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Photo on the front cover: Sculpture: *Diagonal in Room* by Ingela Palmerts.
The sculpture is situated in an exhibition at Pilarne, a heritage and a beautiful cultural landscape on Tjörn at the west coast of Sweden. Photo: Magnus Rönn

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DESIGN PERFORMANCE IN PLANNING FOR DENSIFICATION – THE CASE OF OSLO

GORDANA ZUROVAC

Abstract

This article addresses design performance in transformation of urban tissue under densification policy. It is an embedded case study of Oslo's built-up area, within which three sub-cases of multi-family residential projects have been selected for a detailed analysis based on the features of their physical form and planning instruments applied in their planning processes. The focus is on the zoning stage, where strategies are translated into built form. Through interviews with public planners who were in charge of this planning stage and analysis of planning documents, the article examines the aspects of planning strategies for built form, design of built and open spaces in different kinds of pre-existing tissue, and actors' involvement. The main findings are that there is no strategy for built form at the spatial scale of such individual projects (intermediate scale) except in land-use transformation areas, and that built outcomes are greatly conditioned by the plot and the pre-existing tissue, besides architects' and public planners' skills and goals. Certain propositions are given for improvement of planning approaches through a closer connection between planning and architecture.

Keywords:
densification, design performance, urban tissue transformation, urban architecture, Oslo

Introduction

Urban planning is a complex activity which involves a variety of aspects, ranging from political and economic to ecological, spatial and technological. In the past few decades, planning theory has sought a position within social sciences, abandoning its original roots in architecture and engineering (Palermo & Ponzini, 2010), thus creating a void between planning and design (urban and architectural) to the detriment of both fields (Palermo & Ponzini, 2010). This distancing coincided with two other relevant changes that took place in urban planning; first, orientation of urban planning goals towards sustainability in numerous countries around the world (OECD, 2012) prompted by the publication of the Brundtland report Our Common Future in 1987 (World Commission on Environment and Development, 1987), commonly entailing strict limitation and more effective use of existing urban built-up areas – "densification" (or "intensification") (Hernandez-Palacio, 2014); and second, adoption of "strategic spatial planning" in the European context of the 1990s, considered the most apt approach to respond to sustainability-related challenges (Albrechts, 2004; Palermo & Ponzini, 2010). Regardless of the above-mentioned void, physical structures represent a considerable portion of the outcomes of urban planning activities. In city building, design is mainly connected with development of plans in the framework of spatial planning (Westrik, 2002), and translation of planning goals into physical structures takes place in design processes. Now that planning is tightly woven into social science, the question of current planning, relative to approaches to design of urban architecture, comes to the fore as important for re-connecting these fields, strengthening the city-building practice and improving the quality of new built environments. The interdisciplinary field of urban morphology offers stances that cover this issue comprehensively (Çalişkan & Marshall, 2011) by integrating spatial and socio-economic perspectives.

The void between urban planning and design can also be observed in Norwegian planning context, which is the focus of this study. Already in early 1990s, Norway adopted a policy of "densification with quality" as an orientation towards sustainable development (Miljøverndepartementet, 1993), posing demands for densification of existing built-up urban areas and limitation of their expansion. To date, densification has produced numerous physical outcomes and gave rise to plentiful discussions, both in research and in public, covering a myriad of topics related to planning processes, actors, specific large-scale projects, market conditions, and qualities of new buildings and open spaces. However, the ways in which policy goals are translated into physical structures have not been given much attention. Since the policy introduction, a number of studies applied morphological thinking in assessing the possible physical implications of densification on urban built-up areas and the complexities that densification entails (see Guttu & Thorén, 1996; Guttu, Nyhuus, Saglie & Thorén, 1997a; Guttu, Nyhuus, Saglie & Thorén, 1997b), the application of

planning norms in design processes (Thorén, Pløger, & Guttu, 2000), and the structure of planning processes and physical outcomes from the perspective of housing and living qualities (Schmidt, 2007; Guttu & Schmidt, 2008). However, these studies used small selections of cases of urban tissue fragments and densification projects. In 2005, Børrud elaborated on questions of production of physical outcomes in densification, covering non-residential projects and underlining the great potential of urban morphology to provide the necessary understanding of the complex conditions and possibilities for design (Børrud, 2005). In another study, Børrud and Knutsen (2018) addressed strategies for spatial development, expressed in municipal plans for Oslo in the past three decades, finding that concepts and principles for implementation of main densification strategy have varied greatly.

In general, the links between design and planning have been differently addressed in different contexts. There are increasingly more studies that bring the relevance of the relations between design and urban planning back on stage. Such studies can be prescriptive, as can be found in urban morphology according to Moudon (1997) (see, for example, Hall, 1997), analytical-critical towards the actual practices, or both. The analytical-critical studies can involve different aspects, from particular urban design approaches (see, for example, Racine, 2016), the role of urban design in policy making (see Batuman & Erkip, 2017), to current performances in planning and design in particular contexts (see Lucan, 2012; Salama & Wiedmann, 2016). In his study of planning practice in France, Lucan (2012) relies on morphological thinking and provides an integrative analysis of current performances in urban planning and design, synthesising the aspects of planning system, development processes and the resulting architecture in defined segments of urban tissue.

Exploring the ongoing densification of Oslo and employing urban morphological perspectives, this article aims to offer an analytical-critical study of design performance in urban planning in the contemporary context of Norway, similar to the previously mentioned international studies. Oslo is in focus, as in the early 2000s it was among the fastest-growing cities in Norway (Falleth & Saglie, 2012), and due to intensive building activity, it offers abundant material for a study of physical outcomes today. This article is part of a broader study (Zurovac, 2020b) that explores the links between design and planning, using physical outcomes of densification as a starting point. The study is designed as an embedded case study, where the main case is Oslo's built-up area within which 71 sub-cases (in further text called "cases") of multi-family residential buildings resulting from densification have been analysed. The broader study encompasses a larger number of buildings than the aforementioned studies of the Norwegian context, thus furthering and updating the knowledge on the policy implementation, and also aims to integrate the aspects of planning and design by using morphological perspectives in a more systematic manner.

Of the total of 71 cases that the broader study includes, three cases have been selected for the purpose of this article, based on the results of earlier analytical steps. Those steps addressed physical outcomes of urban tissue transformation at the spatial level of the urban block, including all 71 cases, and identifying four types of urban tissue that have undergone densification, three types of intervention (in spatial terms) and four types of planning instrument sets applied in 71 cases (Zurovac, 2020b). Three cases have been selected to cover the most frequently occurring types of urban tissue, intervention and planning instrument-sets found among the 71 cases. The line of inquiry on the relations between design and planning continues in this article with a detailed study of design performance in planning processes, aiming to provide an integrated perspective of the Norwegian planning context and contribute to the general knowledge on the disciplines of urban planning and design. Production of physical structures takes place in the framework of planning system and here it is understood as a synthesis of planning goals and strategies, actors' interests and involvement in the process, and design concepts that determine spatial articulation of built form and architectural functions (Figure 1). In order to examine design performance in planning for densification, the main research question posed in this article is:

What characterises design performance in planning processes for densification regarding design of new structures in pre-existing urban tissue?

1. Theoretical perspective and main analytical concepts

In this study, the understanding of *design performance in planning* comprises the performance of actors in the design process (including underlying planning strategies and design concepts applied) and the performance of resulting physical structures in the previously existing tissue.

The theoretical field that provides necessary stances for such an integrative analysis is urban morphology. In a morphological study, defining the spatial scale is the starting point in analysis of physical structures. The dominant growth pattern in urban tissue of Oslo is incremental (Zurovac, 2020a) with single projects being inserted into the pre-existing tissue. This analysis therefore addresses the scale where these projects take place, which is the scale between a building (or a group of buildings) and the urban block where they are situated (Figure 2); this is termed intermediate spatial scale.

Figure 1
Aspects that determine the production of physical form.

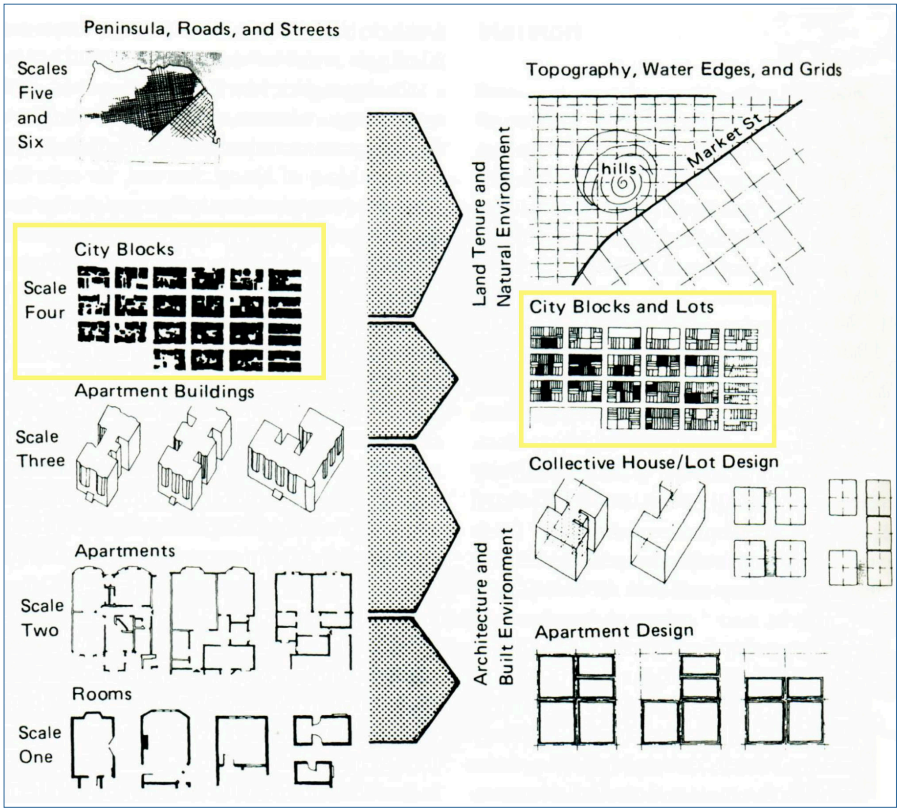


Figure 2
Modularity in the built landscape (Moudon, 2007); presents the different spatial scales and the ways a building fits into the urban tissue. The intermediate scale between the urban block and a single building is marked yellow.

Planning aspect

In addressing the planning aspect, certain stances from planning theory are combined with urban morphological approach. Production of physical outcomes takes place in a framework of the planning system, where planning goals and strategies are expressed, and employed through municipal plans and other instruments that regulate economic and social relations. Faludi (1989) explains that there are two types of plans: *strategic* and *project plans*, and states the differences between them:

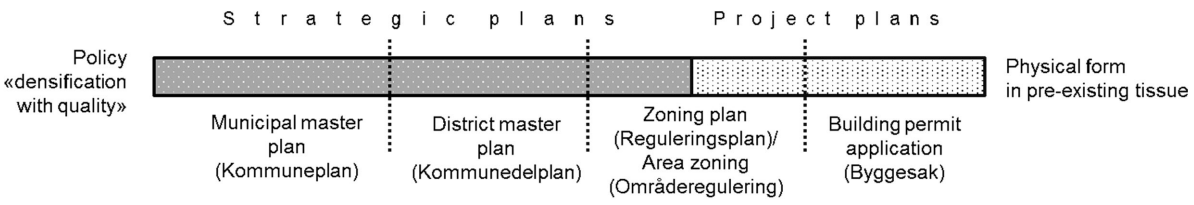
> *Project plans are the blueprints where implementation is unproblematic and outcomes are expected to conform to intentions. Strategic plans are momentary agreement records of various projects considered at different points in time by the participants. The future remains open. Decision makers who use them must perform. Analysis of their performance requires case studies* (Faludi, 1989, p. 135).

In the Norwegian planning context, we can identify both types (Figure 3) yet regarding *strategic plans* it would be more accurate to say that they are predominantly strategic, as they might contain some particularities on physical issues. The current incremental development is put into effect through individual projects, and it is in this stage of planning that *project plans* occur. The first such plan is the zoning plan (in Norwegian: reguleringsplan) which is the stage in between the strategic goals and the actual physical form, where the synthesis of these goals happens and a physical form is shaped through a particular planning and design process, in a specific context of a particular part of urban tissue. The spatial scale of zoning plans is the aforementioned intermediate scale (Figure 2). The solution adopted at the end of the zoning stage provides legally obligatory framework for the second, final step in the development (in Norwegian: byggesak) – building permit application, where design is elaborated in detail and the building(s) constructed accordingly. This study focuses on the zoning stage as the first step in design of physical outputs, and enquires about the ways they come about.

Planning aspect is addressed through a sub-question:

1. ***Are there strategic goals in municipal plans concerning the physical form at the intermediate scale (among selected cases) and if so, what are they?***

Figure 3
Outline of municipal plans contained in Norwegian planning system following Faludi's (1989) types of plans.



Design aspect

In the analysis of design, the basic concept is *constituted tissue,* which denotes pre-existing physical context around newly designed structures. It is linked to a morphological concept of *urban tissue*, understood as the "ensemble of aggregated buildings, spaces and access routes" in a city (Larkham & Jones, 1991, p. 80). Other morphological concepts employed here are:

- building ("A house or stationary structure with walls and a roof" (Larkham & Jones, 1991, p. 23)),
- street ("A town or village road that has more or less closed building development along its length" (Larkham & Jones, 1991, p. 74)) and
- urban block (understood as an entity consisting of one or more adjacent plots, surrounded by planned and unplanned paths, roads and streets on all sides, with buildings located on the plot(s), based on Krier (2007)).

In the book *Ways to study and research urban, architectural and technical design*, John Westrik (2002) exposes a variety of urban design approaches, and links them to urban architecture. As the most important aspects, he states *function* and *form* as well as their articulation on the site, continuing with acknowledgment of existing characteristics of the area and specific design problems. This understanding of approaches to design in urban settings is used as the basis in this analysis of Oslo, and the design of new structures in pre-existing urban tissue is examined through the aspects of:

- articulation of physical *form* and architectural *function* of buildings and open spaces at the intermediate spatial scale – disposition of new built volumes on the site and their relations to the constituted tissue: buildings, streets and urban blocks. Relations of new built volumes with the pre-existing tissue provide an insight into morphological qualities of resulting physical forms, as a perspective that links to the policy goals of qualities in densification, and
- *connections* of new open spaces to other open spaces in the vicinity (including streets).

Design aspect is addressed through a sub-question:

2. ***How are built forms and architectural functions of new structures spatially articulated on the site and in relation to the surrounding urban tissue?***

Actors

The interests and involvement of different actors in the production of physical outcomes include the effects of their inputs on design as well as possible considerations for the broader context – neighbourhood and the entire city. As Oliveira states (2016), a critique that is often directed toward the public planners is an excessive focus on particular projects and the lack of concern for the entire city or larger parts of the city. This

relates to Fainstein's (2005) claim about the spatial context being insufficiently considered in planning theory (and consequently also practice), as well as the observed gap between architecture and current urban planning. This study, however, does not delve deeply into the planning system and investors' role, as these topics have been the subject of numerous studies so far (see for example Børrud, 2005; Røsnes, 2005; Hanssen & Hofstad, 2015; or Nordahl, 2015).

The aspect of actors is addressed through a sub-question:

3. ***Which actors influence the physical outcomes in different types of pre-existing urban tissue and in what aspects?***

Drawing upon these stances and concepts, the purpose of this article is to look closely into performance of actors, planning strategies for physical form and employed design concepts in urban tissue transformation in Oslo. This is investigated through planning processes for development of new physical structures in three individual projects for multi-family residential buildings.

2. Methods and data

Case study approach and selection of cases

As this study addresses the planning context in Norway through its capital, Oslo, it is inherently a case study. The focus is on design performance in planning processes relative to physical outcomes, which requires a detailed analysis. For that purpose, three cases of recent residential developments have been selected (Figure 4). This determines its methodology as an embedded case study, where the main case is the built-up area of the city of Oslo within which three sub-cases of recently built multi-family residential projects have been addressed.

Case selection is based on a broader study of which this article is a part, which comprises 71 multi-family residential projects constructed between 2004 and 2014. Each of the 71 cases was analysed for the physical form and the planning instruments applied in zoning processes (Zurovac, 2020b). In that stage, four types of constituted, pre-existing urban tissue surrounding the case projects (varieties of traditional and modernist, mixed type, and land-use transformation type) and three types of intervention (infill, infill as entirely new urban block and transformation) have been identified among the 71 cases, together with three types of planning instrument-sets (Zurovac, 2020b). The results of those analyses provided references for selection of three cases for a detailed analysis, presented in this article. Three cases have been selected to include all the identified types (Table 1), except for constituted tissue criterion, where the three most common types have been covered: traditional, transformation and mixed. Additionally, the cases have been selected to cover different positions in the urban tissue (Figure 4). For each case,

basic data are provided (see Appendix A). Plan drawings were based on digital maps, obtained from Norway's digital database – FKB-data and Matrikkel-data in UTM32 Euref89 (accessed in February 2014). The cases were also visited on site and photo documented.

To address the aspect of planning goals and involvement of actors, two methods are applied: analysis of case planning documents, and semi-structured interviews with public planners who were in charge of the processes. Public planners act as mediators between the private and public interests and actions (Oliveira, 2016), which provides them with a rather complete overview of the planning processes and makes them

Figure 4
Map of built-up area of Oslo with 3 selected cases (marked red); RING1 – ring road 1, which encircles the densest, most central part of urban tissue; RING2 – ring road 2, which encompasses the dense, central part of urban tissue, of lower density than within ring road 1; RING3 – ring road 3, which encircles a part of urban tissue less dense than within ring road 2; outside ring road 3 the urban tissue is of lowest density.

a solid source for investigation of such processes. Case documentation is available at Planinnsyn, the publicly accessible online database of the Agency for Planning and Building Services of Oslo Municipality (PBE). Documents from the zoning stage (in Norwegian: reguleringssak) and the building permit application (in Norwegian: byggesak) have been analysed. The inputs from the interviews provided additional information which could not be obtained from the documents, regarding steps in the process, communication between actors, public planners' work in the processes and general inputs on the functioning of the planning system.

A common feature of all cases concerns the actors involved, who can be classified into three main groups: municipal planners, who belong to the public sector and represent public interests, initiators of the planning proposal, who are private parties and comprise the property owner (developer) and the architect, and other stakeholders, who can be either from the public sector (municipal or higher-level authorities) or the general public. Their involvement in all analysed processes follows the sequence of steps prescribed by Planning and Building Act from 1985 (see Appendix B).

Table 1
Summary of cases relative to the selection criteria

Cases	Case 1	Case 2	Case 3
Selection criteria	**Christian Krohgs gate** 37, 39A-H, 41	**Gladengveien** 4 A-J, 6 A-F	**Årvollveien** 52A-X, 54A-X, 56A-X, 58A-V, 60A-L, 62A-E (Årvollskogen)
Type of planning instrument set	P1: Municipal Master Plan (Kommuneplan), District Master Plan (Kommunedelplan), Zoning Plan (Reguleringsplan) and Building permit application (Byggesak)	P2: Municipal Master Plan (Kommuneplan), District Master Plan (Kommunedelplan), Planning programme for Ensjø (Planleggingsprogram), VPOR, VPOV, Zoning Plan (Reguleringsplan) and Building permit application (Byggesak)	P3: Municipal Master Plan (Kommuneplan), Zoning Plan (Reguleringsplan) and Building permit application (Byggesak)
Constituted tissue type	Traditional urban blocks combined with large volumes	Land use transformation area where buildings were removed, street layout preserved	Mixed urban tissue, consisting of single-family houses and multi-family housing blocks/slabs
Intervention type*	 **Infill** – part of pre-existing urban block	 **Transformation** – where entirely new urban blocks were built in a larger land use transformation area	 **Infill as entirely new urban block** in pre-existing urban tissue
Position in urban fabric	1,1 km from the city centre	2,7 km from the city centre	6,2 km from the city centre

* Intervention types are presented by using the example of pre-modernist urban tissue.

Methods by research questions

The main research question is: ***What characterises design performance in planning processes for densification regarding design of new structures in pre-existing urban tissue?*** This is addressed through three sub-questions.

Sub-question 1.

Are there strategic goals in municipal plans concerning the physical form (among selected cases) and if so, what are they?

The first step is an analysis of municipal plans, regardless of their legal status, which were applied at the time of zoning of the three cases, in search of strategies for physical form, focusing on the intermediate spatial scale. Another data source is interviews with municipal planners, who explained the application of municipal plans in the case processes.

Sub-question 2.

How are built forms and architectural functions of new structures spatially articulated on the site and in relation to the surrounding urban tissue?

The main concept of *articulation* of built structures is understood as the spatial distribution of physical form and architectural functions in the composition, at the intermediate spatial scale. Hence at this scale, the analysis of articulation includes the interaction between the new built structures and the constituted tissue, based on:

a) *building-street relations*: spatial disposition of new buildings in relation to adjacent street fronts,
b) *heights:* of new buildings compared to the buildings in surrounding urban blocks, and
c) *organisation of open spaces:* whether it is comparable to open spaces in the surrounding urban blocks in terms of size, connections to surrounding streets and accessibility.

Following these criteria, categories that can occur are:

1. *Integrated* – refers to cases where the new built volumes follow the spatial logic of the surrounding tissue
2. *Segregated* – refers to cases where the new built volumes introduce a different spatial logic compared to the surroundings, by the previously mentioned criteria; also, if only one criterion for "integrated" is fulfilled, the built structure is considered segregated.
3. *Semi-integrated* – refers to cases where two out of three criteria for "integrated" are present.

As for the articulation of functions, cases are analysed for the presence of non-residential use and their spatial placement within the new built structure, including the position relative to streets.

Sub-question 3.

Which actors influence the physical outcomes in different types of pre-existing urban tissue and in what aspects?

Sources for this sub-question are planning documents at the zoning stage and interviews with public planners who were in charge of the cases. All actors are identified and characterised for the sector they belong to. Next, the topics of their inputs are analysed and actors who were concerned with physical outcomes at the intermediate spatial scale are specified. Finally, the actors whose inputs were accepted (and thus influenced the physical form at the intermediate spatial scale); the particular subjects of their inputs have been identified and analysed in relation to constituted tissue types.

3. Analysis and results

Sub-question 1.

Are there strategic goals in municipal plans concerning the physical form (among selected cases) and if so, what are they?

Among municipal plans applied in the cases (Table 2), only a few provided guidelines for the physical form of new buildings and open spaces. The most distinctive are planning instruments used in case 2, located in Ensjø land use transformation area, which provided a strategy for shaping of the built and open spaces at the intermediate scale: Planning programme and VPOR (they were adopted locally and not defined in Planning and Building Act.). This was a solid framework for design of particular projects in that area. It is interesting that for the centrally located case (no.1) there was a district master plan (KDP-13), which provided rather detailed principles for physical shaping of new structures at the intermediate spatial scale in the inner city, using morphological thinking. Its application was later discontinued, though it was never politically adopted. In case 3, situated in less dense, peripheral, mixed urban tissue, there were no guidelines for design at the intermediate scale and the only plan applied was the Municipal master plan. In both such plans (from 2000 and 2004) found in the cases, the goals for physical form were to increase density in areas close to transportation nodes, which refers to the spatial scale greater than the intermediate scale, i.e. to the entire built-up area of Oslo. Beside the municipal plans, other planning instruments were applied, such as policy guidelines (in Norwegian: rikspolitiske retningslinjer), which cover certain topics and norms, e.g. parking norms or norms for outdoor areas in residential projects in inner Oslo (in Norwegian: utearealnormer) (Oslo kommune, 2012).

Table 2
Overview of applied planning instruments and their relations to physical form at intermediate spatial scale

Case	Planning instruments applied	Reference to physical form of buildings and open spaces
1. Christian Krohgs St.	Municipal Master Plan (KP 2004)	None
	District Master Plan KDP-13 for inner city, from 1997 (KDP for indre Oslo nr. 13)	Provides guidelines for physical shaping of new buildings in the inner city
	District Master Plan KDP Akerselva Miljøpark	None
	District Master Plan for traffic in the inner city (KDP Trafikkplan for indre by)	None
	Zoning plan S-2255, from 1977 (Reguleringsplan S-2255)	Defines building density for the area
2. Gladengveien St.	Municipal Master Plan (KP 2004)	None
	District Master Plan for locating retail trade and other service functions (KDP for lokalisering av varehandel og andre servicefunksjoner)	Concerns localization and size of a shopping centre in the new area; no inputs relevant for the case
	Planning programme for Ensjø, adopted on 17, March 2004 (Planleggingsprogram for Ensjø)	Provides principles for placement of functions, building density and heights as well as functioning and layout of Gladengveien street
	Guiding Plan for Public Spaces Ensjø (VPOR Ensjø)	Defines concept for the network of open spaces (to contain water and green elements), street widths, building heights and densities as well as functions in open spaces
	Guiding Plan for Stormwater (VPOV)	Gives principles for aesthetic, functional and environmentally-friendly use of stormwater
3. Årvollveien St.	Municipal Master Plan (KP 2000)	None

Sub-question 2.
How are built forms and architectural functions of new structures spatially articulated on the site and in relation to the surrounding urban tissue?

Case 1 – Christian Krohgs Street: *Integrated*
By the criteria of analysis (stated in section 3), the features of this case are:

a) building-street relations: New buildings are aligned with the existing street front.
b) heights: Heights of built volumes are approximately the same as the other previously existing buildings in the street.
c) organisation of open spaces: Open space is organised in the similar logic to that of other buildings in the urban block – private (only for residents), inside the urban block, accessible only through the buildings.

As the new volumes follow the spatial logic of the constituted tissue, which is a variety of traditional tissue, this case is integrated.

Figure 5
Case 1 – Figure-ground plan of the situation.

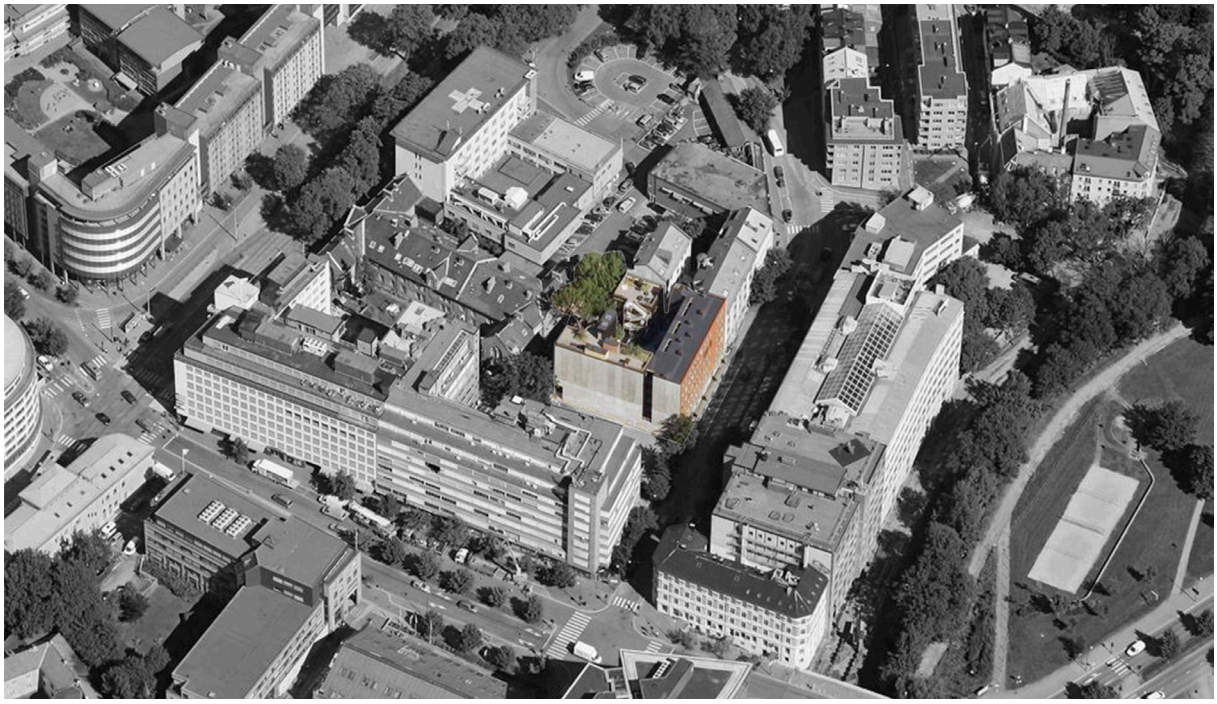


Figure 6
Case 1 – Aerial view
IMAGE SOURCE: © BLOM AS, RENDERED WITH PERMISSION OF COPYRIGHT OWNER.

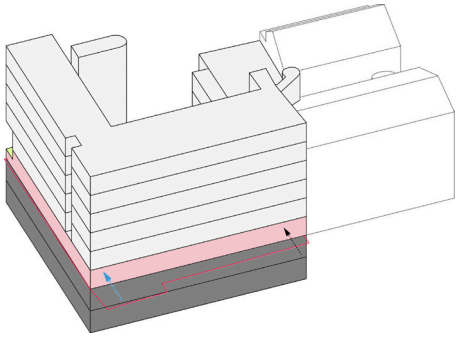


Figure 7
Case 1 – View from Christian Krohgs Street.

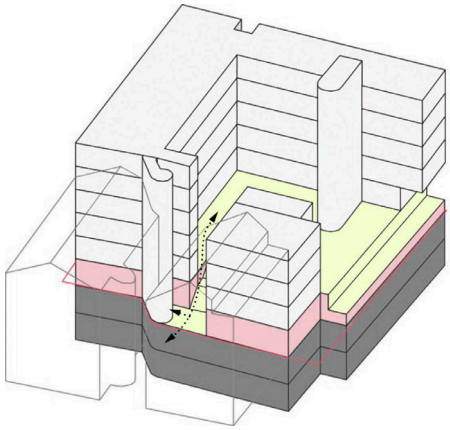


Figure 8
Case 1 – View of the courtyard and the neighbouring buildings.

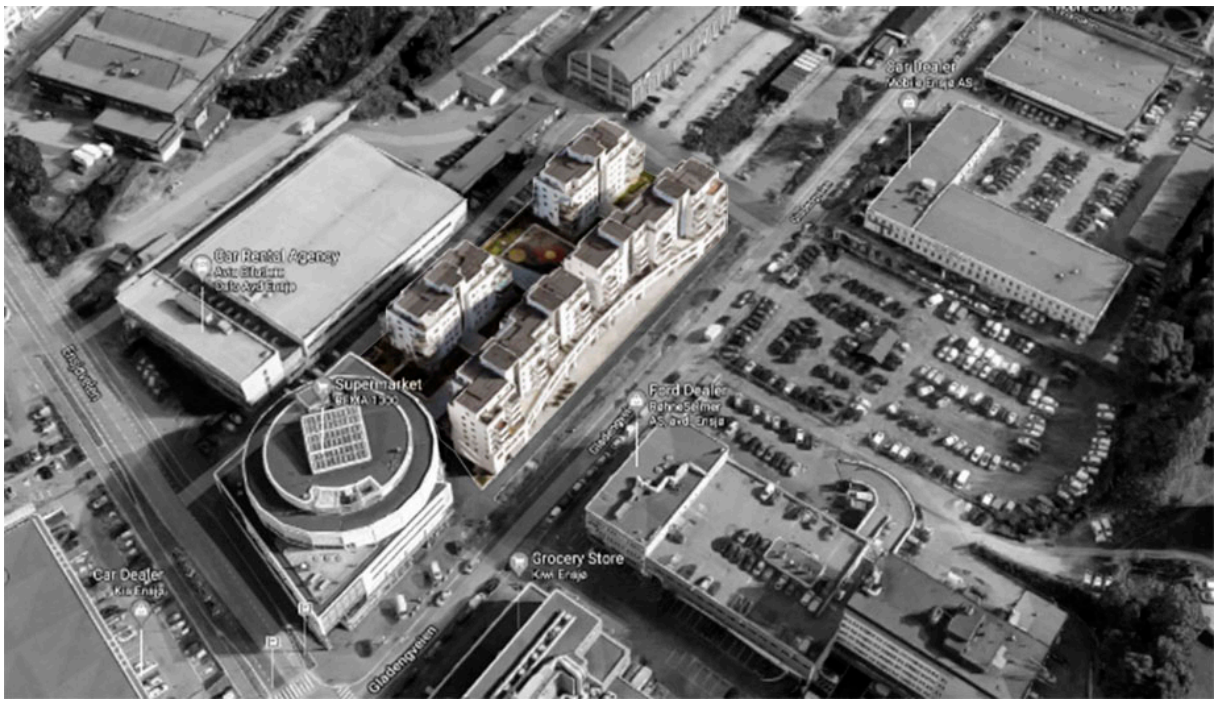
Regarding *architectural functions*, it is a mixed-use development, where functions are distributed vertically. Street level is designated for non-residential uses, while the upper storeys are residential. There are also two underground storeys, which accommodate a parking garage and a car passage towards the hospital located in the same urban block. The new open space is placed on the rooftop of the street-level storey, and it is intended entirely for residential use. It is connected to the courtyard of the pre-existing neighbouring building and is also open for its residents.

Case 2 – Gladengveien Street: *Integrated*

The assessment of interaction in this case differs from the other two, as it is a brownfield transformation project where previous buildings have been removed in a larger area. Therefore, the sole reference of the pre-existing urban tissue is the plot where it is situated, beside other newly planned buildings and urban blocks in the area encompassed by the same zoning plan. It is considered integrated into this new planned area. By the criteria of analysis, the features of this case are:

a) *building-street relations:* Built volumes of Gladengveien 4–6 are aligned with the street front of the neighbouring building, at the same time shaping a new square.
b) *heights:* Building heights are approximately the same as the other planned buildings on both sides of the street.
c) *organisation of open spaces:* Open space is organised in a similar logic to that of other buildings in the street – it is semi-private, providing links between the main street (Gladengveien), the street and urban block to the north-west, as well as the new park axis to the north-east.

Figure 9
Case 2 – Figure-ground plan of the situation.



Concerning *architectural functions*, it is a mixed-use development, with vertical distribution of functions. The street-level storey facing Gladengveien hosts non-residential uses, as part of this new, redesigned central street. Upper storeys are for residential purpose.

Figure 10
Case 2 – Plan and aerial view
IMAGE SOURCE: © GOOGLE MAPS GERMANY; RENDERED IN COMPLIANCE WITH COPYRIGHT OWNER'S POLICY.

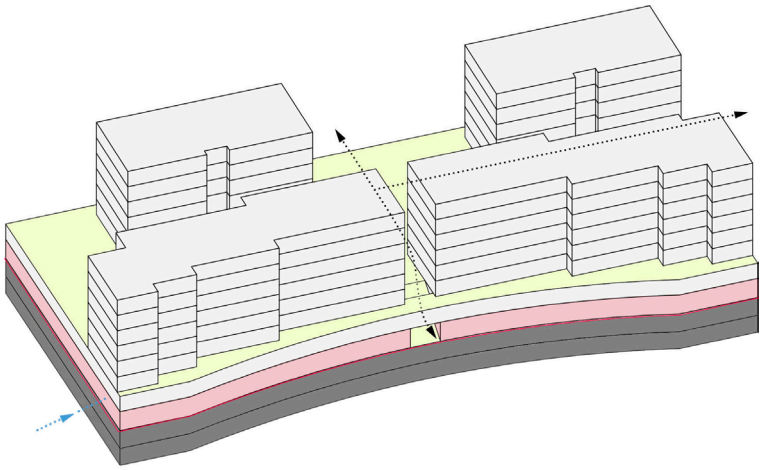


Figure 11
Case 2 – View from Gladengveien Street.

Case 3 – Årvollveien Street: *Segregated*

This case is situated in the constituted tissue of mixed type, at the very margin of Oslo's built-up area. By the criteria of analysis, the features of this case are:

a. *building-street relations:* New buildings are aligned with the existing street as terraced housing type. This differs from the pre-existing buildings, which are semi-detached houses, with parallel repeated volumes at an angle of ca. 60 degrees toward the street axis.
b. *heights:* Building heights vary. Terraced houses along the street, Årvollveien, are of approximately the same height as the pre-existing buildings on the other side of the street, and amount to a total of 3 storeys. Built volumes inside the new block are considerably higher, 6 storeys total.
c. *organisation of open spaces:* Open space of the new development is organised in a dissimilar logic compared to pre-existing tissue – it is a semi-private, courtyard type and it hosts a mix of uses – residential and kindergarten. Its proportions (single, large space) and size are noticeably different from the surrounding urban blocks.

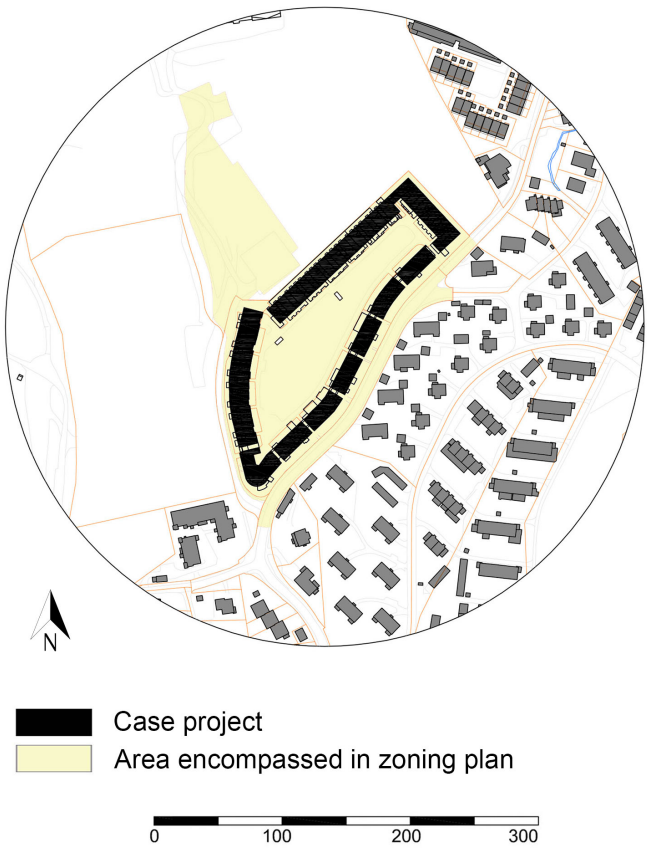


Figure 12
Case 3 – Figure-ground plan of the situation.

Figure 13
Case 3 – Plan and aerial view.
IMAGE SOURCE: © BLOM AS, RENDERED WITH PERMISSION OF COPYRIGHT OWNER.

Distribution of *architectural functions* is predominantly horizontal, as a kindergarten occupies the lowest storey of a part of the built volumes, and uses a part of the common outdoor space in a split regime with the residents, while several storeys in another building are designated as offices.

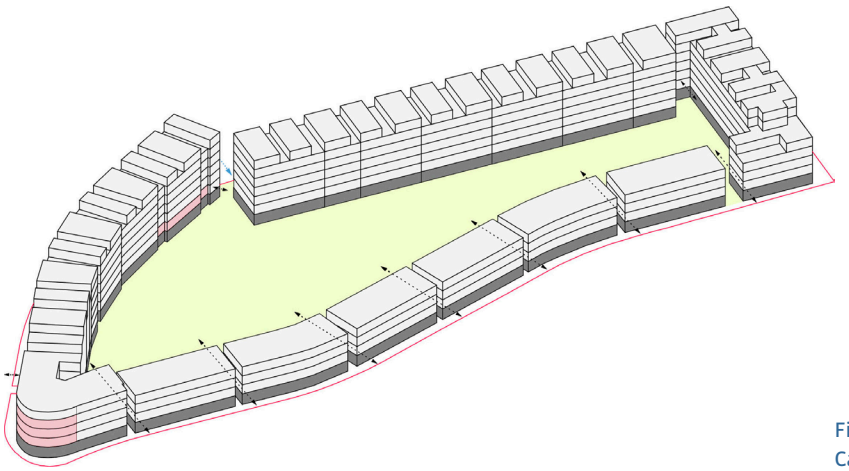


Figure 14
Case 3 – View from Årvollveien Street.

Sub-question 3

Which actors influence the physical outcomes in different types of pre-existing urban tissue and in what aspects?

In every planning process for individual interventions, there are three main groups of actors involved: public (municipal) planners, initiators of the planning proposal (developer and architect) and other stakeholders (public or private). Public planners cooperate with architects in the design process, ensuring compliance of the design proposal with overarching planning goals. In the interviews, public planners stated that their focus in the zoning process is not architectural design and details, but a higher spatial scale (here termed as intermediate scale). Thus, their attention is on volumes (building heights, size, position and shapes of outdoor spaces, density, position of new buildings relative to the surrounding buildings, streets and urban block) and functional layout (use of street-level storey, access, connections and use of outdoor space, access for cars, pedestrians and the disabled). Apart from the case of land use transformation, the project initiators handed in design proposals with elaborated concepts to public planners, and it can be said that the processes entailed small adjustments of the design according to municipal plans and inputs of other stakeholders.

While architects balance between public planners' demands and developers' aims and preferences, other stakeholders provide their inputs through mechanisms of public participation, i.e. in certain steps during the planning process. Most actors provide inputs that concern the physical outcomes in a direct or indirect way, and a number of those relate to the intermediate spatial scale. Of these inputs, a few are accepted and included in the proposal, either entirely or in part, thus influencing the final physical outcomes to a certain extent. Figures 15 and 16 present spatially-related issues discussed in each case, and actors who were concerned with them. Remarks on these issues came from both public and private stakeholders, and often different stakeholders were concerned with the same topic, though from slightly different perspectives. For instance, building heights could be a concern of the Cultural Heritage Management Office, Borough Council, the public health authority, county governor and neighbours. In cases 1 and 3, the issue of building heights attracted the most interest, followed by the qualities of outdoor spaces, such as sunlight, noise and accessibility. Case 2 is yet again somewhat different, and the most debated topics were related to open spaces – parking, dimensions of adjacent streets and open spaces, balconies, as well as the use of buildings.

Case 1. Christian Krohgs street 37-39

POSITION & HEIGHTS OF NEW BUILT VOLUMES; RELATES TO PRESERVATION INTERESTS FOR KROHGSTØTTEN HOSPITAL & TREES

STREET (CHR. KROHGS): BUILDING HEIGHTS, ACCESS FOR CARS & FLAT SIZES

OUTDOOR SPACE: SIZE, SUNLIGHT & ACCESSIBILITY FOR THE DISABLED

Case 2. Gladengveien 4-6

PUBLIC ACCESS & ROAD WIDTH

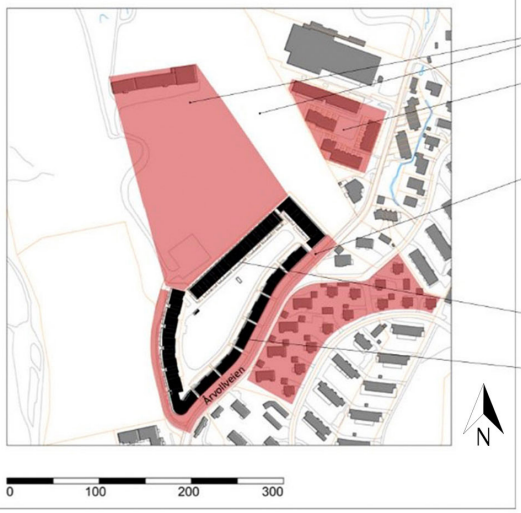
NEW PUBLIC OUTDOOR SPACE (PETERSBORGPLASS): WIDTH

STREET (GLADENGVEIEN): PUBLIC SPACES, DISTANCES TO THE STREAM (HOVINBEKKEN), NOISE LEVELS

OUTDOOR SPACE: SHAPE SUNLIGHT BALCONIES WALKING PATHS ACCESSIBILITY FOR THE DISABLED

NEW BUILDINGS: ARCHITECTURAL FUNCTIONS (USE) HEIGHTS DENSITY PARKING

Case 3. Årvollveien 52-62



NOISE; RELATES TO RESIDENTIAL ARCH. FUNCTION & BUILDING HEIGHTS

DENSITY [SIMILAR TO NEIGHBOURING PLANNED DEVELOPMENT]

STREET (ÅRVOLLVEIEN): DENSITY, POSITION, SHAPES & HEIGHTS OF BUILT VOLUMES TOWARDS EXISTING HOUSING

NEW BUILDINGS: HEIGHTS OF VOLUMES TOWARDS SHOOTING RANGE AND FOREST, ARCHITECTURAL FUNCTIONS (USE), ACCESSIBILITY FOR THE DISABLED, PARKING FOR CARS AND BICYCLES & SUNLIGHT

Figure 15
Overview of spatially-related topics discussed in zoning processes.

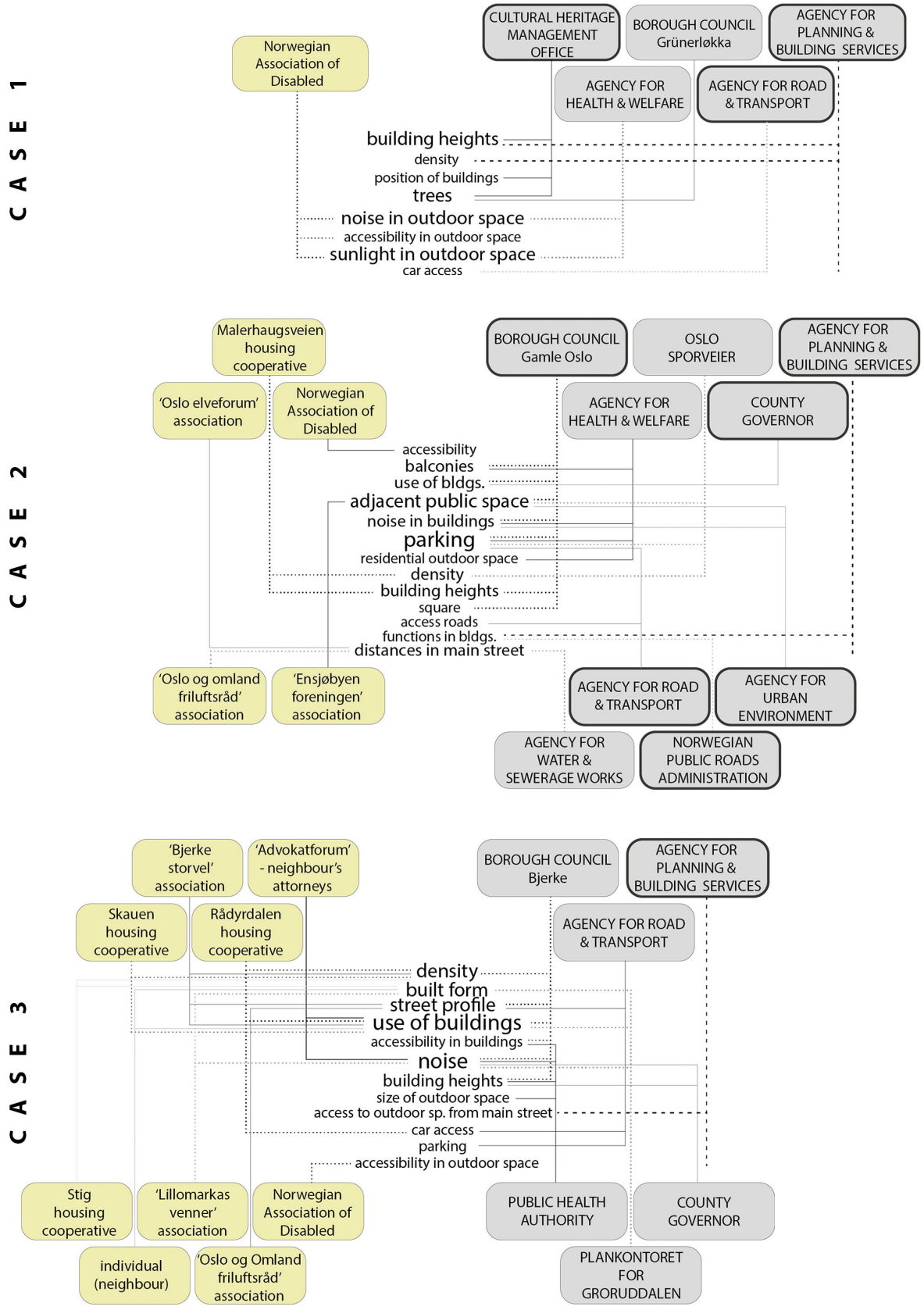


Figure 16
Spatially-related topics and actors that raised them; actors whose inputs affected the outcomes are in bold.

Another interesting finding is the degree in which the proposal was actually affected by the actors' inputs. (Figure 16 and Appendix B) In all cases, the strong initial concepts underwent slight changes. In case 1, which is centrally located, the Cultural Heritage Management Office had an effect on the building heights and positions on the plot. In case 3, where the initial proposal came as an output of previously organised architectural competition, the greatest change was the introduction of passages through the terraced houses placed along the street, and this change was demanded by municipal planning authorities. Concerning case 2, since it is part of a larger transformation area that was designed as an ensemble, a larger number of inputs influenced the physical outcomes. The changes covered the functions of the buildings (reduction of the areas for non-residential use), dimensions of adjacent open/green space (Petersborgplassen) and adjustments of building heights (to enable the use of prefabricated constructions and prevent views into the flats on the first floor).

4. Discussion

As the main question is addressed through three aspects of production of built form, the discussion follows these aspects.

Planning – strategy for physical form

The three analysed cases have been selected in a way to cover different planning instruments and situations in the urban tissue. Hence, the presence and types of inputs or strategies for built form found in those instruments varies considerably among the cases, but also due to the situation in urban built-up area and the time these instruments date from.

Among the plans defined in the law, the District Master Plan for the inner city (KDP-13, from 1997) applied in case 1 was a unique example, as it provided guidelines for the design of new structures in the urban tissue and ambience of the inner city, employing morphological thinking. Case 2, located in the Ensjø transformation area, is distinct in its presence of spatially-related inputs that resemble an expansion of urban tissue. Yet in case 3, situated in less dense, peripheral urban tissue, there were no guidelines for design at the intermediate spatial scale. The design in this case resulted in a completely dissimilar physical structure (segregated) compared to the pre-existing tissue, which was of mixed type. This can be explained both by the flexibility of mixed tissues to sustain different designs and the absence of strategy for built form in that area. The influence of the constituted tissue and strategy on the final output can be more clearly observed in case 1, which resulted in an integrated design due to a consolidated pre-existing tissue, and which defined design principles for that particular area in the city.

A. Design – spatial articulation of built forms and architectural functions

Articulation of built form is closely connected to spatial conditions of pre-existing tissue. There is a difference between the treatment of the three constituted tissue types, mainly in terms of building heights, volume sizes and connectivity of open spaces, while the size and physical form in all cases was greatly conditioned by the size and shape of the plots. Street dimensioning and shaping of outdoor space were of great importance in each case and influenced the form and disposition of buildings to a high extent. It was in the early 2000s that norms for outdoor spaces (in Norwegian: utearealnormer) were developed, and case project 1 was used in their development (according to interviewed planners). Subsequently, these norms became essential in the design of new residential projects, despite the fact that they were never legally adopted.

In the most centrally located case (no. 1), the fairly consolidated constituted tissue provided a solid framework for new buildings. Therefore, the new design is well integrated and contributes to further consolidation of the pre-existing tissue, enhancing its existing morphological qualities. On the other hand, in case 3, situated in mixed tissue in the peripheral part of Oslo's built-up area, the new development introduces an entirely new spatial organisation, despite the fact that the constituted tissue contained sizeable, well defined spatial units. As their density is low, which contrasts with the aims of today's urban development, a compromise between the new (dense) and the pre-existing (far less dense) was reflected in a mix of architectural types – terraced houses with lower heights were introduced in the main street Årvollveien. Yet, while these built volumes match the heights of pre-existing buildings, they are placed continually along the street, which is completely different from the surrounding blocks. Here, the context is primarily addressed in the design of the main street, adjusting the building heights, distances and front gardens to fit with the spatial features of pre-existing, surrounding urban blocks. In case 2, which is part of Ensjø brownfield transformation area, the situation is specific as the pre-existing buildings had been removed beforehand. Consequently, interaction with the constituted tissue is different to the other two cases; instead of interplay with pre-existing buildings, this project was aimed to be integrated in the new design of the neighbourhood, supporting the visions for the greater spatial ensemble. This is comparable to the urban design method that Westrik terms "urban image" (2002), as the layout and coherence of a large spatial unit determine the particular projects.

As for *architectural functions*, there are common, fixed functional demands in residential projects. One is placement of the parking lot, which is defined in the planning norms ("Parkeringsnormer for Oslo") and occupies the lowest storey(s). In cases 1 (centrally located) and 2

(in a brownfield transformation area), non-residential functions were included in the proposal from the beginning and placed at street-level (vertical distribution of functions). This reflects considerations for the immediate urban context, expressed in the intentions of architects (case 1) and public planners (case 2), for creating a lively street front as a desirable urban quality. The last case (no.3), located in the peripheral area, is also a mixed-use development but with horizontal distribution of functions. There, the articulation differs significantly from the central and transformation areas, as the street level is almost entirely residential. This functional distribution was influenced by the mixed type of constituted tissue and the position in the broader context (on the outskirts of Oslo's built-up area).

Further, it is possible to observe that all cases revolve around strong concepts for residential outdoor areas, with variable accessibility and connections to the surrounding open spaces in different constituted tissues. In the most central case (no.1), outdoor areas are private, intended for use only by residents, situated above the street-level (on the rooftop of the street-level storey), with limited access from the main street (Figures 7 and 8). In case 2, the outdoor space is semi-public, accessible on three sides from the surrounding public areas (Figure 11). In case 3, it is a large, park-like semi-private area, intended mainly for residents but providing physical access from the surrounding streets and blocks (Figure 14). These differences, again, depict a diversity of mutual effects between new projects and the constituted tissue, as well as a diversity of spatial qualities that new projects introduce in the urban built structure. They also indicate that planning aims for the larger area around the project site have a great influence on the final design.

The functional character of outdoor spaces is also different among the cases. In the centrally located case, it is separated from the street and intended for exclusive use by residents. Case 3, again, differs as its outdoor space is accessible from the surrounding streets, and is partly shared with a non-residential function (kindergarten). This could be due to the plot size and the design concept that recognised the potentials of the site, as this open space covers a large area and the shared-use poses no threat to the living qualities of the entire outdoor space. The case in the land-use transformation area is an "in-between", as its outdoor space is placed above the main street level, but without barriers (gates) so it is accessible. It is also open on two other sides and linked to the surrounding public open spaces (where the terrain is sloped and higher than the main street), which makes it semi-public and subjugated to the concept for open spaces for the entire area (as defined in VPOR for Ensjø).

B. Actors – impact on design

Evidently, architects (private planners) who represent developers have a crucial role in the design and, in cooperation with public planners, compliance of the new development with public interests is ensured. Other actors (from both public and private sector) provide inputs regarding design through legally defined mechanisms in the process. In all cases, these inputs had a possibility to influence the physical outcome regardless of the type of stakeholder behind them, i.e. regardless of whether they have a legally obligatory status or not. From the analysis it is possible to observe that different stakeholders tackled a variety of spatially-related issues, where building heights and open spaces were topics that attracted most attention (Figure 16). Some inputs, such as remarks on universal design posed by Norwegian Association of the Disabled (in Norwegian: Norges handikapforbund), occur in any case. Demands of public authorities have an obligatory character, e.g. by County governor (in Norwegian: fylkesmann), and while municipal plans may have provided scarce guidance for physical form at the intermediate spatial scale, the inputs of other municipal (and county) sectors addressed this scale, being based on other legal and technical regulations (for instance, heritage preservation interests or traffic regulations).

Regarding *considerations for a wider spatial context,* such as the urban block, neighbourhood and the entire city, and the critique of public planners for the lack of it (Oliveira, 2016; Fainstein, 2005), these considerations can be traced indirectly in the process through the role of public planners. Their task covers the assessment of design proposals based on the intentions expressed in overarching municipal plans and the inputs from other stakeholders that hold different levels of obligation. A concern of public planners in Oslo is also the effect of new buildings on the townscape viewed from a distance (in Norwegian: fjernvirkning, found in case 3), which involves the broader neighbourhood and even the entire built-up area of the city. Another observed factor is tacit knowledge, as public planners in all three cases have an educational background in architecture. This indicates that public planners in Oslo possess the awareness of both the wider context and the particular site with its surroundings, and they ensure that the incremental transformation of urban tissue complies with the general goals for urban development.

Bearing upon these findings, the main question, ***What characterises design performance in planning processes for densification regarding design of new structures in pre-existing urban tissue?*** can be answered through the following points:

a) Strategies for built form at intermediate spatial scale are partial
b) Design approach is highly context-sensitive, though commonly covering just the immediate surroundings

c) Public planners' performance is a learning process, thus process structure and applied tools change
d) Skills of public planners and architects, together with project initiators' aims are crucial for design outcomes
e) Public planners' performance is predominantly reactive to design proposals.

Firstly, strategies for design of newly built structures at the intermediate spatial scale are partial and refer to certain, few areas in the urban tissue of Oslo, which is in line with the findings of Børrud and Knutsen (2018). In central parts, there are no longer guidelines for built form, as the use of District Master Plan for the inner city (KDP-13) was discontinued, since planning became dominantly strategic. Transformation areas are somewhat different, for they cover larger parts of urban tissue. Defining a design strategy for particular areas in the urban tissue can have several benefits: it can provide better guidance to planners, lead to more coherent larger areas, increase predictability of outcomes and shorten the processes.

Secondly, the design approach in new multi-family residential projects is highly context-sensitive, though rather limited to the site and its immediate surroundings. This is in line with Børrud (2005), who reached the same conclusion through an analysis of projects of other architectural functions. Design is greatly conditioned by the pre-existing tissue, which further stresses the importance of developing spatial strategies for particular types of urban tissue, especially mixed types. It is also greatly dependent on the plot size and shape, and concerning multi-family residential buildings, densification occurs in an incremental, fragmentary and property-oriented way. The physical form of buildings is mainly moulded by adjacent outdoor spaces, especially those for private use of residents, as well as technical requirements for traffic and a number of planning norms.

Actors who influence the design have various roles and levels of obligation and participate in processes in different ways. The analysed cases were processed between 2000 and 2007 and at that time, according to the interviewees, there was no precisely defined and accepted sequence of steps in the zoning process. Private and public planners had very little guidance and strategic goals regarding the morphology of new developments in structural terms. The possibilities for physical form were open and proposers could come up with virtually any idea on any site, which was later discussed and adjusted in cooperation with public planners. There was also a strong sectorial division, with an evident impact of the Agency for Road and Transport in terms of technical regulations, and the Cultural Heritage Management Office, who appear to have a structural morphological approach in their assessment of heritage interests for buildings and open spaces in Oslo. Due to this division, processes

could be characterised as irregular and uncertain. Eventually, the process structure has been consolidated, and today there is a higher degree of predictability. Another change concerns planning instruments. Since 2015, site analysis (in Norwegian: stedsanalyse) has been introduced by municipal planners as an obligatory step at the beginning of design processes. It is likely that this will lead to improved solutions regarding considerations for the broader context and urban qualities of new developments. Another instrument, defined in the Planning and Building Act 2008, which aims to better address the context and improve design outcomes, is the area zoning plan (in Norwegian: områderegulering). This indicates that densification is an evolving process, where planners learn from experience and adjust their approaches to meet the demands occurring in policy implementation. Hence their need for instruments that address physical development in a more concrete and comprehensive manner (not only strategic). Still, this does not mean that before these tools were introduced there were no good design proposals. According to an interviewed planner, there were skilled architects then, and the quality of new architecture greatly depended on them. Besides, the analysis shows that the proposals were not significantly changed in the process, which implies the architects' skills and thorough knowledge of regulations; yet, as Børrud (2005) exposed, this may also be due to the investors' important role in the development, coupled with public planners' unpreparedness for proposals.

In any case, the professional knowledge of both private and public planners is highly important, and reliance on norms is not sufficient, which is in line with findings of Thorén et al. (2000). This will remain true, whereas it could be beneficial to strengthen densification approaches in Norway with a set of morphological guidelines, both for the treatment of particular parts of existing urban tissue and brownfield redevelopment areas. It could present possibilities for development, or alternatively restrictions to it (e.g. building height limits or possible street profiles), aid connecting the new and the pre-existing more closely and lead to more coherent physical forms. As mentioned earlier, tendencies to cover larger areas have occurred, with the attention on both open spaces and built volumes, and the experiences from French context could be of use there. In the French system, regeneration of a particular segment of urban tissue is addressed through a legally defined instrument, ZAC (Zone d'Aménagement Concerté – Concerted Development Zone) (Lucan, 2012). A general concept that prescribes the interplay between built volumes and voids, with consideration to the surrounding tissue, is laid out and a chief architect is appointed for it. Fragments of the area are elaborated by other architects under the supervision of the chief architect, who cooperates with public planners and ensures compliance of design with the general concept of articulation. Occasionally, the elaboration of fragments follows the steps across spatial scales, from the entire area, across urban blocks within it, to particular plots within the blocks (as in

Masséna quartier), where each scale is designed by another team, embedded in the concept at the larger scale above it. The appointment of architects can either be a matter of agreement between actors (as in ZAC Bercy) or conducted through architectural competitions as in the Masséna development (Lucan, 2012). The hierarchical organisation of actors provides a more structured and more predictable process, while the entire area is functionally and spatially coordinated, having a diversity of architectural designs. The resulting space is coherent and legible, with numerous opportunities for innovation. This approach integrates architectural design and planning to a great extent. In the Norwegian context, such involvement of architects could yield an experience that would contribute to establishing a closer link between design and planning and a more consolidated knowledge base for the design for urban architecture. Still, land ownership structure could represent a hindrance to such changes in approaches in Oslo, and additional practical examination would be necessary prior to modifications.

Another issue in Oslo is that projects can propose a different use of the site than that intended by public planners (for instance, from public institution to residential as in case 1, or from light industry to residential as in case 3), which can affect the entire surrounding area in unanticipated ways. This finding is in line with the results of Børrud (2005). The influence of private initiators is great, while public planners have a reactive role in handling their proposals. Nevertheless, new planning instruments represent a step toward a more holistic, proactive approach, which has a potential of bridging the gap between planning and design to the benefit of new urban tissues and their future users. They reflect an increasing awareness among public planners of the importance of addressing the actual physical structure of the city, which is also noticeable in the more precise mapping of areas intended for densification in municipal plans (see current Municipal Master Plan – Kommuneplan 2015 or proposal for new Municipal Master Plan – Kommuneplan for Oslo 2018), despite the predominantly strategic and process-oriented character of planning. This is an important tendency, for it places a stronger emphasis on physical developments of larger areas that give the spatial framework for attainment of goals for the dense city, and indicates that there will potentially be fewer reasons for criticism of planning practice for a lack of concern for the wider spatial context in future (as exposed by Oliveira (2016) and Fainstein (2005)).

5. Conclusion

Considering planning strategies, design and actors as the basis for production of physical outcomes (Figure 1) in densification of urban tissue in Oslo, it can be said that the planning aspect is the “soft spot” in the design performance. While design is context-based, and actors’ professional skills play an important role, a strategy for the physical form of

new single projects and their interactions with pre-existing tissue is partial, based primarily on goals for (semi-)private outdoor spaces stated in norms devised by municipal planners. Implementation of the densification policy in Oslo is a learning process in which public planners perceived the need for addressing spatial issues more closely. A way to improve design and planning approaches, together with the resulting physical forms, could be to strengthen the aspect of spatial strategies for particular segments of urban tissue, at a standardised spatial scale. The considerable experience that public planners have gained in the implementation of densification policy and the knowledge about aims and interests of the different actors, especially project initiators and developers, could serve as a basis for developing an integrative strategy for design of physical form, which would balance public and other actors' interests to the benefit of both.

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Google image source in figure 10: https://goo.gl/maps/UBkn9RQgTrdfZnYK9

Appendix A

CASE 1			
Address	**Christian Krohgs gate 37, 39A-H, 41**		
Timeframe	**Start of planning**	2003	**Built area (above street level):** 1 100 m²
	Adoption of zoning plan	2007	
	End of building	2011	**Total built area (above street level):** 4 000 m²
Constituted tissue	**Typology of surrounding urban blocks**	Variety of traditional urban tissue	**No. of storeys:** 5–6
	Patterns of surrounding buildings	19th c. urban blocks combined with large volumes	**No. of housing units:** 33
	Functions of surrounding buildings	Mixed-use, business and administration, housing	**Plot area:** 1 170 m²
	Proximity of new development to public green areas and open spaces	100 m	
	Proximity of new development to public transport nodes	220 m	*Image source: Author's own photo*
Type of intervention	**Infill**	Infill in a part of urban block (<50 % urban block coverage)	
Planning	**Set of planning instruments** Type P1; Municipal Master Plan (KP 2004); District Master Plans: KDP-13 (KDP for indre Oslo nr. 13), KDP Akerselva Miljøpark, KDP Trafikkplan for indre by; Zoning plan S-2255; Zoning plan S-4347 – covers just the project		
	Plot description relative to corresponding urban block	A plot in an urban block	
Design	**Situation**	Between Ring 1 and Ring 2, in central urban area	
	Built structure	3 built volumes above underground garage; street-level storey covers entire plot	
	Functions/use	Mixed use; ground floor: shops; upper floors: housing	

CASE 2			
Address	**Gladengveien 4 A-J, 6 A-F**		
Time	**Start of planning**	2002	**Built area (above street level):** 5 400 m²
	Adoption of zoning plan	2007	
	End of building	2011	**Total built area (above street level):** 20 000 m²
Constituted tissue	**Typology of surrounding urban blocks**	Land use transformation tissue	**No. of storeys:** 6–7
	Patterns of surrounding buildings	Buildings were removed, street layout preserved	**No. of housing units:** 152
	Functions of surrounding buildings	/	**Plot area:** 6 660 m²
	Proximity of new development to public green areas and open spaces	350 m (*condition from 2014; upcoming open spaces will be next to it)	
	Proximity of new development to public transport nodes	300 m	*Image source: Spor Arkitekter web site (https://www.spor.no/prosjekt/gladengveien)*
Type of intervention	**Transformation**	New development on a cleared brownfield site	
Planning	**Set of planning instruments** Type P2; Municipal Master Plan (KP 2004); District Master Plan KDP for lokalisering av varehandel og andre servicefunksjoner (for locating retail trade and other service functions); Planning programme for Ensjø (adopted on 17, March 2004), VPOR Ensjø (Guiding Plan for Public Spaces), VPOV (Guiding Plan for Stormwater)		
	Plot description relative to corresponding urban block	A plot which defined part of a new urban block in a large transformation area (former brownfield)	
Design	**Situation**	Between Ring 2 and Ring 3, in Ensjø transformation area	
	Built structure	4 built volumes above underground garage; street-level storey covers entire plot	
	Functions/use	Mixed use; ground floor: shops; upper floors: housing	

CASE 3			
Address	**Årvollveien 52A-X, 54A-X, 56A-X, 58A-V, 60A-L, 62A-E**		
Time	**Start of planning**	2000	**Built area (above street level):** 7 380 m²
	Adoption of zoning plan	2002	
	End of building	2006	**Total built area:** 28 300 m²
Constituted tissue	**Typology of surrounding urban blocks**	MIXED7	**No. of storeys:** 3–6
	Patterns of surrounding buildings	Separate repetitive volumes (slabs)	**No. of housing units:** 320
	Functionss of surrounding buildings	housing (single-family and multi-family)	**Plot area:** 21 100 m²
	Proximity of new development to public green areas and open spaces	0m	
	Proximity of new development to public transport nodes	>2 000 m	*Image source: Jensen & Skodvin Architects web site (https://jsa.no/filter/housing-large/Arvollskogen-housing-Oslo)*
Type of intervention	**Infill as entirely new urban block**	New development is inserted into pre-existing urban tissue	
Planning	**Set of planning instruments** Type P3; Municipal plan (KP 2000), Zoning plan S-3936 – covers just the intervention project area		
	Plot description relative to corresponding urban block	A plot which defined new urban block in low density peripheral area	
Design	**Situation**	Outside Ring 3, at the border to 'marka' (forest belt)	
	Built structure	9 built volumes around a large semi-private outdoor area	
	Functions/use	Mixed-use: housing combined with offices and a kindergarten in one of the volumes	

Appendix B

Sequence of identified steps in 3 case processes, showing the steps in which other stakeholders participated. Actors (other than planners and project initiators) who influenced the physical outcomes throughout the process are written in italics.

	CASE 1 **Chr. Krohgs gate 39–41**		**CASE 2** **Gladengveien 4–6**		**CASE 3** **Årvollveien 52–62**	
IDENTIFIED STEPS IN THE PROCESS	**Kunngjøring – Notice about the start of planning activities**					
	30.01.2003		22.11.2002/ 11.07.2003		17.01.2000	
	Kunngjøringsinnspill – Comments on the notice					
	11.03.2003	– Cultural heritage management office (Byantikvaren)		* Inputs are listed, referred, commented and attached together with preliminary statements		* No information available
	----------				**Architectural competition**	
					Spring 2000	The winning team leads the project to realisation
	Mottat plan initiative/forslag – Received planning initiative/proposal					
	24.10.2003		11.07.2003		07.11.2000	
	----------		**Planforum**			
			13.04.2005			
	----------				**Notice about extension of planning area**	
					08.11.2000	
	Kommunalt samråd – Municipal consultation and statements					
	04.11.2003	– *Cultural heritage management office (Byantikvaren)* – Agency for Health and Welfare (Helse- og velferdsetaten)				
	Oppstartsmøte – Initial meeting					
	18.11.2003			* No information on date available		* No information on date available

	CASE 1 Chr. Krohgs gate 39–41		CASE 2 Gladengveien 4–6		CASE 3 Årvollveien 52–62	
IDENTIFIED STEPS IN THE PROCESS	**Forhåndsuttalser – Preliminary statements**					
	2003–2006	– *Cultural heritage management office (Byantikvaren)* Grünerløkka borough council – Agency for Water and Sewerage Works (VAV) – Norges handikap-forbund – *Agency for Road and Transport (Samferd-selsetaten)*	2003–2005	– Agency for Water and Sewerage Works (VAV) – Oslo Sporveier AS – *Agency for Health and Welfare (Helse- og velferdsetaten)* – Cultural Heritage Management Office (Byantikvaren) – Borough council Helsfyr-Sinsen – *Agency for Road and Transport (Samferdsels-etaten)*	2001	– Bjerke borough coun-cil (Bydelsutvalg) – Agency for Public Health (Helsevern-etaten) – Agency for Water and Sewerage Works (VAV) – Agency for Road and Transport (Samferd-selsetaten) – Cultural Heritage Management Office (Byantikvaren) – Norges handikap-forbund – Advokatforum for Oslo Østre Skytterlag – Rådyrdalen borettslag – Bjerke Storvel – Lillomarkas venner – Stig borettslag – Oslo og Omland Friluftsråd – Veidekke bolig AS
	Mottatt komplett planforslag – Complete revised planning proposal received by PBE					
	27.10.2006		30.03.2006			* No information on date available

	CASE 1 Chr. Krohgs gate 39–41		CASE 2 Gladengveien 4–6		CASE 3 Årvollveien 52–62	
	Offentlig ettersyn – Public inspection					
IDENTIFIED STEPS IN THE PROCESS	20.11. – 20.12. 2006	– *Cultural heritage management office (Byantikvaren)* – Agency for Health and Welfare – Grünerløkka borough council – VAV – Agency for Road and Transport – County Governor of Oslo and Akershus	03.04. –10.05. 2006	– *Borough Council Gamle Oslo* – Oslo Sporveier AS – *Agency for Health and Welfare (Helse- og velferdsetaten)* – *Friluftsetaten* – *Agency for Road and Transport (Samferdselsetaten)* – Agency for Water and Sewerage Works (VAV) – Fylkesmannen i Oslo og Akershus – Statens vegvesen – Norges handikapforbund – Foreningen Ensjøbyen – Oslo og Omland Friluftsråd – Oslo Elveforum – Malerhaugsveien Bolig-sameie	12.11. – 12.12. 2001	– Bjerke borough council (Bydelsutvalg) – Agency for Public Health (Helseverneetaten) – Agency for Water and Sewerage Works (VAV) – Norges handikapforbund – Advokatforum for Olso Østre Skytterlag – Rådyrdalen borettslag – Bjerke Storvel – Lillomarkas venner – Skauen borettslag – Plankontoret for Groruddalen – Strand, Årvollveien 65
	Revisions of the proposal					
		* No information on date available	09.–12.2006			* No information on date available
	Oppdatert planforslag mottatt - Updated planning proposal received					
	03. 2007		12.2006		27.06. 2002	
	Politisk behandling og vedtakelse - Political processing and adoption of the zoning plan					
	26.04.– 05.12. 2007		21.12.2006– 20.06.2007		08.07.– 06.11. 2002	

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Gordana Zurovac (née Marjanović) obtained a master's degree in architecture at the University of Novi Sad, Serbia, and a master's degree in Urban Forestry and Urban Greening (UFUG) at SLU, Sweden. She has worked as a practicing architect in Serbia and Denmark, and currently she is finalising her PhD thesis at NMBU, Norway. Her research addresses issues related to physical outputs of densification policy in Oslo, from the perspectives of urban morphology.