

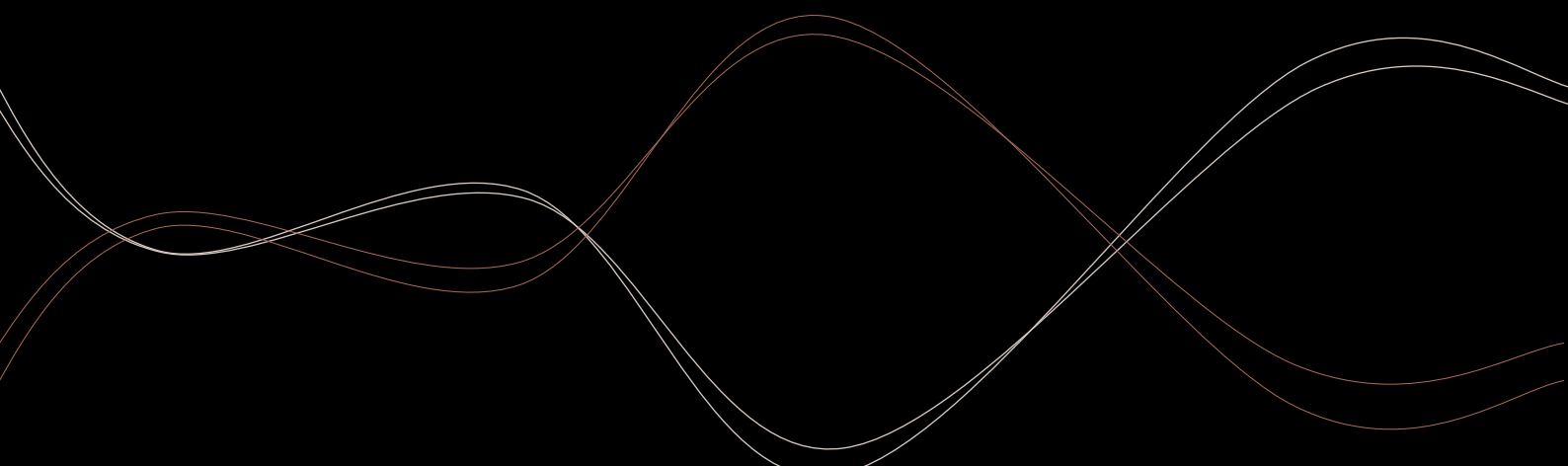
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# Parameterising Participation

*An explorative mixed-method approach towards the  
potential of parametric design within participatory practices*

written by

Lászlo Gonzalez Serrano



A4 Report

Monday 15<sup>th</sup> of June

2026

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# Colophon

## Parameterising Participation

An explorative mixed-method approach towards the potential of parametric design within participatory practices

A thesis submitted in partial fulfilment of the requirements for the degree of

## Master of Science

in Architecture, Urbanism and Building Sciences

at the Technical University of Delft

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by

**L.P.M. Gonzalez Serrano**

5302625



Research conducted over the period between November 2025 and June 2026,  
and publicly defended on the 15<sup>th</sup> of June 2026 in Delft.

First supervisor

**Dr.ing. G.A. (Gerard) van Bortel**

Second supervisor

**Prof.dr. H.T.(Hilde) Remøy**

Delegate

**Dr.ir. G. (Geertje) Slingerland**

Internship company

**Boelens de Gruyter**

Company mentor

**Ir. Bahar Akbarian**

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## Preface

Finalising my bachelors, I did an internship in which I wrote a research report on the accessibility of the Dutch housing market for starters. Not only did this captivate me, it also left me certain that I wanted to return to this topic.

Driven by a genuine interest in project development and the built environment, and the challenges they present, writing this thesis felt as a pleasure. Continuously being engaged with processes that concern the housing market while conducting this study allowed me to gain experience and knowledge within the discipline throughout concluding my masters.

Alongside the addressed themes within this thesis that I found compelling, this graduation process was also brightened by the people that were involved. Above all, I would like to express my sincere gratitude towards those who made this thesis possible.

First, I would like to thank my first supervisor, Gerard van Bortel, and my second supervisor, Hilde Remøy whose constructive feedback, availability and overall guidance helped me consistently throughout the whole graduation process.

Second, the team at Boelens de Gruyter for their genuine interest and support with most notably, my mentor, Bahar Akbarian, for her care, assistance and dedication.

And third, the individuals participating in the research contributing to the outcomes. Reviewing the issues presented in this report would not have been possible without their personal and professional engagement.

Writing the thesis you are now set to read was a challenging yet rewarding journey that marks the completion of my studies at the Technical University of Delft. Other than hoping this will be an enjoyable read, I hope it offers something of value to your own practice.

As much as it being an end, it is however also a beginning of an exciting phase in which I will take my first steps in the real estate domain.

Warmly.

Lászlo Gonzalez Serrano  
June 2026  
Delft

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## Abstract

The persistent challenges of the Dutch housing market cannot be resolved through new built alone. Transformation is widely proposed as a complementary solution, yet procedural obstacles hinder numerous projects. Appropriate participation has the potential to address these challenges, as it correlates with public support and the risk of conflict during permit procedures.

While traditional design shows limitations in incorporating participatory outcomes, parametric design presents potential to address these shortcomings. This research therefore examines under what conditions parametric design could improve participatory quality in project development.

The study employs a mixed-method empirical approach, and the IAP2 spectrum and Arnstein's ladder of participation served as analytical frameworks to conjunctively examine traditional and parametric design-based participation processes in multiple development projects addressing the broader built environment.

The findings first and foremost reveal that participatory quality is not reflected by the absence of formal objections alone. Its value lies in residents adding local knowledge and feeling genuinely heard, informed and respected, aspects that can be fostered before a design even exists. The research therefore demonstrates that quality does not primarily depend on the employed design method, but on the initiator to intentionally involve residents meaningfully.

Parametric design however does present itself as the most capable instrument. It enables earlier resident involvement, bridging the gap between technical expertise and emotional experience, and addressing community concerns before fundamental decisions are fixed. This suggests it is not the design method, but the way it is implemented. Intrinsic motivation therefore remains the primary condition for participatory quality, with parametric design as its most constructive tool.

housing crisis  
project development  
participation  
participatory quality  
parametric design

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# 1. Introduction

The research addresses the housing market issue through two elements of the broader development process: participation and design. This chapter provides context, explains how the subject of this research emerged, what it focuses on and from which perspectives it is approached.

## 1.1. Context

The Dutch housing market faces a persistent shortage of approximately four hundred thousand residences, which represents nearly five percent of the existing housing stock while two percent is targeted (ABF, 2025; CBS, 2025). A long-standing mismatch between supply and demand, compounded by population growth, smaller households and insufficient construction output, has driven housing prices up continuously. Environmental regulations and slow permit procedures further constrain development capacity (Vonkeman, 2025; Volkshuisvesting en Ruimtelijke Ordening, 2023).

### 1.1.1. Transformation

The ongoing challenges have resulted in an annual demand of approximately hundred thousand residences which new construction alone cannot meet (Rademaker, 2025). Transformation is widely proposed as a complementary solution (Remøy et al., 2024). It is the reuse, repurposing or upgrading of existing buildings for new functions and contributes to housing supply in a sustainable and relatively fast way, requiring fewer raw materials and generating less waste (Szopińska-Mularz et al., 2025). Target groups such as students, seniors and urgent housing seekers are also particularly well served by transformation, as they typically seek smaller units that former offices or schools are architecturally suited to provide (Remøy et al., 2024; Boon & van Meurs, 2021). Accordingly, the government has allocated funding to stimulate developers to utilise existing real estate, offering loans for projects consisting of affordable housing (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024).

Nevertheless, transformation has yet to contribute at the scale required and numerous projects remain obstructed. The Dutch cabinet aims to realise fifteen percent of the annual built through transformation, yet in the past year merely three percent was achieved (Rademaker, 2025; CBS, 2025). Table 1 below presents the current vacancy data on non-residential real estate, illustrating the opportunities that are still left untapped (CBS, 2026).

**Table 1**  
*Vacancy in the Netherlands, d.d. 01-07-2026*

	<i>Objects</i>	<i>Square meters (m<sup>2</sup>)</i>
<i>Total</i>	1.218.890	560.383.690
<i>Examined</i>	642.840	505.499.202
<i>Vacant</i>	41.360	16.617.840
<i>Proportion (%)</i>	6,40	3,20

Note. CBS (2026).

### 1.1.2. Obstacles

Despite the advantages transformation projects also promote complexities. While there is not one particular factor obstructing the process the most, literature identifies three main reasons often occurring in failing or delayed transformation projects.

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#### 1.1.2.1. Financial

An obstacle playing a critical role in the decision-making process are the finances. A project must be financially viable to be continued (Remøy et al., 2025). As the principle of transformation is based on existing real estate property, unforeseen building errors cause initial costs difficult to be estimated (Oza et al., 2025). This also poses significant risks towards initiating parties, such as project developers. Issues concerning the structure of the building, hazardous substances such as asbestos being present, and complications once the renovation process has started may cause the project to go over budget discouraging potential investors (Bullen & Love, 2010). Moreover, while architecturally seen, buildings are easier to repurpose to smaller units, financially this is more expensive due to the involvement of substantially more kitchens, sanitary facilities and piping per square meter. Besides initial costs, maintaining financial stability on the long-term also presents challenges (Oza et al., 2025). Heights of rent levels can conflict with the temporary quality of living. Renovation and operational costs have to be covered, but rent must also be kept affordable. Furthermore, in the Netherlands the costs of renovation on an average amount to twice as much compared to acquiring a property (Remøy et al., 2025).

The market of real estate changes continuously, and because of the longer completion time of transformation projects they are extra vulnerable towards such changes (Remøy et al., 2025). This may have an impact on profitability as well. Housing demand is considered to be dynamic, thus prices and rates fluctuate over periods of time affecting possible revenue. Regulations also change over time, for example regarding sustainability. Renewed building standards may require different materials increasing building and renovation costs. This also accounts for legislation concerning rent prices, limiting potential income (Remøy et al., 2025).

#### 1.1.2.2. Technical

Besides technical complexities influencing the financial viability of a project, they also pose obstacles in ensuring an appropriate architectural design. Van Laar et al. (2025) state the quality of existing property only becomes clearly visible once execution of the project has begun demonstrating technical challenges to be unpredictable as well.

In addition to Remøy et al. (2025) reporting the physical state of a building to entail financial challenges due to structural or hazardous constraints, Oza et al. (2025) highlight the low level of flexibility and creativity an older property allows. Modern standards or the intended target group of the project may require structural changes which the building cannot comply with. In older buildings, as stated by Remøy et al. (2025), the structure often has one primary constructive role limiting future possibilities. This causes renovation and transformation using the original structure either easy or difficult. In case of these structural difficulties, architectural quality is limited. Ceilings being too low, the grid not being optimal for an appropriate room division, or the building being too deep to let in enough daylight contribute to this (Remøy et al, 2025).

An aged physical state also poses obstacles towards climate technical and insulation-related aspects. Integrating modern systems of ventilation, heating and energy often conflicts with older structures increasing its complexity (Oza et al., 2025). Examples are adding sewerage and pipelines or improving sound insulation between residences. And even when integrating modern technical systems is possible, fire risk increases. Ultimately, adding climate-related measures may lead to forming unforeseen routes for fire propagation (Remøy et al, 2025).

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### 1.1.2.3. Procedural

Whereas financial and technical obstacles often lie in unforeseen situations depending on physical context and the market being persistently present, procedural challenges occur mostly at the front of the development phase (Boeve & Groothuijse, 2019). This makes them rather institutional and relative, but more predictable than financial and technical complexities (Remøy, 2025). By involving stakeholders appropriately and fostering early alignment with the municipality procedural variables seem better controllable compared to market dynamics and structural conditions. Also, when procedural efficiency is safeguarded, project timelines are as well (Verheul & Heurkens, 2021). Planning overdue increases costs, demonstrating procedural efficiency also mitigates financial risks. Furthermore, Remøy (2025) state initiating parties first desire legal and planning certainty, indicating procedural challenges occur even before financial and technical complexities come into effect.

Procedural complexities in the context of transformation projects vary from legislation to bureaucratic and political obstacles (Remøy, 2025). Concerning legislation, for transformation projects, obtaining an environmental permit is difficult. Next to a permit on legal and planning regarding an outside-environmental plan activity, a permit on the construction activity is required as well. The initiator must also demonstrate that rezoning the property will not conflict with the urban context. Environmental assessments concerning sound, flora and fauna, safety and archaeology are therefore necessary, which take a significant amount of time. As transformation projects often pose an outside-plan initiative, participation is involved as well based on rules that may not have existed before.

### 1.1.2.4. Participation

One aspect however theoretically embedded within the procedural context, but also having direct impact on financial and technical feasibility of a transformation project is participation (Verheul & Heurkens, 2021). Furthermore, participation is considered as a direct influential factor on procedural challenges. The initiating party is obliged to organise and report on the participation process. Not complying with such social duty leads to direct procedural consequences. In terms of mitigating financial risks literature considers participation as a decisive instrument as well (Remøy, 2025).

Accordingly, Flyvbjerg (2003) states participation allows the initiating party to oversee the amount of public support and trust a project can get. Besides, given the responsibility of organising participation lies with the initiator, adherence guarantees the permit application to be taken into account. Remøy et al. (2025) even argue development efficiency within the built environment mainly stems from the tempo of participation and decision-making processes rather than financial and technical hurdles. Even though participation is a costly process, and the outcome is never entirely predictable, it does contribute to preventing prolonged juridical delays and objections at the end of the development-phase (Verheul & Heurkens, 2021). This demonstrates how participation not solely can be considered as a mandatory element within development processes but serves as a holistic approach towards multiple contexts. While intensified participation process does cost more on the short-term, Verheul and Heurkens (2021) argue it to be a self-financing investment by decreasing the risk of failure costs once a project gets delayed or cancelled as a result of juridical opposition. Besides, appropriately integrating participation allows the project to align more with the actual demand. In fact, participation does provide relatively cheap market information. This positively influences market value and commercial viability of a project.

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Although technical complexities usually lie in physical circumstances involving technicians, residents possess knowledge on experiencing certain issues. Because of this, Botero et al. (2020) state participation can contribute to simplify these challenges. Verheul and Heurkens (2021) add on to this, suggesting possible solutions deriving from participation could relate to ideal access to daylight or parking. Moreover, Remøy et al. (2025) report when resident insights are not integrated appropriately technical assumptions could be made incorrectly. In that case, in practice, technical models will not comply with true resident behaviour.

However, beyond its procedural function, the quality of participation itself remains a persistent challenge. Participation is frequently approached as a mandatory element rather than a strategic instrument, resulting in community involvement that is organised too late, too superficially and with too little genuine regard for what residents actually need (Verheul & Heurkens, 2021). This leads to a lack of meaningful involvement and trust, causing a project to be publicly opposed more at a later stage.

A contributing factor to this pattern could lie in the nature of traditional design practice. Its linear and sequential character means that design decisions are made progressively and become increasingly difficult to revise as the process advances (Hettithanthri et al., 2023). By the time community engagement takes place, the design has typically reached a level of detail that structurally limits what residents can still influence. Incorporating community input into a near-finished design is both costly and time-consuming, further discouraging initiating parties from engaging residents early or meaningfully.

Parametric design however offers a potential alternative. Unlike traditional design, it allows for multiple design iterations simultaneously while incorporating social, technical and financial parameters equally (Daher et al., 2018). This integral nature enables involving residents earlier, visualising the consequences of design decisions in accessible ways, and incorporating emotional input as a parameter that actively shapes the design.

## 1.2. Problem statement

Transformation is presented as a viable yet underutilised response to the challenges the Dutch housing market faces (Rademaker, 2025). This study emphasises the procedural challenges which primarily lie in views and appeals caused by a lack of public support and trust. Participation is suggested to be a direct mitigating tool (Abas et al., 2023). Nevertheless, participation is often approached as a mandatory element and a stable process even though it is highly iterative (Verheul and Heurkens, 2021). Participation is often overlooked during early or late design phases although here is where community can add value leading to a more sustainable project (Ahola et al., 2025).

When inappropriately implemented, traditional design methods can play a role in limiting the incorporation of participatory outcomes (Hettithanthri et al., 2023). However, parametric design has the potential to address these issues (Lazaroiu et al., 2021). Given the essence of participation and the challenges it entails, and the potential of parametric design to anticipate these, the question arises whether a parametric approach could enhance the quality of participatory practices. And if so, how to implement it.

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### 1.3. Relevance

New construction alone cannot meet the demand the current housing shortage demonstrates, making transformation a politically initiated priority that has yet to meet annual targets (Rademaker, 2025; Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024). One of the primary obstacles concerns the permit procedure, which are often prolonged because of objections correlated to insufficient community participation (Remøy et al., 2024; Boeve & Groothuijse, 2019). Addressing participation appropriately can reduce procedural delays while ensuring new development is both publicly supported and socially embedded in its environment. This promotes the societal relevance. The scientific relevance of this research lies in addressing a gap at the intersection of two disciplines. While literature on participatory quality identifies persistent shortcomings in how participation is currently approached in project development (Verheul & Heurkens, 2021; Ahola et al., 2025), parametric design is increasingly recognised for its potential to support more integral and iterative design processes (Lazaroiu et al., 2021; Daher et al., 2018), their combined application in a participatory context remains empirically underexplored. Traditional design methods furthermore show limitations regarding the incorporation of participatory outcomes, yet no empirical study has systematically examined whether and under what conditions parametric design can address this limitation. This research contributes to filling that academic gap.

### 1.4. Objective and motivation

This research originates from a practical interest in the procedural challenges of project development, particularly the phase leading up to permit approval. Lengthy permit procedures represent one of the most significant obstacles in housing development. Boelens de Gruyter, the graduation company supporting this research, approaches the challenges in project development through the lens of parametric design. Their perspective provided the foundation for the second pillar of this study. This research aims to examine whether parametric design can contribute to improving participatory quality to eventually contribute to more efficient development processes. Ultimately, given the scale of the Dutch housing shortage and the underutilised potential of transformation, the study aims to offer practical insights into whether parametric design can improve participatory practices to support the delivery of housing and the overall development of projects.

### 1.5. Research questions

This study revolves around this issue, leading to the following overarching research question.

*Under what conditions could parametric design be employed to improve participatory quality?*

This main question will be answered by addressing the following sub-questions.

1. *What defines participatory quality?*
2. *What are the organisational and procedural differences between traditional and parametric design-based participation?*
3. *How do residents experience parametric design-based participation?*

Before finalising and concluding the research by answering the overarching research question, the study involves an expert panel evaluating the findings of the three sub-questions presented above.

By answering all, an empirically supported answer on the main question can eventually be formulated contributing to the broader housing market issue.

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## 1.6. Research scope

The research gap promotes several things necessary to comprehend before assessing the main research question. The definition of participatory quality, organisational and procedural differences between traditional and parametric design-based participation and how residents experience parametric design-based participation in practice. The study adopts the IAP2 (IAP2, 2018) Spectrum and Arnstein's (1969) ladder of participation as its analytical framework to understand participatory quality and examine participation processes supported by traditional and parametric design. Given that participatory and design-related challenges are particularly pronounced in transformation projects, transformation serves as the contextual scope of this research. However, the participatory challenges identified as well as the processes examined are not unique to transformation. The research therefore addresses the issue more broadly, allowing for a joint analysis that is both contextually grounded and more widely applicable. This translates to the case study selection later in the research. A mixed-methods approach is adopted by involving interviews, case study analyses and an expert panel. The aim is to produce empirically grounded insights on the potential of parametric design within participatory practices, eventually contributing to more effective development processes and a meaningful response to the broader housing market challenge.

## 1.7. Reading guide

Including the introduction this thesis consists of fourteen chapters. Building on this chapter, the next presents the employed methods to assess the research questions. Chapter 3 positions the issues this study revolves around within the academic literature and plays a fundamental role for the empirical research reported after. Chapter 4 regards the conducted research for the first sub-question, chapters 5 to 8 address the second and third sub-question through a (cross) case study analysis. Chapter 9 serves to finalise and triangulate the findings. The implications, limitations and recommendations are given in the discussion in chapter 10, and chapter 11 concludes the research formulating a comprehensive answer on all the research questions. Moreover, chapter 12 involves a personal reflection on the graduation process, followed by the bibliography in chapter 13 and the appendices in chapter 14.

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## 2. Methodology

Within this section the employed methodology during this study is illustrated. After a general description of the research paradigm and design the empirical data sources are individually elaborated upon concerning their nature, approach and method. The last paragraphs highlight the measures taken to process data and ethics this study safeguards.

### 2.1. Paradigm

By overcoming quantitative and qualitative dualism, emphasising process, context and the practical consequences this thesis follows the paradigm of pragmatism (Casula et al., 2020). Pragmatism incorporates positivism and constructivism, concerning objectivity and subjectivity, allowing for the integration of scientific reasoning and personal experiences (Neupane, 2024). This interplay lets this study adopt a mixed-method approach towards the established research questions enabling the pluralism of multiple perspectives (Casula et al., 2020). The implementation of theoretical frameworks shows positivistic elements. Expert insights are combined, demonstrating knowledge is explored and constructed through both objective data and subjective data, reflecting the constructivism the study also entails (Neupane, 2024). Addressing community experience with parametric design-based participation through plans and reports enables an objective analysis towards subjectively generated data. Ultimately, evaluating and assessing results closing this research aligns with the practical consequence pragmatism is concerned with (Casula et al., 2020).

Characterised by a qualitative approach this study follows an inductive logic of inquiry (Blaikie & Priest, 2019). Literature, interviews, case studies and an expert panel are addressed seeking for complementary insights regarding the potential of parametric design within participatory practices rather than examining predefined hypotheses. Therefore, this research also prominently holds an explorative nature.

### 2.2. Design

Addressing the first sub-question consists of two phases. To define participatory quality, this study first involves an inductive approach towards existing literature on participation. Academic articles are assessed and provide a fundamental basis for the interviews conducted afterwards. Literature identifies two frameworks to evaluate participatory practices, being Arnstein's ladder of participation (Arnstein, 1969) and the IAP2 Spectrum (IAP2, 2018) which are elaborated upon in the subsequent theory section. The interviews following draw on the literature as well as the frameworks. Through professional expertise participatory value and practices are addressed contributing to the broader understanding of participation. Furthermore, the interviews allow for the exploration of the applicability of the frameworks to evaluate participatory quality. Answering this sub-question therefore strives for comprehending the analytical tools driving further analysis.

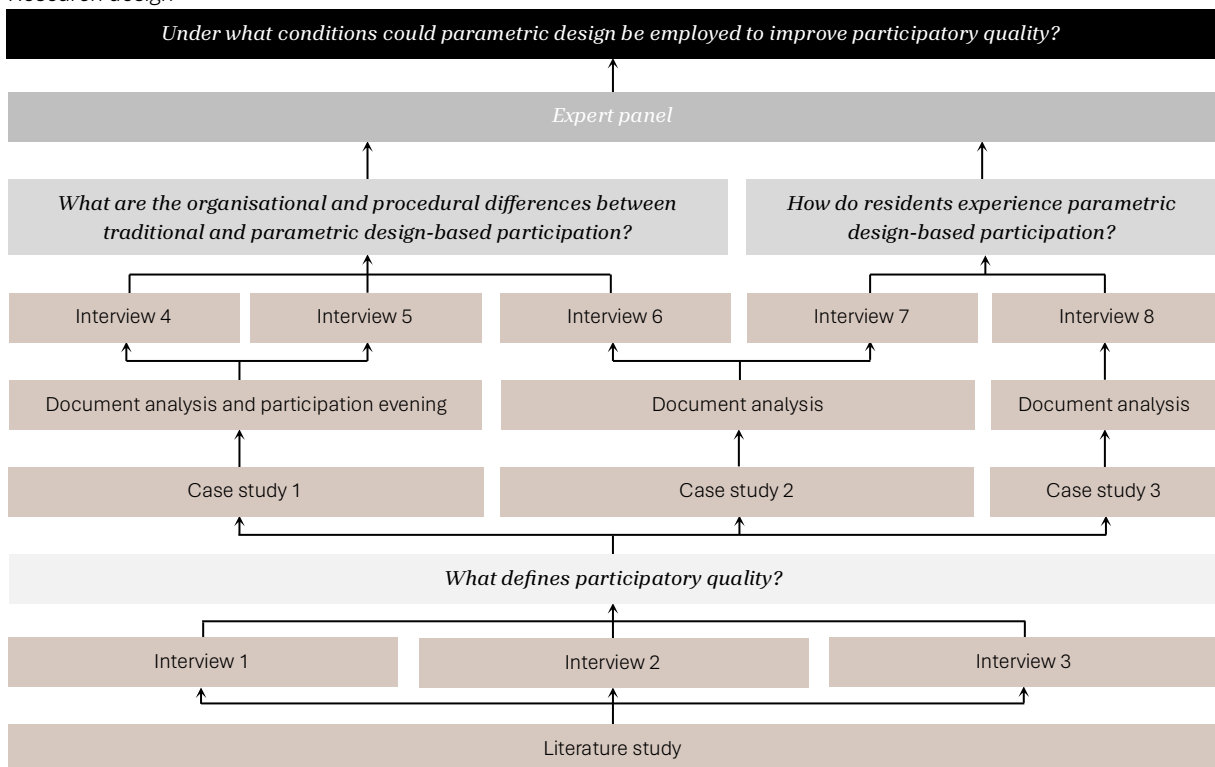
Then, the study aims for identifying the organisational and procedural differences between traditional and parametric design-based participation processes. Besides a qualitative literature study providing relevant knowledge, this part of the research employs two case studies. One involving traditional design and one involving parametric design. This enables the evaluation of both design methods in relation to participation. The first case study allows for physical attendance at a participation meeting with residents to observe current practices.

Moreover, both case studies involve a qualitative analysis on project documents concerning the implemented participation process. After, interviews are conducted to evaluate, reflect and anticipate on the results found in these analyses. Results obtained from the previous sub-questions contribute to assessing this sub-question as this part involves the application of the frameworks as an analytical tool towards the participation documents as well as the interviews. Data is collected both objectively and subjectively, and both theoretically and empirically, leading to a conjunctive analysis on the selected case studies adopting an inductive approach.

Organisational and procedural aspects are deliberately separated from community experience during this research. Community experience is assessed individually in the third sub-question through a qualitative literature study and two case studies involving parametric design-based participation. The second case study also serves the third sub-question. However, building on this case, an additional third case study is introduced as well. A qualitative document analysis on relevant documents regarding the participation process draws on insights derived from the qualitative literature study. After, interviews are conducted to evaluate community perspective on parametric initiatives during the participation process promoting an inductive approach.

Reflecting, reviewing and anticipating on the results addressed through multiple perspectives enables triangulation strengthening the research outcomes (Eisenhardt, 1989). Through accumulating knowledge regarding participatory practices, traditional and parametric design methods, and community experience the research leads to comprehensive analyses. These are evaluated in an expert panel finalising and concluding the empirical research. As proposed theories are examined, this finalising component of this study primarily adopts a deductive approach while remaining open for complementary inductive insights derived from the panel members.

Figure 1  
Research design



Note. Own work (2026)

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## 2.3. Data

### 2.3.1. Collection and selection

Considering that this study involves an exploratory approach, applying both theory and empirics requires selecting qualitative data sources carefully. Beginning the research with a qualitative literature review, academic papers, scientific reports, government plans, news articles and statistical data are examined to address the issues highlighting this research. Empirical data is collected through semi-structured interviews, and case studies involving qualitative document analyses and semi-structured interviews as well. Ultimately, an online panel discussion concluded the study.

A semi-structured format during the interviews allows interviews to be focuses while still enabling one to explore new areas the interviewee mentions (Adeoye-Olatunde & Olenik, 2021). Thus, interviews concerning the same issue can be structured equally yet permit collecting relevant data on the interviewee's personal experience as well as expertise. In practice this entails that a set of interview questions are established beforehand, however, questions may be adapted during the interview depending on the interviewee responses.

Interviewees are selected based on the relevance of their profession related to the concerning issue of the sub-question. As project development involves a numerous amount of stakeholders, evaluating participatory quality requires parties solely independent and societal. Therefore, regarding the interviews for this component, three distinct parties are selected. All neutral yet uniquely engaged with participation.

A total of three case studies are selected to assess the second and third sub-question. A case in which traditional design is used and a case which only involved parametric design to identify organisational and procedural differences. Moreover, to examine resident experience during parametric design-based participation the parametric case from the second sub-question is utilised again together with an additional third case study that also solely involved parametric design. As this study revolves around two main issues, being the housing market and participation, the case study selection is based on the following project characteristics.

1. *A (re)development project mainly following a residential motive.*
2. *A merely use of traditional design for the first case, and parametric design for the second case.*
3. *An active and extensively approached participation process.*
4. *A high number of stakeholders.*

Elaborating upon the selected case studies, semi-structured interviews conducted with those having expertise in design and participatory practices concerning the particular case. Concluding the research, a panel discussion is organised for which former interviewees are invited.

The following paragraphs explain the selected empirical data sources. Irrespective, table 2 on the following page reveals those selected in advance relating to the elements shown in the research design. Additionally, an indication regarding its date is given presenting the steps taken during the research.

**Table 2**

*Empirical sources of data*

<i>Interviews</i>	<i>Respondent</i>	<i>Role</i>	<i>Company</i>	<i>Description</i>
Interview 1	1	Senior project leader	Platform31	Societal consultant
Interview 2	2	Senior participation consultant	Bureau Stroom	Participation agency
	3	Medior participation consultant	Bureau Stroom	Bureau Stroom
Interview 3	4	Planning officer	Municipality	Municipality
	5	Participation consultant	Municipality	Municipality
Interview 4	6	Architect	En-En Architecten	Architecture
	7	Social geographer	Self-employed	Social design
Interview 5	8	Senior project developer	Boelens de Gruyter	Development
Interview 6	9	Associate architect	Mecanoo	Architecture
Interview 7	10	Placemaking specialist	Hadley Property Group	Development
Interview 8	11	Founder and former partner	De Wijde Blik	Participation agency
<i>Cases</i>		<i>Project name</i>	<i>Location</i>	<i>Initiator</i>
Case study 1		Europalaan 2	Eindhoven	Boelens de Gruyter
Case study 2		International Quarter London North	London	Hadley Property Group
Case study 3		Havenhuys	Rotterdam	Vervat Vastgoed

*Note.* Own work (2026)

### 2.3.2. Semi-structured interviews

In addressing the first sub-question, this study first aims for identifying participatory quality and explores evaluative measures. Three interviewees are selected.

The first interviewee represents Platform31, located in The Hague. They emphasise societal issues mainly concerning the residential context, vitality, sustainability and economic security. Platform31 engages with a rather broad audience, varying from executives and policy makers to residents and entrepreneurs. The participant is a senior project leader, mostly active within issues regarding the housing market.

For the second conducted interview, a participation consultancy agency is involved. Bureau Stroom, located in Nijmegen, contributes to organising participation, communicating with those interested and establishing superior environmental plans. By organising interactive assemblies, they allow residents, entrepreneurs and organisation to share their personal opinion enriching environmental plans with local insights. During (re)development projects, Bureau Stroom also manages processes in which the community is involved guaranteeing fair and inclusivity in order to foster more public support. The interviewees concern a senior and a mediocre participation consultant.

Lastly, two municipal representatives are interviewed. They however prefer not to refer to which municipality. They do adopt a neutral and independent opinion but remain as a highly interested and influential stakeholder during development projects. In general, the municipality remains the one deciding whether a participation process is in compliance with environmental law (Verheul & Heurkens, 2021). And thus, whether a permit request is considered. Therefore, including the municipal perspective contributes to a broader understanding of participatory quality for this research. Two representatives are involved, a planning officer and a participation consultant.

### 2.3.3. Case studies

#### 2.3.3.1. Eindhoven

The first case study contributes to evaluating traditional design-based participatory practices and regards a transformation project under development by Boelens de Gruyter in collaboration with Blommers-Scipio Vastgoed and JAJO. A former car showroom originating from 1980 located on the

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Europalaan 2 in Eindhoven will be demolished allowing for new residential built. Figure 2 on the next page illustrates the project location.

Furthermore, the project is designed by En-En Architecten with the participation process being constructed by a self-employed social geographer. In preparation, regarding its organisation the project team conducts meetings which are also attended. Additionally, participation plans are examined to gain a complete overview of the participatory context of the project. The project timeline aligns with this study, allowing for attendance at a participation evening and the reporting of observations.

In order to reflect, evaluate and anticipate on the participation and design process interviews are conducted with parties that are engaged with the designing and participation of this project. This case study consists of three interviewees being an architect at En-En Architecten, a self-employed social geographer and a senior developer at Boelens de Gruyter.

### **2.3.3.2. London**

In order to examine the participatory practices related to parametric design a project was sought for in which this method was dominantly present. This led to the International Quarter in London under the initiative of Hadley Property Group. In a design team consisting of architect Mecanoo, engineer Buro Happold and consultant Deloitte this urban development project is designed in 2022-2024 and predominantly consists of residences as well. Figure 3 on the next page presents a render of the project. Throughout the design phase, parametric design allowed the involvement of numerous amounts of participants having interest in this project. For this part, an associate architect at Mecanoo is interviewed. Regarding the participation process and community experience, a placemaking specialist at Hadley Property Group is interviewed. This project promotes a high level of community involvement supported by parametric initiatives. A placemaking specialist is thus considered as one giving a valuable perspective on community experience. Hence the reason this project is also addressed when answering the third sub-question.

### **2.3.3.3. Rotterdam**

As this research is situated within the Dutch housing market and its corresponding legislative and participatory context, a Dutch case study is considered most appropriate for examining community experience. The Havenhuys in Rotterdam therefore complements the International Quarter in London regarding the third sub-question, ensuring that resident perspectives are assessed within the institutional and cultural context this research addresses. This is a transformation project in which the hospital dated from 1940 is restored and transformed to a residential purpose while maintaining community and healthcare facilities. Mecanoo was involved with its design over the period of 2019-2023, with the client being Vervat Vastgoed. Figure 4 on the following page gives an architectural impression of the project.

Parametric design was implemented during the participation process to visualise environmental consequences. Assessing community response towards these initiatives provides a valid insight on resident experience. A comprehensive number of documents emphasising this participation are obtained and qualitatively analysed. De Wijde Blik facilitated the participation process. Given their expertise in societal consultancy and participation, a semi-structured interview is conducted with the founder and former partner at De Wijde Blik to evaluate and reflect on this project.

**Figure 2**

*Case study 1, Europalaan 2, Eindhoven*



Note. Boelens de Gruyter (2026).

**Figure 3**

*Case study 2, International Quarter London North, London*



Note. Mecanoo (z.d.).

**Figure 4**

*Case study 3, Havenhuys, Rotterdam*



Note. Mecanoo (z.d.).

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### 2.3.4. Expert panel

Results derived from previous literature study, analyses and interviews are bundled building up to the finalisation of the research and discussed during an expert panel. Participants that were involved earlier are invited in an online panel discussion in which first conclusions are presented by means of statements. This entails a reflective, evaluative and anticipative approach striving for the contextualising of the found results. Eventually, resulting in thorough view and a triangulated conclusion of this research.

The participants attending the panel are the municipal participation consultant concerning interview 3, the developer concerning interview 5, and the architect concerning interview 6. The expert panel was composed to represent the primary perspectives relevant across the full scope of this research. The municipal participation consultant represents the institutional actor that structurally shapes the regulatory conditions under which participation takes place. Additionally, the developer remains the one being obliged to organise it. Hence, their involvement provides the financial, technical and multi-interested context that orbit around a project. The architect, with direct experience applying parametric design in a participatory context, provides the design perspective central to this study. The placemaking specialist, with extensive experience in direct and personal community engagement, contributes the community-oriented perspective addressed in the third sub-question while safeguarding participatory quality.

## 2.4. Data analysis

Interviews are conducted both in-person and online. When online and with consent, transcriptions are made using the recording tool incorporated in Microsoft Teams. This allows for the recording and transcription of the meeting, eventually establishing a Microsoft Word document citing all claims and statements. During an in-person interview mobile recording software is used, after which FireFlies software transcribes the interview. For analysing and coding the transcripts ATLAS.ti is implemented, which enhances the transparency and reflexivity of the qualitative analysis.

The qualitative literature study provides the first set of codes deriving from the articles and the frameworks emphasised in the next chapter. Identified themes are implemented fundamentally for constructing the semi-structured interviews. Therefore, analysing the interviews first involves a deductive approach. However, given the nature of semi-structured interviews allowing for exploring relating topics, collected empirical data expose new and complementary codes. Hence, inductive coding is also utilised. Equally, both deductive and inductive coding are applied during the examination of the case studies. First, relevant documents regarding design and participation are qualitatively analysed helping to establish the set of questions for the semi-structured interviews conducted to conclude and evaluate the case studies. Deductive coding provides the main analytical approach. However, given the explorative and inductive nature of this research component, the analysis also aims on exploring complementary themes through inductive coding.

Eventually, by assessing the three sub-questions a comprehensive coding scheme is developed. This scheme is used for qualitatively analysing the transcripts of the panel discussion concluding the study. However, like previous components, the research is open to finding new themes contextualising the results and strengthens the overarching research conclusion. Table 3 on the next page presents the coding scheme that is applied during the analysis.

**Table 3**  
*Deductive and inductive coding scheme*

<i>Codegroup</i>	<i>Code</i>	<i>Deductive / Inductive</i>
<i>Participatory quality</i>	Expectation management	<i>Deductive</i>
	Negotiated nonsense	<i>Deductive</i>
	Reporting back	<i>Deductive</i>
	Effectiveness	<i>Deductive</i>
	Stakeholder awareness	<i>Deductive</i>
	Stakeholder representation	<i>Deductive</i>
	Inclusivity	<i>Deductive</i>
	Interest-driven engagement	<i>Inductive</i>
	Building relationships	<i>Inductive</i>
<i>Participatory outcomes</i>	Plan enrichment	<i>Deductive</i>
	Mutual gain	<i>Deductive</i>
	Public support	<i>Deductive</i>
	Decision making acceleration	<i>Deductive</i>
<i>Structural challenges</i>	Perceived participation quality	<i>Deductive</i>
	Timing	<i>Deductive</i>
	Fixed design	<i>Deductive</i>
	Knowledge gap	<i>Deductive</i>
	Community unpredictability	<i>Inductive</i>
	Context specific	<i>Inductive</i>
	Negative externalities	<i>Inductive</i>
	NIMBY	<i>Inductive</i>
	Resident distrust	<i>Inductive</i>
<i>Organisational challenges</i>	Non-uniform proces	<i>Inductive</i>
	Professional superiority	<i>Deductive</i>
	Expert evaluation	<i>Deductive</i>
	Intrinsic motivation	<i>Inductive</i>
	Mandatory compliance	<i>Inductive</i>
	Architectural vision	<i>Inductive</i>
	Resource intensitiy	<i>Deductive</i>
	Disclosure restraint	<i>Inductive</i>
	Selective openness	<i>Inductive</i>
	Presentation ambiguity	<i>Inductive</i>
Process asymmetry	<i>Inductive</i>	
<i>Procedural challenges</i>	Municipality oriented	<i>Deductive</i>
	Weighing resident opinions	<i>Inductive</i>
	Balancing multiple interests	<i>Inductive</i>
	Regulatory preconditions	<i>Inductive</i>
	Municipality dependency	<i>Inductive</i>
	Policy risk mitigation	<i>Inductive</i>
<i>Parametric design opportunities</i>	Accessible visualisation	<i>Deductive</i>
	Willingness to participate	<i>Deductive</i>
	Urban applicability	<i>Deductive</i>
	Bridging the knowledge gap	<i>Deductive</i>
	Mistrust reduction	<i>Deductive</i>
	Resident empowerment	<i>Deductive</i>
	Social parameter integration	<i>Deductive</i>
	Multi-objective optimisation	<i>Deductive</i>
	Performance-driven design	<i>Deductive</i>
	Early phase decision making	<i>Deductive</i>
	Early resident involvement	<i>Inductive</i>
	Early resident reassurance	<i>Inductive</i>
Obstruction risk mitigation	<i>Inductive</i>	
<i>Parametric design limitations</i>	Neglecting the community	<i>Deductive</i>
	Process acceleration	<i>Deductive</i>
	Visualisation distrust	<i>Inductive</i>
	Visualisation overload	<i>Inductive</i>

Note. Own work (2026)

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## 2.5. Data management

Safeguarding the participants' privacy is essential after the research as well. Collected data is managed ethically and stored safely. To ensure this, a data management plan is constructed in compliance with the guidelines TU Delft propose.

Data collected during the interviews will be stored on the TU Delft storage drive due to their confidential storage provision. The research aims on conducting interviews primarily in-person. Audio recording will be deleted after transcription. In case of an online interview, IP addresses will not be tracked. Technical and organizational measures are taken to restrict collected data only to the researcher including the safeguarding with a password. The storage of collected data meets the FAIR criteria to preserve the participants' privacy while it can be used for further research by third parties. Furthermore, addressing interview outcomes is done anonymously by excluding interviewee names and the company they work for. This also accounts for responses in which other parties are mentioned.

## 2.6. Ethics

Ensuring credible and trustworthy results lies in research validity. For the paper to be compliant with other scientific reports a certain level of validity is required. This can be understood in terms of internal and external, complemented by reflexivity and transparency during the study (Blaikie & Priest, 2019).

Internal validity refers to the coherence of the set research objectives, the methods applied and the findings. It examines whether the research measures the intended goals. This study follows a qualitative multi-method approach, combining literature review, case-study analysis, semi-structured interviews and qualitative expert interviews. Using different data sources enables the triangulation and strengthening of results regarding participation practices and design methods in transformation projects. Moreover, the sub-questions have an evaluative and explanatory nature enabling the alignment of the analysis methods adopted. Consistency between the research' aims and the methodological choices are therefore guaranteed.

Representativeness of the research outcomes is promoted by adopting expert knowledge through interviews and (re)development projects as case studies. This enhances external validity, concerning the extent to which the findings can be applied in other contexts (Blaikie & Priest, 2019). A comprehensive selection of interviewees and clear case selection criteria contribute to the research results' relevance beyond individual cases.

The Dutch housing crisis has evolved into a societal issue gaining great attention in politics, newspapers and television. This proves the number of stakeholders it concerns. Developers, architects, municipalities and neighbourhoods all derive benefit from accelerating project development. The study addresses shortcomings within participation practices and investigates innovative design methods. Moreover, participation falls under the Environmental Planning Act (Verhuel & Heurkens, 2021), demonstrating its juridical importance. Therefore, the outcomes this study provides are relevant to a broad working field.

Owing to the fact this research is executed on the part of the Technical University of Delft, strong guidelines apply. Respecting this, interviewees are asked to grant consent for recording and processing their responses.

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Voluntary and informed participations is secured through consent forms obtained prior to the interview, during the interview the forms is discussed again for confirmation. Used consent forms issue the motive of the research and concerning component, the management of transcriptions and the referencing to participants.

Interview data is anonymised to protect every participant. This concerns their name and the company they work for if desired. Project-specific data will be removed from the transcripts as well. Participation and development projects in general involve multiple stakeholders, identifying challenges and shortcomings in the process during interviews may lead to alleging other parties. As this research is completely neutral, statements are only attributed by role.

## **2.7. Artificial intelligence**

First and foremost, the research and its findings are entirely the work of the researcher who remains entirely responsible for the content. Generative AI tools like ChatGPT (OpenAI) and Claude (Anthropic) were used for editing, translating, structuring or evaluating. Suggestions were critically assessed, verified and integrated where applicable. The use of AI tools is in line with the guidelines the TU Delft applies on the use of generative AI in research. Moreover, the formal AI declaration is included in Appendix I.

### 3. Theoretical background

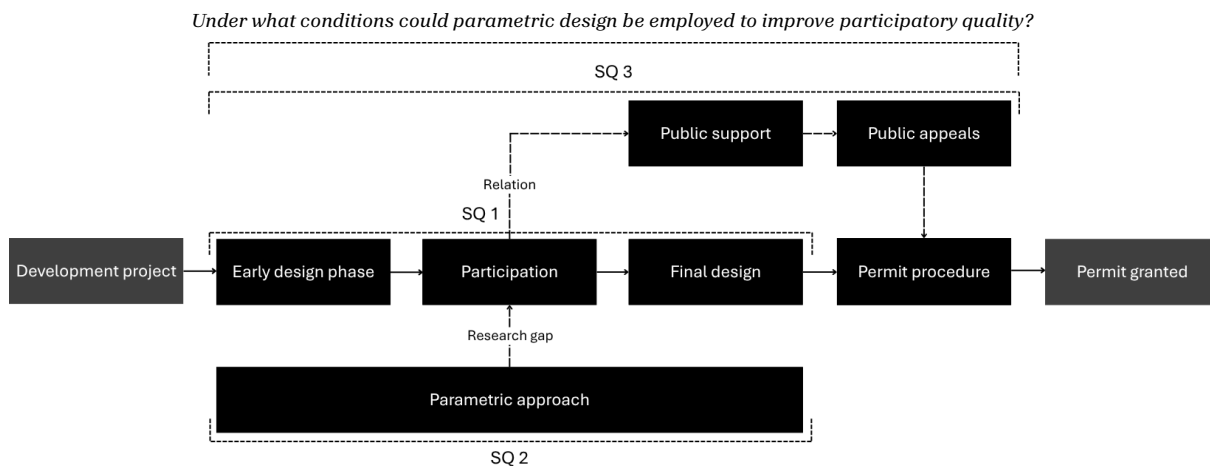
Within this section key concepts mentioned earlier in the introduction and problem statement get elaborated upon. Following paragraphs are structured equally to the order of the research questions explained in the research methods section. Serving as the literature review of this study, this section aims for addressing the existing literature on the issues identified regarding the issues in the research questions.

Starting rather general, defining the springboard of this research, the current Dutch housing market issue is identified promoting the link with transformation. After, participation is assessed, and design methods are theoretically explored as approaches to address the challenges participation faces. Eventually, a theoretical base is established grounding the empirical practice that follows and completes this research.

#### 3.1. Conceptual model

The conceptual framework shown in figure 2 visualises the scope of the research. Evolving around the concept of participation, this research strives for improving the quality of this practice. Therefore, the first sub-question investigates how participatory quality is defined. Given its relation to public appeals in a later phase, the sub-question addresses this as well. The second sub question examines the differences between a traditional and parametric design-based participation process, followed by evaluating differences in participant experience in the third sub-question. Lastly, the expert panel reflects on the whole participation process and evaluates the potential of parametric design. With that, the framework shown in figure 2 below forms the fundamental analytical structure of this study.

Figure 5  
Conceptual model



Note. Own work (2026).

#### 3.2. Participation

##### 3.2.1. Defining participation

By adopting transformation as the research scope the understanding of participation slightly differs. Verheul and Heurkens (2021) address the high number of affected stakeholders when an inner-city transformation project takes place.

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Therefore, in this context participation is referred to as community participation instead of resident participation. Between these two, the difference lies in who is involved. Resident participation rather revolves around interests of future residents, while community participation concerns the already existing environment. On top of that, under the environmental planning act the community is perceived as the one affected by an activity making them the party with interest (Boele & Groothuijse, 2019). Nevertheless, throughout this study the term used to refer to community participation remains 'participation'.

Participation suggests that residents get involved in processes or developments that affect them or their living environment, often characterised by means of influence or power (Abas et al., 2023). Towards the local community participation is a valuable resource to safeguard personal legal standings. Possible experienced consequences concern distance, scenery, shadow, sound and traffic nuisance. And when felt bypassed, these individuals utilise the permit-procedure to submit views and file objections delaying the project at a later stage (Verheul & Heurkens, 2021). Abas et al. (2023) also consider participation as a tool to alleviate the Not In My Backyard-syndrome. If the community feels they are not taken into consideration appropriately, ambitious plans may seem intimidating and rather financially driven than socially. This otherwise results in resistance and even protests.

### 3.2.2. Participation in practice

The practice revolving around informing citizens through getting access to information through websites and social media or giving their opinion on plans through surveys can be considered participation. Participation can also be a facilitated dialogue in which direct interaction is possible, and residents can enter negotiations and help creating the best suitable outcome (Abas et al., 2023). In 2024 the new Dutch Environment Act came into act. Under this act the responsibility of organizing participation lies with the private initiator (Verheul & Heurkens, 2021). Focusing on the Netherlands, as this study addresses the Dutch housing market, participation occurs at two different stages of the project. Informal, involving residents through an unstructured approach by sending surveys or co-design workshops, or formal in which residents can submit views (Boeve & Groothuijse, 2019).

Urban development concerns a wide spectrum of engaged stakeholders, varying from individuals, local businesses to societal organisations or government bodies. Despite this broad group of stakeholders, Remøy et al. (2025) report only one group remains prominently represented during participation procedures. Most often elder, wealthy and higher educated groups tend to actively participate. Thereby, younger aged groups as well as non-western groups remain marginalised. Verheul and Heurkens (2021) add on to that claiming most residents are initially passive but come into force when they deem a plan contradicting their own interests. This complexifies organising participation because not all interested residents could be equally engaged. Especially in the case of a strictly fixed planning, as incorporating feedback from subsequent participant in an almost definite design is challenging. Stakeholder representation therefore is regarded highly important.

Verheul and Heurkens (2021) further report current participatory practices are limited to only informing or consulting residents which reinforces this felt distance between the participant and the initiating party. Furthermore, by most initiating parties, participation is approached solely as a mandatory element without the intention of listening to the residents.

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These findings align with the broader academic literature on shortcomings within participatory practices. Ahola et al. (2025) report participatory activities mostly occur during the planning phase of a project. During this phase global plans are presented to the public for feedback. However, during early and late phases of the design participation only rarely is implemented. Even though, participants often state they can give valuable feedback when the design is already somewhat developed, but not definite (Verheul & Heurkens, 2021). In practice, participants feel they are not involved when making major decision although in early phases, participation could aim for setting priority objectives concerning sustainability, social impact or costs (Remøy et al., 2025).

Within project development the relationship between appeals, public support and participation is critical to the efficiency of the permit procedure. Handling objections is both extremely time-consuming and expensive for involved stakeholders (Boeve & Groothuijse, 2019). Public support towards the project relates to the number of objections afterwards, and public support can be enhanced through participation (Abas et al, 2023).

Objections can be defined as formal expressions of public protest toward a proposed project or environmental planning initiative (Abas et al, 2023). They are often seen in three different types, from which all affect the development process. Formal views are submissions made during a legal window where stakeholders can respond to draft decisions before the environmental permit is granted. This allows the government to weigh these views before making final decisions.

Secondly, legal challenges are appeals against the project often with the motive of stopping or modifying a project. Most importantly, these are submitted after the permit is already granted and therefore often lead to project delays (Boeve & Groothuijse, 2019). And lastly, the Not In My Backyard protests in which a whole community acknowledges the necessity of a project but opposes its location (Abas et al, 2023).

Eventually, the influence of objection is represented in multiple ways. Formal objections and appeals are a primary cause of slow down procedures and obstructing decision-making (Boeve & Groothuijse, 2019). Higher the volume of appeals, even higher the chance of a project failing (Abas et al., 2023). Furthermore, Boeve & Groothuijse (2019) state objections are related to the level of public support. They define public support as the level of legitimacy, trust and acceptance a community has for a proposed plan or project.

Public support does not lie in the compliance with every detail of the project, it lies in the feeling of being heard and whether interests are weighed appropriately. Therefore, Abas et al. (2023) also address a high number of objections as a sign of low public support while it is considered critical for project success. It makes residents more favourable towards real estate projects and plays a major role in meeting timelines and staying within budget.

### **3.2.3. Classifying participation**

#### **3.2.3.1. Arnstein's ladder of participation**

A tool that is widely being addressed in academic literature to evaluate existing participation mechanisms is the ladder of participation. The ladder of Arnstein (1969) is considered the most influential and forms the basis of multiple iterations developed in the years after he presented his.

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It serves as a theoretical framework to map community influence within decision-making processes, with its fundamental value lying in strategically involving residents that are normally being overlooked (Abas et al., 2023).

Examining participatory practices using this model helps evaluating its quality and effectivity (Lazaroiu et al., 2021). Eventually, this uncovers the meaningful impact residents have. In addition to that, seen from the organisation perspective, the ladder helps initiators decide the amount of community power may be allowed depending on the project issue (Abas et al., 2023). The ladder distinguishes eight different rungs within the power community can have, categorised in three major levels: non-participation, tokenism and citizen power (Arnstein, 1969).

Starting with the lowest level of participation, non-participation representing rung one and two (Arnstein, 1969). In this degree the initiators do not aim for letting the community participate, but for giving the impression people are actually involved. The lowest rung is named manipulation, in which people are placed in advisory boards to let them believe they have a voice in the project. It allows the ones with power to manipulate their support, instead for integrating their opinions. Therapy, on the second rung, focussing on 'curing' participants instead of discussing actual environmental issues. Thus, both do involve participants, but prevent them from having any saying at all.

The second category is named tokenism. This level does concern hearing the opinions of residents but does not guarantee them from being integrated in the project (Arnstein, 1969). Informing represents the third rung. It implies resident are kept notified regarding their rights and opportunities. However, this is mostly done through a rather unidirectional way of communication. Consultation, on the fourth rung, involves a bidirectional way of communication through surveys or councils. However, this adheres to just eliciting community opinions without allowing them to claim influence. The fifth rung, placation, is the last rung belonging to the category of tokenism. Resident insights are more powerful because they are granted an advising role. Yet, the authority to make decision regarding the project remains with the ones with power (Arnstein, 1969).

The third category, citizen power, is regarded as genuine participation. This category includes the three highest rungs of participation according to Arnstein (1969). Partnership involves a revised power distribution, enabling residents to negotiate with authorities. Furthermore, joint policy boards allow responsibility regarding planning and decision-making to be shared. At the seventh rung, delegated power, the community gains predominance in governing bodies making them the ones to steer certain parts of a project. Ultimately, the highest rung of participation, citizen control. Residents or local organisations acquire entire governance over a project, including financial resources.

**Figure 6**  
*Arnstein's ladder of participation*

Citizen control	<b>Citizen power</b>
Delegation	
Partnership	
Placation	<b>Tokenism</b>
Consultation	
Informing	
Therapy	<b>Non-participation</b>
Manipulation	

Note. Arnstein (1969).

**Figure 7**  
*IAP2 spectrum of Public Participation*

		Increasing impact on the decision				
		Inform	Consult	Involve	Collaborate	Empower
Public participation goal	Promise to the public	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public
	Public participation goal	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the design decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solution and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Note. IAP2(2018).

### 3.2.3.2. IAP2 Spectrum of Public Participation

Besides the eight rungs presented by Arnstein (1969), another highly influential framework for addressing participation is the IAP2 Spectrum of public participation introduced in 1999 (IAP2, 2018). Although literature does report the spectrum derives from the ladder of Arnstein (1969), it also demonstrates how adopting both alongside each other allows a more meaningful involvement of citizens (Davis et al., 2017). Arnstein's (1969) ladder is based on classifying citizen influence where the IAP2 (2018) model draws on the initiated participation strategy the initiator employs.

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The IAP2 (2018) model consists of five hierarchical levels, with each level promoting a different participation motive. Starting at the left side of the spectrum, inform, in which the sole goal is to inform the community to let them comprehend issues, alternatives and solutions (David et al., 2017). Consult refers to conducting feedback from residents on analyses and resolutions. Within the level of consult, the initiator promises to listen, acknowledge concerns and showing how derived results have influenced later decisions. The tier of involve, facilitates a direct public-private collaboration during the whole process striving for a continuous understanding and incorporation of the community. It promotes a more precise level of reflecting resident input than the previous tier. Regarding collaborate the process aims for a partnership on every aspect of the development. This concerns decisions, but the upbringing of alternatives and identification of the most preferred solution as well (Davis et al., 2017). Community advice and recommendations should be entirely incorporated. Lastly, empower, indicates the highest level of public participation in this spectrum in which the initiator promises to operate according to community decision-making.

### 3.2.3.3. Adaptations

Both fundamentally contributed to future established frameworks. Abas et al. (2023) adopts both to examine progress and issues within citizen participation over a period of ten years in several countries. They identify three different levels, being access to information, consultation and active participation. Access to information has similarities with the lower rungs of Arnstein (1969), but also the inform tier of IAP2 (2018). Arnstein's (1969) tokenism is reflected as consultation characterised by a bidirectional communicative relationship. The IAP2 (2018) spectrum also demonstrates a consult level, striving for obtaining public feedback. Lastly, active participation reflects the rung of citizen power and collaborate tier. Lazaroiu et al. (2021) developed a modification of the ladder of Arnstein (1969), naming it the 'Ladder of participation for performance-driven design' in the context of parametric design methods. Utilising the fundamental rungs as a reflective way of classifying technical and architectural methods, Lazaroiu et al. (2021) examine the influence of digital tools on the level of participation. Eventually, they showcase how certain digital initiatives yet fail to allow a higher level of resident engagement.

Nonetheless, although many alterations have emerged, Abas et al. (2023) and Davis et al. (2017) both refer to both as most valuable and most influential towards increasing community engagement through participation. While Arnstein's (1969) ladder is also regarded as the basis for the IAP2 (2018) model, implementing both while addressing participation is considered extremely valuable (Davis et al., 2017). The ladder serves as an evaluative instrument to analyse true citizen influence, and the spectrum is perfectly applicable in planning the process. This implies one can be used to examine intentions and planned strategy of the initiator, and one to analyse outcomes. After all, in initiated process may adopt collaborate, but may result being stuck at the rungs of therapy or placation when participatory output is discounted.

### 3.2.4. Participatory quality

Elaborating upon the value of participation, defining its quality is crucial. Participatory practices in general as well as its performance are perceived differently by each stakeholder (Verheul & Heurkens, 2021). Hettithanthri et al. (2023) argue that for a designer, it is hardly possible to imagine the feelings residents have regarding a project. Furthermore, residents value meaningful involvement and inclusivity over technical and financial feasibility, which is valued by initiating parties (Verheul

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and Heurkens, 2021). As this research emphasises community participation, in an aim for more public support, participatory quality is being regarded as how local participating residents experience quality.

Participatory quality depends on its approach. According to Verheul and Heurkens (2021), higher participatory quality can only be accomplished when participation transitions from being approached as a mandatory element to a strategic process to create project value and community relationships. This requires several core aspects. Therefore, inclusivity and managing expectations are considered mandatory. Inclusivity ensures the project to reflect views of the whole community (Abas et al., 2023). Simply universal inviting will not guarantee this, it involves actively seeking for representatives to prevent fragmented community input (Liao & Lu, 2023).

Despite the participatory approach an initiator employs having a major influence on quality, it mainly derives from community experience. This reflects what Uddin and Alam (2021) emphasise regarding the way one must approach participation. A universal, pre-planned approach will fail to deliver. It is necessary to engage with the community that is addressed, identifying and managing what they expect at certain stages of a project.

Verheul and Heurkens (2021) refer to this using 'relational justice'. This concerns the manner of felt personal attention to their feelings and worries, even when they do not seem rational from an expert perspective. Another precondition is not only addressing technical outcomes of a participation process but also highlighting personal interaction and human attention. The knowledge gap regarding technical and financial expertise may be bridged by acknowledging personal experience and emotions the participant can have. Experiencing this true sincerity lets the community from feeling as just a thick in the box.

Ahola et al. (2025) report the essence of involving the community at an early stage of the process in which fundamental decisions are still being made. At later stages of the development phase, during the permit procedures, major design choices are already fixed leaving the participant with an excluded feeling (Verheul et al., 2021). This excluded feeling also gets mitigated by report back to participating residents (Arnstein, 1969). The community tends to feel far less satisfied when project results as a result of their input is not recognised.

In addition to that, as participants highly value transparency, a clarification on the influence participants have also contributes to overall quality (Vogel et al., 2014). Informing participants on fixed issues, and open issues they do have an impact on clarifies the negotiation margin. Successful participation also relies on allowing residents control over their surroundings to some extent (Calvo et al., 2022). Verheul and Heurkens (2021) argue the weight of giving participants insights in what environmental consequences certain project initiatives really have. With that, the relationship between the initiating party and the relevant neighbourhood becomes more trustful as well (Calvo et al., 2022). Ultimately, a mutual gain for both the community and for the initiator indicates an appropriately organised participation process, and thus its quality (Verheul & Heurkens, 2021).

Uddin and Alam (2021) refer to this using the meta-criteria of fairness and of effectiveness as broader, fundamental pillars to participatory quality. Fairness is expressed by defining the community scope of entitlement and effectiveness indicates whether the decision-making actually incorporates and mitigates every issue. People will not participate if it is not carried out fairly, and a

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project is considered pointless if outcomes are ineffective. Therefore, the examination of participation lies in these two.

Thus, the essence lies in its ability to enrich plans creating a more valuable design towards all involved parties. Van Laar et al. (2025) reflect the importance of the practice on transformation projects as well. In that case, success and resilience may derive from participation. In transformation projects participation can contribute to finding the best suitable solution for both the building itself as well as the neighbourhood (Szopińska-Mularz et al., 2025).

Arnstein (1969) describes participation as a redistribution of citizen power aiming for preventing community groups to be left out. This also reveals limitations. The ladder is a rather simplistic abstraction as it reduces reality to eight levels, while hundred fifty seems more grounded (Arnstein, 1969). Moreover, the framework adopts a homogeneous practice while minorities face numerous challenges obstructing their amount of power. Davis et al. (2017) argue that the ladder supports a critically pragmatic approach based on reflection.

This is where Arnstein's (1969) ladder and the IAP2 Spectrum (IAP2,2018) complement each other in addressing participatory quality. It adopts a rationalistic approach focussing on planning, strategy and defining motives. The spectrum assesses participation based on the process, but not on the actual result. Moreover, it does not reveal the true influence citizens have. Informing in the IAP2 (2018) model may be labelled non-participation in Arnstein's (1969) ladder when the intention was to educate or convince the participants.

Combining both enables examining the planning and outcome of participatory practices. Thus, the IAP2 (2018) model in the front-end, and Arnstein's (1969) ladder afterwards. This mutual integration forces initiators to either address motives, promises and consequences as well exposing the possible mismatch (Davis et al., 2017).

Thereby, a holistic approach towards fairness and effectiveness within participation has emerged. The IAP2 (2018) spectrum promotes fairness by creating a moral and strategic scope in which the terms are established. The ladder of participation (Arnstein, 1969) overlooks process, but emphasises the factual distribution of power. Aspects of qualitative participation are thereby highlighted by revealing if the process was executed accordingly, transparency was safeguarded and whether the project outcome reports back to commitments made earlier. In essence, alignment between the ladder (Arnstein, 1969) and the spectrum (IAP2, 2018) demonstrates a more valuable participation process, and thus enhancing meaningful involvement.

### **3.3. Traditional design**

#### **3.3.1. Definition**

Traditional design, often seen as the conventional or classic approach of designing a project is characterised by a top-down or expert-steered process (Lazaroiu et al., 2021). The authority to design ideas and concepts in complete freedom overlooking the end-user remains with the architect (Calvo et al. 2022). However, this results in projects often majorly prioritizing profit over serving public interest. Lazaroiu et al. (2021) add on to that criticizing traditional design methods for being too technocratic and technocentric striving for functional performance rather than societal needs. With a rather hierarchal allocation of roles as result, the architect fulfils an omniscient role while the end-user adopts a passive one (Daher et al., 2018).

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Because of this, the end-product emphasises technical performance but overlooks lived experience (Hettithanthri et al., 2023). The traditional design process is described as linear as it relies on manual drawing and simulating specific design solutions (Lazaroiu et al., 2021). Hettithanthri et al. (2023) add on to this, describing the traditional design process as a rigid series of connected decisions. Because of this linear nature, the process lacks iterations in which alternatives can also be explored (Lazaroiu et al., 2021).

### 3.3.2. Process

The design process follows a sequential approach from abstract ideas to specific drawings, to a design that can be realised during construction (Abdulmawla et al., 2023). Literature distinguishes this process, spanning from the initiation of a project to the delivery.

Starting with the initiative during the pre-design phase. Acquisition takes place through digital maps and visiting potential locations for new projects. Existing conditions of a specific locations are reported because of collected data of digitally accessible data (Lazaroiu et al., 2021). Strategic goals are set and a business case to explore feasibility is also established (RIBA, 2020). Additionally, some prior analysis takes place on the environment, opportunities and target groups (Hettithanthri et al., 2023). Ultimately, zoning plans and global project features are also involved. In case of transformation, the initial use of the building must also be evaluated (Remøy et al., 2025).

The briefing phase remains assisted only by experts. Brainstorming sessions take place exploring design solutions and a brief is formed consisting of functional and program requirements, key performance indicators and sustainability goals (RIBA, 2020). Extensive site research and technical measures are also being carried out thoroughly as well as starting conversations with stakeholders (Hettithanthri et al., 2023).

During the concept design phase, the architect begins converting creative inspirations and ideas into visual drawings (Hettithanthri et al., 2023). An architectural vision is developed through sketching and brainstorming with others involved. However, the emphasis remains on compliance with the project guidelines, budget and solely impressions of the building (RIBA, 2020).

After a preliminary design, a provisional design follows. Assumptions concerning engineering and finances made in the previous phase are examined. In order for reassurance, subcontractors may be consulted to evaluate design choices. The most important aspect of this phase is spatially organising and incorporating construction, installations and architecture in such a way further modifications later in the design phase will not be necessary. In case of a design definite enough, application for an environmental permit is also carried out (RIBA, 2020).

Shifting from architectural drawings highlighting design choices, the technical design phase focusses on a design that allows the building to be realised. This involves construction drawings, design specification and precise product and resource information (Hettithanthri et al., 2023). While in the previous phase the design addressed the building as an individual whole, the technical design phase distinguishes it in different systems working together. Each system gets outsourced to specialists and sub-contractors specialised in that particular working field (RIBA, 2020).

During the construction phase the designing aspect adopts a rather supporting role, the initial design intervenes in situations the contractor or construction teams faces challenges or uncertainties to

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safeguard the quality of the design and eventually project performance (RIBA, 2020). And eventually, once the building is finished it gets delivered and gets used and maintained by the end-user.

### 3.3.3. Participation

This described linearity of the process is identified as one of the main causes for obstructing the incorporation of outcomes derived from participation (Lazaroiu et al., 2021). Hettithanthri et al. (2023) note that although traditional design does have iterative aspects, it mostly follows a top-down approach overlooking collecting feedback from other stakeholders. Socio-economic factors are therefore overshadowed by technical and financial aspects. Moreover, evaluation is often only done with other stakeholders with expertise. Feedback that is collected through participation rarely leads to an actual modification of the design as it only gets more and more detailed over the span of the design process.

Adjusting the design in the later stages of a design phase is both costly and timely and this also forms one of the main issues towards developers and designers (Verheul & Heurkens, 2021). Often the design is already too advanced for significant changes, causing collaboration to be overlooked (Calvo et al. 2025). On the first hand, this leads to lower costs and a higher efficiency as traditional design does not allow integrating community input continuously (Lazaroiu et al., 2021). Architects needs to manually rework large parts of the design because minor changes already can have major impact. However, not integrating participatory output may keep costs low in the beginning of the project, it can cause even higher costs in the final phase (Abas et al., 2023).

Calvo et al. (2022) report that according to the traditional way the architect considers themselves as the one with authority to make decisions regarding a project building. Even though, insights on the way a community lives and works will contribute to theory-building in design, planning and decision-making progresses. Especially when transforming a building and giving it a new purpose.

Abas et al. (2023) also report that because of this rather expert oriented approach towards designing a knowledge gap arises. Technical jargon and complex software are difficult to comprehend to those that do not have a background in the concerning issue. The participation process therefore will not have an equal nature, leading to intimidation or a sense of overwhelm (Arnstein, 1969).

In an aim for avoiding participation because of costs, time and negotiations participation often turns into a meaningless practice. Davis et al. (2017) describe this as the Decide-Announce-Defend model. Designers decide, then present it and ultimately have to defend it corresponding with the lower rungs of Arnstein's (1969) ladder. This entirely omits the dialogue.

## 3.4. Parametric design

### 3.4.1. Definition

Digitally driven designing based upon input parameters and algorithmic formulas to create iterative geometries is considered parametric design (Lazaroiu et al., 2021). Compared to traditional design, in which specific objects are drawn, parametric design allows the architect to seek for solutions that are the most appropriate within a certain scope. Generated iterations can be directly assessed against technical performance like sound, sun and wind nuisance allowing the most optimal design to be found. Because of this, architects are able to make informed decisions earlier in the process. In parametric design, designing therefore adopts a performance-driven approach rather than

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drawing first and simulating it after. Multiple distinct geometrical structures are generated, but all safeguard compliance with requirements determined beforehand (RIBA, 2020). Currently, it is mostly recognised as an extremely beneficial tool for urban development because of its flexible and comprehensive characteristic (Lazaroiu et al., 2021). An urban context involves numerous interests and motives from various stakeholders, and parametric design facilitates quantifying those and process those in general. Moreover, in terms of collaborating with external parties, like the community, parametric design allows for participants to adjust parameters themselves and immediately visualise the consequences (Daher et al. 2018). Thus, in potential, a closer partnership.

### 3.4.2. Process

Driven by algorithms and parameters the parametric design process begins with connecting project goals and possible design solutions (Khamis et al. 2022). This involves defining variables like dimensions, materials and key performance indicators (Jane, 2024). Then, the parametric model is made up by establishing connection and dependencies between these variables. Constraints are implemented to control the behaviour of variables and ensure compliance with project requirements. This early phase also consists of optimisation through multi-objective optimisation workflows by examining project performance (Abdulmawla, 2018).

Working from a concept to a design that can be realised, a digital base model is created generating a numerous amount of iterations (Khamis et al., 2022). This allows for exploring different shapes, geometries and masses of different designs after which every alternative is evaluated and is refined. Ultimately, the most appropriate design is chosen and exported to additional software.

Within this new digital environment, a more detailed design can be generated that will eventually be suitable for construction (Khamis et al., 2022). This process is called Building Information Modelling (BIM) and is referred to as the stage of converting a preferred conceptual design determined earlier to execution drawings and building information. Because of this entirely comprehensive model of the building, 1:1 scale fabrication is also possible by the use of 3D printing.

### 3.4.3. Participation

Daher et al. (2018) argue parametric design to be a fundamentally even better alternative to traditional design within participatory practices. Technical, financial and social barriers between experts and the community are bridged and the process makes the role of the participating resident rather more powerful than just a being passive receiver of information.

Abstract decisions can be challenging to comprehend, but due to parametric tools details architectural renders can be presented visualising the initiator's vision (Steinø, 2013). The visualisations are accessible to everyone ensuring the participants all can create clear ideas of the concerning urban environment. Additionally, Daher et al. (2018) report that because of the opportunity to include factors that are not physically quantified, like human preferences regarding privacy, program or views social requirements have the same weight as technical and financial ones.

Mistrust will be reduced because citizens are also enabled to see how a project affects an environment and what the consequences of design choices are (Abas et al., 2023). Parametric design facilitates an holistic three-dimensional environment allowing participants to experience the design (Gün, 2023). As a result, parameters regarding the size of the building in relation to nuisance

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can be modified. By allowing this closer collaboration, the community is more likely to be willing to participate and enter the dialogue. And when executed accordingly, the chance of finding design solutions that are beneficial for all involved parties gets higher.

However, given the potential of parametric design to improve participatory practices it also entails risks. When social and cultural, non-quantifiable data, is not incorporated well the parametric model only remains as a tool to optimise a project technically and financially (Gün, 2023). Therefore, although the capabilities of parametric design are widely acknowledged, it is highly important to address resident-oriented aspects as well for it to be an actual improvement within community participation instead of solely a faster design instrument.

#### **3.4.4. Differences between traditional and parametric design**

The differences between traditional and parametric design become most apparent when their respective processes and relationships with participation are placed side by side. Where traditional design follows a linear and sequential series of connected decisions, parametric design generates numerous iterations simultaneously through algorithmic formulas, enabling the exploration of a far wider range of alternatives within a defined scope (Hettithanthri et al., 2023).

This difference has direct implications for how and when community input can be incorporated. Traditional design becomes increasingly difficult to modify as it progresses, making iterations costly and time-consuming (Lazaroiu et al., 2021). By the time participation takes place, fundamental decisions have typically already been made, leaving residents to respond to conclusions rather than contribute to their formation (Ahola et al., 2025). Parametric design, by contrast, assesses each iteration directly against a set of parameters, either technical, financial and social. This allows for modifications to be made continuously without the manual reworking that traditional design requires (Abdulmawla et al., 2018).

The relationship with expertise also differs. Traditional design assigns the architect an omniscient role in which decisions are filtered internally before the community is consulted (Calvo et al., 2022). Social and cultural values are difficult to quantify within this framework and tend to be overshadowed by technical and financial considerations (Hettithanthri et al., 2023). Parametric design however allows non-quantifiable factors to carry the same analytical weight as measurable requirements, integrating community input as a parameter from the outset rather than as feedback at the end (Daher et al., 2018).

Finally, the two methods differ in how they communicate with residents. Traditional design relies primarily on technical drawings and architectural renders that are difficult for non-experts to interpret, reinforcing the knowledge gap between initiating parties and the community (Arnstein, 1969). Parametric design can generate comprehensible, data-driven visualisations of design consequences that make the impact of design decisions immediately comprehensible to residents regardless of their technical background (Daher et al., 2018; Steinø, 2013).

These differences do not position parametric design as inherently superior. As Gün (2023) notes, when social and cultural data is not well incorporated, the parametric model risks remaining a tool for technical and financial optimisation rather than genuine community participation. What the differences do establish is that parametric design removes several of the structural barriers that make meaningful early participation difficult in traditional practice.

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## 4. Participatory quality

The following chapter builds on the findings derived from literature by addressing the first sub-question addressing participatory quality. Three interviews are conducted contributing to the evaluation of participatory practices in the following chapters.

### 4.1. Introduction

In order to define participatory quality, the research involved three semi-structured interviews concerning a project leader at Platform31, two participation consultants at Bureau Stroom and a municipal planning officer and participation consultant. Precise information regarding the participant is given in the methodology section. This paragraph highlights the main themes identified in the interviews drawing on the literature findings given in the previous section.

### 4.2. Value

Verheul & Heurkens (2021) identify participation as a strategic instrument within a development process besides it being a regulatory requirement. When organised appropriately, fostering public support may lead to a reduction of legal conflicts in later stages (Abas et al., 2023). The interviews conducted for this part confirm this view and add nuance to how these outcomes are achieved in practice.

Respondent 1 at Platform31 summarises the intended outcomes of participation concisely, describing it as a means to generate broader public support, raise the overall quality of the development process and accelerate decision-making. This reflects what literature identifies as the self-financing nature of participation, a more intensive process costs more in the short term but reduces the risk of costly delays and juridical opposition at a later stage (Verheul & Heurkens, 2021).

Beyond procedural efficiency, the interviews point to a relational dimension that literature addresses but underemphasises in practice. Participation does not only serve to reduce objections, it builds understanding between parties that would otherwise remain opposed. Objecting residents begin to recognise the urgency of the housing need, prospective residents gain an understanding of existing concerns. This mutual recognition, rather than the formal participation mechanism itself, is what ultimately contributes to smoother decision-making.

Participation consultants at Bureau Stroom add on to this stating appropriate involvement leads to accelerated decision-making, fewer appeals and a faster obtained permit. However, according to the respondents this may not remain as the sole purpose of participation, aligning with Verheul & Heurkens (2021).

*“You may design something, but that does not guarantee it suits the environment. It is like placemaking: you can design a building or a square from the drawing board, but who will live, work and spend time there? How will that new neighbourhood come together? Participation can contribute enormously to that.”*

Respondents 2 and 3, participation consultants at Bureau Stroom, 9<sup>th</sup> of March 2026.

Bureau Stroom frames participation not merely as a procedural requirement but as a means of grounding a project in its actual living context. Hence the parallel with placemaking, noting that designing a building or public space from the drawing board does not guarantee it will function as intended once people inhabit it.

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Who will live, work and spend time there, and how a new neighbourhood will come together, are questions that technical expertise alone cannot answer. Participation, in this view, is the mechanism through which that gap between design intent and lived reality is bridged. Respondents 4 and 5 elaborate on this more intense collaboration between the initiator and the community through a municipal lens, illustrating that in practice creating an actual design together may be challenging. However, attempting to align as much as possible with one's interests is where participatory value lies which then also makes the design suitable in a certain environment.

Taken together, while reducing appeals and accelerating decision-making represent tangible outcomes, the relational dimension seems equally important. These outcomes are however not self-evident. They depend on how participation is organised, what residents experience during the process, and whether the initiating party genuinely commits to the dialogue. It is therefore the way participation is approached, rather than its mere presence, that determines whether these outcomes are achieved.

### 4.3. Resident perspective

Inclusivity and stakeholder representation are highlighted as primary conditions applying when one attempts to incorporate community interest as much as possible. Liao & Lu (2023) claim solely an invitation towards resident is not sufficient to obtain a comprehensive amount of local knowledge. In such cases, such participation processes only attract either elderly, higher educated or higher paid residents while younger or non-western groups remain left out (Remøy et al., 2025). The importance of a representative group of residents during participation is reflected in the interviews.

*"You need to ensure that you have a reasonably representative group people who participate throughout the process, reflecting the actual population of the area concerned."*

Respondent 1, a senior project leader at Platform31, 6<sup>th</sup> of March 2026.

On behalf of Platform31 respondent 1 argues the essence of carefully approaching and involving residents. This means delving into the environment you are addressing, identifying the different groups and anticipating on this through organising the participation process adaptively. Carefully organising the participation process based on concerned community prevents obtaining fragmented community input.

Besides mitigating the risk of overlooking underrepresented groups, this also prevents the initiator from being misled. Respondent 1 states participation process often only attract those with the highest interest and are most likely to appeal against the plans. Respondents 2 and 3 confirm this.

*"A common pitfall is the large information evening, where a sizeable group is invited in a short timeframe to discuss a sensitive topic. The risk is that such an evening is hijacked by a single outspoken individual whose vocal opposition sets the tone for the entire session. Those who are more reserved tend to remain silent. As a result, the initiating party quickly gains the impression that the entire neighbourhood is opposed, when in reality that may not be the case at all."*

Respondents 2 and 3, participation consultants at Bureau Stroom, 9<sup>th</sup> of March 2026.

This underlines the importance of stakeholder representation. Reaching a broad cross-section of the affected area allows the initiating party to obtain a more honest and complete picture of local interests, rather than a distorted impression shaped by the most vocal attendees.

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Bureau Stroom offers a practical approach to address this. Rather than inviting everyone to a single event, forming smaller and more carefully composed groups enables each segment of the community to be heard individually. This means, for instance, distinguishing between residents on different floors of a larger building whose concerns may differ considerably. This reduces the risk of dominant voices overshadowing more reserved participants.

The communication medium is equally important. A public evening is not always the most appropriate format, particularly for sensitive topics or diverse communities. An accessible online platform, a targeted survey or smaller group sessions may be better suited to capturing a wider range of perspectives. Selecting the right method for the right context is therefore not a logistical detail, it is a precondition for representative and meaningful community involvement.

This aligns with the importance of transparency between the initiating party and the participating residents Verheul and Heurkens (2021) refer to. Also, Vogel et al. (2014) explicitly name expectation management as a key aspect of appropriately organised participation. Two municipal representatives elaborate on this from an institutional perspective, identifying expectation management as one of the most structurally neglected aspects of participation in practice.

A participation consultant notes that the word participation itself already carries significant expectations among residents, expectations that are not always aligned with what the initiating party is able or willing to offer. Being explicit about where room for influence exists, and where it does not, is therefore considered a prerequisite for a trustworthy process.

*"What matters most, and we try to emphasise this every time, is being very clear about where room for participation actually exists. Where is there still room for influence? The word participation already raises a great many expectations. And residents must also understand that it is primarily about gathering interests, not about collecting support."*

Respondent 5, a municipal participation consultant, 1<sup>st</sup> of April 2026.

This gap between implied and actual influence is recurrently recognised. Initiators frequently invite residents to think along on aspects such as landscaping or traffic layout, while fundamental decisions on building volume and massing have already been made in consultation with the municipality. Residents, unaware of these prior agreements, engage with high expectations only to discover that their input carries little weight on the issues they care about most. Something that respondent 5 recognises evidently.

A participatory plan that promises a tailored approach but delivers a single information evening with a two-week written response period does not constitute meaningful participation. This misalignment fosters distrust in the project. However, implementing more moments of community engagement also requires careful organisation. Otherwise, what Bureau Stroom refers to as 'participation tiredness' may be created causing unwillingness to participate in further stages of the process. This stresses the importance clarifying which topics are open for discussion in as well as carefully deciding the frequency of the participation process, demonstrating the complexity participation entails.

#### 4.4. Complexity

The dependency illustrated in the previous paragraph is reflected by Uddin and Alam (2021). A single universal approach does not exist, participation remains a social phenomenon that is affected by

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contextual variables. This may relate the concerned planning agency, the community and the expectations on either side. While reporting back to the importance of stakeholder representation, the Platform31 representative confirms this.

*"Even with a well-composed representative group, that does not automatically mean the quality of the input will be higher. It depends on how you organise the process, how you initiate a participation trajectory, and what objectives you set at the outset."*

Respondent 1, a senior project leader at Platform31, 6th of March 2026.

This demonstrates how also a high level of inclusivity does not guarantee participatory quality and thus, the difficulties arising when organising an appropriate participation process. According to Bureau Stroom, even within a singular project, one's approach must be implemented iteratively.

*"That is why we always say: a uniform approach does not exist. You need to thoroughly analyse the issue at hand and design a tailored approach accordingly. Organising a participation session near a stadium development carries an entirely different dynamic than one in a small municipality involving a traveller community, yet both can be equally impactful."*

Respondents 2 and 3, participation consultants at Bureau Stroom, 9<sup>th</sup> of March 2026.

Residents tend to value being able to respond to an actual project proposal and find it difficult to adopt an abstract way of thinking. At the same time, a proposal may also foster the impression the design is already fixed to such an extent actively participating will not make a lot of impact anymore. The level of detail that is used in presenting design elements therefore becomes essential demonstrating how within the project, participation still needs to be thought through continuously depending on the phase of the design or project issue. In some cases, informing fulfils community expectations although closer collaboration may be necessary at a different stage of the project.

This presents the challenges initiators face when addressing participation. The uncertainty regarding what to present the community at different project stages related to what is already determined also leads to developers prioritising regulatory compliance. A planning officer illustrates this reporting how participation often takes place once municipal support is confirmed.

*"Developers generally want to know that the municipality is supportive, in terms of building dimensions and volume, before they commit to further developing the design and engaging with the neighbourhood at the same level of detail."*

Respondent 4, a municipal planning officer, 1<sup>st</sup> of April 2026.

Timing is thereby equally identified as a complex variable to navigate. Respondent 5 illustrates how developers frequently struggle to determine the right moment for community engagement. When fundamental design decisions remain unresolved, a participation session risks generating a negative atmosphere as residents feel that their presence serves little purpose, as they had expected a substantive dialogue but instead find themselves in a room where the initiating party has few answers to offer. Yet the opposite dynamic is equally problematic. When plans are too advanced, residents question why they are being consulted at all. This directly underscores what Bureau Stroom described regarding the risk of raising expectations that cannot be met. The moment of participation shapes what residents expect to be able to influence and misaligning that moment with the actual state of the design undermines the process before it has begun.

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Nonetheless, even when participation is organised representatively, communication is transparent and expectations are carefully managed, complete resident support cannot be guaranteed. The municipal participation consultant reaffirms this, referencing the NIMBY effect identified in the literature, the tendency of residents to acknowledge the broader necessity of a development while opposing its presence in their immediate environment (Abas et al., 2023).

Residents retain the right to file formal objections regardless of how carefully the process was conducted. Even when the initiating party has listened attentively, communicated transparently and reported back on which participatory outcomes were incorporated and why others could not be, a resident may still choose to oppose the development. This does not constitute a failure of the participation process. It reflects that community involvement is inherently unpredictable, and public support is a likely outcome of good participation, not a certainty.

#### 4.5. Evaluating participation

Arnstein's ladder of participation (Arnstein, 1969) and the IAP2 Spectrum (IAP2, 2018) provide a valuable basis for classifying and evaluating participation processes. However, the contextual dependency elaborated upon in the previous section exposes an analytical limit of both frameworks. They describe levels and intentions, but do not account for the practical constraints that determine what level of participation is actually feasible in a given context and certainly the quality. Bureau Stroom illustrates this directly, arguing that the highest rung on the ladder is not always the most appropriate strategy.

*"When aiming to reach a large target group, striving for co-creation is not realistic. You cannot co-create with an entire city. Instead, you structure the process so that the broader audience is engaged at a level that suits that scale, while zooming in on specific themes with a more targeted group. That way, you obtain the answers you need in a manner that is proportionate to the question. Budget also plays a role: the higher the rung of participation, the more costly it becomes."*

Respondents 2 and 3, participation consultants at Bureau Stroom, 9th of March 2026.

Additionally, a municipal participation consultant notes that the frameworks can be applied unconsciously as a guiding reference, but that a high level of participation on paper does not guarantee residents will feel heard. An initiator may aim for the level collaborate yet find in practice that the process remains stuck at the level of consultation, this is a gap the frameworks can expose but not prevent.

*"You can set out to collaborate, but if you look back honestly at what actually happened, you may find you never got beyond consultation. The framework helps you see that, but it cannot tell you why, and it certainly cannot fix it."*

Respondent 5, a municipal participation consultant, 1<sup>st</sup> of April 2026.

This positions both frameworks as analytical instruments rather than quality benchmarks. They are most valuable when used to compare intended and actual levels of participation rather than as tools for measuring participatory quality in absolute terms. This is consistent with existing critiques in the literature. Abas et al. (2023) and Davis et al. (2017) acknowledge that while both frameworks remain the most widely adopted tools for evaluating participation, their hierarchical structure risks oversimplifying the complexity of real participatory practice. Classifying a process within a single rung or tier does not capture the nuances of how residents actually experience involvement, which is a limitation the interviews confirm and extend. After all, as the project leader at Platform31

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suggests, the quality of a participation process can only truly be assessed by the participants themselves.

#### 4.6. Synthesis

The analysis of the findings regarding participatory quality presents several key topics that contribute to evaluating the issue. Beyond the legal obligation of participation under the Environmental Act respondents refer to it to build public support, lowering the risk of appeals at a later stage in the development. However, this must not be its only purpose. An appropriately organised participation also involves building relationship with residents that are affected. It offers initiators local knowledge in terms of user and emotional value with certain places and therefore, participation may also contribute to a more successful project by reflecting actual community needs.

Achieving better community relations and better project performance depends on several factors. What residents value most is appropriate communication, implying actively engaging with the community and managing their expectations. Often residents remain unsure regarding their actual influence on a project which eventually may cause conflicts during the permit procedure. Residents do not seek for the highest amount of influence or power over a project, residents require honesty, the assurance of genuinely feeling heard, seen and being listened to.

These outcomes are however difficult to guarantee. The interviewees distinctly refer to participation as an inherently context-specific process. Participation cannot be approached universally but requires an iterative and structured approach. Furthermore, community unpredictability remains a structural given, and public support is a likely outcome of good participation, not a certainty. This limits the extent to which quality can be universally defined or measured but increases the importance of developing an understanding of the interested community and its groups. More fundamentally, even a carefully organised process cannot prevent objections entirely.

Arnstein's ladder and the IAP2 spectrum offer a valuable basis for evaluating participatory intent and outcome. However, as the interviews illustrate, the highest level of influence or closest collaboration does not automatically correspond to the highest participatory quality. Quality is ultimately declared by the resident's experience regardless of how intensive or structured the collaboration was. What matters is organising a participation process that fits the context of the project and employs an approach through which residents genuinely feel heard and seen. That cannot be predicted by the levels these frameworks define. Both frameworks therefore function most effectively as analytical instruments for comparing intended and actual levels of participation rather than as benchmarks for measuring quality in absolute terms.

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## 5. Eindhoven

The research follows with examining participatory practices supported by traditional design and parametric design. This paragraph elaborates upon a traditional design-based participation process and thereby assesses the second sub-question of this study. This part first involved a document analysis and a participation evening, then two interviews were conducted with involved stakeholders concluding this case study. Conjunctively, this enables the evaluation of the case through the analytical frameworks discussed in previous sections.

### 5.1. Introduction

The first case study concerns a transformation project at the Europalaan in Eindhoven which is under development by Boelens de Gruyter and designed by En-En Architecten, further explanation regarding this project is written in the methodology chapter. The participation process for the Europalaan project in Eindhoven consisted of three sequential components. Prior to formal community engagement, a neighbourhood survey was distributed. Then, a walk-in participation evening was organised at a local venue which allowed the research for attendance at a participation evening. The project timeline allowed the research for active and live attendance during the process.

### 5.2. Document analysis

The participation plan for this case was established by the project team in response to the municipality of Eindhoven's quick-scan participation tool, which revolves around the external impact a project carries. Factors regarding the urban context, project mass and environmental nuisance allow for the classifying this project at level two. This corresponds to an average participation level and serves as the basis for determining the participatory ambition, which the plan formally defines as '*meedenken*', a consultation approach in which residents are invited to think along with the design team and share their views on the proposed plans.

Assessed against the IAP2 spectrum (IAP, 2018), this corresponds to the *consult* tier in which the initiating party commits to listening to community input and reporting back on how it has been considered, while retaining decision-making authority. The participation plan explicitly states that community input serves as a source of inspiration and that a carefully conducted process may contribute to broader public support. However, the plan deliberately states public support does not imply complete stakeholder alignment. This framing aligns with what Verheul and Heurkens (2021) describe as participation approached strategically rather than as a mandatory formality, suggesting an awareness of participatory value lies in the process and not necessary in entire interest compliance amongst all stakeholders. Something the interview results in the previous paragraph also report.

The plan presents three sequential instruments. A neighbourhood survey was distributed door-to-door in August 2025, focusing on residents' experience of public space, safety and neighbourhood sentiment rather than design preferences. This yielded a response of approximately sixty residents. A walk-in participation evening followed in April 2026 presenting the preliminary design. Two additional gathering events are also planned but without a specific date yet. The plan also shows an awareness of stakeholder representation, identifying direct neighbours, adjacent businesses and institutional parties as separate stakeholder groups requiring individual engagement. A

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neighbourhood coordinator was consulted throughout to verify whether the right parties were being reached, reflecting the importance of stakeholder mapping identified in the previous section.

However, a tension is visible within the plan itself. While the stated vision emphasises early involvement and genuine dialogue, the sequencing of instruments tells a different story. The survey was conducted before the design was sufficiently developed to show anything concrete, and the participation evening took place only after the urban design phase was largely complete. This sequencing reflects what Ahola et al. (2025) identify as a structural pattern in traditional design-based participation, community engagement occurs primarily once the design has reached a level of detail that limits the scope for meaningful adjustment. This also embodies what the participation consultants at Bureau Stroom addressed regarding the difficulties about timing. The survey only abstractly informed residents about a new development while a preliminary design was already made in the following moment of participation. This transition directly exemplifies the conflicting levels of detail in participation processes. At the first moment of community involvement, the development remained vague but at the second a preliminary design is presented already involving mass, floorplans and an urban design.

Ultimately, while the participation plan acknowledges the community as a valuable source of design input, it does not substantiate whether three physical participation moments are appropriate for this particular community. This reflects what Uddin and Alam (2021) argue, a universal approach to participation does not exist. Whether this format is the most appropriate for this context remains unaddressed. The following sections therefore delve deeper into the use of consultation within this case study.

### 5.3. Participation evening

The participation evening provided a direct observational source of data on traditional design-based participatory practice in action. Attendance enabled first-hand insight into how the process was conducted, how residents engaged with the project team and what topics dominated the conversation. A participation report was subsequently produced as part of the research, which served as an additional document for analysis. Together with the participation plan examined in the previous section, these sources formed the empirical basis for the interviews conducted afterwards allowing the interview questions to be grounded in the specific dynamics and outcomes observed during the evening.

On Monday the 13<sup>th</sup> of April 2026, a walk-in participation evening was held at De Rooi Pannen in Eindhoven, attended by approximately thirty visitors over a three-hour period. The evening was jointly organised with another project developer, whose development was presented during the event as well. The venue was spatially divided, the Europalaan project team occupied one side of the room with a shared scale model and urban design posters positioned at the entrance. These posters consisted of conceptual drawings, floorplans and cross-sections of the proposed design.

It is important to note this research only emphasises the Europalaan project, as this is partly being developed by Boelens de Gruyter. Therefore, findings regarding the other project and the developer are neglected. The project team presented the preliminary design through a series of posters. Attendance was voluntary and unstructured. Residents could walk in freely, engage with the team at their own pace and leave without obligation.

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At the entrance, attendees were invited to register their name and contact details, enabling the project team to follow up with updates and maintain communication at later project stages. This walk-in format was a deliberate choice, reflecting the awareness among the initiators that a plenary session risks being dominated by the most outspoken attendees, as discussed in the previous section.

Five themes dominated the conversations throughout the evening. Building height and shadow impact created a significant amount of concern especially from residents living directly along the Europalaan. A shadow and sun study were shown on a laptop, facilitating the equal dialogue between residents' concern and the architects' design choices. This study raised a lot of interest, but reassurance as well. Residents also questioned whether the planned number of parking spots was sufficient, showing the concern regarding traffic business in the neighbourhood. Waste management was a recurring topic as well, consistent with the survey findings. Greenery and the inner courtyard received a broadly positive response, though questions arose about daylight access and the spatial relationship between existing garage structures and the new building volume. Finally, target groups generated mixed reactions.

Two formal follow-up actions resulted from the evening. A meeting with the resident concerned about sun and shadow and contact with the residents' association board. The neighbourhood coordinator additionally recommended using the local neighbourhood newsletter as a communication channel for future updates.

Although the participation plan provides limited guidance on how participatory outcomes are to be processed and does not substantiate the choice of three participation moments, the personal follow-up appointments scheduled as a result of the evening suggest that a more tailored and closer collaboration with individual residents is possible within this format. Notably, how the outcomes were incorporated into the design remains unanswered at the time of analysis. This absence is analytically significant: without documented reporting back, one of the conditions identified in the previous section as central to participatory quality remains formally unmet at this stage of the process. Nonetheless, the document analysis and the participation report provide a constructive basis for the interviews that follow, enabling a more grounded examination of the organisational and procedural aspects of traditional design-based participation.

## **5.4. Interview 4 and 5**

Two semi-structured interviews were conducted with parties directly involved in the Europalaan project. The first was held with an architect at En-En Architecten and a self-employed social geographer, who contributed to the planning of the participation. The second was conducted with a senior developer at Boelens de Gruyter. Both interviews reflected on the organisational and procedural choices made during the participation process, providing an insider perspective that complements the document analysis.

### **5.4.1. Expertise and policy**

The interviews first emphasised the choice for traditional design, which in this case was deliberate. Rather than generating multiple design variations from the outset, the architect prioritised developing a single well-considered proposal, first establishing what the client and municipality considered appropriate for this location before engaging the wider community.

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The top-down approach described by Lazaroiu et al. (2021) can also be recognised here. Design initiatives are filtered to some extent before involving the community.

*"We preferred not to go to the neighbourhood with many different variants, but instead to look together with the urban design department of the municipality at which model best suited both the client and the wishes of the municipality. That way you do limit the options, but you also want to arrive there with an image, an idea, that you know: this is something we all stand behind."*

Respondent 6, an architect at En-En Architecten, 17th of April 2026.

Decisions regarding building volume, massing and urban design were also deliberately made by those with expertise. A developer at Boelens de Gruyter confirms this referring to project decision regarding volume and urban design are for those with expertise, like the architect or municipal quality board. Respondent adds on to this reporting how for an architect, incorporating your own vision of signature is also prioritised, despite it presenting some form of stubbornness. This reflects what Calvo et al. (2022) and Hettithanthri et al. (2023) identify as professional superiority, the conviction that only those with expertise can determine what is best for a project. The social geographer nuances this however, relating this limited design scope to a form of expectation management towards the residents.

*"If you present participation as if it were co-creation, while there are actually many constraints on what is ultimately permitted in such a location, then you are creating the wrong expectations and you are setting yourself up for disappointment."*

Respondent 7, a self-employed social geographer, 17th of April 2026.

Expertise therefore functions here not only as a claim on decision-making authority but also as a justification for limiting participation to aspects where input can genuinely be incorporated, consistent with what was established in the previous section regarding expectation management as a central condition for participatory quality. This shows how for this project, regulations actually provided the participatory guidelines. Municipal compliance hereby serves as the primary focus for the development of a new project, with community involvement coming second. Even though, as for this case, this results in participation when a preliminary design is already made, and the concept phase has already been passed. A developer at Boelens de Gruyter adds on to this, considering policy prioritisation as a way of mitigating risks after being asked whether consultation was not implemented at an earlier phase.

*"We wanted approval from the municipality on the plan before going to the neighbourhood, we needed that certainty about the volume. Once the professionals at the municipality confirmed they supported our volume and building form, that was the right moment to engage the community. That is why participation happened at this stage. It could have been earlier, at the start of the preliminary design phase, but we needed that municipal backing first."*

Respondent 8, a senior project developer at Boelens de Gruyter, 24th of April 2026.

What a developer seeks from the municipality is the certainty of knowing what you are permitted to build, the volume, the program. That certainty is driven by both comfort and risk mitigation. Respondent 8 elaborates that this certainty, combined with the requirements of the business case, is precisely why participation does not occur earlier. Engaging the community before that security is established risks entering a discussion about aspects of the plan that are not yet definitive and if that generates significant conflict, the project simply cannot move forward.

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This also illustrates how an initiating party navigates multiple competing interests throughout the participation process. Beyond protecting the business case, the developer notes that the preference for policy alignment also introduces dependency on the municipality and with it, delay. Waiting for municipal approval sometimes means participation occurs later than originally intended, not because the developer does not want to engage earlier, but because they are unwilling to do so without that institutional reassurance first.

An important nuance the developer introduces is that participation does not always need to result in plan enrichment. This contradicts findings in the previous section regarding plan enrichment as a result of participation. Architectural quality standards and planning regulations set boundaries within which a building must be designed, and these boundaries do not always align with what neighbouring residents request. Incorporating such input would not improve the project, it would compromise it. This creates a dilemma, a lower quality building or risking delays due to objections.

*"We could still choose to reverse it anyway to avoid getting an objection. That would result in a slightly worse building, but at least you have a project, you have a building, you have homes that get built."*

Respondent 8, a senior project developer at Boelens de Gruyter, 24th of April 2026.

This raises a broader question about whose interest's participation ultimately serves and whether the quality of the built environment and the interests of future residents can be reconciled with the demands of existing neighbours within a single participatory process. However, as this study focuses on the perspective of existing neighbouring residents, this issue falls outside the scope of the current analysis although it exemplifies one of the multiple interests developers need to take account of.

#### 5.4.2. Selective openness and disclosure restraint

The expert-driven approach and the prioritisation of municipal alignment have a direct consequence for what is shared with residents during participation. Both the architect and the social geographer describe a deliberate process of filtering, deciding what is sufficiently developed and substantiated to present to the community, and what is not.

The architect at En-En Architecten describes how the team worked through a broad range of internal design variations before arriving at a single model to present. Variants that were considered less optimal were eliminated before the community was involved. What remained was a preliminary design that the professional parties considered sufficiently viable to share.

*"You make sure that what you bring to the neighbourhood is something you know: what we are showing here is very close to what it will ultimately become."*

Respondent 6, an architect at En-En Architecten, 17th of April 2026.

The social geographer confirms this approach, describing how the team consistently returned to the question of where genuine room for community input existed and limited the scope of participation accordingly.

*"Everything we could say was substantiated enough that could be shared. And we are therefore also quite careful with things that are not yet at that level."*

Respondent 7, a self-employed social geographer, 17th of April 2026.

Respondent 7 elaborates that this restraint is not arbitrary but rooted in a concern for expectation management.

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Inviting residents to present aspects of the design where their influence is unsure may mislead them about the extent of their influence, generating expectations that would later need to be disappointed. An architect at En-En Architecten describes how residents tend to hold on to what they have seen or heard, regardless of the explained disclaimers.

*"You can always add: this is still subject to change, we are still investigating this. But that is often the first part of the sentence people forget. They take home what they saw or heard. Six months later they think: but that was said, and it did not happen. That qualifying sentence is gone but the feeling of disappointment remains."*

Respondent 6, an architect at En-En Architecten, 17th of April 2026.

This fear extends to design choices that might seem minor but carry significant emotional weight for residents. The social geographer exemplifies how the team deliberately chose not to present three types of brickwork for residents to vote on, precisely because of what happens when someone's preferred option is not ultimately chosen.

*"If people get to cast a vote, say, on three types of bricks they also need to be made aware that they are not the only ones voting. If someone says: but I voted for that one, and it still became the other, yes, perhaps only three others agreed with you, and many more chose option B. That can still be a very difficult conversation, even when you have approached it entirely democratically and placed the choice with the residents."*

Respondent 7, a self-employed social geographer, 17th of April 2026.

The architect also reflects on the dilemma of visual communication describing how detailed renders make projects tangible and accessible. At the same time, that concreteness becomes misleading as well as this render may then be considered as the exact planned outcome. Residents struggle to see past what is shown to them, interpreting images through their own lens and forming expectations that the design team cannot control or predict.

Literature confirms the relevance of this concern. Expectation management is identified as a central condition for participatory quality (Vogel et al., 2014). Respondents 6 and 7 actually add a nuance conflicting this reporting clarifying of what is definite and what is not may be forgotten by the resident. This however suggests early community involvement is not possible as according to them resident disappointment then becomes a risk.

On the contrary, a developer at Boelens de Gruyter acknowledges that earlier involvement would have generated a stronger sense of community engagement but points again to the municipal dependency as the barrier, and to the fear of raising concerns prematurely.

The overall effect of selective openness is then a participation process in which the scope for community influence is largely predetermined before residents are consulted. The architect acknowledges this tension directly concluding this entails arriving at participation with conclusions rather than questions.

## 5.5. Synthesis

The document analysis, participation evening and interviews together reveal interesting findings about traditional design-based participation for this case.

The participation document identifies community input as a valuable source of design inspiration yet does not support whether the chosen format of three sequential physical moments is appropriate for this particular community. Though, the analysis reveals the participation process

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does enable the identification of those with concerns, and the interviewees explain how these are also addressed. This was however planned only after the first conflicts were already seen.

The participation evening was organized during the preliminary design phase. Findings show how expert-driven decision-making, prioritising municipal alignment and financial and technical viability collectively determined both the timing and the scope of community involvement. The fear of open ends, showing too much before certainty is established, however leads to selective openness. A participation process in which residents are presented with conclusions rather than invited into a genuine dialogue. And where participation seems to remain more a process to check whether the community does still support the plans, instead of actually conducting their opinions.

The mismatch that ultimately emerges from this case involves the concerns of the initiating party and those of the community. Developers and architects focus on risk mitigation and viability while residents, as the participation evening demonstrated, are primarily concerned with sun, shadow, parking and target groups. Those are not design details but external consequences of the project on the neighbourhood. The initiating party however waits for sufficient certainty before engaging residents.

The participation plan explicitly classified the process at the consult tier of the IAP2 spectrum (IAP2, 2018), which suggests a dialogue as the goal. However, this does not mention anything about when this collaboration takes place. Attendance at the participation evening exposed this. Assessed against Arnstein's ladder however, the actual degree of citizen influence observed and described in the interviews was closer to informing. Residents received a preliminary design, asked questions and raised concerns, but fundamental decisions on massing, volume and programme had already been made.

This classification is consistent with the interview findings. The architect at En-En Architecten acknowledged that participation as such, remains as the presenting of conclusions examining whether the community does not yet oppose it. Therefore, this research allocates the participation evening in between the inform and consultation rung of Arnstein's ladder (Arnstein, 1969). This reveals a mismatch between the ambitioned strategy and the execution. The gap between intent and outcome in this case is not explained by a lack of ambition, nor directly by the traditional design method employed. It is explained by the prioritisation of policy alignment which limited the involvement of residents.

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## 6. London

This section emphasises the second case study that addresses the second sub-question. The case presents a project in which parametric design was employed. First, the study involved a document analysis on the participation process followed by two interviews.

Concerning this case, it is important to note and clarify how it is implemented in this research. Besides enabling the combined analysis with the previous case study regarding the second sub-question, the second interview on this project also provides valuable information required for assessing the third sub-question together with the third case emphasised in the subsequent section.

### 6.2. Introduction

The second case study concerns the International Quarter in London, a large-scale urban development project initiated by Hadley Property Group and designed by Mecanoo in collaboration with Buro Happold and Deloitte between 2022 and 2024. The institutional context positioned parametric design as a structural component of both the design and the community engagement process. Community engagement was structured around multiple formats operating simultaneously. This case concerns a finished participation process and a permit-procedure without any conflict from the community. Therefore, the case allows for an analysis over the complete development process.

### 6.3. Document analysis

This part of the case study involved an analysis on the Design and Access Statement for the International Quarter London North which was prepared by Mecanoo on behalf of Hadley Property Group and submitted in support of a detailed planning application. The document describes the participatory ambition as a "considered, holistic engagement strategy" incorporating face-to-face consultation, digital outreach and ongoing uses on the project site.

Assessed against the IAP2 spectrum, the stated intent corresponds primarily to the *consult* tier. However, the range and depth of formats employed extends in places toward *involve* and *collaborate*, particularly through the Community Review Panel and Community Champions programme, which involved co-design opportunities on specific aspects of the evolving proposals.

The London Legacy Development Corporation (LLDC) required evidence of community engagement as part of the planning process, positioning participation as an institutional requirement from the outset. Eleven pre-application meetings with LLDC planning officers alongside multiple rounds of formal Quality Review Panel feedback are documented, indicating that institutional oversight shaped both the timing and the scope of community involvement.

The engagement strategy employed multiple simultaneous formats. An in-person consultation event was attended by 39 people, supplemented by an online exhibition platform visited 1.100 times with 128 survey responses. Invitations were hand-delivered to 4.760 residencies and businesses in the surrounding area. Community Champions were convened in smaller sessions focused on co-design opportunities on the evolving proposals. Design sessions were held with local schools to gather input on public space and play areas.

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The document also describes ongoing meanwhile uses operated on the project site for over two years prior to planning submission, enabling the team to maintain continuous relationships with the community outside formal consultation moments. Examples are community gardens, a sustainability transport hub and a health and wellbeing hub.

A Community Charter was drafted as part of the process, outlining principles for inclusive community living to which tenants and users actively contributed. This represents a form of community ownership over the behavioural framework of the development that extends beyond standard participation practice.

Environmental testing was integrated into the process from the earliest design stages as a planning requirement. Massing studies, microclimate analysis, daylight and sunlight assessments, wind studies and overshadowing analysis are documented as core components of the Quality Review Panel presentations from November 2022 onward. The first QRP presentation explicitly included environmental testing alongside masterplan details, land use and massing. Subsequent iterations of the design were directly influenced by this testing, with documented design changes resulting from QRP feedback on massing and block configuration. This positions parametric analysis not as a retrospective tool applied after the design was fixed, but as an iterative instrument that shaped design decisions throughout the participation process until application.

One analytical tension is visible in the document. While the reach of the engagement was considerable, thousands of households contacted and multiple digital and physical formats employed, the in-person consultation was attended by only 39 people. The document acknowledges the challenge of engaging a transient and relatively young community in an area still undergoing rapid transformation. High reach does not automatically translate into representative or deep community input which is an issue that the interviews address further.

## **6.4. Interview 6 and 7**

As shortly explained in the introduction of this section, examining this case study involves two interviews which each serve a different sub-question. First, an architect at Mecanoo was interviewed on the application of parametric design during the participation process of the project. This contributes to assessing the second sub-question. Secondly, a placemaking specialist at Hadley Property Group was interviewed mainly emphasising the participation process itself and community experience. This interview mainly contributes to the third sub-question regarding perceived participatory quality by the community and the role parametric design.

### **6.4.1. Early resident involvement**

The architect at Mecanoo describes a participatory context in which parametric analysis was a deliberate choice not only from a design perspective but also from an institutional one. From the first pre-application conversations with the LLDC, the design team was expected to demonstrate how the proposed massing would affect the surrounding environment in terms of wind, sunlight, shadow and microclimate. This institutional requirement structured the timing of community involvement from the outset, enabling early and data-driven dialogue before the design was fixed. However, as respondent 9 reports, the early involvement regarding these environmental external consequences allowed the design team to be made definitive while also reassuring residents about the mass preventing surprises in later phases.

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The interviewee refers to RIBA stages, which are similar to the Dutch design phases, ranging from strategy and intention to the delivery. RIBA stage 1 cited below, concerns the preparation and briefing phase which precedes the conceptual design phase.

*"Already in the planning phase, from the first conversations we had with the municipality, it was about the impact of built form on the surroundings, and we were asked how to design a building that best responds to that. So, the massing studies we did were already at RIBA Stage 1."*

Respondent 9, an associate architect at Mecanoo, 15th of April 2026.

What the architect observes about the content of early community conversations is analytically significant. Residents did not engage with architectural choices or design variations, they raised personal concerns about their immediate living environment. These are concerns rooted in consequence rather than design preference, and they are precisely the domain where parametric tools can provide early, concrete answers.

*"What matters to residents is very personal and very specific. Where do I live, on which floor, what will the impact be? And you can almost only demonstrate that with parametric design."*

Respondent 9, an associate architect at Mecanoo, 15th of April 2026.

This aligns with what Daher et al. (2018) describe as the consequence of visualisation. Which is the ability of parametric tools to generate data-driven scenarios that make design consequences immediately comprehensible to non-experts. In this case, that capability translated directly into community reassurance. By showing residents what would change in their environment before formal objections had formed, the design team was able to address concerns at the moment they were most open to resolution. The architect notes that this generated trust and understanding residents felt heard and informed without requiring a finished design to react to.

#### 6.4.2. Inclusivity

The parametric analysis extended beyond physical performance. Inclusivity was explicitly evaluated through wind speed data and open space quality was assessed in relation to the community's identified needs. For example, assessing whether public spaces would remain comfortable for people in wheelchairs, or adapting building definitions based on how it would guide the wind to safeguard the comfortability in public gathering spaces. As well as safety, which concerned sightlines and were incorporated into the mass of the design. This reflects what Daher et al. (2018) identify as one of the main characteristic capabilities of parametric design. The possibility to integrate the social parameter allows for non-quantifiable community values to carry the same weight as technical and financial requirements. Community input fed directly into this process. Sessions with Community Champions focused on co-design of the public realm, while school workshops engaged children and parents in decisions about play space.

*"It may sound like it has little value, sessions with children about what kind of play space they want. But for us it had real value, because these are the people who will grow up here. And we genuinely took that into the design."*

Respondent 9, an associate architect at Mecanoo, 15th of April 2026.

The architect is explicit that these contributions were genuinely incorporated into design decisions as parameters that influenced design outcomes.

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Formal feedback from the Community Review Panel was required to be documented and addressed at the planning application stage, creating an institutional accountability for how community input was processed.

What is notably interesting about the participation process which the respondent illustrates, is that often a moment of community engagement still relied on presenting pictures of the design. The architect however elaborates, it was the technical grounding provided by parametric design that allowed to have a constructive conversation with the participants. It went beyond merely presenting images but also explaining and justifying the design initiatives that were shown. What parametric design did newly add to the participation process was a digital twin that allowed people to experience the design instead of examining it through illustrations. This allowed for zooming in on specific areas to evaluate the environmental impact of the new project.

### 6.4.3. Building relationships

The placemaking specialist at Hadley Property Group offers a perspective that is fundamentally relational in nature, emphasising participatory community experience within this project. Where the architect at Mecanoo describes the technical and procedural dimensions of the parametric process, the placemaking specialist focuses on what made community involvement feel genuine and what it actually required from the team to achieve that.

The starting point was the site itself. Unlike most development projects, the team had physical access to the project site, enabling them to activate the space and build relationships with the local community over an extended period of time. This was the foundation of everything that followed.

*"It is a relational, experiential journey that everybody is on. And that's not just between us and the community members. It's for those community members with each other. And that's probably the most important element, we are facilitating that."*

Respondent 10, a placemaking specialist at Hadley Property Group, 30th of April 2026.

This framing shaped every aspect of the engagement strategy. Rather than organising a fixed sequence of consultation moments, the team maintained continuous presence on the site, allowing informal conversations to take place alongside formal events. Residents could encounter the team in passing, ask questions informally and develop a sense of familiarity with the people behind the project before any formal consultation took place. This reflects what Bureau Stroom identified in the previous sub-question as the importance of building relationships over time rather than extracting opinions at a single moment.

The engagement strategy was deliberately varied to reach groups that would not attend a standard consultation evening. Formal events, digital platforms, community champion sessions, school workshops and informal site activations were deployed simultaneously and iteratively, each designed to meet a different segment of the community in a way that suited their circumstances. The placemaking specialist is candid about what a singular format would have produced.

*"The more formal consultation events we had, predominantly it was white men who attended. A few architects came who happened to live locally, people who didn't have to put their children to bed at that time."*

Respondent 10, a placemaking specialist at Hadley Property Group, 30th of April 2026.

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This honest acknowledgement of a representativeness problem underscores how Remøy et al. (2025) report that the underrepresentation of certain groups remains a structural challenge. The response was not to accept this but to actively seek out those groups through targeted initiatives. Community Champion sessions brought together local parents, neighbourhood organisations and business representatives in smaller, more focused conversations. School workshops engaged children whose families were not attending formal events.

What emerges most clearly from the interview is the volume of conversation the team invested in. Residents were approached individually, in small groups and through the informal encounters the site activation made possible. The team walked the site together with community members, experiencing the space from their perspective, feeling the wind, noting where the light came from, observing what drew people in different directions. This experiential approach to understanding community concerns went beyond collecting opinions.

*"You're watching what the children do. You're watching what the dogs do. You're watching what time of day things happen. You're seeing it played out in front of you in real time."*

Respondent 10, a placemaking specialist at Hadley Property Group, 30th of April 2026.

This aligns with what Verheul and Heurkens (2021) describe as relational justice, which is the genuine attention to the lived experience of residents rather than a transactional collection of preferences. Instead of the community solely giving their opinion or feedback on the design they were observed, listened to and accompanied through the process.

#### 6.4.4. Digital reality

Digital and parametric tools did play a role in the engagement process, and the placemaking specialist describes contexts in which they were genuinely effective. Young people in particular responded well to digital reality. Their familiarity with gaming environments meant that navigating a parametric model felt intuitive rather than alienating. QR codes were used to direct residents to online platforms where they could explore design information and submit responses at their own pace, outside formal consultation hours. This extended the reach of the engagement and allowed people to interact with the project in a way that fitted their schedule and comfort.

*"The digital version really worked with the young people. Their gaming knowledge meant that they were very much used to those spaces. They were excited about coming on board on that level."*

Respondent 10, a placemaking specialist at Hadley Property Group, 30th of April 2026.

Parametric tools are also described as the closest available alternative to the experience of the new development when physically being there is not possible. In that sense, they serve a similar function to walking the site together as they make consequence concrete and discussable. However, she introduces a careful qualification. For some groups, particularly parents of young children who engaged through the Community Champions sessions, a physical drawing on a table and a conversation on site proved more effective than any digital model. The medium must match the community which reflects what Uden and Alam (2021) and the Bureau Stroom respondents stressed about a non-existent uniform approach.

Eventually, the permit procedure went through with a hundred percent agreement from the community. The placemaking specialist reports no views or appeals were field and referred to the participatory approach as the cause of it. It lied in active engagement in the beginning and effectively

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reporting back on how community input was incorporated into the design. In which, according to the architect at Mecanoo, parametric design played a decisive role. A comprehensive relationship over an extended period of time, addressing challenges and reporting back continuously allowed residents to be completely familiar with the project outcome.

#### 6.4.5. Limitations

Nonetheless, limitations that qualify the potential of parametric design in participatory practice are also presented by both. The first concerns cost. Parametric design has the ability to generate an almost definite design in an extremely short time. However, this also requires more detail which is costly and time consuming in early phased and this may frustrate the developer. However, respondent 9 states, deliberately maintaining a greater scale while keeping it integral major risk can also be mitigated. This then, favours the developer. Moreover, parametric tools can generate urban scenarios rapidly, but speed carries its own risk as well. If social and emotional dimensions of community life are not actively incorporated into the parameters, the model optimises technically while missing what residents actually care about.

*"Parametric design is not a computational tool alone, it is a way of designing in which you involve many parameters. Not just computational ones, but also social ones. And it is up to human intent to bring all those parameters together into the best possible design solution."*

Respondent 9, an associate architect at Mecanoo, 15th of April 2026.

The placemaking specialist affirms this, raising concerns about the pace at which parametric tools can generate information. Community members need time to process what they are seeing, form considered responses and return with follow-up questions. If participation is approached as a series of information deliveries rather than an ongoing dialogue, the speed advantage of parametric tools becomes more of a danger to participation.

What the respondent also noted is that the digital tools alone would not have produced what this project achieved. Had the team relied solely on formal events and digital platforms without the site activation, the relationships, and the sustained personal investment, the outcome would have been fundamentally different. The placemaking specialist ultimately grounds the value of parametric tools in a broader concern about trust.

*"Our ability to trust what we see on a screen is going to be absolutely thrashed. So unfortunately, as much as the technology is going to evolve to do some amazing stuff, our trust in whatever that is, is diminishing. If people don't believe it, they're not going to engage with it anyway."*

Respondent 10, a placemaking specialist at Hadley Property Group, 30th of April 2026.

As AI-generated imagery becomes increasingly prevalent, the credibility of anything shown on a screen is being impacted. Parametric tools are therefore only as valuable as the trust residents place in what they show, and that trust cannot be generated by the tools themselves. It is the human element what remains, looking people in the eye, building relationships, being physically present.

This echoes what Gün (2023) identifies as the risk of technical optimisation only. When social and cultural data is not sufficiently incorporated, the parametric model remains a tool for financial and technical performance rather than genuine community participation. The capability of parametric design to support meaningful participation therefore depends not on the tool itself but the way it is employed by the initiator.

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## 6.5. Synthesis

Required by the LLDC, in this project the community was involved to evaluate the environmental consequences in terms of shadow, sunlight, wind and microclimate at an early design phase. Inclusivity and representation were a challenge. The variety of deployed approaches like formal panels, community champion sessions, school workshops, digital platforms and informal site visits helped to resolve this. Different groups were reached through different means, and the engagement was sustained over a period of more than two years. Noteworthy, the plan was granted a permit without any objections.

While often, moments of participation involved presenting images, parametric tools contributed meaningfully to the process in making environmental data more accessible to residents. For the design team, it proved an effective instrument for translating participatory outcomes into spatial decisions. This provided a concrete and accessible basis for conversations with residents at early stage. The concerns residents raised were environmental consequences and addressing those did not require a definite design. Parametric tools provided data early, making it possible to reassure residents and facilitate an informed dialogue about their concerns.

Applying the analytical frameworks to this case is slightly more complex as the Design and Access Statement does not explicitly classify the participatory strategy on a certain level. Based on the described formats and their depth however, the IAP2 intent can be interpreted as falling between the consult and involve tier. Different methods of involving the community were employed addressing different topics but also different approaches. This analytical interpretation is supported by the interview findings.

Assessed against Arnstein's ladder, the research classifies the actual degree of citizen influence in between the rungs of consultation and placation. Residents were involved in shaping public realm decisions through co-design sessions, environmental concerns were addressed through data-driven dialogue at a stage when the design was still open, and follow-up was structured rather than reactive. The gap between IAP2 intent and Arnstein outcome is notably narrow, suggesting a closer alignment between what was promised and what was delivered. This did not only lie in the institutional requirement alone, but also in the strategy the team determined alongside the strategic contribution of parametric tools.

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## 7. Rotterdam

The issue assessed in this section is how the residents experience a participation process supported by parametric design. This paragraph evaluates the third case study. As explained before, together with the previous London case, this project addresses the third sub-question. However, evaluating community experience will draw only on the interview conducted with the placemaking-specialist and on the interview conducted in this case, which involves a document analysis on the participation process and one reflective interview.

### 7.1. Introduction

This paragraph's case concerns the redevelopment of the Havenziekenhuis, which is a former hospital building on the Haringvliet in Rotterdam. The project was initiated by Vervat Vastgoed and designed by Mecanoo. The building currently undergoes the transformation into a mixed-use development involving residential, commercial, social and hospitality functions.

The participation process was guided by De Wijde Blik in close collaboration with the municipality of Rotterdam and Mecanoo. Participation documents were analysed, and an interview was conducted with the founder and former partner at De Wijde Blik. The process is finished, and the permit is granted.

### 7.2. Document analysis

The participation process for the Havenziekenhuis redevelopment was formally classified at the *consult* level, aimed at enriching the zoning plan procedure with community input and concerns from surrounding residents and stakeholders. The process was structured around five sequential moments.

This included preliminary stakeholder conversations in October and November 2020, an online kick-off session on 4 February 2021, and three geographically organised online neighbourhood meetings between 16 and 23 February 2021, an online closing session on 1 March 2021, and a final in-person participation evening presenting the outcomes and their implications for the plan in December 2023. This session mostly involved definite renders, floorplans and parametric studies on the environmental consequences of the project. After, the permit application took place.

An interesting finding regards the attendance between the first and third participation gathering. The audience decreased from 110 participants to 20. The neighbourhood meetings were deliberately organised by geographic area to the northwest, east and southwest of the building respectively. This spatial segmentation reflects an awareness of the importance of stakeholder representation reporting in the first sub-question. Each group was addressed separately, allowing for more focused conversations about the specific consequences of the project for their immediate environment.

Due to COVID-19 restrictions, the first session took place online. Digital tools including Mentimeter were used during the neighbourhood meetings to conduct real-time polls on topics such as preferred ground floor functions, hospitality formats for the city balcony and design preferences for the pavilion. This format enabled active participation from attendees without requiring physical presence, though it also imposed structural limitations on the depth and spontaneity of dialogue that face-to-face formats typically allow.

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The participation documents reveal that the topics open for community input were explicitly defined in advance. Residents were invited to share views on the programme of ground floor functions including social facilities, commercial uses and hospitality and on the design of the city balcony and its pavilion. The documents are equally explicit about what fell outside the scope of participation. Decisions on public space would follow the municipality's standard procedure at a later stage, and fundamental decisions on massing and volume had already been determined in consultation with the municipality prior to the community engagement phase.

The concerns that dominated the meetings with residents closely resemble those observed in both other cases. Building height and shadow impact were the most prominent topics, alongside questions about parking and mobility, noise from the city balcony's hospitality function, and the preference for neighbourhood-oriented rather than city-wide commercial functions. Residents explicitly noted a preference for facilities that served the local community over destination hospitality that would draw visitors from outside the area. Examples are a hairdresser, a GP practice and small-scale food retail.

The participation documents indicate that parametric design played a significant role in the project primarily at the level of environmental analysis. Shadow and sunlight studies were presented at the participation evening, and a sunspot analysis was conducted for the broader inner-city context, positioning the development within a wider urban framework.

### 7.3. Interview 8

The communication consultancy agency that guided the participation process during this project was De Wijde Blik. For the analysis evaluated below, the founder and former partner at this company was interviewed. The respondent provides an insider perspective on how community engagement was experienced by residents during a project in which parametric design was employed.

#### 7.3.1. Contextual factors

A significant contextual factor distinguishing this case from both others is that it was one of the first times Vervat Vastgoed was obliged to organise a formal participation process under the Environment Act. The respondent is explicit that this inexperience shaped the scope of engagement.

*"Vervat was relatively unfamiliar with it and found it a bit daunting like some other developers did too. They were afraid that wishes and concerns would emerge that they could not honour or that would be unreasonable in their eyes. The choice for the consultation model was the maximum achievable for the developer."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

This closely mirrors what the literature and the first sub-question identified as mandatory compliance in which participation is approached as an obligation rather than a strategic opportunity. The respondent notes, however, that despite this limitation, genuine participation did take place and did yield results. Consultation was not an excuse for minimal effort, but a ceiling imposed by the developer's comfort level.

One of the most analytically interesting observations concerns the drop in attendance between the first and third neighbourhood meetings which is mentioned in the previous paragraph. Rather than interpreting this as disengagement, the respondent attributes it primarily to a local cultural disposition.

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*"In Rotterdam, people are much more accustomed to bold decisions being made and large buildings being built. In the same period, I did a project in Bilthoven and a four-storey apartment building there generated thirty times more reaction than this tower of over 100 metres in Rotterdam."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

This adds on to the cultural and institutional differences already observed between the Eindhoven and London cases. Participatory response is not only shaped by the design method or the quality of the process, but also by local sentiment and residents' familiarity with large-scale urban development. In Rotterdam, the respondent notes, close involvement was not necessary, most attendees simply wanted to know what was coming, not to challenge it fundamentally. This reflects what the first sub-question identified as community unpredictability and the context specificness of successful participation. The same approach can yield very different responses depending on who is being engaged and where.

### 7.3.2. Bridging the gap

The respondent is measured but positive about the role of parametric tools in this case, specifically the sun and shadow studies produced by Mecanoo. Rather than enabling co-design or influencing fundamental design decisions, the parametric visualisations primarily served to address and dispel resident concerns.

*"Those films really emphatically contributed to a more accurate picture of what residents could expect. Not so much to enter into a conversation about adapting the design, but much more to make clear that the concerns people had about shadow and wind, those concerns could simply be taken away."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

The respondent contrasts this directly with the standard practice of presenting static shadow maps illustrating a two-dimensional plan view with coloured zones indicating shadow at fixed moments of the day. Residents tend to interpret such maps as representing permanent shadow conditions rather than the brief periods they actually reflect. The animated films produced by Mecanoo, showing shadow movement over the course of a day from a street-level perspective, provided a more honest and accessible representation. This aligns with what Daher et al. (2018) describe as visualising design consequences visualisation entailing the ability of parametric tools to generate data-driven scenarios that make design iterations immediately comprehensible to non-experts. The respondent also draws a broader analytical distinction that is significant for this study. Parametric visualisation is described as a way to bridge the gap between the emotional response of residents and the rational answers that professionals provide.

*"Films like the ones Mecanoo made here, that I was really enthusiastic about, they do help bridge the gap between the emotional concerns people have and the rational answers you give them."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

### 7.3.3. Limitations

The respondent however also nuances the role parametric design in the overall process, stating that the choice of design method is secondary to the attitude of the initiating party. Intrinsic motivation is something the other interviewees refer to as well. According to the respondent, this lies both with the developer as well as with the architect. The architect in the Eindhoven case described wanting to leave their own architectural signature on a project. The respondent's position contradicts this.

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*"The architect does not go to live there. The architect is a guest in an environment where people have lived for thirty years and may live for another thirty. They look at his work every day, he does not. As an initiating party, you have to feel like a guest in the neighbourhood."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

Process speed, as well as other respondents, is also considered a risk of parametric design. It can accelerate the design process considerably, but participation is rarely served by speed. Residents need time to absorb information, form considered responses and return with follow-up questions. The risk is that parametric tools are used to rush a process that requires patience rather than efficiency. The interview closes with a reflection that runs directly through the central findings of this study. When asked whether parametric design ultimately improves participation, the respondent frames his answer not in terms of tools but of attitude.

*"The potential for fully integrating participation into the design process, parametric design has that in it. But whether that potential is realised depends entirely on the parties behind it, primarily the developer and the architectural practice, and to some extent the municipality."*

Respondent 11, founder and former partner at De Wijde Blik, 24th of April 2026.

This is consistent with what the placemaking specialist in London described as the relational foundation of genuine participation and what both the Eindhoven interviews and the first sub-question identified as intrinsic motivation. The tool does not determine the participatory outcome as well as the perceived experience with residents. The people applying it do.

## 7.4. Synthesis

The process of consultation in this project was conducted mostly online, imposing structural constraints on the depth and spontaneity of community interaction that physical formats typically allow. The parametric sun and shadow studies however proved effective not as instruments of co-design but as tools for reassurance at the physical participation evening. Residents who attended with emotional concerns about shadow impact and building height left with a clearer and more honest picture of what the development would actually mean for their daily lives. This contributed to broader public support and a calmer, more constructive atmosphere during the sessions.

This is analytically significant precisely because the process was rather impersonal partly due to the online sessions. Yet, parametric visualisation alone was sufficient to address the most pressing community concerns and facilitate a more informed and equal dialogue by bridging the gap between residents and experts.

This suggests that even in a constrained participatory format, targeted use of parametric tools can meaningfully improve the experience of the community. An important side note remains the urban context. As the respondent reports, residents in Rotterdam tend to be familiar with new initiatives. This perspective is important when evaluating the impact of parametric design in this context. Therefore, the interviewee notes that the attitude of the initiating party underscores the use of any design method.

This positions this case analytically between the two preceding cases. The participatory format is similar to the one observed in Eindhoven, yet the targeted use of parametric tools produced a participatory condition more comparable to what was observed in London.

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## 8. Cross-case learning

The preceding sections examined three case studies, each providing empirical insights into participation processes supported by traditional and parametric design. This chapter draws on all three cases in an analysis structured across two parts.

First, the Eindhoven and London case are assessed, and second, the London case is adopted again, together with the additional Rotterdam. This cross-case evaluation builds up to the main topics that will be presented during the expert panel highlighted in the next section and eventually finalise the study.

### 8.1. Introduction

The analysis is structured across two levels. The first level evaluates case the Eindhoven and London case to address the organisational and procedural differences between traditional and parametric design-based participation. The second level draws on the London case and the Rotterdam case to examine how residents experience parametric design-based participation, with the Rotterdam case providing an additional Dutch context that complements the findings from London.

To support the readability of this chapter, it is important to note how the data derived from the London case is applied across the two levels of analysis. It features in both analyses, as it addresses both the second and third sub-question. In the first analysis, comparing case study 1 and 2 on organisational and procedural differences, only the interview with the architect at Mecanoo is drawn upon. In the second, examining resident experience during parametric design-based participation through case study 2 and 3, only the interview with the placemaking specialist at Hadley Property Group is used. This distinction reflects the different focus of each interview and is essential for understanding the analytical separation between the two sections that follow.

Moreover, difference between the cases that is important to note is the timeline. Case study 1 is an ongoing process which allowed for physical attendance and observation but remains only at the start of the participation process. Case study 2 however is a finished process, enabling the analysis over a broader period of time. Ultimately, case study 3 is also a finished process but also consists of a disrupted participation process due to COVID-19.

### 8.2. Eindhoven and London

#### 8.2.1. Institutional context

In both cases studies community involvement was shaped by municipal requirements. In Eindhoven, the municipality's quick-scan tool determined the participation level, classifying the project at level two and thereby setting consultation as the formal ambition. In London, the LLDC required evidence of environmental impact from the earliest planning stages including massing studies, microclimate analysis and shadow assessments. In both cases, the municipality played a structurally determining role.

The critical difference lies in what that requirement produced. In Eindhoven, municipal alignment was a precondition for participation. In London, the municipal requirement for environmental evidence created the conditions for early community involvement, because the data needed to satisfy the planning authority was also the data most relevant to resident concerns.

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### 8.2.2. Policy alignment and community involvement

The developer in Eindhoven is explicit about prioritising municipal alignment before engaging the neighbourhood. Legal viability was considered essential before any community conversation could meaningfully take place. The consequence, however, was that participation occurred at a stage when fundamental decisions had already been made, limiting its scope to the presentation of conclusions rather than a dialogue.

The architect at Mecanoo describes a structurally different experience. The environmental studies required for planning were conducted at RIBA Stage 1, before the design was fixed and the data they produced formed the basis for early conversations with residents about shadow, wind and microclimate. Crucially, the architect notes that this early engagement did not generate the uncertainty the Eindhoven team feared about. Rather, the data provided a concrete and verifiable basis for dialogue, enabling the team to offer reassurance without committing to a finished design.

This contrast reveals an important finding. The fear of open ends, engaging residents before sufficient certainty exists, was not confirmed by the London experience. Early engagement with data-driven environmental analysis produced dialogue rather than conflict, precisely because residents were not asked to react to a design but to engage with the consequences of massing on their daily lives. The architect at Mecanoo adds that approaching the early design phase at a broader scale itself a form of risk mitigation as well, parametric design enabled this. Public appeals are a genuine threat to permit procedures, and addressing resident concerns early reduces that risk before it materialises. This offers a different perspective on the risk management strategy described by the developer in Eindhoven. Where municipal policy alignment was prioritised as the primary means of securing certainty, the London case demonstrates that early community engagement can serve the same purpose. Satisfying institutional requirements while simultaneously addressing the concerns of residents mitigates both a regulatory risk as well as a procedural risk.

### 8.2.3. Resident concerns

Both cases confirmed residents are not looking for detailed design input but for reassurance about external consequences, which was found in the interviews for the first sub-question. In Eindhoven, the participation evening was dominated by questions about shadow, parking and target groups, for which a preliminary design is not required to address. In London, the architect describes the same pattern. At the stage residents were involved, they were mainly concerned about what they would see from their balcony, whether they could still sit in the sun and how wind would change on the street.

### 8.2.4. Approach

The two cases diverge significantly in how community input was collected and processed. In Eindhoven, a neighbourhood survey was conducted before the urban design was complete, gathering general experiences about public space, safety and waste management. These responses were considered by the design team but their incorporation into design decisions is not documented. At the participation evening, a preliminary design was presented that had already been developed and refined with the municipality. This left residents to respond to a near-finished proposal rather than contribute to its development.

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In London, the Community Champions sessions, school workshops and informal site conversations generated input that was directly incorporated on an urban scale regarding play space and programme. The architect is explicit that this input was genuinely processed, not as aesthetic preference but as parameters that shaped design outcomes. Parametric tools supported this by enabling the rapid generation and testing of design iterations against the community input that was received. A notable difference revealed here lies in this early involvement. Both the survey and the parametric approach addressed community experience with the environment, yet involving residents through parameters instead of a questionnaire facilitates an entirely different and primarily closer dialogue. This clearly shows in the London case. Institutional differences between the Eindhoven and London may also underpin this. The survey was sent just as an interest from solely the intention of the project team while on the other hand, the LLDC required the capturing of environmental consequences. This may have caused a different initial approach from the project team in Eindhoven. However, this was not directly mentioned in the interviews.

The developer acknowledges that parametric design could have changed this dynamic during this case. When asked whether the process would have been different, parametric design is considered as a tool that would have allowed the team to show residents the effect of design decisions real time during the participation evening itself. For example, adding or removing floors. This is a significant acknowledgement. The developer recognises that parametric tools could have enabled the kind of early, concrete dialogue that characterised the London case. However, the design method was not the primary hurdle keeping the project team from engaging residents earlier. It was the prioritisation for regulatory approval.

#### **8.2.5. Culture**

The architect at Mecanoo introduces an observation that extends beyond the two cases. In the Netherlands, participation tends to be focused on a proposal, presenting something concrete and inviting response, whereas in London the emphasis was on understanding what the community needed before the proposal existed. This could be a cultural difference in how participation is approached but also what residents expect. The difference between the cases is therefore not only one of design methods but may also come from the institutional and cultural context, which however falls outside the scope of this research.

#### **8.2.6. Evaluation**

Applying the IAP2 Spectrum (IAP2, 2018) and Arnstein's ladder (Arnstein, 1969) on both cases reveals an interesting contrast. Evidently, the participatory approach differs. In Eindhoven, the participation plan explicitly classified the process at the consult tier of the IAP2 spectrum. Reflectively assessing the participation evening against Arnstein's ladder, the actual degree of citizen influence as observed fell between inform and consultation. This gap can be explained by the late timing of engagement and the near-finished state of the design. The attributed rung of Arnstein's ladder was made as a result of the architect's remarks, pointing to participation as more of a process in which conclusions are presented instead of facilitating a dialogue.

In London, no explicit IAP2 classification was made beforehand, but the described formats and their depth suggest an intent falling between consult and involve. The process offered genuine co-design opportunities, and formal feedback was required to be documented and addressed at the planning

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application stage. Assessed against Arnstein's ladder, the process sits between consultation and placation which is meaningfully higher than in the Eindhoven case. However, as the interviews in paragraph 4.1 reported, this does not immediately suggest a difference in participatory quality. Evaluating this level requires a deeper and more qualitative analysis on both participation processes.

The gap between the intended strategy and practical outcome is notably narrower in London than in Eindhoven. Whereas in the first case study the outcome mostly corresponded with a level slightly below the initial participatory promise, the second case study actually score slightly higher. In Eindhoven, the distance between what was ambitioned and what was delivered reflects the structural constraints of prioritising municipal support over involving the community. In London on the contrary, the outcome evidently is allocated on a higher rung of Arnstein's ladder. And show that while still aiming for municipal compliance, resident involvement is still possible despite an abstract design level. Although institutional conditions applied, the approach of the project team enabled participation to align more with the intention.

### 8.2.7. Synthesis

The conjunctive analysis reveals that both cases shared a common institutional starting point yet arrived at evidently different participatory outcomes. In the first case study municipal compliance and community involvement are done consecutively while in the second these two were taken together. Applied against the analytical frameworks, this difference is captured concisely. Eindhoven fell between inform and consultation on Arnstein's ladder despite a stated ambition of consult attributed through the IAP2 Spectrum, London however reached between consultation and placation without an explicit classification mentioned and arguably exceeded its own stated ambition.

What explains this contrast is what lies behind them, the analysis identifies three factors. First, the sequencing of institutional priorities. In Eindhoven, regulatory approval preceded community involvement as a structural condition, participation was organised around what the professional parties had already decided. In London, the institutional requirement for environmental evidence aligned professional obligations with resident concerns, creating a basis for early engagement that did not require a finished design.

Second, the approach of the initiating party. In Eindhoven, besides prioritising municipal alignment the team preplanned moments of participation and deliberately presented a design without uncertainties or open ends. This was a result of fearing the creation of wrong expectations regarding the definite design. However, the participation evening revealed residents were interested in environmental consequences, and not the grounding for detailed design choices. The London case involved sustained personal investment over a two-year period with distinguished groups. This involved physical on site conversations but also participation meetings like in the Eindhoven case.

Ultimately, the role of parametric design as a participatory tool. In Eindhoven, early engagement was prevented because it would have involved presenting an incomplete design which the team considered a risk. In London, parametric analysis provided a concrete and verifiable basis for dialogue about consequences rather than proposals, enabling the team to address resident concerns without committing to design decisions that were not yet fixed. It promotes parametric design as an efficient and helpful tool.

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In doing so, it can anticipate on the gap revealed by the Eindhoven case in which the team does not want to engage with the community because the design is indefinite, while the residents are mostly interested in the environmental consequences. The London case shows that parametric design can safeguard municipal, technical and financial viability while also addressing resident concerns through sun, shadow and wind studies.

### **8.3. London and Rotterdam**

#### **8.3.1. Participation process**

While both cases employed parametric design as part of the development process, the participation processes of the London and Rotterdam cases differ considerably in organisation, scale and format. Nevertheless, both resulted in a participation process that residents responded to constructively. Understanding what drove that positive response in each case is the central analytical question of this section.

In London, as already explained in the previous paragraph, the participation process was sustained over more than two years. The project team maintained a physical presence on the site enabling informal conversations with residents before any formal consultation took place. Thousands of households were reached through door-to-door distribution. The process was not driven by a single consultation moment but by an ongoing relationship between the team and the community that preceded the design itself. The placemaking specialist describes this as a relational journey, undermining the predefined participation process that is seen in the other cases.

In Rotterdam, the process was considerably more constrained. Conducted initially online due to COVID-19 restrictions, it consisted of a kick-off session, three geographically organised neighbourhood meetings and a closing session which was in-person. The participation level was formally classified as consultation. Moreover, the process produced a measured and largely constructive community response. The participation consultant attributes this in part to the local context. Rotterdam residents are more accustomed to large-scale urban development than those in many other Dutch cities, which reduced the baseline resistance that might otherwise have characterised the sessions.

The contrast between the two processes is significant. London represents an exceptionally intensive and relationally embedded approach. Rotterdam represents a consultation format similar to the Eindhoven case operating under structural constraints. Both produced constructive outcomes but through fundamentally different mechanisms.

#### **8.3.2. Parametric design**

In both cases, parametric design played a role, but a fundamentally different one in each. In London, parametric tools were institutionally required from the earliest design stages. The placemaking specialist describes the tools as valuable for making a place tangible, referring to it as the closest available substitute to the experience of physically being on the site. However, although parametric design posed a helpful tool supporting the process, the public support and meaningful engagement was fostered long before. By the time parametric visualisations were shown, trust had already been established through months of physical presence, informal conversations and sustained relational investment. The tool reinforced what the relationship had already built, it did not create it.

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In Rotterdam, parametric design played a more targeted and decisive role. The shadow and sun studies produced by Mecanoo were not embedded in an ongoing relational process, they were introduced at a consultation evening to address the concerns residents had come with. The animated films, showing shadow movement over the course of a day from street level, replaced the static and frequently misread shadow maps that traditional practice typically produces.

The difference is analytically important. In London, parametric tools were one instrument among many within a rich participatory infrastructure. In Rotterdam, they were the primary instrument through which the gap between expert reasoning and resident concern was bridged. In both cases the tools worked but what enabled them to work was different in each context.

### **8.3.3. Resident experience**

In London, the community response reflected the depth of the relational investment that preceded formal consultation. Residents who had engaged informally with the team over months entered the formal process with a fundamentally different disposition than residents encountering the project for the first time. The placemaking specialist notes that trust built through early contact changed how residents received information later. They engaged with the reasoning rather than pushing back on the outcome. The permit procedure concluded without formal objections, a result that she attributes not to the parametric tools but to the sustained sense among residents that they had been genuinely heard, seen and respected throughout.

In Rotterdam, the community response was more measured but equally telling. Residents who came with emotional concerns about building height and shadow impact left with a clearer and more accurate picture of what the development would mean for their daily lives. According to the participation consultant, the visualisations visibly contributed to a calmer atmosphere and broader public support. Not by removing concerns but by addressing them honestly and concretely.

The participation consultant observes that the animated shadow studies changed the atmosphere of the session visibly. Resistance gave way to dialogue because residents could see, for the first time, the actual impact of the building on their daily lives rather than an abstract technical representation. Public support grew not because residents agreed with everything but because the process felt honest. The participation consultant however does state that this outcome must not be dependent to parametric design alone in overall participation processes. Good participation, including the kind that generates genuine public support, must in principle be achievable without parametric tools. Thus, also by implementing traditional design. What parametric design offered in Rotterdam was facilitating a constructive dialogue.

### **8.3.4. Intrinsic motivation**

Both interviews converge on the same fundamental conclusion, illustrating that the quality of participation does not lie in the employed design method. It lies in the genuine commitment of the initiating party to understand and respect the community.

In London, that commitment manifested as sustained physical presence, a willingness to enter the process before any design existed and a team that genuinely believed the community's input improved the project. The placemaking specialist warns that without this foundation, even the most advanced parametric tools will not produce genuine dialogue. As AI-generated imagery becomes

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more prevalent and trust in screen-based visualisations erodes, the relational foundation becomes more important, not less. In Rotterdam, the participation consultant is equally direct. The parametric visualisations were effective within that constrained ambition, but a more motivated initiating party could have gone further. The decisive factor was not the tool but the attitude of those deploying it.

### 8.3.5. Synthesis

Both cases demonstrate that parametric visualisations contributed to a more constructive atmosphere and a better community response. In London, environmental studies made spatial consequences tangible at an early stage, allowing residents to engage with the project before fundamental decisions were fixed. In Rotterdam, the animated sun and shadow studies addressed the concerns residents came with directly, replacing abstract technical representations with something residents could genuinely relate to. In both cases, residents left the process with a clearer picture of what the development would mean for their daily lives.

The two cases however differ considerably in how that outcome was reached. In London, parametric tools were embedded in a sustained engagement process involving multiple formats over more than two years. In Rotterdam, they were deployed in a more constrained format, yet still produced a measurable effect on how residents experienced the process. This suggests that the contribution of parametric tools to community experience is not dependent on the scale or intensity of the broader participatory process alone.

Both respondents refer to intrinsic motivation as the decisive factor regarding meaningful involvement. The London case demonstrates this as community engagement happened before any design was shown, parametric design however enabled the integration of the input residents gave. In the Rotterdam case, this is demonstrated as parametric design was utilised to specifically reassure residents regarding their concerns by contributing to an informed dialogue.

The synthesis these two cases offer is therefore not a verdict on parametric design but a clarification of its role. Parametric design provides the means. Intrinsic motivation determines whether those means are used to build a genuine relationship.

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## 9. Expert-panel

In order to validate the outcomes of the previous analyses this study involves an expert panel. This section elaborates on this finalising element of the research. First, some context is given as well as the established statements. The analysis and synthesis follow.

### 9.1. Introduction

The expert panel was organised on the 6<sup>th</sup> of May 2026 to collectively evaluate the findings derived from the preceding case studies and interviews. Four professionals participated. A municipal representative (respondent 5), a developer at Boelens de Gruyter (respondent 8), an architect at Mecanoo (respondent 9) and a placemaking specialist at Hadley Property Group (respondent 10).

Their combined perspectives represent the three primary stakeholder positions in any development-based participation process, design, development and municipal governance. Besides an international perspective the placemaking specialist also added valuable knowledge and experience specifically on community engagement.

The panel first involved an introduction round of the participants to each other after which the research and the findings were briefly evaluated. Then, three statements were presented sequentially, each derived from the key insights identified across the research.

### 9.2. Statements

The three statements presented during the expert panel were derived directly from the findings of the preceding interviews and case studies, each addressing a distinct layer of the central research question.

#### 9.2.1. Statement 1

**In current participatory practices policy compliance, technical feasibility and financial viability are prioritised over resident involvement. This reduces participation to a process to examine whether the community has not yet turned against the plans, only postponing the risk of conflict to later development phases.**

The first statement emerged primarily from the Eindhoven case study and the concerning interviews. The findings revealed a consistent pattern in which policy compliance, financial viability and technical certainty were prioritised before any community engagement took place. This reflects a structural issue in participatory practices described by Ahola et al. (2025) as late-phase participation. A concept in which community involvement occurs at the point where fundamental decisions have already been made. What the case studies made visible, however, was the mismatch it produces.

The statement captures this mismatch directly. The caution of the initiating party and the actual needs of the community are misaligned, and participation as currently practised does little to resolve that. The risk of conflict is just postponed.

#### 9.2.2. Statement 2

**In order to achieve actual meaningful community involvement, participation must be implemented in the early design phase even when plans are still mostly indefinite and policy compliance is not yet guaranteed.**

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The second statement builds directly on the first. If the current approach produces a participation process that arrives too late and addresses the wrong concerns, then meaningful involvement must begin earlier at a stage when plans are still largely open, and policy certainty has not yet been established. This is the phase that the interviews and case studies consistently identified as the most valuable for genuine community influence, and the phase that is currently most systematically avoided. This statement is deliberately challenging. It addressed the gap between the developer's need for certainty, the municipality's institutional constraints and the community's need for early reassurance. Which is the precise gap that parametric design can bridge.

### 9.2.3. Statement 3

Despite the capabilities of parametric design, participatory quality remains mostly dependant on the intrinsic motivation of the initiator to listen, communicate and involve resident opinions.

The third statement introduces parametric design not as a solution but as a qualified instrument. The case studies demonstrated that parametric tools could enable earlier and more concrete community engagement by making environmental consequences visible before the design is fixed. This was evident in both the London and Rotterdam cases, where shadow studies and massing analyses provided a basis for dialogue that did not require a finished proposal.

However, the case studies also showed that the quality of participation was not solely determined by the tool. In London, what distinguished the process was genuine personal investment, relational continuity and genuine belief in the value of community input. It was parametric design which just served for incorporating these outcomes and provided materials to report back on the community. The placemaking specialist described the technology as valuable but ultimately secondary to the human dimension. They need to feel that someone is genuinely listening.

This statement therefore reflects what the literature and the interviews together suggest. Parametric design removes a significant barrier to early participation by providing the means to engage concretely in the absence of a finished design. But it does not replace the intrinsic motivation that determines whether those means are used well.

## 9.3. Evaluation and analysis

### 9.3.1. Statement 1

The first statement was broadly recognised across the panel, though the responses revealed meaningful differences in how each participant understood its cause. differences that themselves illuminate the structural tensions this research has been tracing throughout.

The architect confirmed the pattern most directly. From personal experience, consultation has become a tool for confirming decisions rather than genuinely involving people. Residents are engaged only after all the studies have been completed, all the checks have been done and all the important decisions have been made leaving them without an impactful voice in practice.

*"The whole purpose of consultation has become to get people informed and to mitigate potential risk. Everything is solved first and then people are talked to. That doesn't create the feeling of being heard. You mentioned earlier that it is really about managing expectations and making people feel heard, and this approach of solving everything first does not do that."*

Respondent 9, an associate architect at Mecanoo, 6th of May 2026.

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This reflects what previous research identified as the mismatch between initiator behaviour and community needs. The sequential nature of current approaches is precisely the approach that prevents the early, open conversation in which residents are purely value their concerns.

The placemaking specialist framed the same problem from a different angle. Rather than considering a structural cause, a psychological cause was illustrated. It is the fear and discomfort regarding things that are uncertainty and presenting issues instead of predetermined solutions.

*"We have to become more comfortable with asking questions and admitting what we don't know. We might be the experts, but to be comfortable with the knowledge gap and present a question openly, that's not something we are used to in society."*

Respondent 10, a placemaking specialist at Hadley Property Group, 6th of May 2026.

This framing is significant because it points toward intrinsic motivation as the root cause before any design method is considered. The reluctance to engage early is not primarily a technical problem, it is an attitudinal one. This resonates with what Bureau Stroom described in the first sub-question as the importance of genuinely believing that participation improves the project, and with the Eindhoven case in which selective openness was not a strategic choice but a deeply felt fear of creating the wrong expectations.

The developer offered the most qualified and candid response, acknowledging the pattern while defending the logic behind it. A project must be financially viable and policy-compliant before engaging residents. Otherwise, the conversation risks generating expectations about something that may never be realised.

*"There is some comfort in knowing that the project will be realised. You need to know a project is viable and then you go to residents to show the plan and involve them in what they think about it and what can still change."*

Respondent 8, a senior project developer at Boelens de Gruyter, 6th of May 2026.

This is the clearest articulation in the entire study of the developer's perspective, not dismissive of community involvement but genuinely uncertain about when it can responsibly begin. It also confirms the prioritisation of municipal alignment identified in the Eindhoven case.

The municipal representative introduced a further nuance, noting that participation is not always purely a check on public opposition. Despite compliance and viability being prioritised, it still becomes the question what kind of participation is intended to organise. Therefore, this respondent considered rather over simplified. Sometimes, even when a developer wants to engage early and organises an appropriate process, objections still occur. This directly points to the concept of community unpredictability reported in the first paragraph of this chapter.

### 9.3.2. Statement 2

This statement generated the most productive disagreement of the panel, with positions dividing largely along the lines of institutional role and direct experience.

The municipal participation consultant reinforced this statement from an institutional perspective. A project is used as an example where the community was involved at an early phase and the relationship with the municipality was also safeguarded. However, the municipality opposed project initiatives as a result of participatory outcomes because planning targets did not permit this.

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*"We had a wonderful project where we involved everyone really early and had great collaboration and then the municipality said: that is not possible, we've already committed to planning targets in this area and we are not moving on this. That was enormously frustrating. So it is super important that all involved parties are truly on board."*

Respondent 5, a municipal participation consultant, 6th of May 2026.

This demonstrates how despite early community involvement, municipal alignment remains evenly important. Maybe not for the participation process itself, but for the project to go through. Moreover, the developer also explicitly challenged the statement. The concern was practical, reporting that without financial or policy certainty, early participation creates situations where residents ask for renderings and concrete proposals that do not yet exist. When those are not forthcoming, the process generates frustration rather than engagement.

*"If you start really early as a developer, working together with the municipality without knowing whether the project is financially viable or policy-compliant, you don't know whether it will be realised. And then people start coming back: what will the building look like? Can you give us a realistic rendering? And you get into a strange situation."*

Respondent 8, a senior project developer at Boelens de Gruyter, 6th of May 2026.

This directly echoes the disclosure restraint and expectation risk aversion identified in the Eindhoven interviews and confirms that those patterns are not specific to one project but reflect a more broadly shared professional disposition among Dutch developers. Respondent 8 also reports how early involvement raised challenges. From personal experience, often misalignment can be recognised between what they present and what the community expects. The municipal consultant however responds to this stating to coordinate this, communicating with the residents is essential.

The architect and placemaking specialist pushed back on both positions, drawing directly on the London case. Their argument was that early participation is fundamentally misunderstood when it is confused with showing a proposal. Early involvement is not about presenting something concrete, it is about understanding what the community needs before any proposal exists.

*"Early community involvement is much more about understanding what people care about. Do they want kids to play? Do they have elderly mothers living in the area? It's about those little personal things. And eventually, if the plan addresses those concerns, people will think it's great."*

Respondent 9, an associate architect at Mecanoo, 6th of May 2026.

The placemaking specialist added a dimension that connects this statement directly to the research findings on participatory quality. Trust built through early relational contact fundamentally changes how residents receive information later. They engage with the reasoning rather than pushing back on the outcome. This is not primarily about what is shown but about the relationship that is built before anything is shown.

*"You can show people something very early and they can change their mind. What they're really doing is listening to your reasoning, understanding how you think, and eventually agreeing with you if you present it with the right context and relationship."*

Respondent 10, a placemaking specialist at Hadley Property Group, 6th of May 2026.

This exchange between the developer and the London-based professionals is analytically significant. It does not resolve into a simple right or wrong. Both positions reflect genuine constraints.

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What it does reveal is the nature of the gap. The developer's concern about early participation is about showing an unfinished design, while the London experience suggests that early participation does not require showing anything designed at all. It requires clarifying expectations and listening.

### 9.3.3. Statement 3

This statement drew the broadest consensus across the panel while also generating its most reflective and nuanced responses which moved the discussion from diagnosis toward the consolidation. The architect agreed, describing parametric design as a contributing instrument to good communication. Parametric tools make designs more informed and more communicable, but they do not generate the motivation to communicate openly.

*"It is up to human intent to try to come up with the best design solution, bringing together all those parameters. The toolbox is getting bigger, but we are still working parametrically by involving different parameters. Now we have tools that just make our designs more informed."*

Respondent 9, an associate architect at Mecanoo, 6th of May 2026.

In a response the placemaking specialist introduced a significant qualification. Technology evolves and digital tools can reach groups that physical meetings cannot, describing how young people in London responded enthusiastically to the gaming-like quality of the parametric model as an example. But the spatial and relational dimensions of participation produce insights that no digital model can replicate. The respondents referred to being physically present, observing how people move through a space, having longer conversations.

With that, the placemaking specialist acknowledged parametric design to work really well in terms of informing people and responding to their input, but it is limited in building the genuine relationship.

The developer offered a concrete observation that reframed the relationship between parametric design and motivation in a way that neither diminishes the tool nor overstates it. Showing shadow and wind data in real time during the participation evening did not simply inform residents, it created trust. Residents felt the team cared, that decisions were being made thoughtfully, that the professionals could be relied upon.

*"I agree that the intrinsic motivation of the initiator is the most important thing. But having the capabilities of parametric design is a precondition to doing that at a higher level."*

Respondent 8, a senior project developer at Boelens de Gruyter, 6th of May 2026.

The respondent supported this remark with an example of the participation evening that was attended during this study. The project team brought a laptop which enabled them showing how sunlight, shadow and wind affected the environment. By showing this, trust was created between the residents and the team. They felt decisions were made carefully.

This is one of the most direct empirical observations in the entire study about what parametric tools contribute to the community experience. This also aligns with what the Havenhuys case promoted. It was the intrinsic motivation that made the architect construct specific sun and shadow visualisations, and the parametric outcome was the tool used to facilitate the closer dialogue and public support.

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The developer suggests this transparency as the key factor to a trustful relationship with the resident. However, the placemaking specialist nuances what is presented here. While acknowledging that people tend to really appreciate the level of detail that can be shown which supported choices, timing is referred to as equally important.

This relates to the risk of parametric design within participatory practices which was found in previous research. It has the ability to generate a project design rapidly which impacts the speed of decision-making, but this neglects the space of consideration and time with residents. Safeguarding the timing and process in which integral visualisations are presented therefore becomes a precondition for ensuring that participation does not revert to merely informing residents and presenting predetermined conclusions. Which is precisely the shortcoming in current participatory practices identified earlier in this research.

## 9.4. Synthesis

The expert panel serves a dual function in this research. Methodologically, it provides triangulation. Substantively, it both confirms and sharpens the central tensions identified throughout the empirical findings.

The three statements were broadly recognised across all participants, confirming that the structural patterns identified are not specific to one project but reflect a widely shared professional reality in the Dutch context. The panel added institutional depth to this reading. The municipal participation consultant added a new dimension by reporting even internal planning commitments can override well-intentioned early engagement. This confirms that the barrier to early participation is not solely attitudinal but also lies in the institutional context, this emphasises the importance of both community and municipal compliance for the broader development process.

Where the panel extended the preceding findings, most meaningfully was in articulating the conditions under which parametric design becomes genuinely effective. The case studies demonstrated that parametric tools enabled earlier and more concrete community engagement in London and Rotterdam. The panel contextualised this argues this was not because the tools themselves generate trust, but because they make the reasoning behind design decisions transparent. After all transparency, in the context of a relationship that already exists, creates the conditions for genuine dialogue. What the panel does not change is position of parametric design in a participation process which the preceding research already suggested. Especially the architect affirmed this regarding parametric design.

*“You could say that in the beginning, in the first communications, you don't use it in the same way, but as an early-stage design tool it is very valuable. Not just for the design team and the developer, but also for people to understand what could be possible here.”*

Respondent 9, an associate architect at Mecanoo, 6<sup>th</sup> of May 2026.

Parametric design enables a comprehensive approach towards the early development phase, it is the genuine intent that allows the initiator to address this.

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## 10. Discussion

The study demonstrates a predominant explorative and inductive character. This exploration of different fields, therefore, depends on the selected sources. Although the research poses the validity as explained in the methodology section, it is important to place the findings within the broader theoretical and practical field.

This chapter elaborates upon this academic context. The implications are highlighted first, followed by the corresponding limitations. Ultimately, recommendations for further research are given that can build on the conclusions presented in the subsequent chapter.

### 10.1. Implications

#### 10.1.1. Theory

Existing literature on participation promotes evaluative frameworks of such processes (IAP2, 2018; Arnstein, 1969), as well as what residents value most (Verheul & Heurkens, 2021). What however remains rather overlooked, but this research suggests, is the intention lying with the initiator, and how this may relate to participatory outcomes. In contrast to what theory proposes, the interviews conducted for this study promote intrinsic motivation as a precondition to achieve meaningful involvement in project development in the first place. Literature offers broad insights on participation, its organisation and how to evaluate it, but underemphasises the integrity that is essential to be present before any project or design is started. The research outcomes highlight this.

Genuine intent underscores meaningfully involving residents, which also promotes that measuring participatory quality through opposition and objections during the permit procedure is too simplistic. Although this research initially aimed for examining how appropriate participation decreases public opposition, which then contributes to a smoother permit procedure, this does not declare whether the participation process was qualitative.

The implication that the findings demonstrate is that the main focus when organising or approaching should not be to prevent conflicts but to first foster a trustful relationship to begin with. Above that, only the community itself can claim this, which is a finding that has implications for how both researchers and policymakers approach and evaluate participation in the future. This does possibly lead to fewer objections, but this must not be the primary motive.

Despite the research revolving around traditional and parametric design, the study shows how neither initially affect participation. Literature describes how traditional design can limit participation because of its linear nature (Calvo et al., 2025), and parametric design has the ability to address this (Daher et al., 2018). Nevertheless, it depends on the way it is implemented. The case studies do show parametric design serves as a valuable design tool to support participation, but not as the most valuable participatory tool. The intrinsic motivation with the initiator precedes both, in which the research identifies three different underlying sources of interest regarding participation.

The Eindhoven case demonstrates self-interest, by expertise outweighing community input and prioritising legal and financial viability. The London case however presents an organisational interest as the LLDC explicitly required early reporting of the environmental consequences of the development for planning approval, resulting in earlier resident involvement and reassurance.

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Ultimately, the interviews on the London and Rotterdam case and the expert panel also pose public interest as a driver concerning community involvement. These findings argue the willingness to genuinely establish a meaningful relationship with the environment as an influential factor towards intrinsic motivation. All evidently influenced the approach taken towards the participation process.

This raises the question of whether such drivers can be stimulated or safeguarded. Although imposing intrinsic motivation would render it extrinsic, the cases do suggest that certain conditions do relate to the amount of motivation the initiator adopts to participate. Institutional requirements, as demonstrated by the London case, can oblige initiating parties to engage early and openly. Additionally, the Mecanoo architect recognises differences between British and Dutch professional cultures regarding the participatory approach and expectation. The cases confirm this by demonstrating different processes and what caused this. These are not ways of creating intrinsic motivation but demonstrate contextual conditions in which it is more likely to emerge.

Subsequently, the research adds a more tangible perspective towards the possible dynamic between parametric design and participation. Although parametric design has been widely acknowledged as the faster alternative to traditional design (Lazaroiu et al., 2021), its actual implementation alongside a participatory process has not yet been reported.

The question that follows is whether intrinsic motivation combined with parametric design also enables a higher tier on the IAP2 spectrum (IAP2, 2018) and Arnstein's ladder (Arnstein, 1969). Although these frameworks do not measure participatory quality as defined in the study, the research does suggest a higher level can be accomplished easier with parametric tools. Both frameworks classify the amount of influence residents have during a project, but although the findings do report this does not lie in the design method but rather in the strategy, the study also demonstrates how parametric design contributes to enabling a closer collaboration with the community having a stronger voice.

It is the iterative and adaptive nature of parametric design that significantly enables faster decision-making and reporting back design consequences as reported by the architect at Mecanoo. This respondent also states resident reassurance through sun, shadow and wind studies can only be done through parameters. The Hadley Property Group placemaking specialist also exemplified how virtual reality allowed residents to experience and reflect on specific project initiatives such as the placement of street furniture. Furthermore, the developer at Boelens de Gruyter argued how parametric design could enable exploring building height variations with the community.

These examples however do not immediately indicate a higher level of citizen influence overall, as the upper tiers of both frameworks also require access to broader resources and decision-making authority which are conditions that parametric design alone cannot provide. Whether those conditions are granted remains a deliberate choice on the part of the initiating party.

This adds a broader theoretical perspective on the application of the frameworks on participation processes. Whereas the frameworks do classify the degree to which the influence extends, the level of detail within that influence cannot be captured. This then requires a deeper analysis on the participation process, which the analysis on the Eindhoven and London case demonstrates. Both adopt consultation yet evidently show engagement on a different design scale.

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Moreover, it is predominantly praised for its speed, generative capacity and ability to integrate multiple parameters simultaneously. The research confirms this but also nuances it, aligning with Gün (2023). A qualification of parametric design that is explicitly addressed by the interviewees but seems largely overlooked in most literature is the participatory risk upbrought by acceleration. When implemented to solely optimise decision making regarding technical and financial aspects, even though projects are developed much faster, residents get neglected even more. This adds an even broader perspective on the potential of parametric design within community involvement.

Furthermore, the case studies reveal risks that theoretical literature does not adequately address, the danger of overly generic outcomes, the erosion of digital trust in an era of AI-generated imagery, and the loss of the human and relational dimensions that parametric models cannot capture. The theoretical framing of parametric design as an enabling tool must therefore be complemented by a more critical understanding of its limits and by the recognition that the human hand guiding it remains as important as the tool itself.

### 10.1.2. Practice

The case studies demonstrate that developers, architects and municipalities each operate from their own financial, technical or regulatory interest in the early design phase. The Eindhoven case illustrates this most directly. While the project team focused on presenting a detailed preliminary design, the participation evening revealed that residents were primarily concerned with environmental consequences such as shadow, parking and traffic. This disconnect between what initiators are cautious about showing and what residents are actually interested at an early development phase provides the practical implication. Theory considers the early stages critical for meaningful resident involvement (Ahola et al., 2025), and this insight contributes to visualising this phase as well as helping to address it.

The international comparison with London provides a particularly instructive perspective for Dutch practice. The London planning system required evidence of environmental impact from the earliest design stages, which parametric design enabled more easily. This single requirement changed the entire dynamic. Dutch municipalities could consider adopting comparable requirements a structural mechanism for enabling the early participation that current practice systematically defers.

What is equally instructive about the London case is how participation was approached, which the architect Mecanoo referred to as a possible difference in working culture. Rather than arriving with a concrete proposal and inviting response, the team began by understanding what the community needed before any proposal existed. This stands in contrast to the Dutch tendency to focus on concrete proposals while participating. This insight is directly applicable to Dutch practice. It provides an example of a project team that actually did enter participation with 'open ends' without the fear of indefiniteness.

Overall, the integration of an international case within a study primarily employing a national scope allows for combining insights and mutual learning. This was already the case during the expert panel as it involved professionals from different international contexts. Moreover, the London case does not serve as a perfect example for Dutch practice to strive for. Institutional, cultural and regulatory contexts differ too significantly. What it does offer is a proof of concept. Early, open-ended participation without a finished proposal is not only theoretically desirable but practically

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achievable. The fear of indefiniteness that the Eindhoven case demonstrates is not an inherent feature of development but something that can be overcome.

For Dutch practitioners, the London case demonstrates that entering the early phase with parametric analyses rather than proposals is not a risk but a strategy. The question for Dutch practice is therefore not whether this approach is possible, but what institutional and attitudinal conditions would need to be in place to make it the norm rather than the exception.

## 10.2. Limitations

This report demonstrates a highly explorative and qualitative study emphasising a rather underexamined practice, which is the integration of parametric design within community participation processes. This exploratory approach is both its strength and its primary source of limitation. It allows for the development of new insights and theoretical implications in an area where existing literature is limited, but it also means that the findings are indicative rather than conclusive, and that the conditions under which they were produced constrain their transferability to other contexts.

### 10.2.1. Interviews

Semi-structured interviews are inherently subjective. Each respondent speaks from their own professional position, experience and interest and those positions are not neutral. The architect involved in the London case had a professional investment in the value of parametric design. The developer in Eindhoven had an interest in defending the choices made in her project. The participation consultants in Rotterdam and Eindhoven each bring their own professional framing of what good participation looks like. This subjectivity cannot be eliminated as it is a structural feature of qualitative research (Bryman, 2016), but it has been partially addressed through triangulation across multiple respondents, sources of data and the expert panel (Eisenhardt, 1989). Where multiple sources converge on the same finding, the confidence in that finding is strengthened. Where they diverge, the divergence itself is analytically informative. Nonetheless, the reader should be aware that the empirical findings of this research reflect professional interpretations rather than objective measurements.

### 10.2.2. Cases and cross-case learning

The three case studies were selected for their relevance to the central research question, and specifically their relationship to design method and community participation. However, the starting point of this research is the Dutch housing context and the role of transformation within it.

Design methods and participation are phenomena that occur across the broader development process, and the combination of parametric design and participation remains a practice that has been actively applied in relatively few projects. This limited the available pool of cases and led to a selection of projects that, while relevant, differ considerably in context, scale, institutional setting and temporal circumstance.

The Eindhoven case is a mid-scale Dutch residential project, in which the existing building is demolished and replaced with new built, that was integrated in this research during an active design phase and evaluated through direct attendance at the participation evening. This provided directly

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observed data but not on the entire participation process, while the other cases did consist of a finished participation process.

Secondly, the London case presents a large-scale mixed-use urban development in a distinct planning system that institutionally requires parametric environmental analysis. Moreover, the project presents an extremely intensive participation process unusual to Dutch practice as exemplified by the Eindhoven and Rotterdam case. While this also provides a notable practical implication, it does bring some sort of unequal comparison.

Lastly, the Rotterdam case proposed actual transformation, but the participation process was conducted primarily online due to COVID-19 restrictions as well as it being the first time the developer was obliged to organise the process themselves. This introduces a structural constraint on the depth and spontaneity of the employed strategy.

These differences mean that more factors than design method alone shaped the participatory approach and outcomes in each project. Municipal requirements, economic conditions, the year in which the project took place, the organisational culture of the initiating parties and the specific neighbourhood contexts all influenced how participation was organised and experienced. It is therefore not possible to attribute the observed differences in participatory quality solely to the general approach and implemented design method. Engaging directly with the professionals involved in each project did contextualise findings through in-depth interviews and testing conclusions through the expert panel. However, the results are strongly grounded in the specific contexts examined. Although this empowers the individual case analysis, it makes the results less representative towards other projects.

Because of the significant mutual differences, the conjunctive analysis on the three cases remained rather evaluative than comparative. The numerous influential factors involved did not allow for directly subtracting concrete differences between individual aspects of a project. It did however provide a broad lens to examine practices concerning the issues this research revolves around, which still contributed to assessing the research questions. This resulted in a multi-case analysis that enabled drawing multiple lessons from different cases that all supported establishing the overall conclusion of the research, but not a cross-case analysis that the research initially intended.

### **10.2.3. Resident perspective**

A significant limitation of this research is that participatory quality was not assessed through direct community engagement although the research primarily defines this as something that can ultimately only be measured by the participants themselves. The conclusions regarding how residents experience parametric design-based participation are based on professional interpretations of that experience rather than on explained personal experience by participants themselves. This limitation was partly structural. Studying participation as it happens risks interfering with the process itself, asking residents during an active participation evening what is working and what is not could negatively affect the dynamics of a process in which the initiating party has a significant stake. In the context of parametric design and perceived community experience, the research therefore was left to participation processes that had already went through.

However, the London and Rotterdam cases selected to examine participation processes supported by parametric design were finished roughly three years from now. Because of this, a deliberate choice

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was made not to approach the residents involved. Evaluating residents experience would then have depended on how many and which residents wanted to engage in this research. Additionally, the uncertainty of addressing a representative group for the concerning project would have raised another limitation. Now, the results draw on the observations of two professionals who were actively involved in the participation process for both cases. For the London and Rotterdam cases, this meant relying on the placemaking specialist and participation consultant respectively to convey how residents responded and what the parametric tools contributed to that response. Given their neutral role, they were considered most appropriate to speak on the experience the community.

These observations however remain second hand and mainly reflective. The research therefore addresses community experience in parametric design-based participation based on assumptions. Whether residents themselves would describe their experience in the same terms, and whether the public support observed in these cases would be attributed by residents to the parametric tools or to other aspects of the process, requires an actual dialogue with those involved. This is now only reflected by what the interviewees reported and by the absence of objections during the permit procedure.

#### **10.2.4. Generalisability**

As a consequence of the above, the findings of this research are less representative towards other projects or contexts than a larger, more controlled study could be. Bryman (2016) acknowledges this as an inherent critique towards qualitative research, noting that the goal of qualitative inquiry is not statistical generalisation but what Lincoln and Guba (1985) refer to as transferability, which is the degree to which findings are recognisable and applicable in comparable contexts. Rather than asking whether findings hold universally, transferability asks whether the patterns identified are sufficiently described and contextualised to allow others to judge their relevance to their own situation. This transferability was demonstrated by the expert panel. The participants were drawn from different national and institutional contexts, yet independently recognised the patterns and concepts identified across the research allowing for a comprehensive conversation concerning the findings of this study. The mutual agreement on the errors in participatory practices, the prioritisation of policy compliance and the role of intrinsic motivation suggests that these findings carry relevance beyond the specific projects studied, even if they cannot be statistically generalised.

The trade-off between contextual depth and statistical width however remains unavoidable. What the research offers is a valuable source of insight into how parametric design and participation intersect in practice, grounded in real projects and real professional experience. It does not, however, produce findings that could be directly replicated by another researcher using different cases. The specific combination of institutional context, professional culture and project circumstance that shaped the outcomes in each case means that similar studies conducted elsewhere might produce different results. This does not diminish the value of the findings but qualifies their scope. The patterns identified across the three cases, particularly the prioritisation of policy compliance over community involvement, the mismatch between what the initiator is cautious to show and what the resident seeks, and the role of intrinsic motivation, were consistently recognised by all participants involved in this research. This suggests that the findings hold relevance beyond their immediate context, even if they cannot be generalised without further empirical validation across a larger and more diverse set of cases.

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### 10.3. Subsequent research

The most immediate gap this research leaves is the absence of direct derived resident data regarding their experience during participation supported by parametric design. Gustafson and Hertting (2017) emphasise the understanding of participants' motives to engage in a project. They consider knowledge on these motives essential for understanding the quality and nature of participatory governance and its potential contribution to the overall political administrative system. This demonstrates that to evaluate quality in participatory practices, the way residents experience it plays a vital role.

Research complementing this would emphasise this. A way examining and comparing traditional and parametric design-based participation would be to expose residents to two parallel participation processes. One supported by traditional design and one by parametric design, assessing what residents themselves experience as more meaningful, informative and respectful would add on meaningfully to the findings in this study. This would, not only test the assumptions this research has made supported by professional knowledge but would also provide empirically grounded evidence for concluding whether traditional or parametric design could be the superior participatory tool. Such a study would ideally involve the same community engaging with both formats, controlling for context as much as possible, and even better in multiple different contexts.

Secondly, this research focused on the perspective of existing neighbouring residents whom private lives are directly affected by a new development in their immediate environment. A largely unexplored dimension which was introduced by one of the interviewees is the potential for involving future residents in the participation process. And to build on this research, particularly in combination with parametric design.

Future residents have a different relationship with the project, they are not protecting an existing situation but choosing to enter a new one. How their participation might be organised, what parameters they would prioritise and how their input could be integrated alongside that of existing neighbours raises questions that parametric design is well positioned to address, given its capacity to model preferences and consequences simultaneously. Whereas this research reveals existing resident mainly focus on environmental consequences, Eriksson et al. (2014) refer to future users a factor also influencing project performance. Subsequent research could aim for integrating input from both existing as well as future residents, examining how to balance those while still safeguarding viability and policy alignment.

Zhang et al. (2021) elaborate upon the differences between interested stakeholders, referring to local businesses, which is a group that is also neglected in this research. Local businesses introduce a fundamentally different set of interests. They value physical environmental measures as well as their own role in the renewed area, promoting the need for a different participatory approach. A study specifically examining how parametric tools could be used to engage local businesses as a distinct stakeholder group, incorporating their own parameters into the design process, would extend the participatory potential of parametric design into a broader context than the one this report illustrates.

Thirdly, to examine the implementation of parametric design the study involved participation processes that had largely concluded. A study that follows a complete participation process supported by parametric design from the earliest design stage through to planning approval would provide a more granular and process-oriented understanding than retrospective interviews allow.

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Observing what parametric tools are actually deployed, when, how and with what community response could allow for the same conclusions and the identification parallel processes that were now revealed in the Eindhoven case.

Additionally, intrinsic motivation emerged as the central condition for participatory quality in this research, yet the concept remains undertheorized and difficult to measure. Potential drivers for initiators to participate could stem from professional culture, educational background, organisational values or prior experience. Understanding what makes an initiating party genuinely want to involve residents, and how that disposition can be recognised and encouraged, would transform the concept from an observed condition into an actionable one.

Moreover, it would contextualise the choices initiators make in development processes instead of just relating them to either financial or technical motives or unwillingness, which current literature oftens refers to. Brown (2015) underscores this by documenting the interests, motives and actions of real estate developers. Understanding what developers do and why they do it will help community members participate more productively in the development process. This demonstrates how participation overall would improve from mutual understanding. To build on this, future research could investigate what drives intrinsic motivation among initiators and how this could be cultivated. This would contribute to overall better integrated participation processes.

Defining the context between participatory motives also proposes additional research on cultural and institutional differences and how this relates to the way participation is approached. Haklay et al. (2018) demonstrate this highlighting the differences between public participation applications in various countries due to their specific legal and organisational structures.

Furthermore, besides the context influencing a participatory method, Przeybilovz et al. (2022) report how the societal context also shapes the behaviour of residents. And more importantly, as this evolves over time, so does citizen engagement.

A comparative study specifically designed to investigate participatory culture across different cities, municipalities and national contexts would provide a more systematic understanding of why the same tools and methods produce different outcomes in different settings. Identifying how planning systems, professional norms and community expectations shape the quality of participation could provide meaningful insights contributing to the understanding with developers and municipalities in different participatory contexts. Haklay et al. (2018) and Przeybilovz et al. (2022) emphasise the participatory context, a following study examining how parametric design could anticipate on this would directly build upon one of the case study limitations this research presents.

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## 11. Conclusion

Employing both a qualitative and explorative approach, this study aims for examining the potential of parametric design to enhance the quality of participatory practices. Assessing this issue entails three main concepts to investigate, which are translated to three sub-questions that will be addressed in this section.

As this research strives for improving participatory quality, the first sub-question emphasised defining and analysing participatory quality. The practical context of parametric design and the participatory conditions it provides is assessed employing three case studies. Eventually, the findings derived from literature, the interviews, the case studies and the expert panel enable the formulation of the conclusions presented below. The three sub-questions are discussed first, followed by the overarching issue this study revolves around.

Participatory quality is considered as the first concept of this study necessary to comprehend. The follow sub-question was formulated.

### 1. *What defines participatory quality?*

The starting point of this research were procedural challenges, emphasising the views and appeals that obstruct project timelines, addressing participation as the tool to prevent those. Findings however reveal participatory quality is not defined by the absence of formal objections alone, and this should most certainty not be the main goal. The respondents at Bureau Stroom stress this aligning with what Verheul and Heurkens (2021) suggest. Participatory quality is perceived different by a resident than it is by an initiator, and thus its focus is also different.

As reported by two participation consultants at Bureau Stroom, the value participation carries lies in how well a project connects with its environment in both spatial and emotional terms and whether residents can continue to appreciate and use the area as they did before. Public support is achieved through the relationship that is built with the community throughout the process. What residents consistently value is feeling genuinely heard, seen and informed. This makes it essential to actively engage with the specific groups concerned, to understand who they are, what they need and what they fear. As a Platform31 project leader states, representativeness is a precondition for quality. It is however not an assurance, organising the participation process is equally essential.

A municipal participation consultant adds on to this by highlighting that residents need to understand the scope of their influence before the process begins. What that scope looks like depends on the scale of the project, the number and diversity of stakeholders and the phase in which engagement takes place, and thus the intensity of the collaboration differs each project. As argued by the participation consultants at Bureau Stroom, aligning with Uddin and Alam (2021), there is no universal approach. Participation must be continuously adapted to the context it operates in, and that adaptation requires active investment and genuine intent from the initiating party.

Genuine communication regarding expectation management therefore becomes an essential component. Participatory quality does not necessarily mean giving residents more power, which a municipal participation consultant builds on referring to being honest and transparent as key factors for meaningful involvement. The research therefore deliberately adopts the IAP2 spectrum and Arnstein's ladder of participation solely as a classifying, evaluating and understanding tool towards

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participation processes. A higher rung on the ladder or a more advanced position on the spectrum reflects a greater degree of citizen influence, not necessarily a better participatory outcome. What matters is not where a process sits on a scale but how well it is tailored to the situation at hand. The frameworks are most effectively used as analytical tools for comparison and reflection rather than as targets to be achieved.

Participatory quality can therefore be defined as the degree to which a participation process is genuinely tailored to its context, builds an honest and transparent relationship with a representative group of community members, and ensures that all parties understand the extent and limits of their influence from the outset. It is declared by whether residents feel heard, informed and respected throughout and whether the project ultimately connects with the environment it enters, both spatially and emotionally. Something that in practice, according to a Platform31 project leader, can only be determined by the residents themselves.

## ***2. What are the organisational and procedural differences between traditional and parametric design-based participation?***

Literature introduces fundamental differences between both that could relate to incorporating participation outcomes (Ahola et al., 2025; Hettithanthri et al., 2023). However, although the findings do show characteristic differences in both participation processes, they also reveal the organisational and procedural approach towards participation was not initially a result of the design method that was used. This contradicts the initial aim of this sub-question which is highlighted in the discussion.

The participation process in Eindhoven consisted of three sequential moments and beforehand, a survey was distributed concerning neighbourhood experience but without presenting any design. The participation evening presented a near-finished preliminary design through posters, floor plans, facade views and a scale model. Also, a two-dimensional shadow analysis was shown on a laptop during the evening. The choice of what to present was deliberate. The project team filtered design variants internally before engaging the community, presenting only what they felt confident about and what stood close to the expected outcome. Materialisations and unresolved elements were consciously withheld. The timing of participation was equally deliberate, municipal alignment was prioritised before engaging the community.

The participation process in London consisted of multiple simultaneous formats organised over more than two years. Like Eindhoven, according to the architect at Mecanoo, in London the community engagement similarly relied primarily on showing pictures. What differed was an earlier involvement and the technical grounding to support what was presented in the visualisations. A digital twin allowed the team to zoom in on specific areas of concern, study their impact in detail and present updated iterations in subsequent sessions. These are elements that structurally enable a different participatory approach. The differences align with what Daher et al. (2018) & Steinø (2013) stress but did not change the initial approach that was taken by the project team in both cases, which is the key insight of assessing this sub-question.

The organisational and procedural differences between both cases were primarily caused by the strategy. In the traditional design case, municipal alignment was emphasised before community engagement took place, together with the conviction that fundamental decisions belong to professionals and should only be presented once certainty exists. Therefore, when the survey was

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sent, the design was deliberately not shown yet or concerned in the questions. The interviewees report they were cautious about showing an indefinite design which was not yet financially or legally viable, fearing fostering wrong expectations they could not match. This caused the community to be involved once the design was already to some extent definite.

In the London case, the organisational and procedural approach was institutionally driven as the municipality required to map the environmental consequences. It was therefore mandatory to evaluate the impact on the community, and how the project anticipated on it. Parametric design however enabled generating this environmental impact. Most notably, as reported by the Mecanoo architect, in doing so parametric design facilitated early resident involvement while also safeguarding legal and financial viability and risk management. Nonetheless, involving the community was considered added value towards the project in the first place, which also shaped the participatory approach. Parametric design primarily remained as a tool to substantiate it. Although this demonstrates how parametric design allowed a different organisation of the participation process, it was not the initial reason.

Nonetheless, a direct causal relationship is not identified between the design methods and the organisational and procedural approach. The case studies demonstrate how this approach is determined beforehand, traditional and parametric design only differ in how they could serve the established strategy.

### **3. *What participatory conditions does parametric design create, and how are these perceived by residents?***

Building on the findings regarding the previous sub-question, and as literature suggests, parametric design creates new participatory conditions. It aligns technical and financial requirements with social interests from the community (Daher et al., 2018) and facilitates a closer dialogue and collaboration by generating accessible visualisations of the new development (Abas et al., 2023; Gün, 2023). While the case studies affirm this, the concerned interviewees also refer to intrinsic motivation to genuinely engage with the residents as most important for participatory quality.

A participatory condition provided by parametric design is facilitating the dialogue. Environmental analyses make the spatial impact of a development comprehensible to non-experts, facilitating a conversation that residents genuinely engage with. The former partner at De Wijde Blik illustrates this through the Rotterdam case. Animated films showing shadow and sunlight movement from street level gave residents a more accurate and accessible picture of what the development would mean for their daily environment. It did not create a discussion about the design itself but directly addressed the concerns residents came with.

The films bridged the gap between the rational reasoning of the initiating party and the emotional concerns of the community. They ensured that residents did not need the expertise to understand what the project would mean for their living environment, the visualisations made it accessible without requiring them to interpret the underlying technical considerations. According to the respondent, this visibly contributed to a calmer atmosphere and broader public support.

The London case demonstrates another ability of parametric design to address resident interests. Pedestrian flows, like actual movement, common routes and meeting places, were examined parametrically and directly informed the positioning of buildings and the design of public space.

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This included curving and angling the building to guide wind around the building rather than downward safeguarding the accessibility and comfortability of the public space. In this way, parametric design translated observed community behaviour into spatial parameters, bringing the lived experience of residents closer to the design decisions that shaped their environment. In doing so, parametric design enabled the initiating party to gain a deeper understanding of how residents actually use and experience their environment and to translate that understanding directly into design decisions.

However, implementing parametric design also carries the risk of becoming overly generic. If parametric design is employed solely to accelerate the process rather than to deepen it, it risks becoming nothing more than a tool for generating a definite design more rapidly causing the community to be overlooked. Hence the reason the De Wijde Blik representative stresses participation is not served by acceleration. The Hadley Property Group placemaking specialist adds on to this, suggesting too many visualisations can also foster distrust given the rising impact of AI. Parametric design therefore creates participatory conditions that bring professionals and residents closer to a shared understanding, but only when it is also implemented to achieve this.

Moreover, both the De Wijde Blik and the Hadley Property group representative state it is not a precondition for genuinely involving residents and thus participatory quality. The underlying condition in each project was the intrinsic motivation of the initiating party to enter the conversation at all and anticipate on it. In the London case, residents were engaged before any design was shown to gather their interest and concerns.

Addressing specific groups personally, listening and demonstrating a sincere interest in their perspectives physically on site created the foundation for residents to feel genuinely involved. Parametric design however enabled incorporating the input. The respondent at De Wijde Blik affirms this, stating parametric design does have the potential to completely integrate participation in the design process but refers to intent of the initiator whether this is accomplished. In the Rotterdam case it was the genuine aim of the initiator to generate films to address the concerns residents had regarding sun and shadow consequences.

Parametric design therefore creates conditions to enhance participatory quality by incorporating resident concerns and interests and facilitating an accessible dialogue for the community leading to public support and an overall better understanding with the community. But this is however only when the intent allows this and aims to implement it as such. Parametric design must be implemented to involve residents by fostering a constructive conversation, and not to accelerate the process.

The main research question that proceeds from the central issue these sub-questions revolved around reads as follows.

***Under what conditions could parametric design improve participatory quality?***

Assuming participatory quality is not determined by the design method, the level of citizen influence or the absence of formal objections but by the quality of the relationship between the initiating party and the community built on honesty and transparency. Parametric design can foster and support that relationship from an early stage, but only when the intrinsic motivation to build it is present.

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The study revealed the gap that emerges from the developer prioritising risk management and viability, the municipality emphasising regulatory requirements and the community valuing reassurance. This is the mismatch that causes residents to be involved when the design is majorly fixed, and participation is left with just presenting conclusions. Parametric design however enables the initiating party to progress toward municipal alignment and financial viability while already engaging residents, addressing their concerns and building the relationship that participatory quality depends on. Nevertheless, those conditions only become meaningful when the initiating party genuinely wants to use them. This motivation depends on the motives behind it, whether driven by self-, organisational or public interest.

Parametric design has the capacity to make community involvement more meaningful, though, intrinsic motivation is suggested as the very requirement for parametric design to do so. When parametric design is only used to accelerate participation rather than to deepen it, the community risks being overlooked and is left with the presentation of conclusions and no structural conversation.

Intrinsic motivation enables the initiator to identify the participatory context and act upon it, parametric design serves as the most enabling design tool. This tool provides the means, which need to be implemented appropriately to build the relationship required to achieve participatory quality. And it is the underlying source of interest that could shape this motivation.

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## 12. Reflection

From the outset of this graduation research, I was determined to investigate a subject I had defined myself. My interest in the Dutch housing market developed through practical work experience and the broader professional discourse around development processes. The procedural obstacles leading up to permit approval, and the role that public participation plays, quickly emerged as the central problem I wanted to address. Boelens de Gruyter provided me the perspective of parametric design as a potential approach, which became the second pillar of the research. The period after did carry significant challenges, which this section elaborates upon.

What followed was a period of significant challenge. The initial research issue was far too broad, and the process of narrowing it down to a focused and answerable question demanded more time and effort than I had anticipated. The sessions with my supervisors in the early stages were invaluable in this regard. Looking back, I consider establishing the research scope to be the greatest challenge as a result of proposing my own topic. It required genuine effort and the willingness to let go of directions that seemed promising but were ultimately too wide to pursue within the available time.

A mixed-methods approach was employed combining literature review, interviews, case studies and an expert panel. Looking back, I still consider this the most appropriate choice for this research. Because of the limited existing empirical work on this topic, a single method would not have produced sufficiently reliable or nuanced findings. Each method addressed a limitation of the others. Literature provided the theoretical foundation, interviews captured professional realities, case studies grounded the findings in concrete projects, and the expert panel tested the emerging conclusions against diverse perspectives simultaneously. Given its exploratory nature, drawing on multiple sources of data and triangulating findings across them proved genuinely valuable and the expert panel as a concluding step added a layer of critical reflection that strengthened the conclusions considerably.

Deriving data on this particular topic, however, came with its own challenges. Studying a practice that has been applied in relatively few projects meant that the materials and cases I had originally envisioned were not always available in the form I had hoped. Finding appropriate cases required conversations with colleagues, external contacts, meetings and calls with professionals across multiple organisations to understand whether a project might fit the research. This process was time-consuming, and there were moments where I came away empty-handed. But I am glad I took that approach. It meant that when I did select a case, I had sufficient background knowledge and contextual understanding to make a deliberate and well-founded choice rather than a convenient one.

The London case is a good example of this. At first glance it appeared to fall well outside the scope of the research given its scale and institutional context. It is not a Dutch project, it is an entirely new built project, and the planning system it operates within has no direct equivalent in the Netherlands. Yet in terms of parametric design and participatory practice, it proved to be one of the most valuable sources of insight in the entire study. The Netherlands has a great deal to learn from how participation is approached in that context, and including it broadened the findings in ways I had not anticipated.

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The decision to include it came from a moment of recognition during a supervision session, when my supervisor used a phrase that stayed with me: *"als het niet kan zoals het moet, moet het zoals het kan"*. That was the moment I let go of the ideal and started working seriously with what I had. It was also, I think, the most formative moment of my development as a researcher.

Adopting this rather rational approach towards case studies also proposed important considerations. One regarding the Rotterdam case was the most significant. The documentation available on the development and participation process of the Havenhuys project was limited to what was publicly accessible. Although this is an inevitable risk of integrating projects outside your graduation company, this left me with an impactful choice in which I had to decide whether to exclude the case, reduce its role in the research, or find an alternative way to gather sufficient data. The interview I conducted with the former partner at De Wijde Blik, initially, was not planned as this case addressed community experience. Despite the limitation this brought to the findings, as explained in the discussion, the interview was genuinely valuable and did bring empirical depth to the conclusions. This was one of the moments in the research that required actual flexibility as a result of the saying of my supervisor, accepting your considerations and using it the best possible.

Conducting the research also gave me something I did not fully anticipate, a genuine understanding of participation as a professional and human practice and not merely a mandatory element. My prior educational and working experience had not brought me into close contact with the realities of community engagement. Especially regarding what residents actually need, what initiating parties fear and why the two so often fail to connect. Through the interviews, the case study analyses and the expert panel, I developed a grounded understanding of both the initiator's and community side of the participatory dynamic.

The research began as an attempt to contribute to faster and more efficient development processes. It ended with a more nuanced conclusion that speed is not always the answer, and that the most durable contribution parametric design can make to participation is not primarily acceleration but a better dialogue. Parametric design is becoming an increasingly prominent instrument in the sector and understanding both its capabilities and its limits to me more valuable than any generic prescription for efficiency.

I look back on this research with genuine satisfaction. The process was demanding, the subject was complex and the conclusions are provisional rather than definitive. But that, I have come to understand, is what good exploratory research produces. Not answers, but a better understanding of the right questions. Questions that will contribute to how practitioners, researchers and policymakers think about participation and design in the years ahead.

On a personal level, it will at the very least inform my first steps in the built environment after graduating aiming to make a meaningful difference.

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## 14. Appendices

### Appendix I – AI Declaration

- Not used generative AI.
- Used generative AI to generate (parts of) the content of the text. Where applicable, I have acknowledged this in a footnote and/or with a literature reference.
- Used generative AI (for inspiration) to structure the text.
- Used generative AI to improve the grammar, style, and/or spelling of the text.

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## Appendix II – Data Management Plan

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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Parameterising Participation

**Creator:** Lászlo González Serrano

**Contributor:** Hilde Remøy, Gerard van Bortel

**Affiliation:** Delft University of Technology

**Funder:** Delft University of Technology

**Template:** TU Delft Data Management Plan template (2025)

### **Project abstract:**

The Dutch housing market faces a shortage of 395 thousand residences today, accounting up to almost five percent of the total housing stock while two percent is preferred. New construction cannot meet the annual housing plans of one hundred thousand residences. Approximately seventeen million square meters, equal to over three percent of the total non-residential built environment, is currently vacant. Accordingly, the ministry aims to encourage transformation by allocating 150 million euros to grant loans to developers willing to transform existing real estate to housing. Transformation helps cities remain vital and tends to be faster, cheaper and more sustainable compared to new construction. Despite the advantages, it fails to contribute significantly to housing stock due to financial issues, technical complexities and procedural challenges partly caused by public appeals leading to project delays or cancellation. Appeals relate to the level of participation, which lies with the developing party making it a critical element of the broader development process. Therefore, this study adopts and addresses participation as a design and process related factor to transformation projects.

The number of appeals reflect the level of public support, which is considered a direct product of appropriate participatory practices. Public involvement can lead to a more valuable design, and mitigates cost and schedule overrun in the final phases. However, developers often find this challenging and traditional design methods limit the incorporation of participatory output because of its linearity, labour-intensity and lack of flexibility. Participation often happens either at the planning phase or when major design decisions are already made leaving public cooperation overlooked. Parametric design is considered a better alternative. It promotes iteration and immediately visible design changes, equally incorporates participatory outcomes, financial and technical requirements, and allows active community involvement because of knowledge sharing and transparency.

Through qualitative literature and case study, and qualitative interviews this research investigates parametric opportunities during participation. Through analysing current participatory practices, identifying key challenges, examining limitations of traditional design limits and assessing parametric design potential, this study report contributes to addressing the broader housing market issues.

**ID:** 197720

**Start date:** 09-02-2026

**End date:** 15-06-2026

**Last modified:** 17-02-2026

# Parameterising Participation

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## 0. Administrative questions

1. Provide the name of the data management support staff consulted during the preparation of this plan and the date of consultation. Please also mention if you consulted any other support staff.

Gerard van Bortel

2. Is TU Delft the lead institution for this project?

- Yes, the only institution involved

## I. Data/code description and collection or re-use

3. Provide a general description of the types of data/code you will be working with, including any re-used data/code.

Type of data/code	File format(s)	How will data/code be collected/generated? <i>For re-used data/code: what are the sources and terms of use?</i>	Purpose of processing	Storage location	Who will have access to the data/code?
Anonymised transcript from interviews	.docx	Conducted through face-to-face interviews	Gaining knowledge on participatory quality, parametric design potential and experience with participatory practices.	Researchers' laptop and TU Delft One Drive	Lászlo Gonzalez Serrano
Recordings of interviews	.mp4	Conducted during face-to-face interviews	Validating transcripts and enabling evaluation when in doubt.	Researchers' laptop and TU Delft One Drive	Lászlo Gonzalez Serrano
Anonymised data from questionnaire.	.xlsx	Physical survey	Gaining insight on residents' experience during participation.	Researchers' laptop and TU Delft One Drive	Lászlo Gonzalez Serrano

## II. Storage and backup during the research process

4. How much data/code storage will you require during the project lifetime?

- < 250 GB

### III. Data/code documentation

#### 6. What documentation will accompany data/code? (Select all that apply.)

- Data - Methodology of data collection

### IV. Legal and ethical requirements, code of conducts

#### 7. Does your research involve human subjects or third-party datasets collected from human participants?

*If you are working with a human subject(s), you will need to obtain the HREC approval for your research project.*

- Yes - please provide details in the additional information box below

Researcher will apply for ethical approval.

#### 8. Will you work with personal data? (This is information about an identified or identifiable natural person,

Name, email/telephone number and job description.

#### 9. Will you work with any other types of confidential or classified data or code as listed below? (Select all that apply and provide additional details below.)

*If you are not sure which option to select, ask your Faculty Data Steward for advice.*

- No, I will not work with any other types of confidential or classified data/code

#### 10. How will ownership of the data and intellectual property rights to the data be managed?

*For projects involving commercially-sensitive research or research involving third parties, seek advice of your [Faculty Contract Manager](#) when answering this question.*

The thesis will be written as part of my MSc Track at TU Delft. Data retrieved from interviews will be shared with my TU Delft supervisors but not with external parties such as Boelens de Gruyter.

**11. Which personal data or data from human participants do you work with? (Select all that apply.)**

- Audio recordings
- Job title and/or employer
- Telephone number, email addresses and/or other addresses as contact details for administrative purposes
- Names as contact details for administrative purposes

**12. Please list the categories of data subjects and their geographical location.**

Participation organisations, parametric experts, developers and municipalities from the Netherlands.

**13. Will you be receiving personal data from or transferring personal data to third parties (groups of individuals or organisations)?**

- No

**16. What are the legal grounds for personal data processing?**

- Informed consent

**17. Please describe the informed consent procedure you will follow below.**

After interview participants have been recruited, the informed consent will be sent first. The participant is given a second consideration after when still agreeing to participate, the interview takes place.

For the questionnaire, participants are informed beforehand and given an consent form before answering the questionnaire.

**18. Where will you store the physical/digital signed consent forms or other types of proof of consent (such as recording of verbal consent)?**

TU Delft One Drive

**19. Does the processing of the personal data result in a high risk to the data subjects? (Select all that apply.)**

***If the processing of the personal data results in a high risk to the data subjects, it is required to perform a Data Protection Impact Assessment (DPIA). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data in your research project.***

***If any category applies, please provide additional information in the box below. Likewise, if you collect other type of potentially sensitive data, or if you have any additional comments, include these in the box below.***

***If one or more options listed below apply, your project might need a DPIA. Please get in touch with the Privacy team ([privacy-tud@tudelft.nl](mailto:privacy-tud@tudelft.nl)) to get advice as to whether DPIA is necessary.***

- None of the above apply

**23. What will happen with the personal data used in the research after the end of the research project?**

- Other – please explain below

All data will be anonymised.

**24. For how long will personal research data (including pseudonymised data) be stored?**

- Personal data will be deleted at the end of the research project

**25. How will your study participants be asked for their consent for data sharing?**

- In the informed consent form: participants are informed that their personal data will be anonymised and that the anonymised dataset is shared publicly

Participants are also informed about what, how and where data is stored, and when it will be deleted.

## **V. Data sharing and long term preservation**

**27. Apart from personal data mentioned in question 23, will any other data be publicly shared?**

*Please provide a list of data/code you are going to share under 'Additional Information'.*

- Other – please explain below

Research results and conclusions will be published and openly accessible on the TU Delft repository. In case the research aims to refer to research results concerning participants, they are only referred to by their job description. Name, age, gender, company and other traceable data is anonymised and deleted after finishing the research.

**29. How will you share research data/code, including those mentioned in question 23?**

*Select all that apply and provide additional details below.*

- I am a Bachelor's/Master's student at TU Delft and I will share the data/code in the body and/or appendices of my thesis/report in the TU Delft Repository

**30. How much of your data/code will be shared in a research data repository?**

- < 100 GB

**31. When will the data/code be shared?**

- At the end of the research project

**32. Under what licence(s) will the data/code be released?**

- CC BY

## **VI. Data management responsibilities and resources**

**33. If you leave TU Delft (or are unavailable), who is going to be responsible for the data/code resulting from this project?**

My first supervisor Gerard van Bortel, assistant Professor Housing Management.

**34. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?**

4.TUResearchData is able to archive 1 TB of data per researcher per year free of charge for all TU Delft researchers. The research does not expect to exceed this and therefore there are no additional costs of long term preservation.

**35. Which faculty do you belong to?**

- Faculty of Architecture and the Built Environment (ABE)

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## Appendix III – Consent forms

## OPENING STATEMENT – PARTICIPATORY QUALITY

You are invited to participate in a research study entitled *Parameterising Participation*. This research is conducted by László Gonzalez Serrano as part of the MSc Management in the Built Environment programme at Delft University of Technology. The study focuses on improving participatory processes through the application of parametric design. The aim of this research is to explore whether parametric design can improve the quality of participation, eventually contributing to a more streamlined final phase of the development process.

The research consists of several elements. This part concerns defining the quality of participation and determining how it can be measured. The interview itself should take about **45** minutes. Collected data will be used for analytical purposes and will contribute to the thesis of László Gonzalez Serrano. After completion, the thesis will be published in the TU Delft repository.

As the risk of a data breach can never be eliminated, every reasonable measure will be taken to minimise this risk. Your responses will remain as confidential as possible through anonymisation, and all research data will be stored on the TU Delft repository. In the research, you will only be referred to by your professional role. All other personal information, also including the company you are employed at, will be anonymised.

With your consent, this interview will be recorded and subsequently transcribed. Both the recording and the transcript, as well as any collected data, will be deleted after the completion and processing of the research.

Your participation in this study is entirely voluntary. **You may withdraw from the research at any time, as well decline to answer any question.**

Should you have any questions, you may contact László Gonzalez Serrano by email or telephone.

[L.P.M.GonzalezSerrano@student.tudelft.nl](mailto:L.P.M.GonzalezSerrano@student.tudelft.nl)

+31 6 12 61 29 05

By signing this agreement, you confirm the following:

- I acknowledge my participation in the above-mentioned research and understand that I have the right to withdraw at any time or to decline to answer any questions.
- I consent to the recording of this interview, on the condition that the recording will be deleted upon completion of the research.
- I agree that the data collected during this interview will be used solely for the specific purpose of this research.

Date:

Full name:

Signature:

...

## OPENING STATEMENT – TRADITIONAL DESIGN

You are invited to participate in a research study entitled *Parameterising Participation*. This research is conducted by Lászlo Gonzalez Serrano as part of the MSc Management in the Built Environment programme at Delft University of Technology. The study focuses on improving participatory processes through the application of parametric design. The aim of this research is to explore whether parametric design can improve the quality of participation, eventually contributing to a more streamlined final phase of the development process.

The research consists of several elements. This part concerns evaluating the use of tradition design within participatory practices. The interview itself should take about **45** minutes. Collected data will be used for analytical purposes and will contribute to the thesis of Lászlo Gonzalez Serrano. After completion, the thesis will be published in the TU Delft repository.

As the risk of a data breach can never be eliminated, every reasonable measure will be taken to minimise this risk. Your responses will remain as confidential as possible through anonymisation, and all research data will be stored on the TU Delft repository. In the research, you will only be referred to by your professional role. All other personal information, also including the company you are employed at, will be anonymised.

With your consent, this interview will be recorded and subsequently transcribed. Both the recording and the transcript, as well as any collected data, will be deleted after the completion and processing of the research.

Your participation in this study is entirely voluntary. **You may withdraw from the research at any time, as well decline to answer any question.**

Should you have any questions, you may contact Lászlo Gonzalez Serrano by email or telephone.

[L.P.M.GonzalezSerrano@student.tudelft.nl](mailto:L.P.M.GonzalezSerrano@student.tudelft.nl)

+31 6 12 61 29 05

By signing this agreement, you confirm the following:

- I acknowledge my participation in the above-mentioned research and understand that I have the right to withdraw at any time or to decline to answer any questions.
- I consent to the recording of this interview, on the condition that the recording will be deleted upon completion of the research.
- I agree that the data collected during this interview will be used solely for the specific purpose of this research.

Date:

Full name:

Signature:

...

## OPENING STATEMENT – PARAMETRIC DESIGN

You are invited to participate in a research study entitled *Parameterising Participation*. This research is conducted by Lászlo Gonzalez Serrano as part of the MSc Management in the Built Environment programme at Delft University of Technology. The study focuses on improving participatory processes through the application of parametric design. The aim of this research is to explore whether parametric design can improve the quality of participation, eventually contributing to a more streamlined final phase of the development process.

The research consists of several elements. This part concerns exploring the potential of parametric design within participatory practices. The interview itself should take about **45** minutes. Collected data will be used for analytical purposes and will contribute to the thesis of Lászlo Gonzalez Serrano. After completion, the thesis will be published in the TU Delft repository.

As the risk of a data breach can never be eliminated, every reasonable measure will be taken to minimise this risk. Your responses will remain as confidential as possible through anonymisation, and all research data will be stored on the TU Delft repository. In the research, you will only be referred to by your professional role. All other personal information, also including the company you are employed at, will be anonymised.

With your consent, this interview will be recorded and subsequently transcribed. Both the recording and the transcript, as well as any collected data, will be deleted after the completion and processing of the research.

Your participation in this study is entirely voluntary. **You may withdraw from the research at any time, as well decline to answer any question.**

Should you have any questions, you may contact Lászlo Gonzalez Serrano by email or telephone.

[L.P.M.GonzalezSerrano@student.tudelft.nl](mailto:L.P.M.GonzalezSerrano@student.tudelft.nl)

+31 6 12 61 29 05

By signing this agreement, you confirm the following:

- I acknowledge my participation in the above-mentioned research and understand that I have the right to withdraw at any time or to decline to answer any questions.
- I consent to the recording of this interview, on the condition that the recording will be deleted upon completion of the research.
- I agree that the data collected during this interview will be used solely for the specific purpose of this research.

Date:

Full name:

Signature:

...

## OPENING STATEMENT – COMMUNITY EXPERIENCE

You are invited to participate in a research study entitled *Parameterising Participation*. This research is conducted by Lászlo Gonzalez Serrano as part of the MSc Management in the Built Environment programme at Delft University of Technology. The study focuses on improving participatory processes through the application of parametric design. The aim of this research is to explore whether parametric design can improve the quality of participation, eventually contributing to a more streamlined final phase of the development process.

The research consists of several elements. This part concerns evaluating the way residents experience parametric design-based participation. The interview itself should take about **45** minutes. Collected data will be used for analytical purposes and will contribute to the thesis of Lászlo Gonzalez Serrano. After completion, the thesis will be published in the TU Delft repository.

As the risk of a data breach can never be eliminated, every reasonable measure will be taken to minimise this risk. Your responses will remain as confidential as possible through anonymisation, and all research data will be stored on the TU Delft repository. In the research, you will only be referred to by your professional role. All other personal information, also including the company you are employed at, will be anonymised.

With your consent, this interview will be recorded and subsequently transcribed. Both the recording and the transcript, as well as any collected data, will be deleted after the completion and processing of the research.

Your participation in this study is entirely voluntary. **You may withdraw from the research at any time, as well decline to answer any question.**

Should you have any questions, you may contact Lászlo Gonzalez Serrano by email or telephone.

[L.P.M.GonzalezSerrano@student.tudelft.nl](mailto:L.P.M.GonzalezSerrano@student.tudelft.nl)

+31 6 12 61 29 05

By signing this agreement, you confirm the following:

- I acknowledge my participation in the above-mentioned research and understand that I have the right to withdraw at any time or to decline to answer any questions.
- I consent to the recording of this interview, on the condition that the recording will be deleted upon completion of the research.
- I agree that the data collected during this interview will be used solely for the specific purpose of this research.

Date:

Full name:

Signature:

...

## Consent Form

	Yes	No
<b>A: GENERAL AGREEMENT – RESEARCH GOALS, PARTICIPANT TASKS AND VOLUNTARY PARTICIPATION</b>		
1. I have read and understood the study information dated 16-02-2026, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	<input type="checkbox"/>	<input type="checkbox"/>
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.	<input type="checkbox"/>	<input type="checkbox"/>
3. I understand that taking part in the study involves:  An online, audio-recorded qualitative interview of which the recording will be translated into and anonymous script that will be used for research publication. Notes taken by the researcher will be anonymised and used for the research.	<input type="checkbox"/>	<input type="checkbox"/>
4. I understand that the study will end when the research is published in June	<input type="checkbox"/>	<input type="checkbox"/>
<b>B: POTENTIAL RISKS OF PARTICIPATING (INCLUDING DATA PROTECTION)</b>		
5. I understand that taking part in the study involves the following risk: answering questions regarding my personal situation that might be sensitive. I understand that these will be mitigated by my ability to withdraw my participation in this research at any given time.	<input type="checkbox"/>	<input type="checkbox"/>
6. I understand that taking part in the study also involves collecting specific personally identifiable information (PII) [name, age, place of origin, job] with the potential risk of my identity being revealed.	<input type="checkbox"/>	<input type="checkbox"/>
7. I understand that the following steps will be taken to minimise the threat of a data breach and protect my identity in the event of such a breach by anonymising the transcript, secure data storage with limited access and deleting data after the research.	<input type="checkbox"/>	<input type="checkbox"/>
8. I understand that personal information collected about me that can identify me, such as name, telephone number, email, profession and place of origin will not be shared beyond the study team.	<input type="checkbox"/>	<input type="checkbox"/>
9. I understand that the (identifiable) personal data I provide will be destroyed after the research has ended.	<input type="checkbox"/>	<input type="checkbox"/>
<b>C: RESEARCH PUBLICATION, DISSEMINATION AND APPLICATION</b>		
10. I understand that after the research study the de-identified information, I provide will be used for publication through TU Delft and parties involved in project development.	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
11. I agree that my responses, views or other input can be quoted anonymously in research outputs	<input type="checkbox"/>	<input type="checkbox"/>
<b>D: (LONGTERM) DATA STORAGE, ACCESS AND REUSE</b>		
12. I give permission for the de-identified recorder interview transcript that I provide to be archived in 4TU.ResearchData repository so it can be used for future research and learning.	<input type="checkbox"/>	<input type="checkbox"/>
13. I understand that access to this repository is restricted and may only be used when credited under the same license. The data in the repository will be deleted after 10 years	<input type="checkbox"/>	<input type="checkbox"/>

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## Appendix IV – HREC Checklist

**Delft University of Technology**  
**HUMAN RESEARCH ETHICS**  
**CHECKLIST FOR HUMAN RESEARCH**  
**(Version January 2022)**

**IMPORTANT NOTES ON PREPARING THIS CHECKLIST**

1. An HREC application should be submitted for every research study that involves human participants (as Research Subjects) carried out by TU Delft researchers
2. Your HREC application should be submitted and approved **before** potential participants are approached to take part in your study
3. All submissions from Master's Students for their research thesis need approval from the relevant Responsible Researcher
4. The Responsible Researcher must indicate their approval of the completeness and quality of the submission by signing and dating this form OR by providing approval to the corresponding researcher via email (included as a PDF with the full HREC submission)
5. There are various aspects of human research compliance which fall outside of the remit of the HREC, but which must be in place to obtain HREC approval. These often require input from internal or external experts such as [Faculty Data Stewards](#), [Faculty HSE advisors](#), the [TU Delft Privacy Team](#) or external [Medical research partners](#).
6. You can find detailed guidance on completing your HREC application [here](#)
7. Please note that incomplete submissions (whether in terms of documentation or the information provided therein) will be returned for completion **prior to any assessment**
8. If you have any feedback on any aspect of the HREC approval tools and/or process you can leave your comments [here](#)

## I. Applicant Information

<b>PROJECT TITLE:</b>	<b>Parameterising Participation</b>
<b>Research period:</b> <i>Over what period of time will this specific part of the research take place</i>	February 2026 – June 2026
<b>Faculty:</b>	Architecture, Urbanism and Building Sciences
<b>Department:</b>	Management in the Built Environment
<b>Type of the research project:</b> <i>(Bachelor's, Master's, DreamTeam, PhD, PostDoc, Senior Researcher, Organisational etc.)</i>	Master's
<b>Funder of research:</b> <i>(EU, NWO, TUD, other – in which case please elaborate)</i>	
<b>Name of Corresponding Researcher:</b> <i>(If different from the Responsible Researcher)</i>	Lászlo Gonzalez Serrano
<b>E-mail Corresponding Researcher:</b> <i>(If different from the Responsible Researcher)</i>	L.P.M.GonzalezSerrano@student.tudelft.nl
<b>Position of Corresponding Researcher:</b> <i>(Masters, DreamTeam, PhD, PostDoc, Assistant/ Associate/ Full Professor)</i>	Masters
<b>Name of Responsible Researcher:</b> <i>Note: all student work must have a named Responsible Researcher to approve, sign and submit this application</i>	Gerard van Bortel
<b>E-mail of Responsible Researcher:</b> <i>Please ensure that an institutional email address (no Gmail, Yahoo, etc.) is used for all project documentation/ communications including Informed Consent materials</i>	g.a.vanbortel@tudelft.nl
<b>Position of Responsible Researcher :</b> <i>(PhD, PostDoc, Associate/ Assistant/ Full Professor)</i>	Assistant

## II. Research Overview

**NOTE:** You can find more guidance on completing this checklist [here](#)

### a) Please summarise your research very briefly (100-200 words)

What are you looking into, who is involved, how many participants there will be, how they will be recruited and what are they expected to do?

*Add your text here – (please avoid jargon and abbreviations)*

The research investigates the potential of parametric design within participatory practices. A participation organisation is involved to define participatory quality. A literature study supports these interviews. However, to validate outcomes the research involves interviewing a societal, a municipal and a participation organisation that will be recruited through email/call and/or the network my internship company has.

The research also strives for exploring the organisational and procedural differences between traditional and parametric design-based participation, the study assesses this through two case studies employing document analysis and reflecting interviews with concerning stakeholders.

Thirdly, aiming for defining what parametric design can offer towards participation from a resident's perspective. Case studies involving parametric design are selected and evaluated with the participation consultants that were involved during interviews.

Lastly, an expert panel will be organised in order to triangulate derived results and to contribute to the study's conclusions in the end. The panel will consist of a developer, a municipal representative, an architect and a placemaking specialist.

- b) **If your application is an additional project** related to an existing approved HREC submission, please provide a brief explanation including the existing relevant HREC submission number/s.

*Add your text here – (please avoid jargon and abbreviations)*

- c) **If your application is a simple extension of, or amendment to,** an existing approved HREC submission, you can simply submit an [HREC Amendment Form](#) as a submission through LabServant.

### III. Risk Assessment and Mitigation Plan

*NOTE: You can find more guidance on completing this checklist [here](#)*

Please complete the following table in full for all points to which your answer is “yes”. Bear in mind that the vast majority of projects involving human participants as Research Subjects also involve the collection of **Personally Identifiable Information (PII)** and/or **Personally Identifiable Research Data (PIRD)** which may pose potential risks to participants as detailed in Section G: Data Processing and Privacy below.

To ensure alignment between your risk assessment, data management and what you agree with your Research Subjects you can use the last two columns in the table below to refer to specific points in your Data Management Plan (DMP) and Informed Consent Form (ICF) – **but this is not compulsory**.

It’s worth noting that **you’re much more likely to need to resubmit your application if you neglect to identify potential risks**, than if you identify a potential risk and demonstrate how you will mitigate it. If necessary, the HREC will always work with you and colleagues in the Privacy Team and Data Management Services to see how, if at all possible, your research can be conducted.

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT – what risks could arise? <i>Please ensure that you list ALL of the actual risks that could potentially arise – do not simply state whether you consider any such risks are important!</i>	MITIGATION PLAN – what mitigating steps will you take? <i>Please ensure that you summarise what actual mitigation measures you will take for each potential risk identified – do not simply state that you will e.g. comply with regulations.</i>	DMP	ICF
<b>A: Partners and collaboration</b>						
1. Will the research be carried out in collaboration with additional organisational partners such as: <ul style="list-style-type: none"> <li>One or more collaborating research and/or commercial organisations</li> <li>Either a research, or a work experience internship provider<sup>1</sup></li> </ul> <i><sup>1</sup>If yes, please include the graduation agreement in this application</i>	X		The research issue involves different stakeholders. Developers, municipalities, designers, participation organisations and participants. Interviewing them may lead to naming each other or third parties, both positively and negatively. Not anticipating on these risks may lead to conflicts when the research eventually is published.	Parties will solely be referred to by means of their profession. So, ‘developer’ or ‘parametric designer’. Furthermore, in case they name other parties as well as persons these references will be anonymized. This guarantees the neutrality of the research.	X	
2. Is this research dependent on a Data Transfer or Processing Agreement with a collaborating partner or third party supplier? <i>If yes please provide a copy of the signed DTA/DPA</i>		X				
3. Has this research been approved by another (external) research ethics committee (e.g.: HREC and/or MREC/METC)? <i>If yes, please provide a copy of the approval (if possible) and summarise any key points in your Risk Management section below</i>		X				
<b>B: Location</b>						

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	<b>RISK ASSESSMENT – what risks could arise?</b> <i>Please ensure that you list ALL of the actual risks that could potentially arise – do not simply state whether you consider any such risks are important!</i>	<b>MITIGATION PLAN – what mitigating steps will you take?</b> <i>Please ensure that you summarise what actual mitigation measures you will take for each potential risk identified – do not simply state that you will e.g. comply with regulations.</i>	DMP	ICF
4. Will the research take place in a country or countries, other than the Netherlands, within the EU?		X				
5. Will the research take place in a country or countries outside the EU?		X				
6. Will the research take place in a place/region or of higher risk – including known dangerous locations (in any country) or locations with non-democratic regimes?		X				
<b>C: Participants</b>						
7. Will the study involve participants who <b>may</b> be vulnerable and possibly (legally) unable to give informed consent? (e.g., children below the legal age for giving consent, people with learning difficulties, people living in care or nursing homes,).		X				
8. Will the study involve participants who <b>may</b> be vulnerable under specific circumstances and in specific contexts, such as victims and witnesses of violence, including domestic violence; sex workers; members of minority groups, refugees, irregular migrants or dissidents?		X				
9. Are the participants, outside the context of the research, in a dependent or subordinate position to the investigator (such as own children, own students or employees of either TU Delft and/or a collaborating partner organisation)? <i>It is essential that you safeguard against possible adverse consequences of this situation (such as allowing a student's failure to participate to your satisfaction to affect your evaluation of their coursework).</i>		X				
10. Is there a high possibility of re-identification for your participants? (e.g., do they have a very specialist job of which there are only a small number in a given country, are they members of a small community, or employees from a partner company collaborating in the research? Or are they one of only a handful of (expert) participants in the study?		X				
<b>D: Recruiting Participants</b>						
11. Will your participants be recruited through your own, professional, channels such as conference attendance lists, or through specific network/s such as self-help groups		X				
12. Will the participants be recruited or accessed in the longer term by a (legal or customary) gatekeeper? (e.g., an adult professional working with children; a community leader or family member who has this customary role – within or outside the EU; the data producer of a long-term cohort study)		X				

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	<b>RISK ASSESSMENT – what risks could arise?</b> <i>Please ensure that you list ALL of the actual risks that could potentially arise – do not simply state whether you consider any such risks are important!</i>	<b>MITIGATION PLAN – what mitigating steps will you take?</b> <i>Please ensure that you summarise what actual mitigation measures you will take for each potential risk identified – do not simply state that you will e.g. comply with regulations.</i>	DMP	ICF
13. Will you be recruiting your participants through a crowd-sourcing service and/or involve a third party data-gathering service, such as a survey platform?		X				
14. Will you be offering any financial, or other, remuneration to participants, and might this induce or bias participation?		X				
<b>E: Subject Matter</b> <i>Research related to medical questions/health may require special attention. See also the website of the <a href="#">CCMO</a> before contacting the HREC.</i>						
15. Will your research involve any of the following: <ul style="list-style-type: none"> <li>• Medical research and/or clinical trials</li> <li>• Invasive sampling and/or medical imaging</li> <li>• Medical and <i>In Vitro Diagnostic Medical Devices</i> Research</li> </ul>		X				
16. Will drugs, placebos, or other substances (e.g., drinks, foods, food or drink constituents, dietary supplements) be administered to the study participants? <i>If yes see here to determine whether medical ethical approval is required</i>		X				
17. Will blood or tissue samples be obtained from participants? <i>If yes see here to determine whether medical ethical approval is required</i>		X				
18. Does the study risk causing psychological stress or anxiety beyond that normally encountered by the participants in their life outside research?		X				
19. Will the study involve discussion of personal sensitive data which could put participants at increased legal, financial, reputational, security or other risk? (e.g., financial data, location data, data relating to children or other vulnerable groups) <i>Definitions of sensitive personal data, and special cases are provided on the <a href="#">TUD Privacy Team website</a>.</i>		X				
20. Will the study involve disclosing commercially or professionally sensitive, or confidential information? (e.g., relating to decision-making processes or business strategies which might, for example, be of interest to competitors)		X				
21. Has your study been identified by the TU Delft Privacy Team as requiring a Data Processing Impact Assessment (DPIA)? <i>If yes please attach the advice/ approval from the Privacy Team to this application</i>		X				
22. Does your research investigate causes or areas of conflict? <i>If yes please confirm that your fieldwork has been discussed with the appropriate safety/security advisors and approved by your Department/Faculty.</i>		X				

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>	<i>Please provide the relevant reference #</i>		
ISSUE	Yes	No	<b>RISK ASSESSMENT – what risks could arise?</b> <i>Please ensure that you list ALL of the actual risks that could potentially arise – do not simply state whether you consider any such risks are important!</i>	<b>MITIGATION PLAN – what mitigating steps will you take?</b> <i>Please ensure that you summarise what actual mitigation measures you will take for each potential risk identified – do not simply state that you will e.g. comply with regulations.</i>	DMP	ICF
23. Does your research involve observing illegal activities or data processed or provided by authorities responsible for preventing, investigating, detecting or prosecuting criminal offences <i>If so please confirm that your work has been discussed with the appropriate legal advisors and approved by your Department/Faculty.</i>		X				
<b>F: Research Methods</b>						
24. Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g., covert observation of people in non-public places).		X				
25. Will the study involve actively deceiving the participants? (For example, will participants be deliberately falsely informed, will information be withheld from them or will they be misled in such a way that they are likely to object or show unease when debriefed about the study).		X				
26. Is pain or more than mild discomfort likely to result from the study? And/or could your research activity cause an accident involving (non-) participants?		X				
27. Will the experiment involve the use of devices that are not 'CE' certified? <i>Only, if 'yes': continue with the following questions:</i>		X				
<ul style="list-style-type: none"> <li>Was the device built in-house?</li> <li>Was it inspected by a safety expert at TU Delft?</li> </ul> <i>If yes, please provide a signed device report</i>						
<ul style="list-style-type: none"> <li>If it was not built in-house and not CE-certified, was it inspected by some other, qualified authority in safety and approved?</li> </ul> <i>If yes, please provide records of the inspection</i>						
28. Will your research involve face-to-face encounters with your participants and if so how will you assess and address Covid considerations?	X		Face-to-face interviews are preferred within the research. However, these may pose health risks in case of transferable and contagious conditions.	If preferred by either one of the involved parties, interviews can be conducted online. In case interviews are held in person, this will be done in consultation with the participant and in compliance with proposed guidelines.		X
29. Will your research involve <b>either</b> : a) "big data", combined datasets, new data-gathering or new data-merging techniques which might lead to re-identification of your participants <b>and/or</b> b) artificial intelligence or algorithm training where, for example biased datasets could lead to biased outcomes?		X				
<b>G: Data Processing and Privacy</b>						

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	<b>RISK ASSESSMENT – what risks could arise?</b> <i>Please ensure that you list ALL of the actual risks that could potentially arise – do not simply state whether you consider any such risks are important!</i>	<b>MITIGATION PLAN – what mitigating steps will you take?</b> <i>Please ensure that you summarise what actual mitigation measures you will take for each potential risk identified – do not simply state that you will e.g. comply with regulations.</i>	DMP	ICF
30. Will the research involve collecting, processing and/or storing any directly identifiable PII (Personally Identifiable Information) including name or email address that will be used for administrative purposes only? (eg: obtaining Informed Consent or disbursing remuneration)	X		<p>Collecting PII such as name, telephone number, email address and profession pose the risk of a data breach, possibly leading to the identification of participants after publication.</p> <p>The research involves multiple sequential contact moments with the same participants: interviews conducted for the sub-questions are followed by a panel discussion serving as triangulation. The risk exists that participants are not fully informed about potential follow-up contact at the time of the first interaction, resulting in informed consent being incomplete at the moment of signing.</p>	<p>PII will be collected on the TU Delft One Drive, which as restricted access, and will be deleted after the research is finished.</p> <p>Prior to the interviews, participants receive an informed consent form outlining the research and its conditions, after which they provide consent to participate in the concerning interview and are given the opportunity to note any misunderstanding or ask clarifications. Only when consent is granted, the interview is conducted.</p> <p>Participants considered suited for the expert panel are then asked at the end of the interview whether they are willing to participate, following a comprehensive explanation of the panel's motive. Participation in the panel is voluntary and subject to the same conditions as the interview. Those accepting to participate will be sent the panels' content, findings and subjects beforehand reiterating that withdrawal remains possible at any time and without providing reasons, without this affecting the processing of information already shared.</p>	X	X
31. Will the research involve collecting, processing and/or storing any directly or indirectly identifiable PIRD (Personally Identifiable Research Data) including videos, pictures, IP address, gender, age etc and <b>what other Personal Research Data</b> (including personal or professional views) will you be collecting?		X				
32. Will this research involve collecting data from the internet, social media and/or publicly available datasets which have been originally contributed by human participants	X		The research involves data from literature addressing participation. This poses a risk of misinterpretation leading to invalid conclusions, but does not pose traceability to individuals.	Only academic, scientific literature is used, only seeking for theory on participation and not individual participatory input.	X	
33. Will your research findings be published in one or more forms in the public domain, as e.g., Masters thesis, journal publication, conference presentation or wider public dissemination?	X		When research are published there is a risk of traceability to certain persons or companies. Especially when job titles are mentioned in interview outcomes.	All interview outcomes will be anonymised before publishing. Furthermore, solely non-traceable data will be archived and in accordance with the FAIR principles. If necessary, access restrictions are implemented as well.	X	

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>	<i>Please provide the relevant reference #</i>		
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34. Will your research data be archived for re-use and/or teaching in an open, private or semi-open archive?	X		The research will be published and openly accessible on the TU Delft repository. Referring to interview outcomes within the research report poses the risk of traceability.	In case the research refers to certain interview outcomes by e.g. quoting, the reference is only made through the concerning participants' job description. Other personal data will not be shared in the report. These will be stored on the TU Delft Onedrive and deleted once the research is finished, as well as the interview transcripts and recordings.	X	

## H: More on Informed Consent and Data Management

*NOTE: You can find guidance and templates for preparing your Informed Consent materials) [here](#)*

Your research involves human participants as Research Subjects if you are recruiting them or actively involving or influencing, manipulating or directing them in any way in your research activities. This means you must seek informed consent and agree/ implement appropriate safeguards regardless of whether you are collecting any PIRD.

Where you are also collecting PIRD, and using Informed Consent as the legal basis for your research, you need to also make sure that your IC materials are clear on any related risks and the mitigating measures you will take – including through responsible data management.

*Got a comment on this checklist or the HREC process? You can leave your comments [here](#)*

## IV. Signature/s

*Please note that by signing this checklist list as the sole, or Responsible, researcher you are providing approval of the completeness and quality of the submission, as well as confirming alignment between GDPR, Data Management and Informed Consent requirements.*

**Name of Corresponding Researcher (if different from the Responsible Researcher) (print)**

Signature of Corresponding

Researcher: Date: 1-02-2026

**Name of Responsible Researcher (print)**

Gerard van Bortel

Signature (or upload consent by mail) Responsible Researcher:

Date: 18 mei 2026

## V. Completing your HREC application

Please use the following list to check that you have provided all relevant documentation

### Required:

- **Always:** This completed HREC checklist
- **Always:** A data management plan (reviewed, where necessary, by a data-steward)
- **Usually:** A complete Informed Consent form (including Participant Information) and/or Opening Statement (for online consent)