their investments into benefits for the area and the city by reduction of the land price.</li> <li>- The improved public space and higher service level provided to the apartment units increase marketability.</li> <li>- The developer included urban functions that improve the attractiveness of the main function, mitigating vacancy risk.</li> <li>- Even if price is not negotiable, the softer demands and restrictions are generally still up for discussion. In the end, the municipality also has great interest in the realisation of the project, and several concessions were made. The municipality agreed to resettlement of the land price after feasibility had become an issue.</li> <li>- Mixed-use may not always maximise the return in a single business case, but it provides a strong strategic advantage for the company in acquisition of future projects through positive exposure of the firm.</li> </ul>
<b>Conclusion on mixed-use benefits</b>	<p>The change in identity enabled the developer to sell homes in this rough neighbourhood. Realisation of the mixed-use programme decreased project risk because the municipality was willing to sign the first lease contract as a result. Their great interest in permanently housing the cultural organisations meant the developer gained more room for negotiation. Thus, the benefit is not directly financial, but lies in negotiability of other conditions imposed on the project. Additionally, the inclusion of the social functions improved the relationship with the public parties.</p>	<p>The land price compensated for the loss of buildable land and the investments into the structure of the hall that houses the local community. Also, the social investment was justified as a high-risk long-term plan to raise property value through sustaining the community; The contribution of whom must be assessed qualitatively. The unique mix of multiple land-uses on the same plot, but in different buildings overtop each other, has made this a 'prestige' project. This further reinforces the tight relationship of the parties involved in this and future projects.</p>	<p>The land price was compensated through the tender, which provided a price reduction based on the realisation of a proper public entrance hall. The importance of the hall to the municipality opened up negotiations on both the land price and loosening of building restrictions that limited the business case. Lastly, the strengthened relationship with public parties as a result of this project is a strategic advantage for the company that exceeds the business case and is part of a long-term ambition of the company.</p>

Table 7.1 Extensive cross-case analysis in written form

**Other similarities and differences worth mentioning:**

All three of the projects were greeted with (very) close involvement of the municipality. Also, for all three of the projects this involvement was the result of the high interest the municipality had with the realisation of the project. Two of the projects -Fenix I and Haasje Over- are pioneering projects in larger area redevelopments. The municipality is dependent on the success of the urban renewal these projects carry out.

For KJ Residences, the interest is not dependent on a pioneering role as the project is located in a well-established neighbourhood. However, as one of the main entrances to the city, the project resembles how the city portrays itself and therefore carries great interest of the municipality. Moreover, the square itself (Koning Julianaplein) involves municipal investments into public space and a vast underground bicycle parking garage. The success of both of which is in part dependent on the success of the KJ Residences project.

**Further conclusion of cross-case analysis:**

For two of the three projects (Fenix I & KJ Residences) the additional project components that provide social benefits to the area were strict demands from the municipality. In KJ Residences it was both a mandatory component and one of the main assessment criteria. In Fenix I it was part of the agreements made between developer and municipality.

The other project (Haasje Over) saw no mandatory mixed-use or inclusion of social project components. However, the housing association saw the benefit to the area themselves as a motivation to retain the urban functions and incorporate these into the redevelopment.

For all three of the projects the developing parties claim to have gained more freedom and greater negotiability of restrictions when socially desirable uses were introduced in the mix. This freedom may result in temporary functions (used for placemaking) to find a permanent home as project components. In two cases (Fenix I & Haasje Over), engaging and sustaining local communities through urban transformation of the neighbourhood is part of the added value for the area. For the other case (KJ Residences) the redevelopment did not entail housing local communities, but provides improved throughput for transit and a more engaging entrance to visitors of the city.

The positive impact of (social) additional project components on the area surrounding the development is hardly quantifiable. It is therefore incredibly difficult, if not impossible, to express the financial value of benefits. However, these benefits can be considered qualitatively (and probably should). As benefits do not end up with the investor, attempts are made to reclaim some of it.

Two of the three projects (Haasje Over & KJ Residences) saw financial compensation - through a reduced residual land price- for the inclusion of urban functions outside of the main project component. The third (Fenix I) merely saw a financial commitment of the municipality by signing the first major lease agreement, greatly decreasing project risk. Although it should be noted that the argument for the compensation was based around the loss of buildable land c.q. lettable space. Thus, the residual land value decreases as a result of the inclusion of unprofitable spaces. The municipality thereby subsidises the realisation of spaces for otherwise unfeasible urban functions.

Besides the regular rent revenues and remuneration, other effects can benefit the business case as well. Although synergies have not been discussed extensively in the case analyses, interviewees have hinted at the positive effects that project components can have on one another. Moreover, the enhanced cohesion of the project team and the improved public relations are a benefit that transcend the development business case. These upsides each lie on a different level of directness and measurability. This demands arrangement and operationalisation, which will be discussed in the conclusion. There, these (qualitative) cash flows provide a broadened understanding of the business case, which is expanded with primary, secondary, and potentially even tertiary value streams.

# Comprehension.

## 8 Conclusion

This chapter draws conclusions based on the results gathered from empirical research and the studied literature. This chapter is where all results of the various methods come together, and work in tandem to formulate comprehensive conclusions. It thereby answers the re-search sub questions and the main research question subsequently.

### **SQ1:** *What are the benefits and downsides of mixed-use?*

Historically, mixed-use was simply a product of the gradual development of towns that were traversed on foot (Morris, 1994; Rabianski, 2009). Consequential to industrialisation, the accompanied rise in wealth, urbanisation, and the rise of the automobile, land-uses of cities became segregated (Mumford, 1961; Jackson, 1985; Bruegmann, 2005; Mandelker, 2008; Herndon, 2011). Single-use zoning became the norm and is still dominant to this day (Grant, 2007). However, the issues of pollution and nuisance that drove this change have largely been resolved and several of the arguments for monofunctional areas are outdated. Modern cities are struck with new problems created by car dependency, daily commuting traffic and a general lack of vibrancy during office hours characteristic of single-use zoning (Rowley, 1996; Downs, 2005; Hoppenbrouwer & Louw, 2005; Rabianski, 2009; Herndon, 2011).

Urban planning is reconsidering mixed-use development as a remedy for these problems and identifies several positive effects relating to day-round vitality of the area, mobility, and environmental sustainability (Herndon, 2011). The attractiveness of mixing uses lies in the desire to limit sprawl, preserve open space, reduce automobile dependency, limit the expense of infrastructure, achieve housing and employment goals, and increase sustainability (Walker, 1997; American Planning Association, 1998; Leinberger, 1998; Filion, 2003; Leinberger and Kozloff, 2003; Song and Knaap, 2004; Kozloff, 2005; Williams and Dair, 2007; Rabianski, 2009).

Coupland (1997) and the British Department of the Environment (1995a) state a list of consequential benefits originating in the concentration and diversity of activities produced by mixed-use. The relationships between benefits are illustrated in figure 8.1 (DoE, 1995b). Hoppenbrouwer & Louw (2005) add to this the environmental benefits of conserving energy and lowering pollution as a result of decreased car mobility and commute. Some publications even extrapolate to improved health and greater economic activity (Grant, 2002). Ultimately, mixed-use development provides social, economic, and environmental benefits.

Although convincingly beneficial, mixed-use development does come with certain downsides and hindrances. Some advantages are absolute, but others may only be realised under certain circumstances (Coupland, 1997). Hoppenbrouwer & Louw (2005) point out that mixed-use development is not a single solution to all societal problems. They describe it as a tool to create better urban environments. There are certain preconditions to properly apply mixed-use development in order for any positive impact to be released (Jane Jacobs, 1992; Rowley, 1996; Coupland, 1997; Grant, 2002; Rabianski, 2009).

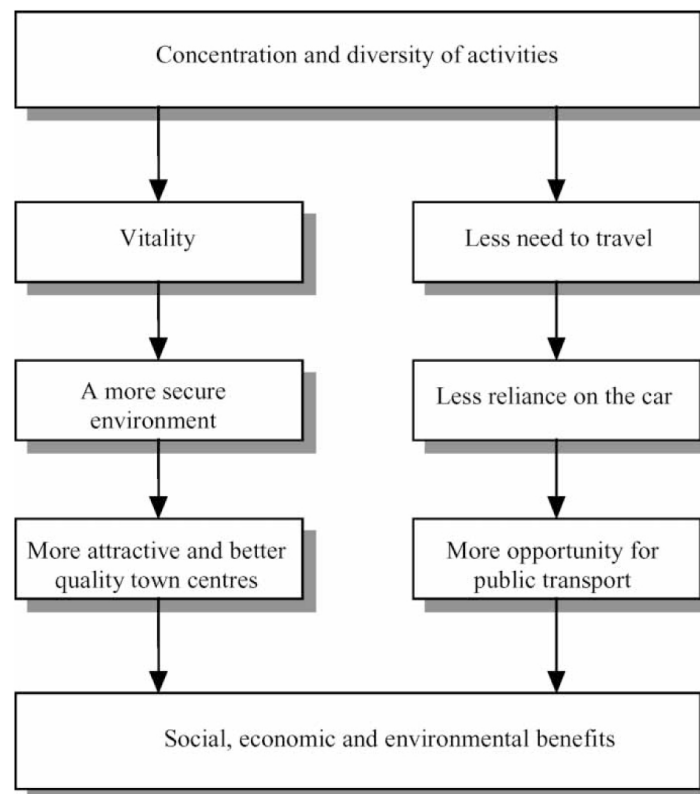


Figure 8.1: Relationships between benefits of mixed-use development (DoE, 1995b).

Many of the benefits rely on synergy of urban functions and are therefore interdependent. This increases risk as poor timing may lead to vacancy and low rents (Rabianski, 2009). Moreover, the project needs to be pre-planned completely and hit the ground running, resulting in high initial investment costs. The added complexity and longer development timespan increase this risk and add costs. Independent financial feasibility of the project components may mitigate this risk, but that would mean that cornerstone land-uses cannot compensate for other urban functions. (Schwanke, 2003).

It should be recognised that many of the downsides are not necessarily a consequence of mixed-use but a product of the real estate development practice being geared towards single-use development ever since the industrial era. The investment statutes and financier's acceptance, regulations, policies, and land-use plans may form obstacles to mixed-use development (Rabianski, 2009; CRA, 2021; Hobma & Jong, 2016). Interviews strongly note the prescriptive impact these aspects have. However, these downsides may diminish when mixed-use becomes more common in the real estate industry and public parties and investors become more acquainted with this product type.

Mixed-use projects may often have a harder time securing sufficient financing due to their composure of several real estate types (Schwanke, 2003; Leinberger, 2003). This means they do not fit into any of the single-use asset classes that have been standardised in investment practices. Additionally, the higher equity requirements, complex underwriting, extensive development period, and possible financial involvement from the public sector means mixed-use projects have greater difficulty securing capital.



Besides a greater difficulty in acquiring financing, investors demand more complex ownership structures (Rabianski, 2009). The complex ownership structure of mixed-use projects hinders maintenance and facility upkeep (Marsh, 2006). Moreover, it could desynchronise the (re-)investment cycle of project components. As a result, mixed-use properties require more complex management structures (Schwanke, 2003). Both the case specific and non-case specific reinforce this standpoint.

An interesting difference in paradigm is raised in the interviews, where developers perceive the greater control over the area and marketability of the asset as risk mitigation, while investors can see additional project components as by-catch or an increased management risk. Interviews indicate that the functional segregation by investors is one of the main obstacles of mixed-use real estate. Although fund composure is changing as investment managers have to adapt to the changing composure of projects as a result of the demands of the city and the resulting urban planning. On top of that, real estate professionals are increasingly more aware of the benefits that may come with mixed-use real estate. The impact that the vibrancy of the area has on the project is increasingly more apparent. The interviews, too, indicate a more accepting attitude.

**SQ2:** *How can mixed-use add value to the area?*

The answer to research sub-question one has identified many benefits of mixed-use. Many of these benefits relate to the context of the project, and therefore add value to the area. Interview responses are consistent with the previously stated benefits to the area, but case research expands upon this list. Without restating the value-adding positive effects listed in the previous paragraphs, some remarks can still be made on added value to the area based on the empirical research:

The inclusion of urban functions that socially engage with local communities or a prospective target audience attract a diverse user group and a more welcoming attitude among residents (Interviewee A, 2022; Interviewee B, 2022; Interviewee D, 2022). Also, temporary fulfilment of the space during development can prove valuable to the area and be permanently incorporated in the spaces to sustain this value (Interviewee D, 2022).

Moreover, diverse space-uses that distinguish the development provide a 'sense of place' to the area (Interviewee F, 2021; Interviewee A, 2022; Interviewee B, 2022; Interviewee D, 2022). Increased foot traffic generated by the mix of space-uses also provides greater support for public transportation, public space, and surrounding commercial functions (Interviewee F, 2021; Interviewee H, 2022). The space-uses contribute to the identifiable character of the project. As such, mixed-use can become part of branding or long-term placemaking for the project or the area (Interviewee F, 2021; Interviewee A, 2022; Interviewee D, 2022). The attractiveness not only benefits the project itself but increases asset value of the surrounding real estate as well.

The benefits to the area are represented in figure 8.2, which shows the extra investment of the inclusion of additional functions in the project, and the corresponding positive contribution to the area. The diagram indicates how the added value to the area falls outside of the business case. Figure 8.2, and the following renditions of this diagram throughout the conclusion, are a re-interpretation of the conceptual framework of figure 2.1. The diagram is once again based

on an abstraction of a cash-flow diagram, but this time allows for the appropriate categorisation of the value streams that have now been made explicit.

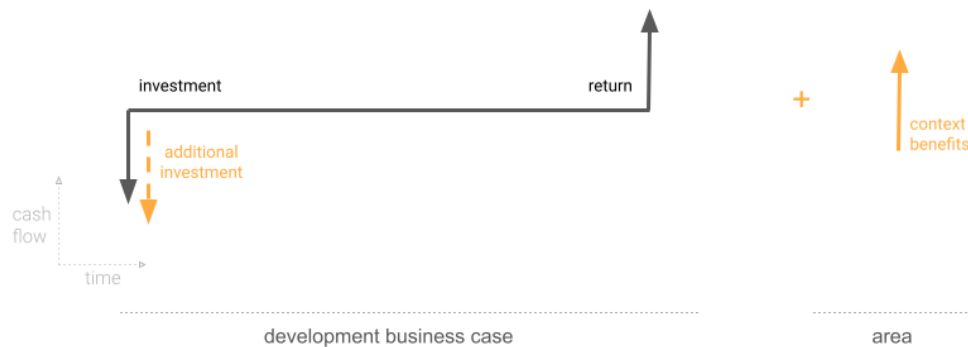


Figure 8.2: An abstraction of the cash-flow diagram of the development business case (left). The orange arrows represent the extra investment and the positive contribution to the area, external to the business case.  
(Own illustration)

For two of the three cases (Fenix I & KJ Residences) the additional project components that provide social benefits to the area were strict demands from the municipality (Interviewee F, 2021; Interviewee G, 2022; Interviewee A, 2022; Interviewee B, 2022). In KJ Residences it was both a mandatory component and one of the main tender assessment criteria. In Fenix I it was part of the agreements made between developer and municipality. Interviewee J (2022) states that mixed-use with social and/or unprofitable functions are generally concessions, and almost exclusively result from municipal demands or obligations in tenders.

However, the third case project (Haasje Over) saw no mandatory mixed-use or inclusion of social project components. However, the housing association saw the benefit to the area themselves as a motivation to retain the urban functions and incorporate these into the redevelopment (Interviewee D, 2022). In some cases, the developer can choose to opt for the inclusion of socially engaging urban functions if the business case allows for it, or even profits from it (Interviewee F, 2021; Interviewee L, 2021; Interviewee E, 2021).

### **SQ3:** *How can mixed-use contribute to the business case?*

Justification of project components does not solely lie in their relationship to the surrounding area. Their profitability justifies their position in the project, but the marginal rent price of social space-uses does not compensate for the investment within the normal business case time frame. Thus, the developer aims to include urban functions that improve the marketability of the main function (Interviewee F, 2021; Interviewee J, 2022, personal interviews). This may improve rent price and/or mitigate risk of vacancy.

For the analysed cases, the investment into urban functions that provide societal value is believed to have a positive effect on real estate prices of the area (Interviewee A, 2022; Interviewee B, 2022; Interviewee D, 2022, personal interviews). While justification for the additional investment cost is partly socially driven, it is also a longer-term investment. When units are sold later on, the value increase can amply be redeemed as the exit value of the real estate has risen due to the attractiveness of the area (Interviewee E, 2021; Interviewee D, 2022; personal interviews). Investors are increasingly aware that the value of the building is

dependent on the vibrancy of the neighbourhood it is situated in (Interviewee L, 2021; Interviewee J, 2022; Interviewee D, 2022; Interviewee H, 2022).

Due to this dependency, it is important that this contextual value increase is measured and considered in the business case. Though when formulating an answer to this research sub-question, a main conclusion is that assessing the positive impact of the mixed-use characteristic of projects is complicated. According to Rodrigo (2021) measuring the delivered value can be a strategy to gain a better insight into the financial and social returns of investments. However, the benefits of investments into mixed-use are not always distinct and foreseen, hence they can often not be quantified or measured (Schuur, 2010; Heurkens et al., 2020; Ecorys, 2020; Lieshout, 2021).

Lieshout (2021) argues that for this very reason, qualitative yield of societal values should be weighed independently. A qualitative social impact analysis can help assess the qualitative benefits to the area. Several interviewees reinforce this perspective and claim the importance of qualitative assessment of project impact (Interviewee L, 2021; Interviewee F, 2021; Interviewee J, 2022, Interviewee D, 2022).

Furthermore, benefits may take a long time to become available. These longer periods make their value uncertain and hard to estimate, especially when the benefits lie embedded in the local context (Rodrigo, 2021). Moreover, the benefits do not always end-up with the parties who pay, making financing of these components cumbersome (Gietema et al., 2018; CRA, 2020). Opportunities may even spill-over to other areas (Heurkens et al. 2020).

Instruments that assess the project impact, such as social cost-benefit analysis and key performance indicators do not measure the redistribution or displacement of gained wealth. Moreover, stakeholders interpret and value benefits differently (Schuur, 2010).

This leaves the investor not fully benefitting from the value created (CRA, 2020). Therefore, it is important to understand how the added value of the area can be recaptured to the development business case. It is for these reasons that unconventional ways to recover the investments are sought. These benefits lie outside of the familiar business case but do regain value to the investor or developer.

**SQ4:** *How can the added value for the area be captured for the business case?*

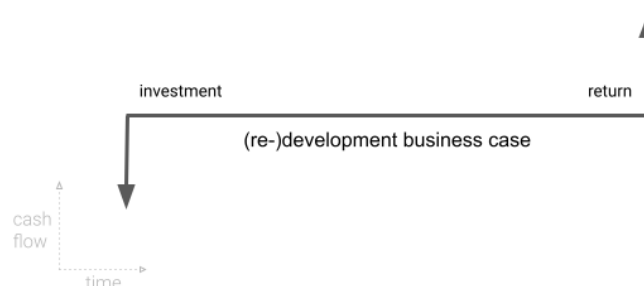


Figure 8.3: An abstraction of the cash-flow diagram of the development business case, representing the initial investment and later financial return (Own illustration)

The results from the case studies in conjunction with the studied literature provide a series of ways in which value can be recaptured by the developing party, which transcend the familiar business case of figure 8.3. A division of these results can be made based on value streams. The direct financial returns, such as revenues and financial compensation, can be seen as the primary value stream that results from mixed-use investments.



Figure 8.4: An abstraction of the cash-flow diagram of the development business case, showing the primary value stream by which added value of the investment can be recaptured in mixed-use development in orange (Own illustration)

The additional functions provide a business case of their own, outside of the main project component(s). However, the profitability may be lower and as a result of residual assessment of land prices a financial compensation from the municipality may occur (Interviewee G, 2022; Interviewee D, 2022). This can be a settlement of the land price, or a decrease in contribution (e.g. anterior agreement) to compensate for the loss of profitable space (Peek & Gehner, 2018; Urban Land Institute, 2018; Heurkens et al., 2020). Interestingly, even if there is no direct compensation a long-term financial commitment can still directly affect the feasibility of the project (Interviewee A, 2022; Interviewee B, 2022). This primary value stream is the direct result of the extra investment into mixed-use as can be seen in figure 8.4.

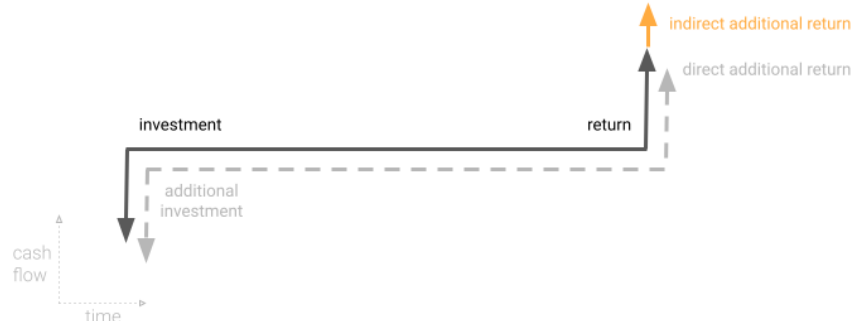


Figure 8.5: An abstraction of the cash-flow diagram of the development business case, showing the primary value stream in grey, and a secondary stream of indirect added value in orange (Own illustration)

There are also benefits to the project that cause a business case value increase indirectly. This secondary value stream is depicted as extra revenue on the business case in figure 8.5. The profits of these benefits cannot directly be linked to the mixed-use investment monetarily but do increase profitability or feasibility of the project. For example, both the case specific (Interviewee F, 2021; Interviewee A, 2022) and non-case specific (Interviewee J, 2022; Interviewee E, 2021) interviews revealed increased negotiability of 'soft' restrictions for the project, essentially enabling project solutions that are financially more appealing to the developer. Moreover, the greater freedom in placemaking granted developers the opportunity to better market their project and tether local communities.

A significant indirect effect that generates revenue in this second value stream is the synergy created by the mix of urban functions, distinctive of mixed-use projects. Their benefit lies

mainly in the increased profitability of the main project component(s), but can also be found in closer integration of the supply chain and a unique sense of place within the urban landscape (Schwanke, 2003; Schuur, 2010; Koppels, 2018). The increased productivity of the urban functions results in higher rent income or greater marketability of the spaces. Although it should be noted that synergies in projects are often erratic (Rabianski, 2009). This is a risk during the development phase that investors can be reluctant about (Interviewee I, 2021; Interviewee J, 2022). The perception of this risk and views on how it is best mitigated differs amongst the interviewed real estate professionals.

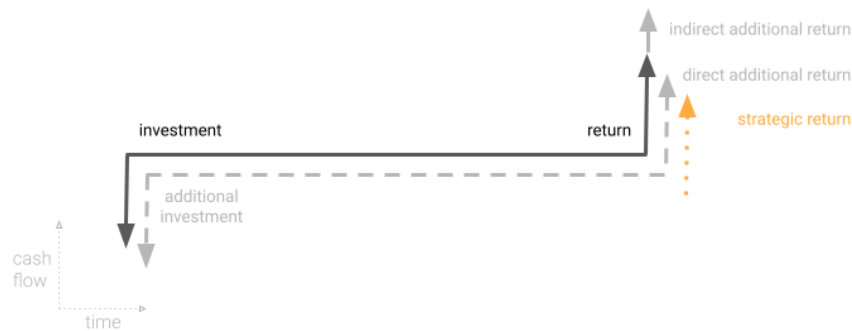


Figure 8.6: An abstraction of the cash-flow diagram of the development business case, showing the primary and secondary value streams in grey and the tertiary stream of added value to the firm in orange (Own illustration)

This study has shown there is another way in which benefits can be regained by developers. This last category is based on the effects outside of the business case, meaning a tertiary value stream can be registered. The tertiary value stream shown in figure 8.6 consists of the competitive advantages that the development firm gains from the investment into the additional functions. This strategic value can match (if not supersede) the otherwise financial maximisation of the business case.

Lastly, the benefit of mixed-use can also be the result of tender criteria in which the inclusion of socially relevant additional spaces is obligatory. This is not a quaternary value stream, but simply a 'conditio sine qua non' for the original business case to even exist in the first place. If the project had not incorporated certain urban functions in its mix, it would not have won the tender. Or it would not be a valid submission at all, as not meeting the required criteria can be a grounds for exclusion in tenders.

### *How can mixed-use real estate generate value for both the area and the redevelopment business case?*

The research sub-questions provide a structure of value streams that can be abstracted into the shape of a cash-flow diagram. These value streams are categorised typologies, based on the benefits and considerations identified in literature and case research. The horizon of the 'usual' business case can be broadened with three degrees of benefits, all benefits to the area are grouped as one. The diagram of which can be seen in figure 8.7. Together they provide the total impact of investments into mixed-use programming of real estate assets in a business case, as perceived through this study.

There are no scales on the axes of the diagram as the extents of additional benefits and investments differ between projects. Moreover, as these benefits are qualitative stakeholders

may value benefits differently, making their value relative. Therefore, the series of diagrams merely operationalises and categorise investments and returns. They do not measure them.

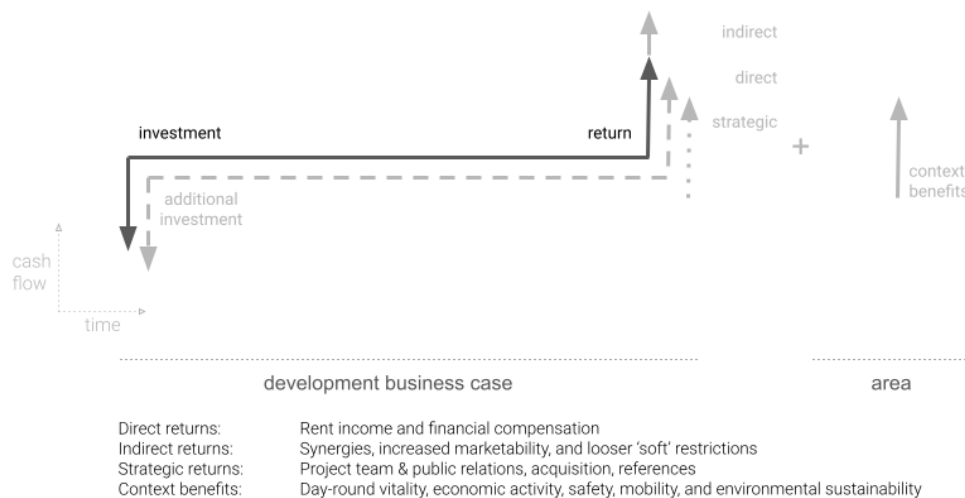


Figure 8.7: An abstraction of the cash-flow diagram of the development business case, showing the total of values for both the area and the business case, that result from mixed-use. (Own illustration)

In urban planning mixed-use is increasingly seen as a remedy to modern problems that cities face relating to day-round vitality, safety, mobility, and environmental sustainability. The attractiveness of mixing uses lies in the desire to limit sprawl, preserve open space, reduce automobile dependency, limit the expense of infrastructure, achieve housing and employment goals, and increase sustainability. This list is by no means exhaustive of the opportunities that mixed-use can effectuate. Although certain (pre)conditions are quintessential to the accomplishment of a positive impact, and the development process of mixed-use can face a higher risk level and more regulatory hindrance. Moreover, not all urban functions are perceived as equally interesting to the investor.

What has come forward is that the value of a real estate asset is (highly) reliant on the vibrancy of the area in which it is situated. Its contribution to this vibrancy through the inclusion of social urban functions in the mix of space-uses therefore impacts the asset itself. In short, added value to the area and added value to the business case are connected in multiple ways. The two are absolutely not mutually exclusive, and should be seen not only as benefits, but as arguments in negotiation with other parties too.

In tenders the inclusion of certain urban functions can be commanded, but these mandatory components may be compensated for if land-bid is a less weighty assessment criterium. When land price is calculated residually a compensation for the less or unprofitable space-use can be negotiated. Although the extra investment or marginal rent income of a particular project component is mostly compensated for by the increased attractiveness of the main function. Believed to result in a higher rent income on the main project component. Raising the marketability of the main space-use through the mix of urban functions is thus prioritised by the developer.

Due to many of the benefits lying in the synergy of components, timing of component delivery and their interdependencies may increase risk. Therefore, there is a high interest in early understanding of the extent of the value that project components may add. However, it must be recognised that the extent of these benefits is difficult if not impossible to measure quantitatively. Although methods such as a social cost-benefit analysis or measurement of

performance indicators can be used, a qualitative approach would best suit this decision-making process. Many of the benefits of mixed-use can take particularly long to come available and are perceived differently by stakeholders.

As a result, developers and investors may have differing perspectives on mixed-use as a real estate asset class. The developer perceives the greater control over the area and marketability of the asset as risk mitigation, while the investor may see additional project components as by-catch or an increased management risk. Moreover, the main limitation for financial support of mixed-use developments are the investment fund criteria set in place by investors. Investment models do not consider qualitative benefits to the area.

Nevertheless, due to the demands of cities and the resulting urban planning policies mixed-use projects are increasingly more common. Investment managers have to adapt and are changing their perspective on mixed-use assets. As the mutual benefits of mixed-use become increasingly more explicit, acceptance and implementation will follow suit. Ultimately, the value added to the area through mixed-use can be remunerated in the business case by including the three degrees of alternative value streams studied in this thesis. They provide ways in which the qualitative benefits can be considered. Thus, broadening the idea of the business case opens opportunities for added value.

# Interpretation.



## 9 Discussion and limitations

### Discussion

#### Value for the business case

The empirical research advocates the importance of qualitative assessment of added value and argues that quantitative or monetary valuation is often incredibly difficult if not outright impossible. Literature backs this argument and advises early estimation of the impact that project components can make. The current development business case as is notional in practice does not encompass the value streams that mixed-use can trigger. Besides, the models of investment managers do not sufficiently cover context variables and location vibrancy parameters. Therefore, the effects of mixed-use are implicit in practice and remain unrecognised until after project realisation. Thus, developers can hardly convince investors of the positives, even though it is the investor who profits from the long-term impact of vibrant areas. An integrated approach of the two could improve project feasibility and better justify investments that benefit the area.

#### Paradigm-shift

The research problem and accompanying question split the added value of mixed-use development into two segments: the area and the business case. The empirical research of this thesis was set-up in a similar division. However, what has become clear is that these values are by no means mutually exclusive, and more often than not they are interdependent.

Practice itself seems divided between developing parties that have recognised the benefits and advocate mixed-use development, and investment managers that are bound to more conservative perspectives on real estate management. This is an interesting difference in paradigm that emerged from the interviews and is a severe blockade to mixed-use real estate.

Among investors yield-based thinking results from their approach of financial assessment models. The developer has a value-based approach, which is much more sensitive to the qualitative values that impact the project. However, real estate professionals generally are increasingly more aware of the (positive) impact the attractiveness of the area has to the project or asset. For investors, this is a paradigm-shift from yield-based thinking to value-based thinking.

This does not necessarily mean the mixed-use development process requires new investors or demands a different type of real estate developer. As was found in the exploratory interviews, the main problem lies in the strict criteria of real estate funds. Mixed-use developments adapt to the local demand of the area. They rarely fit in any of the funds managed by investors due to their unique nature. By adapting investment fund criteria many of the blockades can be overcome.

Similar to the financing difficulties, the downsides of mixed-use development found in the exploratory interviews are indicative of how the built environment and its policies are not as familiar with mixed-use as they are with monofunctional property and zoning. These problems can be overcome as mixed-use becomes more common and redeems itself as an effective value contributing asset type.

### **Marketability**

Synergies are the most fundamental way in which mixed-use sparks benefits. Developers base the space-uses on local demands and a maximisation of the marketability of their property. This means that additional project components must have a reasonable effect on the attractiveness of the site. All increases in productivity, liveability, walkability, vibrancy, recognisability, safety, and supplied service level are of added value for the area. The project's mix of urban functions can, and preferably should, positively impact each and every one of these variables.

### **Motivation**

The municipality has the duty to safeguard local wellbeing and strengthen the resilience of the area. Therefore, the inclusion of amenities and services is often demanded through agreements and tender criteria. The ambitions for the area are assimilated in vision documents that developers can use as a basis for their plans. Moreover, the land-use plan and a wide range of municipal policies further steer the realisation of these ambitions. This also means that social space-uses are most often the result of concessions rather than motivations. Although interviews with industry professionals do point out that in some scenarios an inherent motivation or corporate social responsibility underlies the realised mix of urban functions. After all a developing party wants to complete a project with pride and use it as a reference for further acquisition.

This hints at a conflict between the corporate strategy of the firm and the operational effectiveness of the business case. The real estate development firm gains a strategic advantage from corporate social responsibility, improved public relations, and remarkable reference projects. However, this can hinder maximisation of the business case. Thus, there may be conflicting interests between strategic and operational levels of the firm.

### **Grain size**

Lastly, it is essential to acknowledge that many of the benefits of mixed-use development rely on the preconditions set for its success, as outlined in the literature review. Although many of these conditions relate to the area, especially regarding walkability and building block grain size. The link to public space and the traversability of the site must not be forgotten.

This brings about the difference in scope of this research and the broader theoretical status-quo. Mixed-use is mostly studied from an area-wide planning perspective. As such, it is not necessarily as relevant for redevelopment projects of single plots or properties. On the area development scale context benefits are perceived differently as the entire site can be assessed integrally.

### **Regaining value from the area**

The empirical findings can be put into perspective of literature. What results is a set of considerations outside of the usual business case, that is consistent with those listed by the Urban Land Institute (2018). As discussed in the literature review, Heurkens et al. (2020) unfold these considerations, forming the following list of potential private benefits for a wider interpretation of the business case. The following paragraphs mirror their considerations with the findings of this research:

- *Private parties can benefit from investment in communal values and public functions through a rise in real estate value and increased economic activity.*

In the analysed cases, A and B saw a rise in real estate value through increased attractiveness of the area (Interviewee E, 2021; Interviewee D, 2022; Interviewee A, 2022; Interviewee B, 2022). The third case expects increased economic activity, due to generation of increased foot traffic passing by the lettable spaces (Interviewee F, 2021; Interviewee G, 2022). Part of the value of real estate assets is based on the vibrancy of the neighbourhood in which they are situated (Interviewee L, 2021; Interviewee J, 2022). Certain functions can increase this vibrancy and help sustain other functions (Interviewee K, 2021; Interviewee J, 2022; Interviewee H, 2022).

- *The municipality may be inclined to contribute financially when an area is strengthened through a contribution to health, wellbeing and welfare of the local community that is invested in.*

Cases B and C saw direct financial compensation in the form of a financial settlement based on the loss of buildable land / lettable space (Interviewee F, 2021; Interviewee G, 2022; Interviewee D, 2022). Residually calculated land prices can compensate for the lost revenues, but prices are normative (Interviewee E, 2021; Interviewee J, 2022). Alternative to land price compensation, a financial commitment to the project can be made in the form of a long-term lease agreement, as seen in case A. (Interviewee A, 2022; Interviewee B, 2022). Tenders may also compensate financially if the assessment criteria for contribution to the area have a more significant weight than the land bid (Interviewee F, 2021; Interviewee G, 2022).

- *Communal/citizen initiatives in the area may be supported through the investment, raising market value of projects through increased resilience and positive identity*

This is especially true for case B, in which the temporary usage of the building has had a major impact on the popularity of the area. The initiative was expected to be housed for short-term as an act of placemaking. However, in the following years a strong community has grown, characterising the site. The continuation of the communal initiative through permanent inclusion in the project means the strong local community can be sustained. The demand for the real estate assets is largely based on the identity and cohesion of this community, meaning the investor directly profits from building and sustaining the communal initiative.

Although not as directly visible as in case B, in case A the placemaking initiatives that were temporarily employed during the development process have had an impact on the local community. The project of case A was part of a larger plan to revitalise the

neighbourhood. As such, several social aspects of the project pertain to a strategy of gentrification and recharacterization of the neighbourhood. This had a beneficial impact on the real estate value of the building and its surroundings.

- *Investment in public amenities and services can help earn government trust, which may in turn result in financial contribution or support for further projects*

Completely in accordance with the findings on other considerations, the willingness to incorporate socially relevant urban functions at the loss of profitable space enables developers to gain commitment from public parties. Consistent with this study's results, the commitment can be redeemed either within the project itself or in project acquisition, or even both. This means the investment can be reclaimed through a financial contribution or lease agreement as seen in the cases analysed in this thesis but can also be redeemed in future projects as pointed out by the context interviews.

What should be noted is that the earned trust is not limited to a relationship with the (local) government. The relationship with other project partners can also be strengthened as the case interviews have pointed out. This most likely has to do with the novel character of the socially engaging cases of mixed-use projects.

- *Private investment into sustainable aspirations is increasingly seen as part of a corporate social responsibility*

The experts that were consulted in the empirical research generally agree to this notion. Most recognise the increasing awareness, the market and municipalities even seem to expect a certain social responsibility from developing parties. Obviously, the corporate social responsibility has become part of marketing for the firm and its projects. It can play a role in being selected for tenders. That means a positive identity of the firm is favourable, especially in future project acquisition. The interviewed professionals back this from their experience.

## Limitations

Where many research methods require another round of validation of results to achieve triangulation, this is not particularly useful for the chosen methodology of this thesis. Case studies are inherently descriptive and by themselves do not aim for generalisable answers. Their results cannot be transferred. Therefore, testing the generalisability or prevalence of the findings does not make sense for this research method. This also means that the findings are not all-encompassing. By opting for an embedded multiple-case study, phenomena are compared among multiple cases, thereby achieving triangulation. Although this case study method is comparative, further research and a much larger dataset are required to formulate strategies or common themes that can be generalised. Findings can merely be compared and discussed with literature to gain an understanding of practice.

In alignment with Yin's (2003) perspective on case study research, the context in which the cases operate is thoroughly analysed on both a case-specific and overarching level. This ensures correct interpretation of the case results, thereby validating the results. The usage of a combination of methods and data inquiry methods ensures triangulation. Non-case specific interviews as part of the empirical evidence provide validation on the case results, thereby aiding the interpretation of answers from a practice perspective. On the contrary, other interpretations or perspectives outside of those that were analysed may be lost as a result. In this theses focus lies mainly on a private sector development perspective. This interpretation could theoretically be a limitation to the broader comprehension of findings but does not hinder the aim of this research.

## 10 Recommendations

### Further research

The empirical evidence from practice expands upon the theoretical knowledge found in literature. In relation to the discussion of new insights, recommendations can be made to further cover this knowledge gap.

The impact on, and strong role of, local communities on project success and realisation of synergies and value streams emerges from the case studies. The studied literature seems to overlook the importance of neighbourhood participation and generally focusses on other considerations and effects of mixed-use development. Many publications do acknowledge that the topic is still young and undefined. Thus, further research could deepen the understanding of the relationship between participation processes and mixed-use developments.

This touches upon the topic of social sustainability. Although many of the benefits and considerations of mixed-use relate to this field, a project's relationship to cohesion of the neighbourhood seems undefined. Further research into the sociological impact of mixed-use developments may provide valuable expansion of knowledge both academically and in practise. Moreover, it may very well reinforce the relevance of the topic with public parties and financiers.

This thesis employed a qualitative method usually selected for exploratory research into underexposed topics. Through the use of case studies, the phenomena can be better understood, but results are rarely transferable. Therefore, follow-up studies could best be employed to come to generalisable results. These studies should examine a larger sample group and preferable use focus groups, expert panels, or surveys to acquire more data from practice. This exploratory study found that any quantitative analysis of the added value would likely be inaccurate and unlikely to succeed. Therefore, it is best to adhere to qualitative methods.

### For use in practice

Monetary assessment of benefits proves to provide insufficient insight into the creation of added value in real estate development. Fundamentally, this goes to show how the real estate industry has an incomplete perception of urban reality. Expanding this perspective with a qualitative approach provides the opportunity for better assessment of both the feasibility of the project and the realisation of what is socially desirable for the area.

A wider perception of qualitative value would have to be adopted by the real estate industry on both the public and the private side in order for mutual understanding to be reached on the realisation of public ambitions. However, single-use zoning is still dominant in the built environment. Rules and regulations are geared towards monofunctional areas and projects. In order for the benefits of mixed-use to come available, changes must be made to the policies that are in place. This change of perspective must also seep into the real estate investment world in order for mixed-use to really catch on. A great way to affect the attitude that stakeholders have on the mix of urban functions is by measuring project impact beforehand, however difficult this may be, as the willingness to invest can be increased if the yields can emerge in advance.

The overview of alternative value streams that the business case can be expanded with can aid in discussions between developers and investors. By understanding the ways in which value can be added to the project or the firm stronger alignment between these actors may be reached. Moreover, the benefits of mixed-use on inner-city locations may persuade investors to evaluate their future assessment of asset acquisition.

**Source.**



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#### **Empirical data sources:**

This repository version does not include the interview notes due to the unfiltered sensitive project information that may be in there. For the original notes please contact the author of this thesis through the contact information. The data can only be released with permission of the interviewees involved. Furthermore, in this repository version any in-text mentioning of interviewees as data sources has been anonymised. Their identity can only be revealed at their discretion.

The following table helps readers decipher the position of interviewees in the real estate field.

<b>Interviewee:</b>	<b>Description:</b>	<b>Year:</b>	<b>Source type:</b>
<b>A</b>	Real estate developer involved in case project	2022	Lecture
<b>B</b>	Head urban planner involved in case project	2022	Lecture
<b>C</b>	Architect involved in case project	2022	Lecture & Personal interview
<b>D</b>	Social housing developer involved in case project	2022	Personal interview
<b>E</b>	Real estate developer involved in case project	2021	Personal interview
<b>F</b>	Real estate developer involved in case project	2021	Personal interview
<b>G</b>	Municipal project manager of case project	2022	Personal interview
<b>H</b>	Head of asset management of real estate investment fund	2022	Personal interview
<b>I</b>	Director of real estate investment firm	2021	Personal interview
<b>J</b>	Director of leading real estate development firm	2022	Personal interview
<b>K</b>	Director of mid-size real estate development firm	2021	Personal interview
<b>L</b>	Developer at leading real estate development firm	2021	Personal interview
<b>M</b>	Mobility and urban planning consultant	2022	Personal interview

# Appendix A

## Interview Protocol

## **Opname**

Gaat u ermee akkoord dat dit gesprek wordt opgenomen t.b.v. het empirisch onderzoek voor mijn Master scriptie?            JA / NEE

Voor de kwaliteit van het onderzoek is het van belang dat u vrijuit spreekt. Daarom is het eventueel ook mogelijk u anoniem als bron te vermelden.

## **Introductie**

Om het gesprek te sturen en de vragen te introduceren schets ik de context van het onderzoek. Deze studie is gericht op herontwikkeling van objecten of kavels naar mixed-use vastgoed. Vaak zitten in deze functie-mix een of twee hoofdfuncties, aangevuld door nevenfuncties of -activiteiten. De literatuur wijst uit dat hiermee het vastgoedobject en haar directe omgeving levendiger, veiliger en zowel sociaal- als economisch veerkrachtiger worden (Rabianski, Gibler, Tidwell & Clements, 2009). Echter, het rendement van de hoofdfunctie zal op deze locatie waarschijnlijk hoger zijn dan dat van de nevenfuncties -zowel absoluut als relatief. De hoofdfunctie is dan ook bepaald door de locatie; In een Central Business District renderen vierkante meters kantoor beter dan die van restaurants. Toch voegt men een restaurant toe. De nevenfunctie kan namelijk een synergie-effect opleveren met de hoofdfunctie. Zo wordt er meer uit de hoofdfunctie geput door de toevoeging van de nevenfunctie.

We kunnen concluderen dat functiemenging een middel is waarmee de ontwikkelaar extra waarde kan laten ontstaan in het project. Het doel van dit onderzoek is om onder woorden te brengen wat ontwikkelaars doen met (de creatie van) deze toegevoegde waarde. Eerst zullen we kijken naar wat de secundaire functie toevoegt voor de omgeving van de ontwikkeling. Daarna belichten we wat het de ontwikkelaar/belegger zelf kan bieden.

Graag benadruk ik dat gedurende het hele interview de vraag "Hoe kan je nou meerwaarde creëren met secundaire functies?" centraal staat.

**DEEL A:** Zoals hiervoor aangegeven, belichten we eerst wat de secundaire functie toevoegt voor de omgeving van de (her-)ontwikkeling.

**Q1:** *Heeft u momenteel te maken (gehad) met projecten waar u secundaire functies heeft toegevoegd aan het hoofdprogramma van een (her-)ontwikkeling? Zo nee, waarom niet? Zo ja, welke en waarom juist die?*

**Sturing:** Introductie van het onderwerp. Hier probeer ik de spreker uit te dagen overall met een uitleg en een voorbeeld te komen, om zo een antwoord verder te onderbouwen. Dat vormt als het ware de basis van het interview.

**Q2:** *Hoe komt de keuze voor toevoeging van een bepaalde functie tot stand?*

**Sturing:** Is dit van tevoren bepaald (bestemmingsplan, tender eis, etc.)? Of gaat het hier om een gevoel met de plek (genius loci, instinct, historie, etc.)? In hoeverre is het een discussie die rationeel (op rendement) tot stand komt? Vraagstuk; Concessie versus Motivatie.

**Q3:** *Tegenwoordig trekt het ontwikkelproces steeds meer naar de kant van private initiatieven, maar in hoeverre kan de ontwikkelaar met een plan de buurt voorzien in hun behoeften? / Dragen de secundaire functies bij aan het welzijn en welvaren van de buurt?*

**Sturing:** Hoe past de keuze van functies bij uitnodigingsplanologie en de aankomende omgevingswet? Komt een functiemix tot stand uit een directe behoefte van de omgeving?

**Q4:** *In welke wijze voegen de secundaire functies waarde toe aan hun directe omgeving?*

**Sturing:** Dit kan financieel zijn, via een spill-over of ripple-effect. Ook kan het gaan om een bijdrage in veiligheid, aantrekkingskracht voor commercie, of aanbod van voorzieningen etc.

**Q5:** *In hoeverre worden secundaire functies toegewijd aan placemaking en/of branding?*

**Sturing:** De secundaire functies kunnen de plek smoel geven. Door ze als marketing in te zetten kan de ontwikkellocatie op de kaart gezet worden, maar hoe ver gaat dat en werkt dat echt?



**DEEL B:** Dan zijn we nu aangekomen bij het tweede deel van mijn vraagstuk; Wat biedt de toevoeging van deze secundaire functies nu voor de ontwikkelaar/belegger.

**Q6:** *Hoe draagt de functiemix direct bij aan de business case?*

**Sturing:** Sommige waarde blijft verscholen, maar ligt in betere relaties met de lokale overheid, een betere relatie met de buurt, een beter imago bij de eindgebruikers, etc.

**Q7:** *Welke extra waarde uit het vorige deel van het interview kan terugstromen naar de ontwikkelaar/investeerder, en op welke manier gebeurt dat?*

**Sturing:** Soms kan het wellicht zo simpel zijn als het vragen van hogere huur omdat het pand aantrekkelijker is of meer functionaliteit tot de eindgebruiker biedt door de toegevoegde functies. Dit is een vrij directe (terug) stroom, misschien zijn er ook minder directe waardestromen die u kunt noemen?

**Q8:** *Is die waarde altijd financieel uit te drukken? Zo niet, hoe valt die dan wel te kwantificeren?*

**Sturing:** Sommige waarde blijft verscholen, maar ligt in betere relaties met de lokale overheid, een betere relatie met de buurt, een beter imago bij de eindgebruikers, etc.

**Q9:** *In het vorige deel werd gevraagd naar de toegevoegde waarde van de secundaire functies bij placemaking. Hoe draagt diezelfde waarde van placemaking bij aan de business case?*

**Sturing:** In vraag 6 werd al vermeld dat het aantrekkelijker maken van het pand (middels placemaking) wellicht een hogere huur kon opleveren. Toch kan het zijn dat, nadat bij vraag twee de andere manieren van waarde terughalen zijn verkend, er een andere kijk is op de toegevoegde waarde van placemaking. Kan het zijn dat de secundaire functies bijdragen aan stadsverbetering, welke de positie van de ontwikkelaar verbeteren bij vervolgonderhandelingen (of de anterieure overeenkomst).

**Q10:** *Moeten ontwikkelaars/beleggers hun horizon verbreden bij het opstellen van de business case en deze verscholen waardestromen meenemen?*

**Sturing:** Als het zo is dat er een waardeslag verscholen gaat in de synergie van functies, dan zouden ontwikkelaars en beleggers er goed aan doen hierop te sturen. Tegelijkertijd is er wellicht geen garantie voor succes van deze functiemix. Kunnen we proberen het instinct van de ontwikkelaar hier in woorden uit te drukken?

Bedankt voor uw aandacht en tijd. Ik ga uw antwoorden verwerken in mijn onderzoek en zal bevindingen later nog terugkoppelen met u.

# Appendix B

## Interview Notes

**This repository version does not include the interview notes due to the unfiltered sensitive project information that may be in there. For the original notes please contact the author of this thesis through the contact information. The data can only be released with permission of the interviewees involved. Furthermore, in this repository version any in-text mentioning of interviewees as data sources has been anonymised. Their identity can only be revealed at their discretion.**