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A study on the empirical parceling planning of 2B lands that have lost their forest characteristics

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Research Article

ABSTRACT

Within the scope of forest maps used as forest areas, the areas whose borders and forest cadastre have been made may lose their forest area character in time, either partially or as a whole. First of all, without losing its quality, necessary works should be carried out for all kinds of renewal and protection of the forest area. However, the areas that have lost their qualification despite all kinds of improvement works are included in the scope of 2B land in our country by the law numbered 6831 and are included in the evaluation as areas that have lost their forest quality. The cadastral transactions are carried out and registered in the name of the treasury on the legal or real person. Next is the planning process. If the planning 2B land is in the existing zoning plan, a local revision is made, if it is adjacent, an additional, and if it is far from the existing plan, local location zoning planning is made within itself, and parcellation planning is created. The planning process, on the other hand, is to create the closed equilibrium surface that will occur depending on the area that does not depend on any variable, especially the 2B terrain, the X variable, which is called the topographic observation data with the empirical method, and the function that will emerge depending on it, the Y variable. With the empirical method, the necessity of preparing subdivision plans as a result of the reduction of irregular lines and curves as a matrix resulting from the transfer of X and Y coordinates has been researched.

Key Words: Forest land loss, empirical method, parceling plans, 2B lands

Orman vasfını yitirmiş 2B arazilerin ampirik yöntemle parselasyon planlanması üzerine bir araştırma

ÖZ

Orman alanları olarak kullanılan orman haritaları kapsamında sınırları ve orman kadastrosu yapılmış olan alanlar zaman içerisinde kısmi ya da bütüncül olarak orman alanı vasfını kaybedebilir. Öncelikle vasfını kaybetmeden, ormanlık alanla ilgili her türlü yenileme, koruma için gerekli çalışmalar yapılmalıdır. Ancak, her türlü iyileştirme çalışmasına karşın vasfını yitiren alanlar ülkemizde 6831 sayılı kanun uyarınca 2B arazi kapsamına alınarak orman vasfını yitiren alanlar olarak değerlendirme kapsamına alınır. Kadastro işlemleri yapılarak hazine adına tüzel ya da gerçek kişilik üzerine tescillenir. Sonrasında işlem planlama sürecidir. Planlama 2B arazi mevcut imar planı içerisinde ise lokal revize, bitişik ise ilave, mecut plandan uzakta ise kendi içerisinde lokal mevzi imar planlaması yapılarak parselasyon planlaması oluşturulur. Planlama işlemi ise özellikle 2B arazi olarak ortaya çıkan hiçbir değişkene bağlı olmayan alanı, ampirik yöntemle topoğrafik gözlem verisi olarak adlandırılan X değişkeni ve buna bağlı ortaya çıkacak fonksiyon Y değişkenine bağlı olarak meydana gelecek kapalı denge yüzeyini oluşturmaktır. Ampirik yöntemle, X ve Y koordinatlarının taşınması sonucu meydana gelen düzensiz doğru ve eğrilerin matris olarak indirgenmesi sonucu ile nasıl parselasyon planları hazırlanması gerekliliği üzerine araştırma yapılmıştır.

Anahtar Kelimeler: Orman arazi yitimi, ampirik yöntemler, parselasyon planları, 2B araziler

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1. Introduction

Land use in Turkey and in which sectors it will be used is a controversial issue. When the said distribution is taken into consideration and evaluated under the conditions of Turkey, it is seen that a significant part of it, even almost all of it, is realized on forest lands. This can be illegal as well as legal ways and public interest, agricultural purposes, sector incentives, creating added value, having strategic values, etc. It is also made through allocations or transfers based on various reasons such as The reason why transfers and allocations were made and discussions arose because of them is the reason for the loss of forest quality in terms of science and science and the lack of benefit in preserving the lands as forest, which is included in Article 169 of our Constitution and Article 2 of the Forest Law No. 6831, which was arranged in parallel with this. exists. According to Article 2/B of the Forest Law; Whether a place has completely lost its forest quality is evaluated by the forest cadastral commissions and the places that have completely lost their forest quality before 1981 are taken out of the forest borders on behalf of the Treasury by the provision of Article 2/B of the Forest Law No. 6831. In particular, 2/B allows change and land shift based on various dates, and the discussions are concentrated here (Dursun, 2009). The problem, known as the 2/B problem among the public, is the title deed problem in the settlements formed by illegal construction in the areas covered by this article of Law No. 6831. Because, according to the current law, title deeds cannot be given to the owners of buildings located in such places by the State. What is expected to solve this title deed problem is a constitutional amendment. However, there is another property issue about 2/B that is not brought to the fore or perhaps is not well known to most people. This is the problem: because a title deed immovable was later transferred to the 2/B area, the title deed was canceled by a court decision, and the titleholders became occupiers in these immovables, and on top of that, they were faced with a criminal penalty (occupation fee) (Dinç, 2012).

Cadastre procedures are carried out to determine the border, geometric condition, and area of forests. According to the 11th article of today's Forest Law, state forests that have been cadastralized and finalized are registered in the name of the treasury without any tax or fee. The registration here does not mean the registration in the land cadastre law. In short, the term "registration of forests" means the limitation of forests (Ateş, 2010; Polat, 2012). Areas whose boundaries are determined by the Council of Ministers, upon the proposal of the Ministry of Forestry and Water Affairs, from the places where there is no scientific and scientific benefit in conservation as a forest, but on the contrary, it is determined that it is beneficial to be converted into agricultural land; Ministers for the provision of resettlement for the people of villages and neighborhoods in or adjacent to state forests, which must be removed from their settlements due to their stay in a dam or pond reservoir areas and absolute protection areas of dams for drinking water purposes, in military forbidden zones, in areas where there is a danger of earthquake or erosion or landslide. According to the procedures and principles to be determined by the Board, it is taken out of the forest borders by the General Directorate of Forestry and registered in the name of the Treasury in the land registry (Yeşilyurt, 2013). These areas fall under the control of the Ministry of Environment and Urbanization. In these areas, the provision of Article 22 of the Law No. 3402 stating that the cadastral sites cannot be subjected to cadastre for the second time shall not be applied. A sufficient number of forest cadastral commissions are assigned by the General Directorate of Forestry to determine these areas. During this determination, the announcement period is one week; The objection period is applied as one month. The periods specified in this paragraph shall apply to the forest cadastre implementations to be carried out within the scope of this paragraph. The resettlement works and transactions of the villages or neighborhoods that are decided to be transferred and settled within the scope of this paragraph are carried out jointly by the relevant public administration and the Ministry of Environment and Urbanization (Ayaz, 1998; Yeşilyurt, 2013; Url1, 2023). Planned, objective, self-sacrificing, and exploratory approaches should be exhibited in the preparation for the sale of the lands taken out of the forest because they have lost their forest quality in our country and in the evaluation studies to be carried out by public institutions for this purpose. Suggestions for solutions to be developed about these lands; It should contribute to the sustainable use of forest resources, not encourage the occupiers of forest lands, provide an advantage to the public sector and everyone should be assured that the work done is transparent (Uğurcu, 2018).

2. Theoretical Framework and Scope

When 2/B lands turn into a normal area by the relevant law, cadastral studies are carried out first. After the cadastral work is done and the cadastral borders are determined, the procedures will be converted to the same steps to be made in the areas with or without zoning.

The purpose of the cadastre is to establish the land registry stipulated by the Turkish Civil Code No. 4721, by determining the legal status of immovable properties by specifying the borders of the immovable properties on the land and the map based on the cadastral or topographic cadastral map of the country according to the country coordinate system, to establish the infrastructure of the spatial information system. , 2008).

As a 2/B land, the land that has lost its forest character is usually registered in the name of the treasury, and the border is determined by the purpose of the cadastre. This process is carried out in light of various factors. The cadastral part can be considered a separate issue.

With the loss of forest quality, forest areas are used for different purposes with the provision of subparagraph (B) of the first paragraph of Article 2 of Law No. 6831. Determining and monitoring the horizontal and vertical changes in these areas over time is an important part of determining the areas taken out of the forest (Can, 2019). In the joint provisions of the law concerning all forests, there are provisions for the protection of all forests in the country and for increasing the forest existence, regardless of the owner, such as afforestation and zoning works and extinguishing forest fires. The follow-up of the acts prohibited by this law and the penal provisions envisaged in connection with these acts are regulated in the last part of the Law (Yaşar, 2022).

If we summarize the scope and limits of the study, after a certain piece of land loses its forest quality and becomes a

normal piece of land, it is the process of regulating the resulting raw land piece by cadastralizing the land according to the zoning planning rules according to its proximity to the zoning or adjacent border. Forest areas are generally available in areas that are out of zoning. The land that becomes 2/B will be out of zoning in this case. Apart from this, it is available in the forested area within the zoned area. At this point, the land that will become 2/B land will be in the zoned area.

It is to seek an answer to the question of how to arrange these areas, which are formed by 2/B lands, which are irregular when viewed. If the arrangement of the lands is within the zoned area, the local revision plan or plan amendment is made, while the parceling process is carried out by making an additional zoning plan on the piece of land coming from 2/B, which is close to the zoning area but not zoned. The area where only facilities such as vineyards, gardens, dairy farms, and cheese farms bordering the zoned area can obtain a construction permit is considered a contiguous area. The process of arranging the pieces of land coming from the 2/B lands, which are both unzoned and outside the contiguous area, is done within the scope of the location zoning plan.

The aim is to provide an empirical estimation of horizontal and vertical lengths in a closed convex plane of scattered parcels, which have been cadastralized by coming from 2/B at certain points, and which are in a raw state by the zoning concepts of the lands. In this way, it is to provide new parcellation characters.

3. Material and Method

In experimental research, it is desired to determine the values of a certain function against the values of the independent variables known, given, or obtained by observation. Those who do experimental studies want to have an equation and graph between independent variables and function values, to see it constantly, to use it in every measure, and to compare it for convenience. If the number of observations is equal to the number of unknown coefficients or constants in the equation, there is a definite solution with algebraic and simultaneous equations (Evinay, 1972). For example, no matter what type of study, model formation emerges as a result of the correlation of dependent and independent variables with each other, and empirical modeling occurs (Vural, 2022). A data model is created by creating a certain equation according to the purpose of the study. Empirical experiments usually approximate the outcome of the event to the most correct one based on the available data. Empirical results show that the effect of other variables is in line with expectations to a large extent (Aslan, 2022). In the empirical view, if an X variable is not the cause of the Y variable, then any shock to X will not affect Y (Bozkurt, 2007; Ersin, 2022). Experimental modeling can be done by controlling it with different estimation tests (Abdi, 2022).

The planning process is started with balancing in the convex area, whose land size is determined as an empirical model, for which the cadastral process is performed as a 2/B land. After a measured quantity is cleared of gross and systematic errors, the reasons (usually irregular errors) that cause the measurement to be corrected are tried to be determined. Irregular errors that cause corrections are formed by the combination of many parameters (Bayrak, 2010).

$$\text{Correction=Exact Value-Measure} = \begin{cases} V_1 = X - L_1 \\ V_2 = X - L_2 \end{cases} \quad (1)$$

(Bayrak, 2010)

Each correction value consists of elementary corrections.

$$V_1 = V_{11} + V_{12} + V_{13} + \cdots + V_{1n}$$
$$V_2 = V_{21} + V_{22} + V_{23} + \cdots + V_{2n} \quad (2)$$
$$.$$
$$.$$
$$V_n = V_{n1} + V_{n2} + V_{n3} + \cdots + V_{nn}$$

(Bayrak, 2010)

Some or only one of these elementary corrections may be greater than the others and be repeated in all measures. The effect of this parameter on the dimensions is the same. If Vİ corrections are affected by the same Vİİ value, these measures become dependent on each other, and the measure showing this dependence is called correlation. If this dependence is due to the physical environment, it is called physical correlation, if it is due to the functional model written for the measures, it is called mathematical correlation. Physical correlation occurs when there is a physical relationship between the measures. Mathematical correlation, on the other hand, may occur due to mathematical models even if the measures are independent of each other (even if there is no physical correlation) (Bayrak, 2010).

Suppose that a sufficiently large number of sides of a rectangle whose sides are x and y are measured. Let's collect the dimensions of x in L1 and the measurements of y in the vector L2. Correlation between x and y can be obtained by utilizing corrections with the help of exact values (Bayrak, 2010).

$V = Ax - L$ If the functional model in matrix format is taken as the main starting point in empirical modeling, unknowns are solved. By adding the balancing unknowns obtained from the solution of normal equations to the approximate values of the unknowns, the exact values of the unknowns are obtained (Bayrak, 2011).

$$\begin{bmatrix} V_1 \\ V_2 \\ \dots \\ V_n \end{bmatrix} = \begin{bmatrix} a_1 & b_1 & c_1 & \dots \\ a_2 & b_2 & c_2 & \dots \\ \dots & \dots & \dots & \dots \\ a_n & b_n & c_n & \dots \end{bmatrix} * \begin{bmatrix} d_x \\ d_y \\ \dots \\ d_u \end{bmatrix} - \begin{bmatrix} l_1 \\ l_2 \\ \dots \\ l_n \end{bmatrix} \quad (3)$$

$$A^T Ax - A^T L = 0 \quad (4)$$

$$X = (A^T A) \quad (5)$$

(Bayrak, 2011)

Exact value of unknowns = Approximate value of unknowns + Balancing unknowns, So, line, $Y = ax + b$, parabol $Y = ax^2 + bx + c$ and higher order polynomial $Y = a + bx + cx^2 + dx^3 + ex^4 + \cdots$ (6) (Evinay, 1970; Url, 2023).

The mathematical approach to closing an area is provided with correct, parabola and iteration, and order is ensured in planning.

$$\begin{bmatrix} x \\ y \\ \dots \\ u \end{bmatrix} = \begin{bmatrix} x_0 \\ y_0 \\ \dots \\ u_0 \end{bmatrix} + \begin{bmatrix} d_x \\ d_y \\ \dots \\ d_u \end{bmatrix} \quad (7)$$

$$\begin{aligned} x &= x_0 + d_x \\ y &= y_0 + d_y \\ &\dots \\ u &= u_0 + d_u \end{aligned} \quad (8)$$

(Bayrak, 2011)

With the matrix solution, the piece of land from 2/D is empirically created as a result of the operations in the priority order.

4. Finding and Discussion

The lands accepted as forests are determined in our country within the framework of the law numbered 6831. Protection and ensuring its sustainability are carried out in the light of this law. Despite the painstaking work required for sustainability, when it is believed that sometimes this characteristic of the soil cannot continue as a result of different factors such as soil or water, a piece of land emerges as areas that have lost their forest area within the scope of article 2/B of this law. Although the piece of land obtained in this way was first cadastralized as a forest cadastre at the time of the forest area, when it turns into a normal piece of land within the scope of 2/B, a cadastral work is done again within the scope of the cadastral law no 3402, and it is registered in the name of the treasury to a large extent. Sometimes, there may be cases where it is registered as a real person.

In our study, the following question is sought. It is how these pieces of land, which only have a cadastre, will become regular and under what factors. Zoning works are done as a planning process around 3 axes.

- Revised Zoning Planning
- Additional Zoning Planning
- Site Zoning Planning

The regularization of the piece of land that emerges as 2/B should first start with the surrounding of the relevant area as convex. It is only possible with empirical data obtained in the field. Because there is no plan on paper. The aim is to make the most ideal planning on paper. Empirically, as a result of these observations, the most ideal plan can be created, especially by the connection of the transformation coefficient matrix with the road network and the general construction conditions in the plan.

Revised zoning plans are the type of plan that is made when the zoning plan is certain and the need in the zoning plan. While the additional zoning plan is adjacent to the existing zoning plan, the local zoning plan is called local planning in a region not adjacent to the existing zoning plan. The word adjacent area, on the other hand, means the areas where permissions can be granted for the construction of facilities such as vineyards, gardens, and animal husbandry, which are adjacent to a certain region around the existing zoning area. After the necessary definitions, if the pieces of land have lost their forest character and emerged, how to plan the pieces of land, are examined from different views;

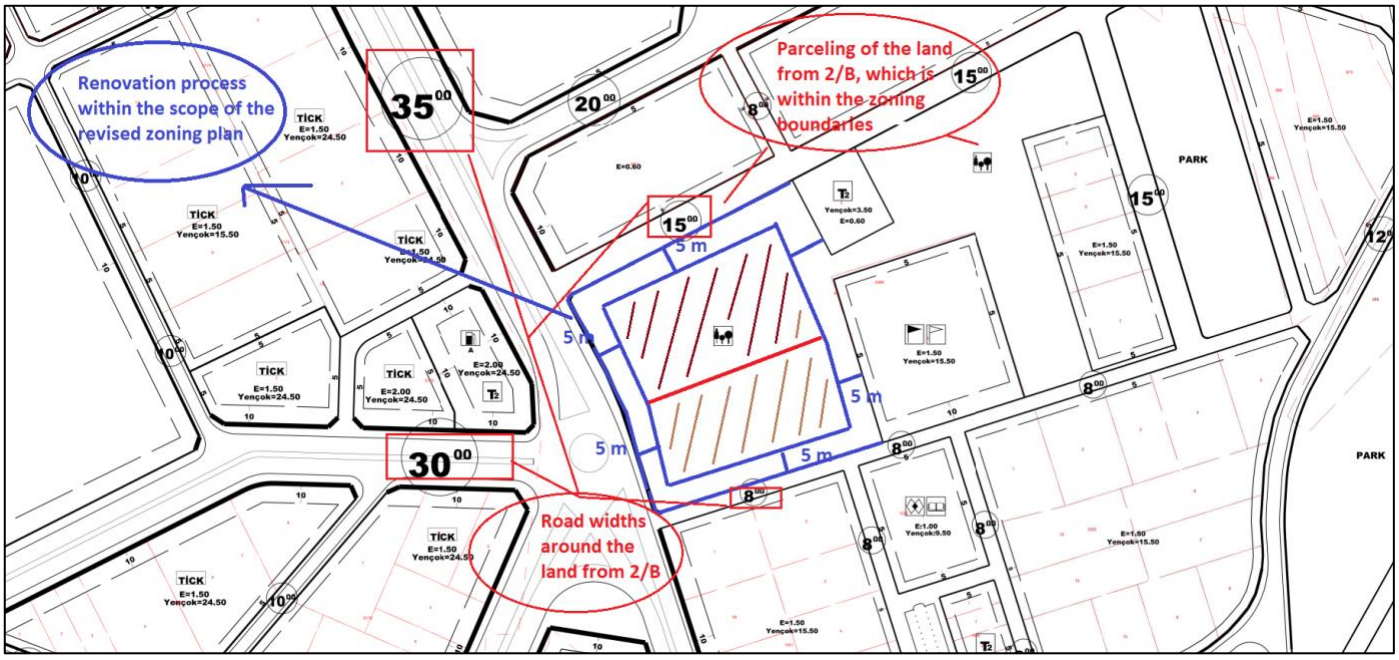

Figure 1. 2/B area view that has lost its forest area in the zoning plan

From the zoning plan image in Figure 1 to the question of how the piece of land within the scope of 2/B within the scope of the zoning area will be arranged convexly in an empirical way when the outer edge of the land is accepted as the outer edge of the land, how many sides will the area be closed and the fixed distance to the zoning road as a basis. how it will be subdivided is determined. Accompanied by the coefficients matrix;

$$X = (A^T * A)^{-1} * (A^T * L)$$

Based on the matrix of X coefficients that will find the unknown, the matrix defined by A shows how many matrices

there are according to the number of line segments that will make the land from 2/B closed. The L matrix, on the other hand, is fixed and is used to provide the parcellation of the distances of the zoning blocks according to the cross-sectional length of the zoning road network of the parceling.

In the illustration in Figure 1, the area shown in blue around it is an area that has lost its forest character, and since this land that has lost its forest quality is within the zoning area, apart from providing a minimum 7 meters cross-sectional road width, the cross-sectional length of the road that has been worked in the plan first is fixed as an L matrix. considered an approach.

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^{T} * \begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}\right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^{T} * \begin{bmatrix} 8 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}\right) = 1.3 \text{number of parcels} \quad (10)$$

Since the piece of land will be made convex with the 5 intersecting lines from the 8-meter road processed in the south plan, the A coefficients matrix symmetric unit matrix, the last column beginning is 5. At the zoned points, however, the section of the road is taken at the beginning of the L coefficients matrix by taking the number of meters from the front where the cross-section is processed. The number of parcels is generated depending on the starting value of the X coefficients matrix L entering and the number of correct cuts of the area to be covered, so that the front drawing parts of the piece of land transformed from 2/B, with a minimum of 7-meter road cross-section, are in the form of a garden, corresponding to 5 meters. For each 3.5-meter road cross-section increase, the number of plots increases by 0.5 according to the X coefficients matrix. The parcel amount is formed in the light of the road cross-section of 15 meters in the north of the 2/B land and 35 meters in the west. When an average of 4 to 10 parcels come together, a zoning island is formed.

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^{T} * \begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}\right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^{T} * \begin{bmatrix} 35 \\ 1 \\ 1 \\ 1 \end{bmatrix}\right) = 5 \text{ number of parcels} \quad (11)$$

It shows that when the L coefficients matrix is entered from the cross-section amount of the road in the west of the area, it will correspond to the number of 5 parcels as a front. When the number of parcels equals 1.3 on the 8-meter south facade, the number of parcels and parcellation are performed by rounding to the next number of parcels. No matter which factor is put in the row and column digits of the matrix shown with dots, such as the pulling distance, the result will not change because the coefficients matrix is found over the unit matrix.

Table 1. The number of parcels to be formed with the cross section of the plan zoning road

X Coefficients Matrix (Number of parcels)	A Matrix (Number of lines)	L Matrix (Road cross section length) (m)
1	4	7
2	5	14
3	6	21
4	7	28
5	8	35
6	9	42
7	10	49
8	11	56
9	12	63
10	13	70
11	14	77
12	15	84
13	16	91
14	17	98
15	18	105

While the plotting of the cutting line edges in Table 1 is systematically created as zoning islands according to the road cross-section and the corresponding number of parcels, rounding according to the number of upper and lower parcels in the matrix based on the correct number may sometimes be one or two parcels more or less relatively.

In particular, if no changes will be made in the cross-sections of the road within the scope of the revised zoning plan, or only in the existing zoning plans, the parcel is produced in the part facing the road front, according to the processed cross-section width on the lands that have lost the forest quality.

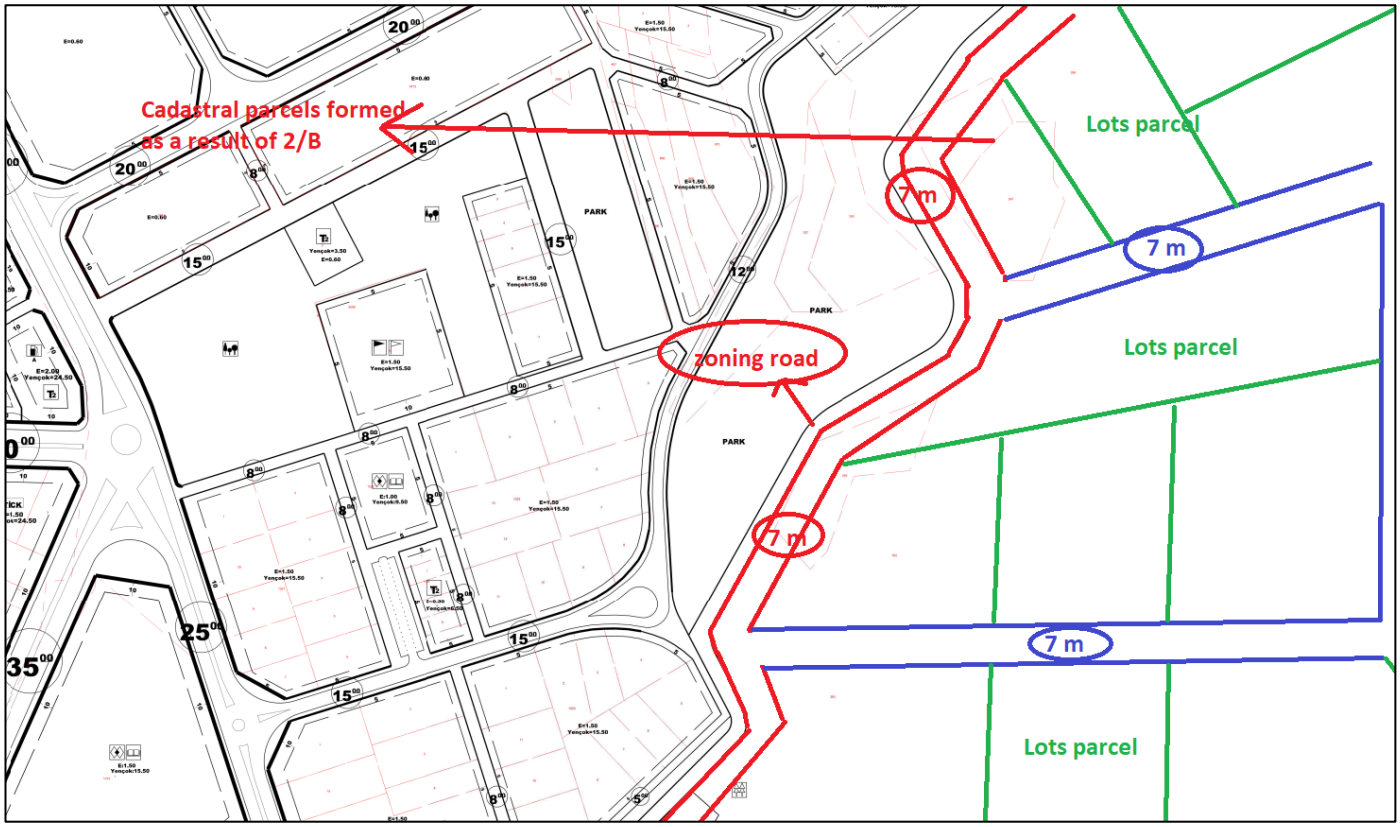

Figure 2. 2/B area view that has lost its forestry character outside the zoning plan

As seen in Figure 2, it is an example of an additional zoning plan. While the relevant land was a forest area before, the process of regulating the land removed from the forest area is simpler according to article 2/B of Law No. 6831. By entering a minimum 7-meter road cross-section, parcellation can be done by creating islands between 4 and 10 parcels. In the additional zoning plan, each straight edge is taken as a basis and the broken points during the convex transformation of the area are entered into the coefficients matrix as 4 and six parts from the base edge,

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & 4\ and\ under \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 1 & \dots & \dots & 4\ and\ under \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}\right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & 4\ and\ under \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 7 \\ 1 \\ 1 \\ 1 \end{bmatrix}\right) = 1 \text{ number of parcels} \quad (12)$$

As in this type of image, the size of the area coming from 2/B and the dominance of the cadastral base are determined empirically by observation and relative.

In Figure 3, a forest area adjacent to the existing zoning plan is located in the adjacent area. While the first two ways were revised and additional examples were given, the area that lost its forest character was removed as 2/B in the middle of the forest. The extracted area is called the localization plan. The extracted area has been made convex to cover it with 5 straight segments. The number of parcels corresponding to the road-facing side of the line segment has been inferred, with a minimum of 7 meters of road network laid on the L matrix.

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}\right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 5 \\ \dots & 1 & \dots & \dots & \dots \\ \dots & \dots & 1 & \dots & \dots \\ \dots & \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 7 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}\right) = 1 \text{ number of parcels} \quad (13)$$

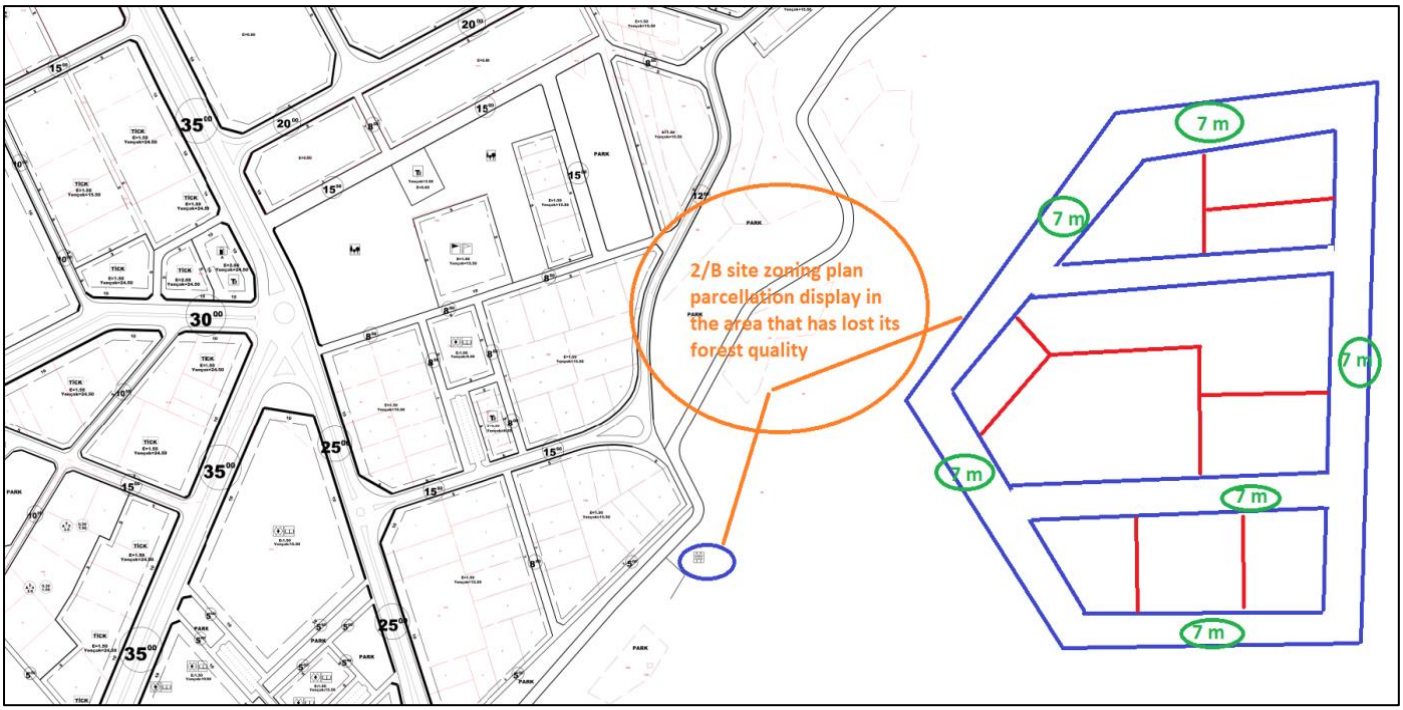

Figure 3. 2/B area view that has lost its forestry character in the adjacent area outside the zoning plan

The average number of parcels formed in the section facing 7 meters will appear as 1.

$$\begin{bmatrix} x \\ y \\ \dots \\ u \end{bmatrix} = \begin{bmatrix} x_0 \\ y_0 \\ \dots \\ u_0 \end{bmatrix} + \begin{bmatrix} d_x \\ d_y \\ \dots \\ d_u \end{bmatrix} \quad (14)$$

After the number of parcels is removed, approximately 4 to 10 parcels will be placed on the zoning island by adding iteration to the average zoning island line segment.

In the image, the area zoning plan gives the same X coefficients matrix, although the amount of outer edge cut-off is 5. Still, some of the inner zoning islands appear as 4.

$$\begin{bmatrix} x \\ y \\ \dots \\ u \end{bmatrix} = \begin{bmatrix} 1+1_n \\ 2+2_n \\ \dots \\ N+N_n \end{bmatrix} + \begin{bmatrix} 1 \\ 2 \\ \dots \\ n \end{bmatrix} \quad (15)$$

As a result, the piece of land from 2/B is planned by adding 1 to the increasing number of parcels.

In Figure 4., a modification will be announced in the plan, which has emerged as a 2/B land only in the area that has lost its forest character, within the zoning boundaries, and will be announced as a mini revision plan when planning is requested. A matrix of L coefficients will be created when a large amount of determination is made in the plan as a minimum double lane with at least a minimum cross-section of 7 meters. As the number of outer edges of 2/B in red, in the planning consisting of the number of cutting 10 pieces;

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 10 \\ \dots & 1 & \dots & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & 1 & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & \dots & 1 & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & \dots \\ \dots & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}^T * \begin{bmatrix} 1 & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 10 \\ \dots & 1 & \dots & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & 1 & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & \dots & 1 & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & \dots \\ \dots & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 10 \\ \dots & 1 & \dots & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & 1 & \dots & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & \dots & \dots & 1 & 0 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & \dots \\ \dots & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & \dots \\ \dots & \dots & \dots & \dots & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}^T * \begin{bmatrix} 7 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix} \right) = 1{,}47 \text{ number of parcels} \quad (16)$$

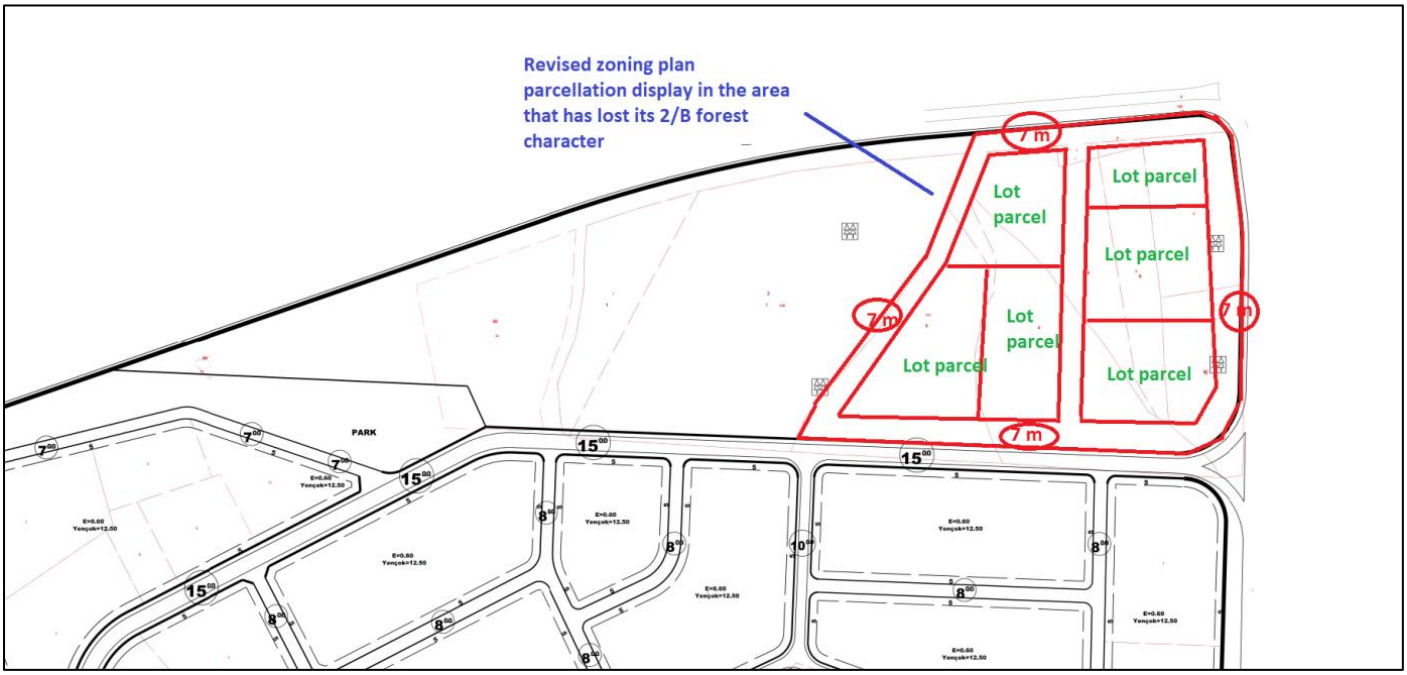

Figure 4. 2/B area view that has lost its forest area in the zoning plan

No matter how the X coefficients matrix comes from either the unit or the zero matrices since it will be a symmetrical unit matrix, the number of parcels in each iteration will continue as 1 and.

In Figure 5., the planning of the area that has no cadastral base, which has been designated as 2/B land within the existing un-zoned contiguous area, has been determined as an approximately quadrangular convex area with a 4x4 matrix by forming 4 lines segments according to the number of segments that cut the right line approximately enough for the size of the land.

The amount of parcel that will coincide with the side facing the side is determined.

$$X = \left(\begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}^T * \begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}\right)^{-1} * \left(\begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}^T * \begin{bmatrix}7\\1\\1\\1\end{bmatrix} = 1 \; and \; X = \left(\begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}^T * \begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}\right)^{-1} * \left(\begin{bmatrix}1 & \dots & \dots & 4\\ \dots & 1 & \dots & \dots\\ \dots & \dots & 1 & \dots\\ \dots & \dots & \dots & 1\end{bmatrix}^T * \begin{bmatrix}10\\1\\1\\1\end{bmatrix} = 1 \text{ number of parcels} \quad (17)$$

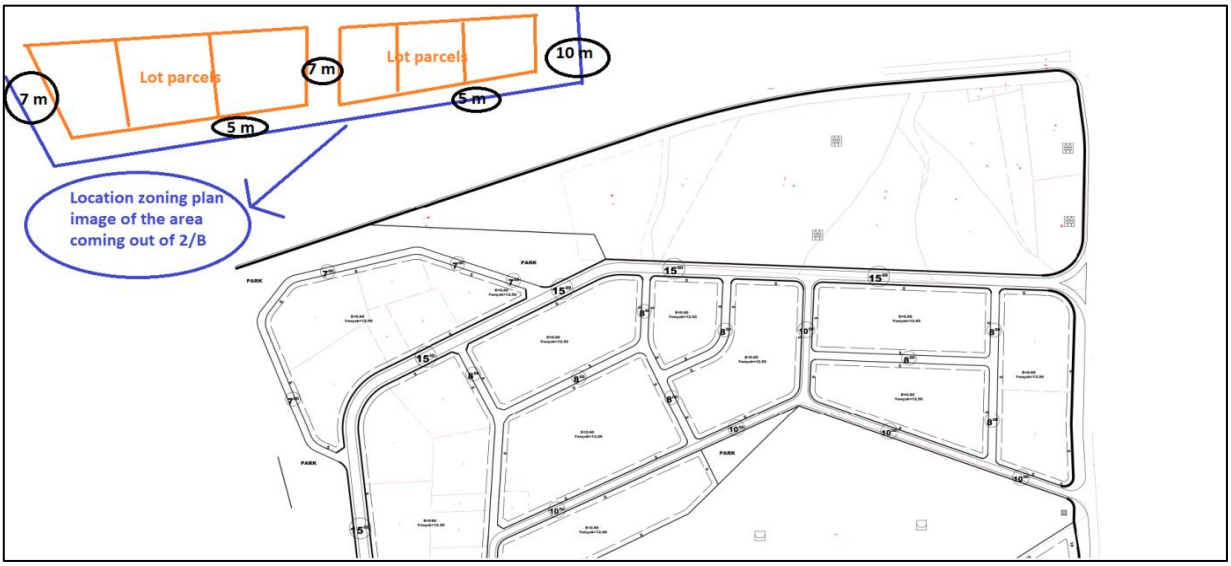

Figure 5. 2/B area view that has lost its forestry character in the adjacent area outside the zoning plan

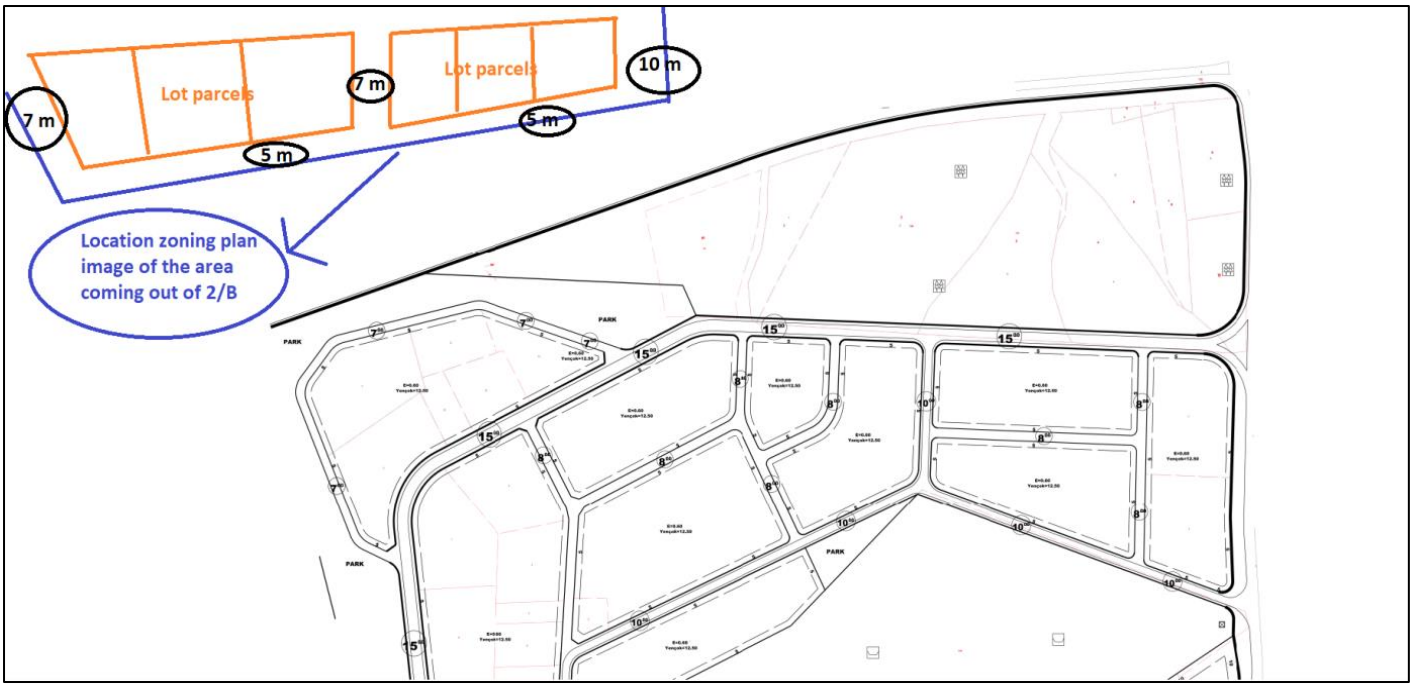

Figure 6. 2/B area view that has lost its forest area except for the zoning plan and the adjacent area

In Figure 6., the process is determined according to the number of cuts in the form of 1 + 1n, according to the size of the area coming from the 2/B land, a certain amount of which has lost its forest character, except for the zoning and contiguous areas. When looking to the south of the area, the reason why 5 meters is exceptionally reduced to 7 meters is due to the slope of the area according to the topography. Regardless, it is continued with the same iteration.

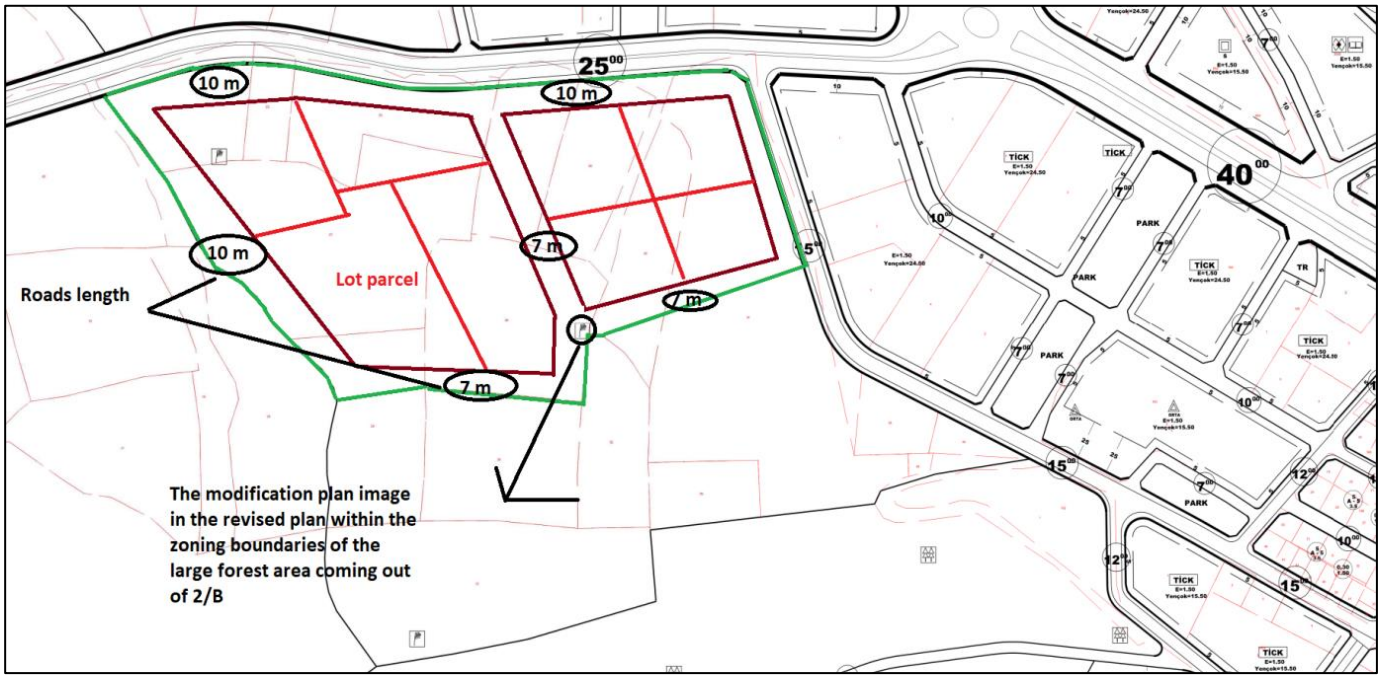

Figure 7. 2/B area view that has lost its forest area in the zoning plan

In Figure 7., most of the lands that have a cadastral base and have lost their forest quality as 2/B are determined as part of the treasury-registered planning part towards the land size. After this determination, road network planning is determined by considering the topography in meters. The number of correct pieces corresponding to the land situation in terms of average size;

In Table 2., the area size that will form the basis of the X coefficients matrix is shown by determining the convex line segment to be used proportional to the size of the area declared in the parcellation of the 2/B land.

Figure 8., it is shown how the parceling of the undetermined region should be done by simply finding 2 zoning blocks together with two zoning parcels, each corresponding to each zoning island, with the 4x4 unit matrix will be arranged as convex.

On the other hand, in Figure 9., both outside the zoning and the adjacent areas, in or out of the village areas, by combining with the most appropriate line relative to the size of the land in the nearby region, starting from the unit matrix, the number of islands such as the number of parcels, and then the number of islands such as the number of islands, is the lowest path. The parceling process is done by determining the number of parcels based on the L unit constant matrix from the cross-section

Table 2. The relationship between the number of straight pieces and the size of the area

Line Segment	Field Size (m^2)
1-3	1000-3000
3-5	3000-5000
5-7	5000-7000
7-9	7000-9000
9-11	9000-11000
11-13	11000-13000
13-15	13000-15000
15-17	15000-17000
17-19	17000-19000
19-21	19000-21000

$$X = \left(\begin{bmatrix} 1 & \dots & \dots & 4 \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 1 & \dots & \dots & 4 \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}\right)^{-1} * \left(\begin{bmatrix} 1 & \dots & \dots & 4 \\ \dots & 1 & \dots & \dots \\ \dots & \dots & 1 & \dots \\ \dots & \dots & \dots & 1 \end{bmatrix}^T * \begin{bmatrix} 7+1_n \\ 1 \\ 1 \\ 1 \end{bmatrix}\right) = 1\ 1 \text{ number of parsels} \quad (18)$$

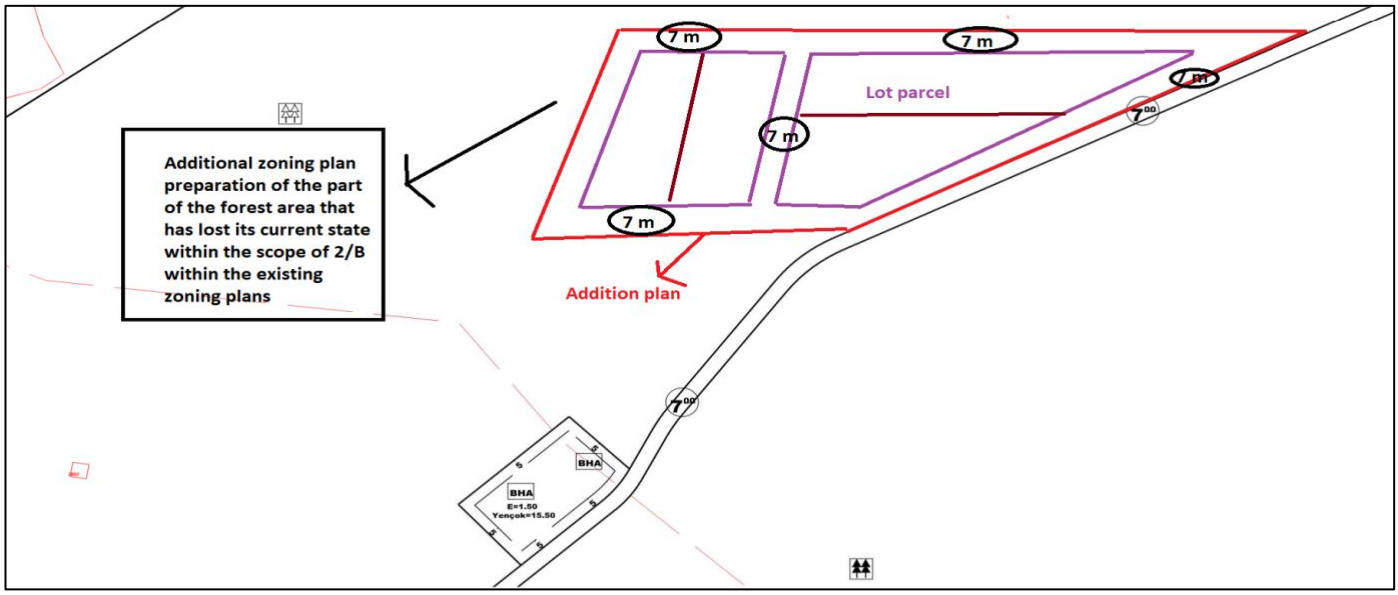

Figure 8. The view of the 2/B area that has lost its forest area outside the zoning plan and within the adjacent area

5. Conclusion and Recommendation

2/B lands appear as lands that have lost their forest character in our country and are generally registered in the name of the treasury. In our study, on the other hand, the question of how these areas can be subdivided technically and their function becomes high, without looking at the part of the cadastre of the lands coming from 2/B or to whom the immovables will be registered, has been examined. The empirical method was preferred as the mathematical model. This approach was preferred to transfer the observations on the field to the plan with the empirical approach by balancing with the help of matrices.

• The land area from 2/B is shown as 3 types of revised, additional and local zoning plans in the planning.

• The variance between the unit matrix and the number of lines,

• The number of parcels that will correspond to at least 7 meters between the unit matrix and the road cross-section,

• The relationship between the unit matrix and the number of lines and the size of the land,

Thanks to the factors, the priority plan area as the main cluster, then the zoning island in the field and the number of parcels within the island were investigated. Our suggestion, on the other hand, is to give sufficient withdrawal distances to forested lands that have not lost their quality while finding straight lines and cross-section distances with the planning coefficients matrix and avoiding high-rise structures.

In the study, only the research about parcellation and proper planning of the land has been included without entering the legend features in the sense of urbanization.

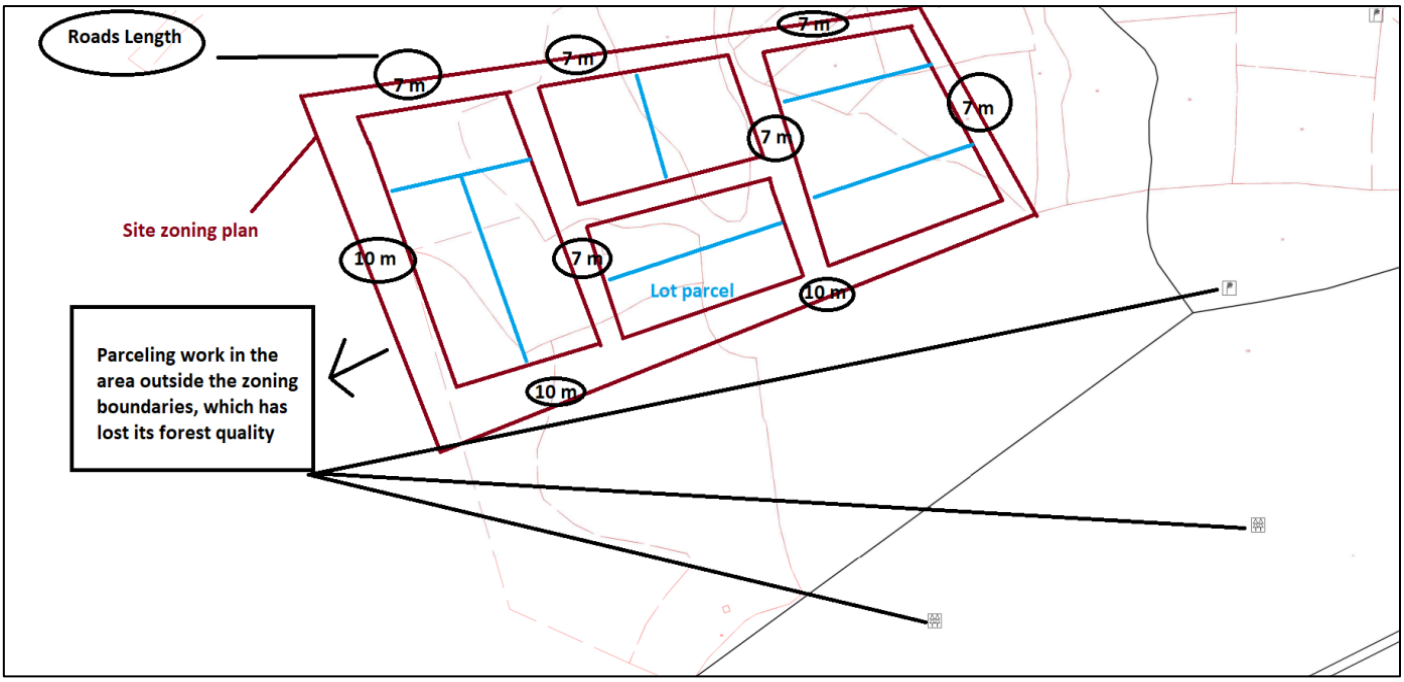

Figure 9. 2/B area view that has lost its forest area except for the zoning plan and the adjacent area

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