

KAROLIINA TULKOWSKA-SŁYK*

PROJECT:
MULTI-FAMILY HOUSE

PROJEKT:
DOM WIELORODZINNY

Abstract

The character of residential multi-family accommodation is influenced by, among others, spatial, functional, and architectural conditions. At the design stage we take into account both the investment guidelines for the structure of the housing, as well as the formal requirements arising from the local zoning plan or spatial development conditions. Another issue is the compatibility with building law regulations and the rationality of the construction process.

It is undeniable that the final architectural result is influenced by many circumstances delimiting the creation of the project.

Within the same location and the identical formal requirements and investment assumptions it is possible to introduce projects of different character and style, which meet the expectations of different customers.

Keywords: apartment, house, city, multi-family housing, architecture

Streszczenie

Na charakter zabudowy mieszkaniowej wielorodzinnej wpływają m.in. uwarunkowania przestrzenne, funkcjonalne i architektoniczne. Na etapie projektowania uwzględnia się zarówno wytyczne inwestycyjne dotyczące układu czy struktury mieszkań, jak i wymagania formalne wynikające z zapisów miejscowego planu zagospodarowania przestrzennego lub warunków zabudowy, pozostając w zgodzie z przepisami prawa budowlanego i logiką procesu realizacji.

Nie można zaprzeczyć, że na ostateczny rezultat architektoniczny wpływa splot wielu okoliczności towarzyszących powstawaniu projektu.

W ramach tej samej lokalizacji, przy jednakowych uwarunkowaniach formalnych i założeniach inwestycyjnych możliwa jest realizacja projektów o odmiennym charakterze i stylistyce odpowiadających oczekiwaniom różnych odbiorców.

Słowa kluczowe: mieszkanie, dom, miasto, zabudowa wielorodzinna, architektura

* Ph.D. Arch. Karoliina Tulkowska-Słyk, Faculty of Architecture, Warsaw University of Technology.

The contemporary city struggles in its attempts to adapt to the new requirements of reality. Society is evolving, methods of work are changing, and so is the nature of human relations, modes of transportation and recreation. Consequently, a need emerges to create a new model of the city, which would be able to react more flexibly to changes, while taking maximum advantage of existing resources.

The townhouse plays an important role in these transformations. Today, the high intensity of land use is not necessarily considered a disadvantage. City centres providing access to a wide variety of services and activities are becoming desirable places to live. However, existing building structures do not always meet the growing demands of the user. [1] Hence the need to search for solutions that will answer the evolving expectations of the residents.

The character of the multi-family residential building is influenced, among others, by spatial, functional and architectural conditions. [2]

At the design stage we take into account both the investment guidelines for the structure of housing, as well as the formal requirements arising from the local zoning plan or spatial development conditions. Another issue is the compatibility with building law regulations and the rationality of the construction process.

It is undeniable that the final architectural result is influenced by many circumstances delimiting the creation of the project.

To conceive the complexity of the conditions accompanying the process of multi-family building formation, we will use the examples of potential locations for residential development situated in Warsaw. These plots were used as subjects of the design project course for third year students of the Faculty of Architecture at the Warsaw University of Technology.

The subject of analysis are four locations for the project purposes, located in various districts of Warsaw, with a similar size (approx. 2,000 m² to be used for new building structures) and the diverse spatial and formal conditions.

All are located in downtown areas, which allows reduced requirements for sunlight, shadowing and veiling of the apartments to be used.

For each potential investment the basic spatial, formal and functional conditions were determined. Based on the evaluation of projects ongoing in Warsaw, for each location we assumed a different standard, average apartment area, and structure of flats.

The summary of conditions influencing the architectural character of the building potential for four investment areas: Bema, Chodakowska, Madalińskiego, Pawia, is delivered below.

1. BEMA

The area which is the subject of the project is located in the region of Bema Street, in the Wola district in Warsaw.

The plot has a polygonal shape, with an area of approximately 1,900 m² and is situated inside the quarter, in the second line of buildings of Wolska Street.

The nearest vicinity includes: 5–9-storey condominium buildings forming the southern frontage of Wolska Street, and – along Bema Street – the complex of the 33rd High School.

The area is surrounded by trees and is a part of the green interior of the quarter, extending in the direction of Plocka Street (to the east).

The plot is embraced by the area of local development plan of the region of Wolska and Płocka streets, in the unit: 37-U / MW, within which, the following main principles of development apply:

- zoning – service buildings or multi-family housing;
- minimum ratio of biologically active surface – 15%;
- the maximum percentage of area covered by construction – 70%;
- intensity of development indicator – from 2.2 to 3.0;
- building height – from 18 m to 25 m;
- building lines – according to the drawings in the plan;

parking places requirements:

- multi family housing: 1 parking place / 1 apartment,
- services: 10–25 parking places / 1,000 m² usable area.

Initial conditions for the project and design assumptions

Location analysis shows that the investment objective taking the best advantage of the potential of the area, might be a detached apartment building, representing individual architectural character. The incorporation of green areas inside the building quarter remains substantial.

The structure of the apartments should be diverse and allow to achieve the greatest possible efficiency of land at a reasonable average area for the apartment.

The main determinants influencing the size of the building investment are: the shape and location of the plot, sun exposure and, to a lesser extent, the parameters of the local development plan.

The most important advantage of the site is that it is located in the second building line, in a partially open green area within the quarter.

Architectural differentiation of the surrounding buildings and the position outside the street frontage provide opportunities to customise spatial and architectural solutions.

2. CHODAKOWSKA

Development area is located in the district East Praga in Warsaw. It includes plots with a total area of 4,712 m².

The integrated territory has a polygonal shape, located between the streets: Owsiana and Chodakowska, at the intersection with Groszowicka Street.

For the purposes of the course project, in order to adjust the range of the design concept to the scale of the task, the property was preliminarily divided into two parts, each of approximately 2,200–2,500 m² – for individual development.

The closest vicinity include: three – and four-storey residential buildings forming the southern frontage of Groszowicka Street, from the east – eight-storey office building, in the west – parking and a five-storey high school, north – two – and three-storey buildings of different functions.

In the neighbourhood several complexes of multi-family residential buildings are under construction now (near Terespolska, Minska and Goławska streets).

The investment area is not covered by the local development plan. The zoning plan for the Kamionek region is under design process.

According to the accepted convention, conclusions from the urban analysis were adopted as binding conditions for development. The concept for a property buildout prepared on the basis of these suppositions could be the premise to apply for formal building conditions.

The regulations of the draft plan are treated as general guidelines illustrating the direction of spatial changes in the area.

The area is located in the planning unit: 10.1 MW (U), for which the following principles of development were described, among others:

- intensity of development indicator – 3;
- the maximum percentage of area covered by construction – 0.5;
- minimum ratio of biologically active surface – 25%;
- maximum building height – 25 m;
- minimum building height – 12 m along the street frontages;
- building lines, including the obligation to maintain continuous frontage along Chodakowska and Groszowicka Streets – according to the plan drawings;
- requirement to locate service function along the streets;

parking places requirements:

- multi family housing: 1–1.25 parking place / 1 apartment,
- services: 10–50 parking places / 1,000 m² usable area (depending on the function);

Preliminary urban analysis confirms the possibility to implement similar parameters for development.

Initial conditions for the project and design assumptions

Based on the information derived from the location characteristics and investment potential, we assumed that the main objective of the project is the concept of multifamily residential building forming a part of the spatial layout, and improving the atmosphere of the architectural environment.

The structure of the apartments should allow the greatest possible effectiveness to be achieved at a relatively low average flat area.

The main determinants influencing the size of the investment are: orientation and insolation and the parameters of the local development plan, in particular the height of the building.

The advantage of the site is its location at the intersection of three streets, at the closing of the quarter located in an area of different scales, characters and function of buildings.

The neighbourhood of the designed complex of Sinfonia Varsovia may be architecturally and spatially inspiring.

3. MADALIŃSKIEGO

The area is located in the central part of the Mokotów district. It includes plots with a total area of approximately 3,400 m², wherein the northern part is built-up by the villa dating from the early twentieth century with an accompanying annexe.

The whole has a rectangular shape, located between the streets: Madalińskiego (from the north), Kielecka (from the east) and Rozycki (from the south). From the west, the development is adjacent to a four-storey apartment building from year 2014.

The closest surroundings are residential houses and villas with gardens, typical for this part of Mokotów.

The area is covered by the local development plan for Old Mokotów region and is located in the zone: I8 MW (U), for which, the following main principles of development apply:

- zoning – multi-family housing with admissible services;
- minimum ratio of biologically active surface – 25%;
- intensity of development indicator for multi-family residential – 2.5;
- maximum percentage of area covered by construction – 70%;
- maximum building height – 18 m;
- impassable building lines – according to the plan drawings;
- protection of high greenery;

Plots are located in the area under conservatory protection.

parking places requirements:

- multi-family housing: 1 parking place / 1 apartment,
- services: 10–15 parking places / 1,000 m² usable area.

Initial conditions for the project and design assumptions

The nature of the environment gives the feasibility for residential project of a higher standard, integrated with the historical buildings surrounded by greenery.

In the structure of the apartments an important role is undoubtedly played by large flats enabling the exceptional values of the development to be highlighted.

4. PAWIA

The land under development is located in the centre of Warsaw. It includes a plot of approximately 2,450 m² of rectangular shape with the longer side situated along Pawia Street.

In the closest vicinity there are four-storey detached residential buildings surrounding a green courtyard currently open to the south.

In the direction of Anielewicza Street, in the gap between the existing buildings, you can see the outline of the Polin Museum.

The investment area is not covered by the local development plan.

Therefore, the conditions for development resulting from the urban analysis were accepted as current. The development concept prepared on the basis of these assumptions could define the parameters of the investment to apply for building conditions.

The area is surrounded by existing multi-family residential buildings and has access to a public road and, on the basis of the analysis of environment parameters, we can attempt to formulate the potential conditions for the investment:

- function – multi-family housing with acceptable services on the ground floor;
- impassable building line – the line of the existing adjacent buildings;

- height – up to 5 floors above ground;
- maximum ratio of area covered by construction – 0.4;
- minimum ratio of biologically active surface – 25%;

parking places requirements:

- multi family housing: 1 parking place / 1 apartment,
- services (retail): minimum 10 parking places / 1,000 m² usable area.

Initial conditions for the project and design assumptions

Analysis of the closest surroundings and spatial conditions shows the feasibility of building a detached, multi-family house, forming a part of the existing urban layout with the ability to highlight the relationship to the Polin Museum and the nearby open areas.

The structure of flats, due to the downtown location and the relatively tranquil nature of the project, can be determined on the assumption of a high standard for the building.

The basic determinants that affect the size and character of the investment are: orientation and sunlight, climate of the context and the parameters resulting from the urban analysis, in particular the height.

The advantage of the site is downtown location near a quiet street with good public transport connections. An important element of the concept is the need to resolve the relationship with the existing buildings and to define the nature of the courtyard shared by different entities.

From the point of view of the location within the urban structure, multi-family housing is subject to certain restrictions related to the specifics of the interior, referring to the need to optimise the structure of flats, including an efficient transport system, the need for more flexible apartments equipped with the appropriate sunlight and spatial comfort etc. Therefore, the shape, size and location of the plot implies the need for different spatial solutions.

According to the classification of building types made by Gunter Pfeifer and Per Brauneck [3] multi-family residential house may represent six basic floor plans:

- row – a building frequently located along the street, orientation north-south or east-west with a depth of approx. 7–8 m;
- twin row – a building consists of two parallel wings separated by a narrow courtyard similar to a passage – open or covered with a roof;
- single aspect row – a longitudinal building, receiving daylight only from one side, mostly because of the tight surroundings, which often happens in the case of infill;
- perimeter block – continuous – outline similar to a rectangle located along surrounding streets with an inner semi-private courtyard;
- perimeter block – perforated – a variant of building quarter, partially open; whereby the range and size of perforation is often due to conditions of sunlight and ventilation;
- infill – supplementing the existing urban structure in the form of a building inscribed in the neighbourhood;

And these categories often overlap, blend and fuse with one another.

For the purposes of this study, we will attempt to adapt the specified categories to Polish conditions, taking into account the specifics of the location, of the most common:

- row – objects located along the street, with an average depth of 10–12 m, in the floor plan with staircases or corridors (depending on the orientation and solar exposure

conditions), with the width of the section of approximately 15 m; with radically different solutions for the street side and the inside;

- perimeter block – continuous – a building or group of buildings on a plan (usually) similar to a rectangle of approximately 50–120 m length, accessible from the outside by paths or streets, with an inner semi-private courtyard;
- perimeter block – perforated – a building or group of buildings in a quarter plan with perforations, usually related to the needs of sunlight or ventilation;
- infill – supplementing the existing urban structure in the form of a building fitted into the neighbourhood; with depth most frequently adapted to the surrounding buildings, the width of the section resulting from the dimensions of the plot and the requirements of functional structure and standard of apartments;
- open plan – detached building or buildings creating open structure, adapted to the size of the area and conditions of spatial location;

The four projects analysed are characterised by diversity, which enables different types of buildings to be designed.

And, according to the classification given above:

For the area near Bema Street, the natural form of development is a detached building, shaped in relationship to the context. The outline of the plot, close to a trapezoid, does not dictate the form of building. There is no direct relationship to the frontage of the (Bema) street, which emphasises the open character of the architecture.

The plots near Chodakowska are located between three streets and the shape of the terrain itself suggests a building on a U-floor plan to the U-opening with the inner courtyard inside the area, opened (unfortunately) to the north. The meaning of the most important corners can be emphasised by the height and character of the architecture. So here we are dealing with a perimeter block – perforated.

The Madalińskiego project has a special character because of the need to respect the existing residential buildings. Only the southern zone of the plot situated at the intersection of two small streets is available. The outline of the area suggests a combination of two floor plan types: row and perimeter block, with emphasised relation to the existing buildings.

At Pawia, the existing cubature and location of the street implies the need to continue development on a scale and in the character of surrounding objects. The problem is the location of the street on the south side and, consequently, the need to organise a recreation area in the poorly sunlit northern part.

In order to streamline the process of design, the subsequent phases of the concept were prepared in the form of a virtual model embedded in the environment. Starting from the variant studies for solids, adjusted in relation to the proximal and distal neighbourhood, through analysis, including insolation and shadowing, to successive approximations of the concept. The methodology applied allowed a holistic approach to design to be created at every stage and helped to settle any doubt about the functional and architectural solutions.

We used available the CAD software, including: ArchiCAD, AutoCAD, Revit, etc.

During the work on the project, the following stages of preparation of the investment were considered:

- analysis of the formal and spatial conditions with regard to the multi-layered structure of the context;
- the building location conception, with reference to issues of urban connections, the scale and character of the surrounding buildings, spatial relationships and individual analytical findings;
- variant solution for the internal layout of the building, including solutions for residential levels and, where applicable, service areas in conjunction with a properly functioning underground garage;
- the concept of architectural, material and detail solutions, based on our own studies on selected reference objects and analysing the nature of the surrounding architecture;

The result is a variety of design solutions not only illustrating the potential of plots, but also enabling analyses and conclusions about the shape of the modern multi-family house located in the city.

For the Bema location students prepared two proposals for detached houses of a distinctive architecture, embedded in the open green.

The concepts for Chodakowska Street were dominated by the frontage nature of the location. Natural in this situation and evident was the perimeter block solution, accompanied by a varied architecture vertically diversified, with exposed selected elements of the form.

The expressive context of the Madalińskiego project imposed a concentration of building structure in the southern area of the plot or, optionally, the south-east corner. In the architecture, there were references to the modernist threads perceptible in the surrounding villas, as well as attempts to find a contemporary minimalist interpretation of the idea of a residential building.

The Pawia location (unexpectedly) provided the most diverse spatial concepts, representing different approaches to the street-building-courtyard relationship. There were solutions focused on the newly created frontage, but also proposals which pushed the building away from the street, using a southern exposure to create a new kind of recreation or public space.

Reflections flowing from the analyses and presented design concepts can be reduced to a few basic observations about the realities and expectations of a modern residential house in the city. [4]

The conditions of the location, including development restrictions due to the shape of the plots, orientation, spatial relationships, etc. often determine the individual nature of the building investment, which can raise its attractiveness, both business and architectural.

The typical optimised internal layout of a multi-family residential building is open to the implementation of individualised architecture and vulnerable to far-reaching changes to respond to the needs of future users.

The variety of available sites includes the potential for non-obvious solutions to form, functional and architectural questions.

Within the same location and the identical formal requirements and investment assumptions it is possible to introduce projects of different character and style, which meet the expectations of different customers.

References

- [1] Rykwert J., *Pokusa miejsca. Przeszłość i przyszłość miast*, Kraków 2013, p. 312–316.
- [2] Schittich C. (red.), *High density housing. Concepts, planning, construction*, Basel Boston Berlin, p. 10.
- [3] Pfeifer G., Brauneck P., *Town Houses: A Housing Typology*, Walter de Gruyter, 2008. p. 24–26.
- [4] Schneider F. (red.), *Floor Plan Atlas. Housing*, Basel Boston Berlin, p. 26–30.