

## Article

# The Definition of the Heritage Status of Modern Residential Architecture from a Multi-Scalar and Perceptual Approach. A Heritage Perspective in the Case Study of the Neighbourhood of El Plantinar in Seville (Spain)

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**Abstract:** The demographic, political, social and economic evolution of the last 40 years has shown how difficult it has been for the residential architecture of the 1960s to adapt to the needs of the turn of the century, in many cases suffering abandonment by the administration and the citizens themselves. However, these architectural ensembles, grouped together in the so-called “barriadas” (neighbourhoods), represented a change of era and a conceptual transformation in the way the city was built. This has led various international organisations to consider the need to study and protect them. The El Plantinar neighbourhood, located in the city of Seville, is one of these architectural complexes that are in a situation of vulnerability. The aim of this article is to propose a research methodology that, from different scales and with the incorporation of new players, allows us to understand these modern assets in their maximum dimension and to define their unique heritage. The methodology is structured in two phases. In the first phase, a general study of the neighbourhood is carried out on three scales: urban, object-typological and perceptive. In the second phase, the cultural attributes of the urban ensemble, of a patrimonial nature to which values can be assigned, are identified. The results provide very heterogeneous attributes that contribute to enrich the neighbourhood beyond the traditional scientific-technical and objectual vision that accompanies the assets of the modern period. The conclusions indicate that a methodology that takes into account different approaches and scales is necessary to incorporate these neighbourhoods solidly into the heritage landscape.

**Keywords:** modern heritage; urban obsolescence; methodologies; citizenship

## 1. Introduction

The modernisation process that Spain underwent, and, specifically, the transformation that the city of Seville experienced, was brought about through the initiatives of the national and local governments from the 1960s onwards. Among these actions was the construction of numerous residential neighbourhoods that prepared Seville for the change of era. This process was possible thanks to the implementation of public policies that showed the imminent need for new architectural programmes, as well as high-rise architecture built with reinforced concrete. However, the evolution of the last 60 years has shown the difficulty of adapting this residential architecture to the needs of the change of century, suffering in many cases abandonment, not only by the administration but also by the citizens themselves. However, this architecture implied a change of era and a conceptual transformation

in the way of making a city, which has led various international organisations to consider the need to implement a heritage approach to this type of architecture [1].

It was at the beginning of the 21st century when all these questions related to the heritage vision of certain 20th century architecture were contemplated by other international organisations specialising in cultural heritage. In 2001, UNESCO, ICOMOS and DOCOMOMO initiated a joint programme for the identification, documentation and promotion of the architectural heritage of the 19th and 20th centuries (also covering interventions in the urban environment, in the ensembles and patterns of the city, in infrastructures and engineering works, and in the landscape) [2]. This first meeting of experts, held at the UNESCO headquarters in Paris in October 2001, marked the beginning of this new way of looking at contemporary heritage [3]. Among the issues on the table was the need to overcome the need to look at the heritage of those centuries through the object–monument perspective. Historical processes and socio-economic activities must be identified with a different approach to define the significant processes and trends of modernisation. Only by identifying these processes can the specific themes (or phenomena) of the modernisation era be defined and questions of style and typology for any classification be avoided [2]. The uniqueness of “modern heritage assets” is also expressed, characterised by the knowledge of their author, the idea of the project and the technological and constructive renovation that their materialisation implied. Both issues, together with the proximity in time and the absence of the superimposition of temporal and historical strata, favour a novel approach to this heritage, where the reflection on the original ideas of the author’s project, which generated the property, is incorporated as the new heritage value, although it is not the only one.

Aspects of the selection criteria are already addressed in the Recommendation of the Council of Europe. The need is to protect not only the most significant works of the contemporary scene, but also lesser-known examples that are still of importance for the architecture and history of the time [4]. This issue is highlighted in the Madrid Document 2011, which stresses the importance of recognising the heritage value of the full range of 20th century building styles, types and methods. The same is true of the importance of including among the selection factors, in addition to aesthetic aspects, those contributions to the history of technology and political, cultural, economic and social development [5]. In both documents, reference is made to going beyond the architectural object to incorporate structures, estates, residential complexes, new towns and villages, public spaces, facilities, decorative elements and furniture into the contemporary heritage landscape. It also focuses on qualifying the conservation of architectural heritage by promoting scientific, theoretical and practical studies on construction, maintenance and restoration methods, and training specialists in this field, because of its uniqueness. Other issues raised, both in the Recommendation of the Council of Europe and in the Madrid Document 2011, are the need to propose new uses for the heritage element, in accordance with contemporary society, to fight against the abandonment or ruin of the element and the need to raise public awareness through policies that promote knowledge of 20th century heritage with respect to these emerging heritages (publicity campaigns, specialised publications, public debates and educational experiments).

As can be seen from the facts, residential architecture is also being incorporated into this panorama, demanding a more careful and inclusive look at these more invisible heritages. In short, the aim of all these meetings and investigations is to alleviate the processes of obsolescence and abandonment, more widespread lately, of this nearby heritage, which is also beginning to be transformed without considering heritage criteria for their intervention. This process of transformation accelerates the loss of a heritage that is representative of this period. In Andalusia, relatively recently, the issue of modern heritage linked to housing has begun to be taken into account, as is the case of the research Re-Habitar in the neighbourhood of El Carmen [6], the inscription in the General Catalogue of Andalusian Historical Heritage of some housing complexes [7] and identification as a prior step to their inscription [8]. Specifically, there is the case of El Plantinar, which was one of the

neighbourhoods conceived to house a large number of people and that today is a key reference point in the urban landscape of the city of Seville linked to modernity. The typological and constructive particularity of the residential complex of El Plantinar makes it the main object of analysis of the research project financed by the Andalusian Regional Government: RENERSIS (Energy and Seismic Reinforcement) [9]. Within the framework of this project, with a strong technological focus, as the initial phase and the historical and heritage foundation of the neighbourhood, the analysis of values and the identification of attributes—the main object of this study—is framed as a preliminary step to the assigning of heritage values.

In this sense, the present research proposes a methodology for researching these neighbourhoods, which, from a multi-scalar approach and with the incorporation of new actors, has two results; on the one hand, finding those attributes that contribute to enriching the neighbourhood beyond the traditional scientific-technical and objectual vision that accompanies the assets of the modern period; and, on the other hand, knowing the relationship between these attributes that make up the neighbourhood. It is the value we place on the attributes that characterise the property, which can be tangible or intangible [10,11], that defines its heritage uniqueness. The diversity of approaches, scales and actors can lead us to assign a wide range of values that can range from traditional values proposed by UNESCO to those more linked to more current concepts, such as sustainability [12].

The proposed methodology for the valuation of the heritage of 20th century neighbourhoods will be tested in El Plantinar, with the aim of extrapolating it to other, similar neighbourhoods. It is structured in two phases: Phase I, in which a general study of the El Plantinar neighbourhood is carried out on three scales: urban, object-typological and perceptive, with a view to obtaining a general diagnosis of the neighbourhood; and in Phase II, based on the information gathered in Phase I, we will identify the cultural attributes and values of the urban complex with a heritage character on which to assign values. This will help us to determine the heritage value of the neighbourhood. The results provide very heterogeneous attributes that will aid us to understand the heritage value of these neighbourhoods in the construction of the collective memory. The conclusions indicate that a methodology that takes into account different approaches and scales is necessary to incorporate these neighbourhoods solidly into the heritage landscape. The key is to guarantee the future presence of these neighbourhoods in the urban landscape of the city of Seville and to adapt them to new contemporary requirements but without losing the attributes and heritage values that define them.

## 2. Spanish Political Context Background—Case Study

The end of the Civil War marked the beginning of a period of necessary reconstruction, which was to be followed by a period of urban development. Public housing development policy in Spain was thus framed in two major stages: the first was essentially one of reconstruction and the second of development, which would lead to the creation of a renewed housing stock [13]. At the beginning of the 1950s, Spain put protectionist measures to one side and embarked on a new period of social and economic development. This period was marked by great migratory activity from rural to urban areas. The main Spanish cities doubled or even tripled their population. Seville went from having a population of 312,123 to 548,072 inhabitants (INE 2018) [13,14]. This migration, added to the demographic growth, aggravating the problem of residential deficit suffered by these cities. This led the Francoist government to undertake certain public housing development policies that would equip all provincial capitals with numerous and extensive housing estates or residential neighbourhoods built from scratch. Public housing development was carried out in urban centres by the National Housing Institute (Instituto Nacional de Vivienda: INV). The INV, governed by functionalism and rationality, carried out typological studies, establishing surface areas, programmes and types of furnishings according to the kind of housing. Initially, two types of housing were proposed: minimum income and reduced income [13], which would later be replaced by limited income housing. This system sought to unify in a

single law all public intervention affecting housing and thus serve as the basis for a national plan [14]. This system was part of the National Housing Plan, carried out between 1955 and 1960. This plan introduced a consensus, on a national level, regarding the typification and standardisation of housing, as well as its constructive elements, making it compulsory to build according to the stipulations of the INV [14]. The implementation of the National Housing Plan was based on the prior analysis of the census of buildings and dwellings necessary to estimate the residential deficit. The fundamental objectives of the plan were to give the most underprivileged classes access to decent housing, to technically direct and order construction activity, to economically protect housing construction and to attract and encourage private initiative to obtain its support for the construction of all types of housing [14].

In the case of Seville, between the second half of the 19th century and the first half of the 20th century, the city underwent an economic development and demographic growth that doubled its population. This demographic increase led to urban congestion in the historic centre and the necessary urbanisation of the outlying areas. This urbanisation was carried out at the end of the 19th century without the prior planning of extensions but through the construction of small neighbourhoods, and it was not until the 20th century that it underwent urbanisation processes on a larger scale. This economic development was, to a large extent, the result of the growth of industrialisation, which in turn conditioned the urbanisation guidelines of the periphery [15].

Thus, in this research, we analyse the values and the unique heritage of the Seville neighbourhood of El Plantinar, a symbol of the urban and residential development that would mark the course of the growth of the city of Seville from the 1960s onwards. El Plantinar is a residential complex set in a strategic urban context, close to the historic city centre and in a prosperous environment rich in infrastructure and facilities that stands out for the high socio-economic profile of its residents. Paradoxically, on the other hand, El Plantinar is conspicuous for its local scale and the lower socio-economic profile of its population. Likewise, the significant migration, which, in recent years, has been affecting the dwindling, ageing population, emphasises the abandonment and precariousness in which the neighbourhood is immersed. For all these reasons, the heritage assessment aims to stress the intrinsic values and attributes of the neighbourhood, as well as the obsolete or worthless aspects (which could be improved through study and critical reflection).

### 3. Materials and Methods

Nowadays, heritage management is undergoing a significant transformation, where heritage valuation does not focus on monuments, groups of buildings or sites, but on the cultural meaning that they convey, defined by the tangible and intangible attributes that once motivated these assets to be considered heritage [16]. These attributes are obtained from in-depth studies carried out on the ensemble, to which a series of values have subsequently been assigned according to the social and cultural context [17,18]. When this approach is transferred to the sphere of modernity, the conceptual diversity is just as complex, and in the case of a neighbourhood in an urban context, understanding it becomes even more so. For this reason, the methodology proposed to tackle the neighbourhood in question has sought to go beyond the technical-constructive approach with a quantitative character that traditionally accompanies the study of these neighbourhoods and to surpass historical-urban research with a qualitative character. It also incorporates the social approach, one very necessary to deal with neighbourhood studies. It is a methodology that crosses three scales—urban, objectual and perceptive—and places the technical approach on the same level as the social-cultural one. It is a methodology that combines scientific and technical studies with observation and personal interviews, as well as a combination of qualitative and quantitative aspects. The novelty of this case study is strengthened by two approaches. On the one hand, it uses a transdisciplinary and participatory methodology, which has sought to give a voice to actors who have never been taken into account in these neighbourhoods, and, on the other hand, the innovation lies in the possibility of

considering that these neighbourhood complexes can be considered from the perspective of protection, hence the need to identify those heritage attributes that define the property and make it unique. For this it must be holistic, transdisciplinary and participatory, and must consider different scales. The proposed methodology is structured as follows:

Phase I. Heritage characterisation. At this point in the research, studies of different scales and approaches are carried out with the aim of obtaining the most diverse and complete information on the property:

- Analysis from the urban scale. These studies are aimed at understanding the urban dimension of the ensemble in the city and its relationship with the functioning of the city. In this study, those attributes with possible historical, economic, political or symbolic values can be identified. Three approaches are addressed:
  - Study of the evolution of the urban fabric of Seville aimed at understanding the role of the neighbourhood in the modernisation process of Seville.
  - Study of the relationship of the neighbourhood with the urban context. In this section, the connections of the complex with the rest of the city will be identified, not only from a physical point of view but also from the point of view of uses, facilities and other elements of the city's patrimonial network.
  - Study of the urban planning of the neighbourhood. This study considers questions related to the conceptual design of the neighbourhood, the flows and routes, the occupation of public space and even questions related to comfort and health, already defined in several documents as heritage values [19].
- Analysis from the object scale. These studies are focused on the architectonic project, both of the blocks that make up the complex and of the typology of the dwelling. In this study, those attributes with possible scientific, aesthetic or economic values can be identified. Three approaches are addressed:
  - Typological analysis of the blocks of El Plantinar aimed at finding out the composition and type of block, which will make it possible to define the singularities of the architectural design. It will also be possible to define the transformations undergone over time.
  - Analysis of the El Plantinar houses with the aim of defining the different types, as well as their spatial and functional distribution. This study will also identify the evolution of the project from its design to the present day.
  - Identification of incompatibilities between the typologies of El Plantinar and the contemporary habitat. This study is approached from the perspective of social evolution, the housing programme and its dimension, the gender perspective, accessibility and flexibility.
- Analysis from the perceptual scale. Unlike the previous studies developed from the discipline of architecture, the aim of this study is to ascertain the perception that citizens have of the neighbourhood [20]. This study is of those attributes with possible social or symbolic values can be identified.

Phase II. Identification of attributes and heritage values. With the information provided, those attributes to be protected will be identified from each study (urban, objectual and perceptive) and, later, heritage values will be assigned to each identified attribute. As mentioned above, the diversity of approaches, scales and actors will provide a wide and diverse range of attributes. These will be assessed by combining different approaches, with the understanding that in this way the main spectra of contemporary positioning will be covered. First, the values defined in the Convention on the Protection of the World Cultural and Natural Heritage will be considered: the aesthetic, historical and scientific values [21]. Likewise, the social value, provided by ICOMOS with the Burra Charter [22], will be recognised, considering these four values with a traditional approach. However, and going a step farther in terms of cultural valuation, UNESCO has referred in its latest documents to the need to incorporate values related to the pillars of sustainability, defined as ecological (environmental) and economic values [23]. Although these values are not



officially established in any convention, we understand that we cannot overlook this approach, this interest and, at the same time, this need. Finally, and linked to modernity, the incorporation of the political value responds to the need to value urban processes of this nature [12]. This attribution of values should be as flexible as possible, as an attribute can have more than one heritage value and vice versa [24]. All this information is going to be put into a matrix that will make it possible to locate the relationship between the attributes obtained in function of the studies and the possible values assigned to them. This matrix will also make it possible to visualise the complexity of the heritage significance in relation to the different attributes and values identified.

#### 4. Phase I: Heritage Characterisation

##### 4.1. Urban Scale Analysis

##### 4.1.1. Evolution of Seville's Urban Fabric

Economic and demographic growth, a consequence of the end of the Civil War and boosted by the Industrial Revolution, led to the urban congestion of the historic centre and subsequent urbanisation of the peripheral areas of Seville. In this context, the development of industrialisation marked and directed the patterns of growth of the city [15]. Thus, the origin of the sector of the Southern District that concerns us was marked by the location of various industries: the ceramics and tile factory “El Porvenir”, the military pyrotechnics factory of the Ministry of War and the factories of super-phosphates and sulphuric acid San Carlos S.A. (1956) (Highlighted in Figure 1). Their positioning was conditioned by the structure of urban connections, being located next to the main communication arteries.

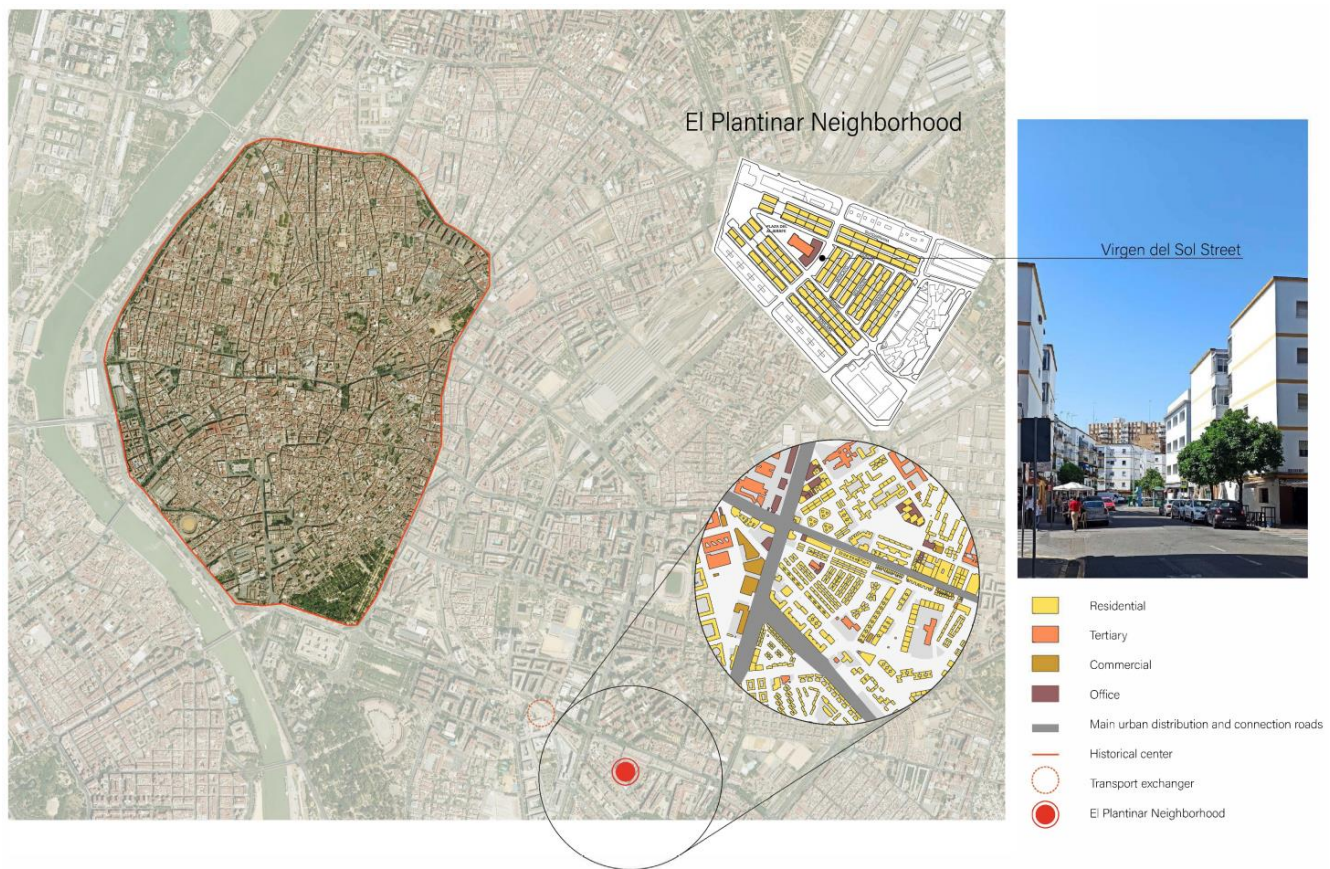


**Figure 1.** Historical flights of Seville: (from left to right) aerial photographs from 1956, 1969 and 1977. Data Source: Viewer of Historic Flights of the Urban Planning Department. Julia Díaz-Borrego.

Already in the second half of the 20th century, the great migratory activity from rural to urban areas, together with demographic growth, aggravated the problem of the housing shortage [13,14]. This led Franco's government to undertake public housing development policies that would equip all provincial capitals with numerous residential estates [13]. Thus, in response to the cessation of activity of many of the aforementioned factories and the need to increase the residential stock, a new urban transformation of Seville began. In this context, in the epicentre of what had previously been a mainly industrial area, the El Plantinar neighbourhood was built in 1964, one of the first residential neighbourhoods in a still industrial-rural environment (Figure 1 (1969)).

##### 4.1.2. Relationship of the Neighbourhood with the Urban Context

El Plantinar enjoys a privileged urban location, between main communication routes, in an area close to the historic city centre. In this sense, it is well-served by public transport, with one of the city's main modal interchanges (buses, commuter trains, medium-distance trains and trams) located nearby. Likewise, in terms of urban facilities, the area has a wide and diverse offering: university campus, schools, shopping centres, catering and food shops, hotels, office buildings, etc. (Figure 2).



**Figure 2.** Urban location of the object of study. Planimetry of the buildings in the area around the El Plantinar neighbourhood by use. Cadastre data, 2021. Photographs Virgen del Sol Street: Julia Díaz-Borrego.

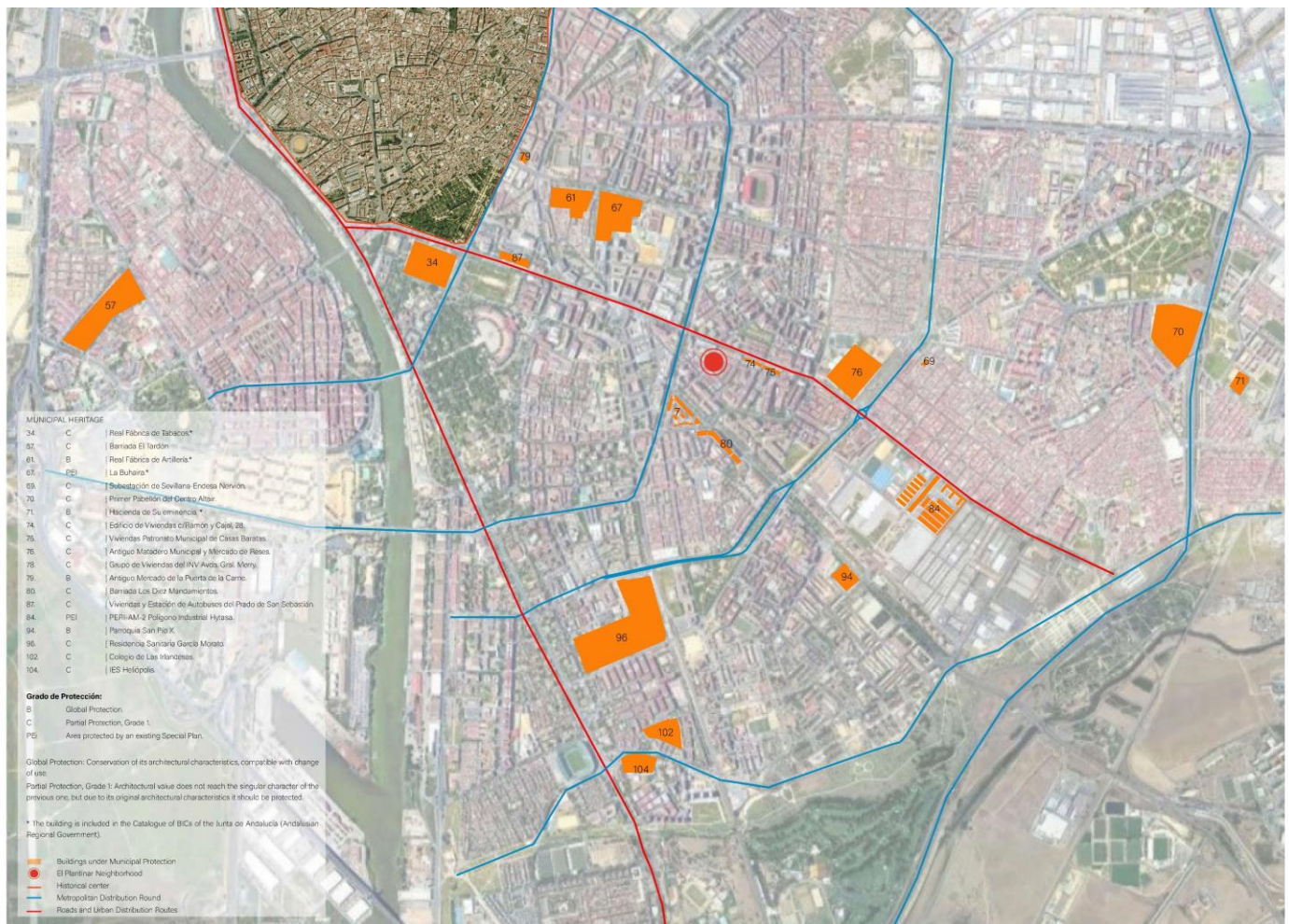
Despite its strategic location at a territorial level, the urban density of the complex does not correspond to that which it would today because of its location next to large urban facilities and communication arteries. The built environment around the neighbourhood does respond to this reality, tending towards denser and higher typological solutions. As a result, the neighbourhood is surrounded by a built-up mass that contrasts with it and, at the same time, isolates it socially and spatially (Figure 3).



**Figure 3.** Bird's-eye view showing the relationship of the neighbourhood with the urban context. Data Source: Google Earth, 2022. Julia Díaz-Borrego.

As Figure 4 shows, there are numerous urban and architectural elements in the vicinity of El Plantinar that form part of Seville's heritage context. Among them, it is worth highlighting the different residential complexes, neighbourhoods and dwellings that have some level of municipal protection and that share numerous historical, social, architectural and urban characteristics with the neighbourhood under study. The comparative analysis between these protected residential complexes and El Plantinar may reveal heritage values intrinsic to the neighbourhood that have yet to be discovered and defined in their particular cases.





**Figure 4.** Relationship between the neighbourhood and the municipal heritage. Analysis of the El Plantinar neighbourhood (Seville). Julia Díaz-Borrego.

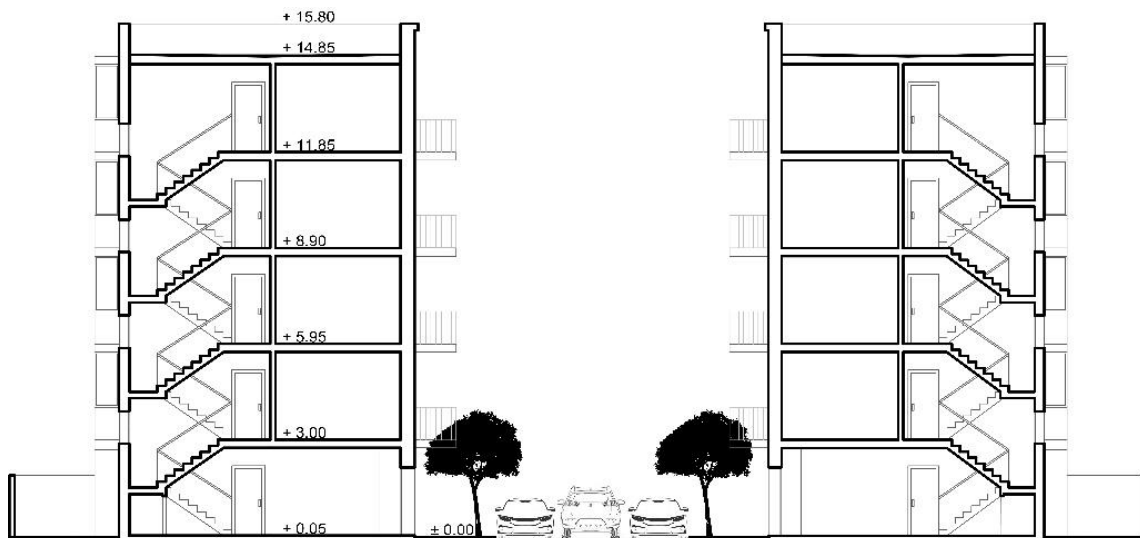
#### 4.1.3. Urbanism of the Neighbourhood

The local scale of the complex defines its activity and social rhythms [25]. As mentioned above, there is a high contrast between the building density of the complex and its urban environment. The neighbourhood is made up of linear-storey buildings with a building height of no more than 15.5 m, while the surrounding buildings are, on average, more than 25 m high.

This contrast is also evident in the nature of the facilities and equipment. In the interior of the neighbourhood, the marked residential character defines the complex. In it, we find a great diversity of facilities of a more local nature in which the Virgen del Sol Street stands out, equipped on the ground floor with all kinds of local shops. Thus, the local character of trade and daily activity in the neighbourhood responds to times and rhythms that contrast with those common to the urban scale of the immediate surroundings.

On the other hand, the narrow road is dominated by the abundant presence of private vehicles parked on the sides of the road, as well as that of small trees (orange trees) on the pavement (Figure 5). This presence obstructs pedestrian routes, relegating pedestrians to the sometimes insufficiently wide pavements (Figure 6). Pedestrian flows are concentrated in Virgen del Sol Street (Figure 2), which, as it has the most facilities in the complex, is the busiest street. Thus, this street, centrally located with respect to the whole, is the one that serves as a connection between the neighbourhood and the surrounding area and is where we find the greatest activity of exchange and relationship between the inhabitants of El Plantinar and the neighbours of neighbouring areas.





**Figure 5.** Detailed generic section of the current road network in the neighbourhood of El Plantinar. Julia Díaz-Borrego.



**Figure 6.** Photographs of the current state of the road and open spaces in the neighbourhood of El Plantinar, 2022.

The local scale of the neighbourhood gives it great environmental potential. This potential could be exploited through the conquest and enhancement of the open space of the neighbourhood, favouring the encounter and connection with the immediate surroundings.

The modification of the road section, tending towards a more homogeneous design in which the presence of pedestrians is more important than that of vehicles, could mean a social and environmental transformation that would lead to higher-quality open spaces. Likewise, a greater presence and diversity of vegetation would enrich not only the environmental characteristics but also the urban and architectural values of the complex [26–29].

In relation to comfort and health, the urban form affects the energy performance of the building, accounting for up to a 10% increase in energy consumption [30–33]. The urban form also affects microclimatic variables, playing a decisive role in the urban heat island phenomenon, which is mainly responsible for nocturnal heat stress [34–37]. As Givoni [38] points out, “the outdoor temperature, wind speed and solar radiation to which an individual building is exposed is not the synoptic regional climate but the local microclimate modified by the structure of the city”. The latter thus determines the quality of the outdoor environment, affecting the comfort and health of the inhabitants [39–41].

To analyse the influence of urban morphology on microclimate and daylight accessibility, the main parameter of analysis is the urban canyon ratio, a term coined by Oke [38] that specifies the ratio between building height and road width (H/W). The orientation and proportions of the urban canyon influence solar access potential, air flows and other microclimatic data such as the heat-island effect. Previous research, with a case study in Seville, found that ratios lower than 4/5 significantly improve solar access in buildings, with no significant thermal increase in the outdoor environment if the ratio is greater than or equal to 4/5 [42].

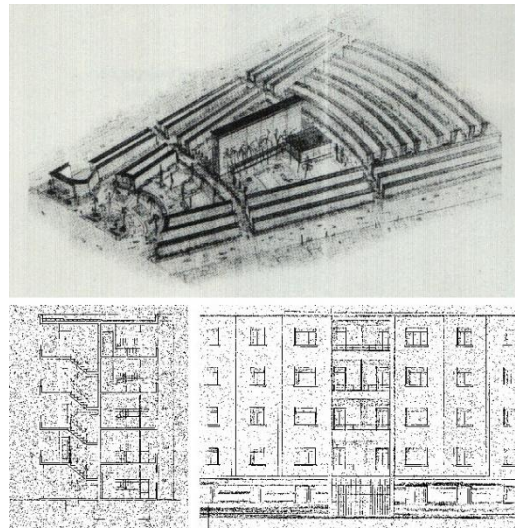
Despite the low urban density of El Plantinar, the urban canyon ratios are, on average, high (1.44), resulting in narrow canyons. In these road proportions, the ventilation of the road is lower and the sunlighting of the dwellings is hindered by the mutual shading of the blocks. In addition, the presence of vehicles in the narrow streets of the neighbourhood is a source of noise and environmental pollution and aggravates the urban heat-island effect, increasing night-time temperatures.

On the other hand, in the 21-metre-wide Virgen del Sol Street, as well as in the central square of the neighbourhood, the proportions of the canyon are smaller and more favourable, according to previous research [42]. Such a proportion benefits solar access to the shops, while at the same time controlling, thanks to the building’s own shading, the outside temperatures in the hot seasons.

On the other hand, the arrangement of the blocks of the complex, forming an arrow-head, gives rise to three different orientations. Those located in the central streets have a NW-SE orientation, while both of those bordering the north and south, despite having different orientations, have a NE-SW orientation. These orientations seem to achieve a greater homogeneity of solar accessibility and energy performance, as well as external microclimatic conditions, compared to N-S or E-W orientations [42,43].

The project built responds in a reliable way to the original (Figures 7 and 8), both in the urban planning and in the housing typologies and their layout. However, the original project proposed the construction of a skyscraper as a landmark in the central area of the complex. In its place, the parish church of San Diego de Alcalá was built in 1971. Undoubtedly the parish church has achieved the ultimate goal of the original plan: to be a central element of the neighbourhood, the landmark around which the neighbourhood is both physically and socially organised. This modification with respect to the original project gives the complex a more balanced spatial relationship both in physical and structural (urban) terms, as well as in terms of environmental efficiency (sunlight, urban ventilation, urban density, visual pollution, noise, etc.), thus making the central square a meeting place for neighbours and one of the spaces with the highest spatial and environmental quality in the neighbourhood.





**Figure 7.** Planimetry of the original project of the neighbourhood of El Plantinar, 1960, A. Delgado Roig and A. Balbontín de Orta ICAS-SAHP. Data Source: Municipal Archive of Seville, N° 60392.



**Figure 8.** Aerial photograph of the area of the El Plantinar neighbourhood and its urban environment, 2008. Historic Flights of Seville, Urban Planning Management. Data Source: Google Earth, 2022. Julia Díaz-Borrego.

#### 4.2. Analysis from the Target Scale

##### 4.2.1. Typological Analysis of Blocks of El Plantinar

El Plantinar is a project of 846 housing units designed by the architects Antonio Delgado Roig and Alberto Balbontín de Orta, in collaboration with Publio and Pedro Fernández de Heredia, carried out in the 1960s. The conformation of the blocks corresponds to the dominant subsidised housing typology of the 1950s: linear blocks of first floor plus four, with double bays, stair core—without lift—and two dwellings per floor (Figure 7). The



unusual use of the low-density linear block for the conformation of an entire neighbourhood after the 1960s is noteworthy because of its low economic and urban profitability, in comparison with high-rise constructions. Likewise, the constructive and structural solution of the blocks of El Plantinar [1,43] (mixed structure) is in line with that commonly used in the blocks of subsidised housing of the 1950s, and is unusual in nearby neighbourhoods, which makes it a set of unique interest.

For its part, the arrangement of the complex consists of successive blocks in which the formalisation of the road and public space is a product of the “void” resulting from the linear composition of the blocks (Figure 8). This composition, in turn, forms open spaces within the blocks, which allow double ventilation of the dwellings and give the first-floor dwellings private rear courtyards. This formalisation of the complex responds, in turn, to the urban grid and the shape of the arrowhead section. In general, the neighbourhood as a whole has not undergone any notable transformations. Functional transformations stand out, such as the introduction of lifts in some of the blocks of flats, the opening of openings in walls that were originally opaque and the introduction of sun protection and window grilles, as well as the closing of balconies as an extension of the living space or, on occasions, transforming them into small laundry rooms. Other transformations of an aesthetic nature have also been detected, such as the aesthetic and material modification of the plinths (ground floor façades), as well as the access doors to the blocks.

#### 4.2.2. Typological Analysis of Blocks of El Plantinar

In the El Plantinar neighbourhood, there are three types of dwellings (small [3a, 3c], medium [3b, 3d] and large [2a, 2b]); there are also two variants of each type of dwelling: what could be called the standard dwelling and its ground floor variant (Figure 9).



**Figure 9.** Current layout of the El Plantinar residential complex. Differentiation of blocks according to housing typology. Data Source: Maria-Victoria Requena-García-Cruz et al., 2022 [43].

As for the “small” or smaller housing typology (Figure 10), this is housing with a very limited surface area of living space, with all the rooms being too small by today’s housing standards. Likewise, the layout of the house, with a central corridor, means that the usable surface area of the house is even more reduced because of the passageway area. In turn, the night and day rooms are interspersed, with no separation between them, causing a dysfunctional distribution.

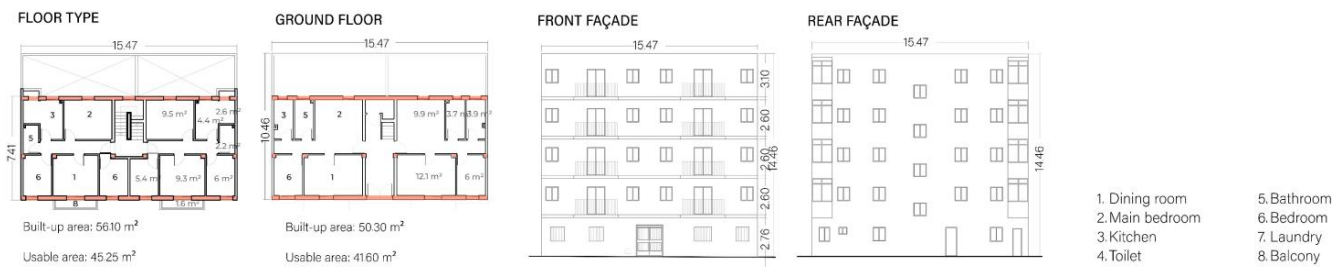


Figure 10. Typology of “small” housing in El Plantinar with surface areas and layouts. Julia Díaz-Borrego.

The “medium” housing typology (Figure 11) also has a very limited surface area. The distribution of the dwelling allows the maximum saving of useful surface area to the detriment of its functionality. This dysfunctional distribution is manifested in the inadequate use of the main room as the distribution space of the dwelling, causing the small useful surface area of this room to be reduced by the passage area between the day and night rooms of the dwelling.

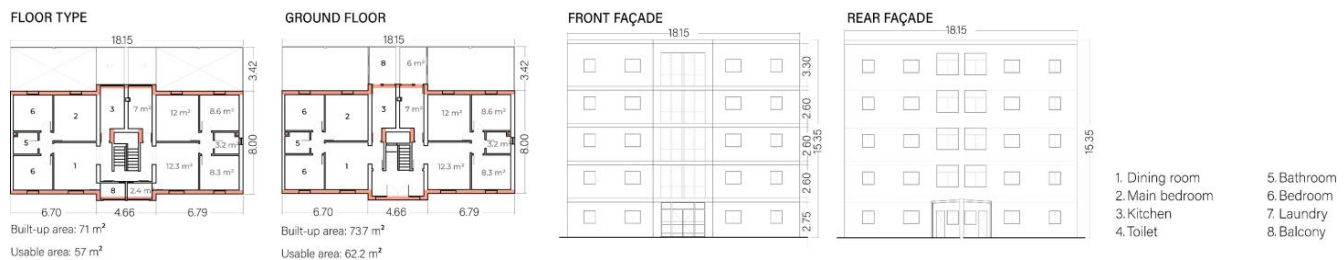


Figure 11. Typology of “medium-sized” housing in El Plantinar with surface areas and layouts. Julia Díaz-Borrego.

Finally, the “large” dwelling typology (Figure 12) has a more acceptable surface area than the previous ones that is due, however, to the introduction of a bedroom. Its width allows for a central corridor, thus preventing the living room from playing an organisational role. The kitchen is located in the party wall at the end of the corridor. This position frees the dwelling from the distribution problems generated by the coexistence of the corridor and the double bedroom in the party wall. Next to it, there is a small outdoor laundry terrace, a toilet and a complete bathroom (wet room). Otherwise, the master bedroom is located at the back, next to the toilets, and the rest of the bedrooms are located next to the access to the house.

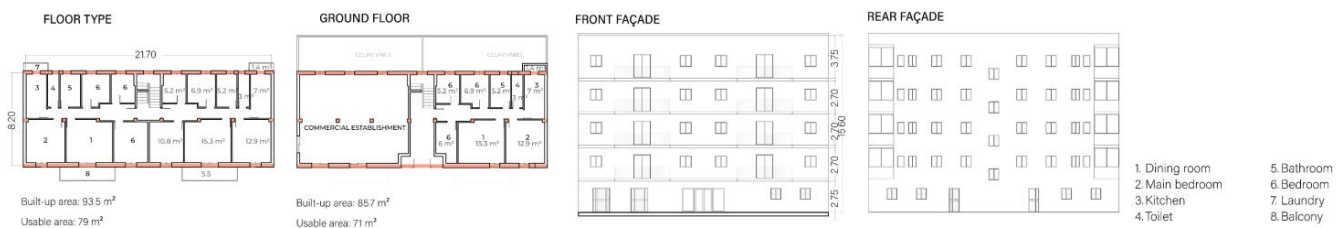


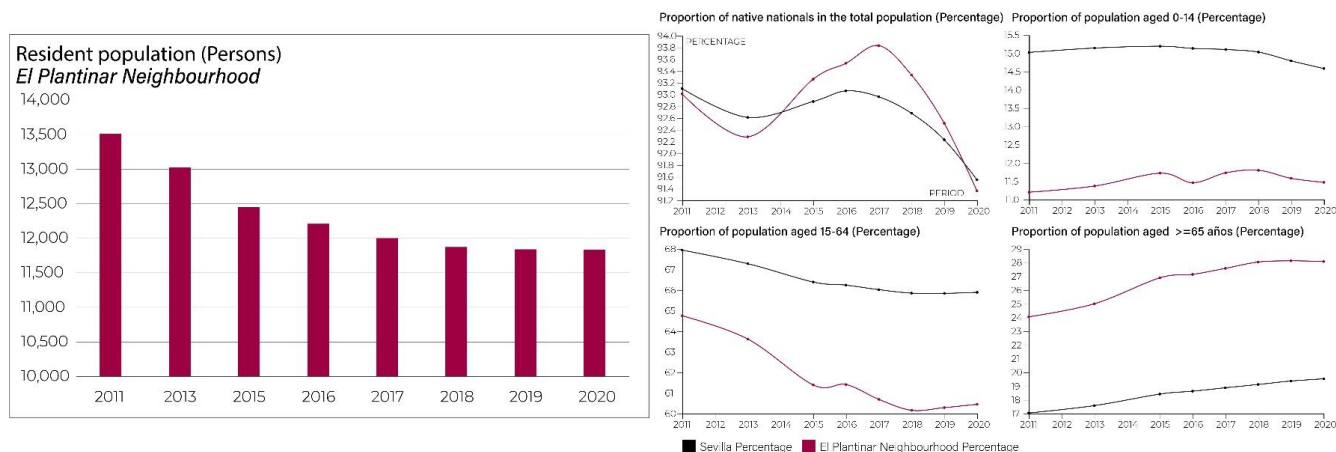
Figure 12. Typology of “large” housing in El Plantinar with surface areas and layouts. Julia Díaz-Borrego.

#### 4.2.3. Identification of Incompatibilities between the Typologies of El Plantinar and the Contemporary Habitat

The resident population of the neighbourhood has suffered a significant decline (Figure 13). This trend is due to:

- Ageing of the original resident population, which means a significant increase in the number of deaths.

- Emigration of the generational exchange to other areas of the city, a sign that the neighbourhood has not been able to adapt to the new ways of living. This also means that new residents are not being attracted.
- Increase in temporary residents. The proximity between the neighbourhood and the Viapol university campus, together with the high rental prices in the surrounding area in relation to the low rents in El Plantinar, make the housing in the neighbourhood the best option for students.



**Figure 13.** Migratory evolution of El Plantinar in the period 2011–2020. Data Source: Census data [www.sevilla.org](http://www.sevilla.org) (accessed on 12 February 2022. Julia Díaz-Borrego.

In terms of size and surface area, social housing must meet minimum standards, adapted to the requirements of contemporary living. Taking as a reference the social housing regulations in force in Andalusia for a three-bedroom dwelling (Table 1), the degree of obsolescence of the dwellings in the neighbourhood is analysed in terms of their dimensions.

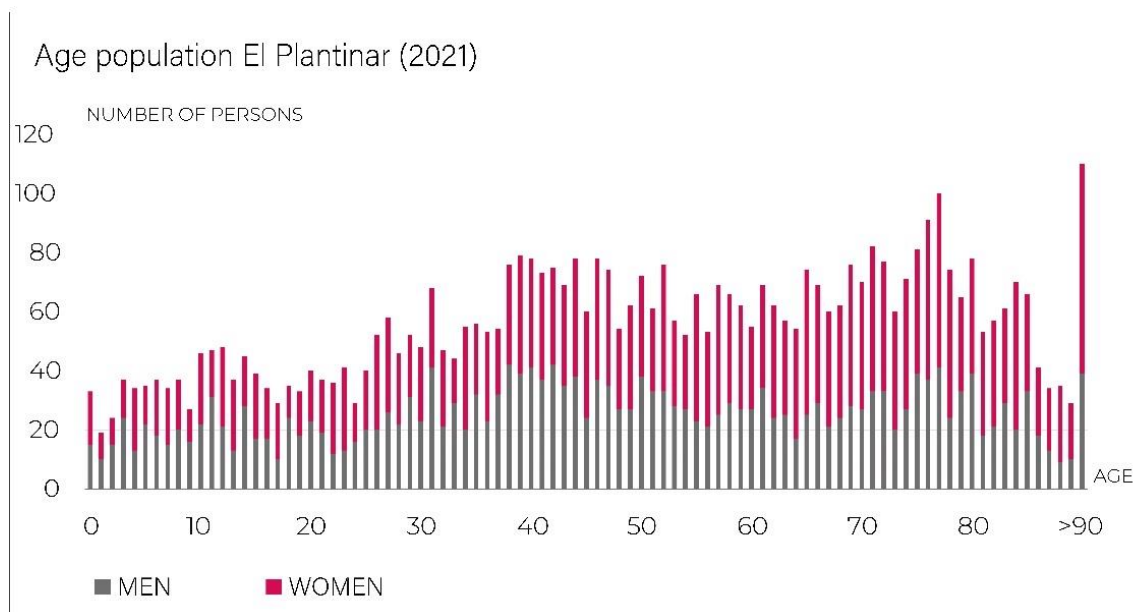
**Table 1.** Comparative table of minimum surface areas according to current social housing regulations in Andalusia for three-bedroom dwellings and surface areas of the different housing typologies in El Plantinar. Julia Díaz-Borrego.

|                         | Living-Dining Room  | Main Bedroom        | Secondary Bedrooms  | Independent Kitchen | Bathroom           |
|-------------------------|---------------------|---------------------|---|---------------------|--------------------|
| Andalusia               | 18 m <sup>2</sup>   | 12 m <sup>2</sup>   | 8 m <sup>2</sup>  | 7 m <sup>2</sup>    | Unspecified        |
| El Plantinar Typologies | Living-Dining Room  | Main Bedroom        | Secondary Bedrooms  | Independent Kitchen | Bathroom           |
| Small dwelling          | 9.3 m <sup>2</sup>  | 9.5 m <sup>2</sup>  | 5.4 m <sup>2</sup><br>6.0 m <sup>2</sup>                        | 4.4 m <sup>2</sup>  | 2.2 m <sup>2</sup> |
| Medium dwelling         | 12.3 m <sup>2</sup> | 12.0 m <sup>2</sup> | 8.3 m <sup>2</sup><br>8.6 m <sup>2</sup>                        | 7.0 m <sup>2</sup>  | 3.2 m <sup>2</sup> |
| Large dwelling          | 15.3 m <sup>2</sup> | 12.9 m <sup>2</sup> | 5.2 m <sup>2</sup><br>6.9 m <sup>2</sup><br>10.8 m <sup>2</sup> | 7.0 m <sup>2</sup>  | 5.2 m <sup>2</sup> |

In relation to current standards, the three housing typologies have rooms with dimensions far below those stipulated by current regulations [44]. Particularly alarming are the dimensions of the living-dining room and secondary bedrooms. Likewise, the small dwelling typology will certainly pose the greatest challenge when it comes to adapting it to contemporary living. On the other hand, the size, quality and situation in the distribution of the dwelling of the spaces historically associated with women (food preparation, household cleaning or laundry) tended to be inferior and marginal. It is therefore essential to analyse the size, spatial quality and degree of isolation of kitchens and laundry rooms in this type

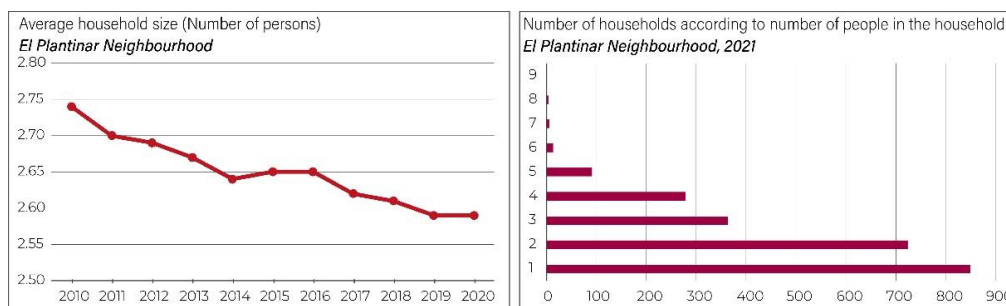


of housing. Accessibility is another essential factor in meeting minimum standards of habitability [45], especially in ageing neighbourhoods such as El Plantinar, where a high proportion of the population is over 65 years old (Figure 14). To meet the housing needs of the elderly and their caregivers, the layout, furnishings and size of spaces such as passageways, main living area, bedroom and bathroom are essential. In relation to the blocks, in El Plantinar there is a notable lack of lifts, which are essential to ensure accessibility for people with mobility problems. This has meant the necessary transformation of the blocks for their subsequent introduction or, failing that, the transfer of this population from their original homes to ground floor ones.



**Figure 14.** Age of resident population in El Plantinar (2021). Data Source: INE, urban audit 2021. Julia Díaz-Borrego.

In contrast to the homogeneity of the traditional family nucleus that prevailed in the 1960s, the composition of today's family nuclei is characterised by the diversity of housing standards [14]. According to a study carried out in 1950 by the "Census of Buildings and Dwellings", the average family composition in Spain was 4.5 people. Today, the average family size in Spain has decreased drastically, putting the viability of the housing programmes of the 1950s and 1960s in crisis (Figure 15). The homogeneity of El Plantinar's housing types conflicts with the diversity of current household composition, which demands greater housing flexibility.



**Figure 15.** Evolution of average household size in El Plantinar in the period 2010-2020. (INE, urban audit 2021). Size and composition of households in El Plantinar (2021). Data Source: Census data [www.sevilla.org](http://www.sevilla.org) (accessed on 12 February 2022). Julia Díaz-Borrego.

As listed by Alfonso Guajardo [14], some of the requirements that a dwelling must meet to be flexible include:

- Homogenisation of spaces without a defined hierarchy: similar in size, shape and facilities.
- Flexibility in the delimitation of spaces by means of mobile elements and, as far as possible, by reusing conventional distribution corridors.

Thus, to accommodate today's diverse housing realities, it is necessary to transform and adapt the typology of housing to contemporary living.

#### 4.3. Analysis from the Perceptual Scale

Citizen perception is a fundamental piece of information to contrast the approximation made by the technicians when concluding the heritage characterisation. This information is obtained from a series of interviews carried out with the community, specifically with 52 members (representing 0.5% of the population of the neighbourhood). The questions asked were the following. (1) What do you like most about your neighbourhood? (2) What aspects would you improve? (3) What would you eliminate? In relation to the first question, 90% of the answers referred to the neighbourhood feeling, the good relations between neighbours, the good connection with the rest of the city by public transport, the quiet life and the fact of having public spaces nearby. Nobody mentions their housing. In relation to issues for improvement, 77% of the neighbours referred to the need for more space in their homes, the lack of light, the high temperatures in summer and the difficulty of access (not all of them have a lift), while 23% mentioned the need to increase the cleaning service because of the dirtiness of the neighbourhood, the increase in insecurity and the need for more trees. Finally, in relation to the question of what they would eliminate, the majority (94%) say nothing, that they like their neighbourhood as it is, while 6% refer to architectural barriers and insist on the need to eliminate them to achieve full inclusion and accessibility in the neighbourhood.

### 5. Phase II: Attributes and Asset Values—Discussion

Next, the tangible and intangible heritage attributes will be identified, which raise a reflection on why they should be protected for future generations. These will be identified on the basis of each study carried out and will be included in Table 2.

**Table 2.** Matrix of values and attributes, obtained from the analyses carried out.

|                  |   | Traditional |           |            | Sustainability |            | Processes |           |
|------------------|---|-------------|-----------|------------|----------------|------------|-----------|-----------|
|                  |   | Historical  | Aesthetic | Scientific | Social         | Ecological | Economic  | Political |
| Urban scale      | Architecture of necessity                               | X           |           | X          | X              |            | X         | X         |
|                  | Strategic urban location                                | X           |           |            | X              |            | X         |           |
|                  | Shopping street, square and parish <sup>1</sup>         | X           |           |            | X              | X          | X         |           |
|                  | Street width, low urban density urban, height buildings | X           | X         |            | X              | X          | X         |           |
|                  | Public trees  |             | X         |            | X              | X          |           |           |
| Scale object     | VPO housing of the INV                                  | X           |           |            | X              |            | X         | X         |
|                  | Type of house: double façade and mixed structure        | X           |           | X          |                | X          | X         |           |
|                  | Modifications related by neighbours                     |             |           | X          | X              |            | X         |           |
| Perceptual scale | Good neighbourly relations                              | X           |           |            | X              |            |           |           |
|                  | Strong neighbourhood feeling                            | X           |           |            | X              |            |           |           |
|                  | Collective memory                                       | X           |           |            | X              |            |           |           |
|                  | Processional El Sol Brotherhood                         |             | X         |            | X              |            |           |           |

<sup>1</sup> Calle Virgen del Sol, central Aljarafe Square and San Diego de Alcalá Parish.

From the analysis on an urban scale, the following attributes are extracted. First, from the study on the evolution of the urban fabric of Seville, the intangible attribute, architecture of necessity, is extracted, as El Plantinar, built in 1964, was one of the first residential neighbourhoods in a rural setting, which arose as a consequence of the industrialisation process in a city in the midst of a development boom that was seeking expansion in its urban periphery [46]. This gave rise to historical, scientific, social, economic and political values, as technological and innovative advances were achieved for the time, which benefited society, allowing them to obtain work and housing. Second, from the study of the relationship between the neighbourhood and the urban context, the attribute of strategic and privileged urban location is extracted, as it is surrounded by large urban facilities, such as the university campus and the intermodal public transport hub, which, together with the important communication arteries that surround it, create a social value, as the population benefits from its use and urban relations with the city centre. The use of private transport is reduced, which is an economic-ecological value, generating economic savings for families, and a political value, as the site was an initiative of the INV when deciding where to grow in the city.

Next, there is a social value to be highlighted because a large number of university students reside in the neighbourhood, which benefits the permanent residents with new relationships and supports in the local economy. Third, from the study of the urban planning of the neighbourhood, the main street, Calle Virgen del Sol, equipped with local shops and hotels and restaurants, is an attribute of historical, aesthetic, social, ecological and economic value because it is traditionally where the commercial premises are concentrated, giving rise to inter-neighbourhood relations and being the main source of economic income. This street, unlike those in the rest of the neighbourhood, is wider, measuring 21 m, which means that, as in the central Aljarafe Square, the houses facing it are in a privileged situation with good sunlight and favourable ventilation conditions. The width of the street/height of the building helps to control the outside temperatures in the hot seasons. The church is also mentioned as an attribute that gives it physical and social order. This gave rise to the aforementioned square, which transformed the space into one of the highest-quality urban and environmental spaces in the neighbourhood. The latter is enhanced by the presence of public trees, orange trees, which provide the streets with shade, lower the temperature in summer and give them an aesthetic and ecological value.

From the analysis on an object scale, the following attributes can be extracted. First, from the study of the typologies of blocks, two attributes can be extracted. On the one hand, the emergence of the VPO Housing of the INV, presenting a political, economic and aesthetic value because of the typologies, which responded to a housing shortage, seeking monetary savings with characteristics typical of the principles of functionalism and rationality, giving rise to an austere design. On the other hand, there is the attribute of modifications to the dwellings made by the neighbours that were due to the need to adapt the primitive design to current demands. The owners have made changes in their respective dwellings, which conform to scientific-social values, as these are aimed at improving living conditions. From this study, we can also extract the attribute of the double façade, achieved thanks to the position of the blocks, which leave gaps between them, creating courtyards that achieve an optimal contribution of ventilation and sunlight, reducing energy expenditure, taking advantage of the entry of sunlight through both façades during the winter months and lowering temperatures in the summer months thanks to cross ventilation, providing ecological-economic values. There is also the mixed structure, which was not generally used in this type of linear block but was chosen as a solution, being typical of the architecture of the 1950s, providing scientific and historical values. Second, from the typological analysis of the housing of El Plantinar, the following attribute is extracted: "Typologies of Type 1 and Type 3 housing" developed by Alfonso Guajardo in his doctoral thesis [14]; these are of historical value and, from that time onwards, their use declined because of their small surface area. However, they have an important economic value, as they were able to respond quickly and efficiently to the housing problem and are nowadays affordable.



From the analysis at the perceptual level, the following attributes can be extracted: first, a strong sense of neighbourhood, good neighbourhood relations and collective memory because these are present in the community, which became apparent after the surveys were carried out. This fosters the existence of values such as social-historical values, since, among the neighbours, a strong identity is perceived from the origin of El Plantinar. In addition, the close relationship between the neighbours and the neighbourhood itself, its streets and public spaces, is noteworthy. Second and last, the Processional El Sol Brotherhood was created and formally established in 2005, and has managed to carve out a place for itself in the world-famous Holy Week processions in the city of Seville (in 2010). This is a very important social value to highlight, since the neighbours are involved in an activity that they share year after year and it also has an aesthetic value because of the brotherhoods and processions on the days of the year that go through the neighbourhood, and the streets of the neighbourhood are transformed by this event, which gives it a strong sense of identity.

The approach from the urban scale has made visible the political role of the neighbourhood in relation to the growth of Seville, as well as its strategic situation in the city, but it has undoubtedly highlighted the urban project as the great success of the complex, an undocumented and invisible attribute, to which the seven values proposed have been assigned. This is a qualitative study. This scale highlights a type of life in community and collectivity that today is being lost (becoming singular) and symbolises a moment in the country when the modern project was really designed to improve the quality of life of certain social groups. The object scale allows us to reflect on habitability, health and comfort from a quantitative approach, focusing on the envelope and spatiality of the dwelling. Finally, the perceptive approach, which combines the qualitative with the quantitative, incorporates other isolated actors into the research process by providing immaterial and religious attributes.

## 6. Concluding Remarks—Conclusions

The different analyses carried out in the field of study clearly reveal the obsolescence of the modern housing project in relation to the needs of the different users of 21st century housing [47]. Typological obsolescence is confronted with current lifestyles and the prevailing need to improve comfort and habitability in terms of thermal and energy insulation. Difficulties related to accessibility, minimum habitability (a legacy of the modern project), the rigidity of the programme and the diversification of inhabitants have also been outlined. However, in the face of typological obsolescence, it is important to recognise those heritage values that go hand in hand with the urban question, i.e., the location of the neighbourhood in relation to the city, the spatial quality of its streets, the scale of the building in relation to the user, the relationship between neighbours, the use of local commerce and even questions of identity (the most vulnerable). Likewise, from this tour, we can extract the value linked to the design of the new city linked to modernity, establishing itself as a symbol of progress that allowed all social classes to locate themselves in the city. The material, constructive and structural issues have probably become obsolete, but other matters, such as conceptual, urban, social and environmental issues, acquire a significant dimension to understand the value and importance of the modern project [48]. There are so many nuances and singularities in these neighbourhoods that it is necessary to apply sufficiently creative and novel methodologies, where different scales, different research strategies and, above all, the technical-constructive issue, habitability, health and comfort, the way of life, the landscape built in the city itself and the festive-ceremonial and symbolic issues are put on the same level of importance. This methodology aims to combine all these factors so that, depending on the context, it can be adapted and applied to other neighbourhoods by other researchers.

With the information obtained, the next step is to identify intervention criteria that allow for an updating of the housing typology, while at the same time respecting the identity of the citizens and their integration into the historic urban landscape of the city of Seville. Three significant issues emerge from this current panorama on which this research

is based: (a) the importance of studying contemporary heritage to prevent its loss and destruction, (b) the need to pay special attention to the neighbourhoods and housing of the modern period given the scarcity of examples studied in this area and, finally, (c) the importance of developing extensive and rigorous documentation work to ensure the future processes of research, protection, conservation and dissemination of any type of heritage, as well as the implementation of effective protection policies. For all that it means and implies, the Modern Movement, from an artistic, historical, cultural, aesthetic, constructive, social, methodological and conceptual point of view, constitutes a heritage with a series of values to be protected from the present. In this dispersed panorama, and even at the risk of being diluted, are the neighbourhoods and dwellings of the 20th century, considered a fundamental piece in the construction of the modern urban landscape. With a view to the sustainable development of the city, it is strategic to ensure the presence of these neighbourhoods and their proper evolution for future generations. This permanence, as well as being sustainable from an economic and environmental point of view, ensures the community's identity link with this architecture, resolving issues related to social and cultural sustainability.

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