

on the western plateau. The maximum and minimum elevations of the land on which the quarry is located are 410 m and 254 m respectively (*vide* Figure 20 and Figure 21).

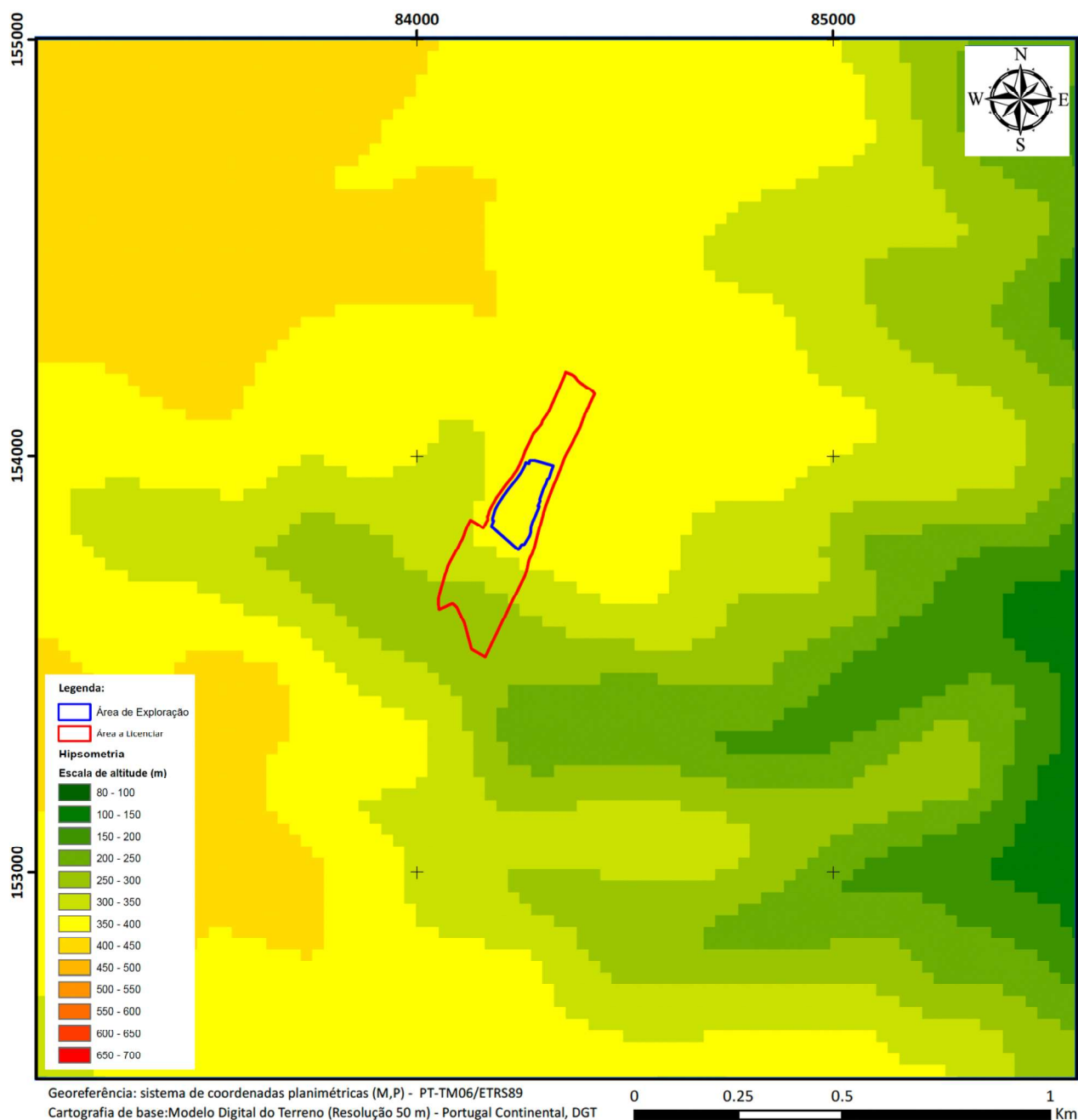


Figure 20: Hypsometry in the area surrounding quarry n.º 6637 “Vale de Videiro II”.

Next to the northern boundary of the area to be licensed, there is a main groove line separating the two valleys: the Canada do Inferno Valley and the Videiro Valley. To the south of the project area, there is the secondary thalweg, the water line of the Videiro Valley, and to the west there is a tertiary thalweg, roughly parallel to the project.

The slope and exposure of the slopes are obviously conditioned by the hydrographic network (*vide* Figure 21 and Figure 22).



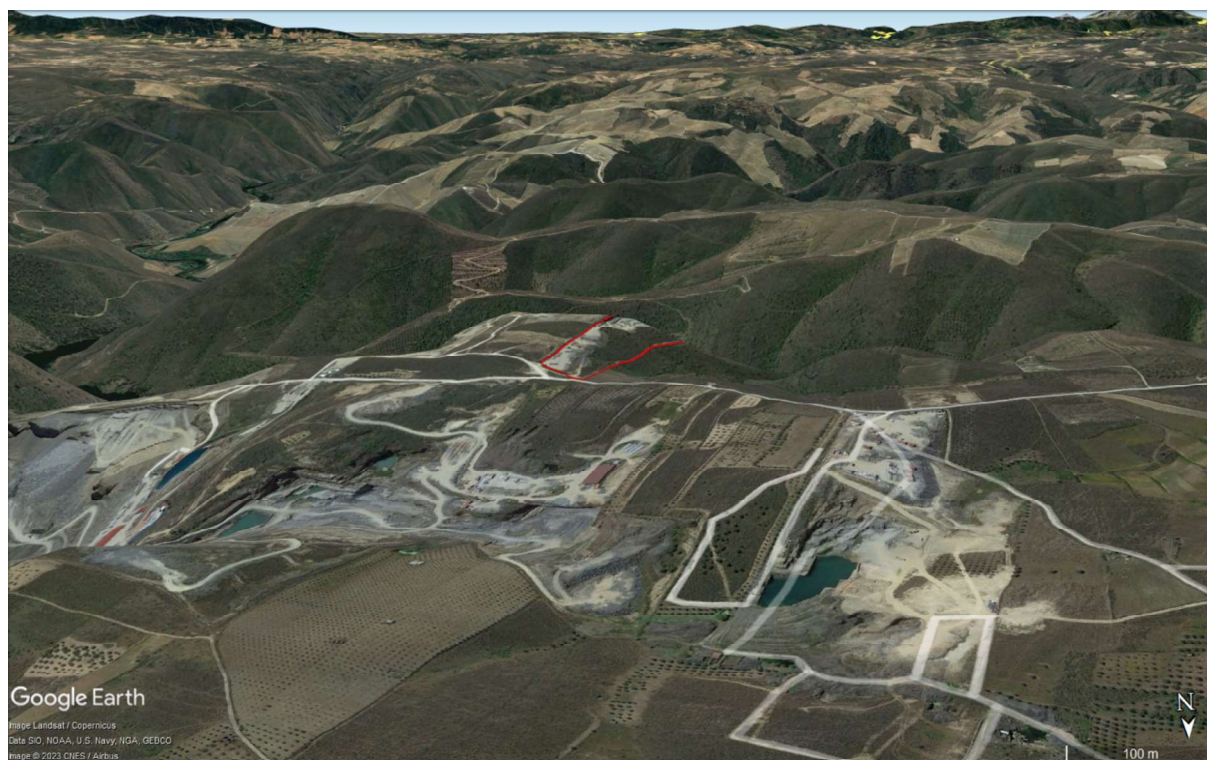


Figure 21: Aerial photographs of the site of the quarry n.º 6637 “Vale de Videiro II”, outlined in red.

The hillsides in the study area are representative of the region in which it is located, mostly between the 5% and 20% classes, with slopes of more than 30% on the steeper hillsides (*vide* Figure 22).

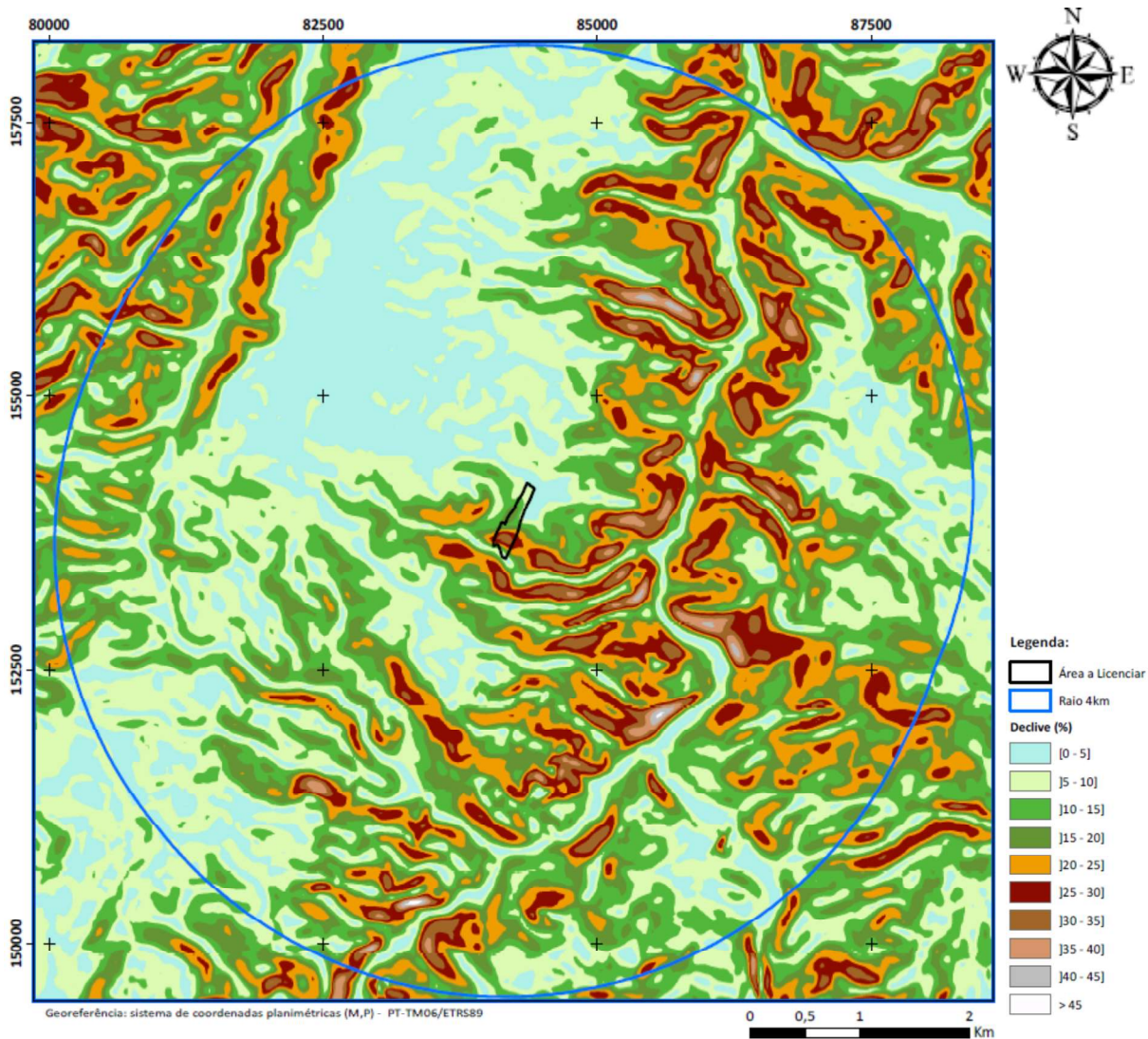


Figure 22: Extract from the slopes Map.

Thus, the project is located in an area with strongly accentuated slopes, enhancing its observation, especially from the opposite slope, however the very wavy relief also contributes to attenuate its visualization from areas further away from the project. The project's operating area has slopes of between 5% and 15% (*vide* Figure 23). In the southern part of the area to be licensed, the slopes are steeper, between 20 and 35%.

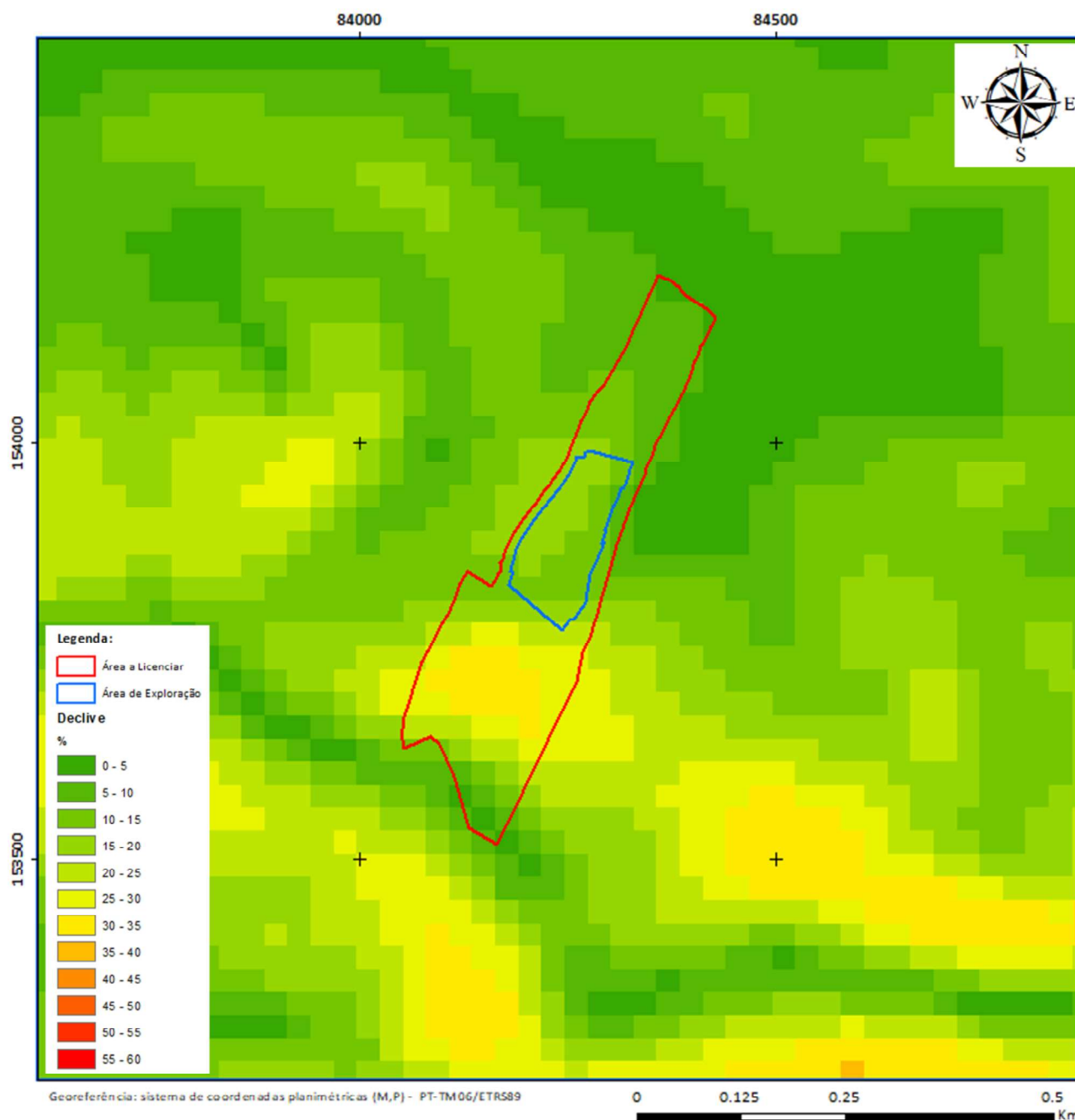


Figure 23: Slopes Map in the area of implantation of Quarry n.º. 6637 "Vale de Videiro II".

The analysis of visibility for the Quarry n.º 6637 “Vale de Videiro II”, from the surrounding area, did not considered the presence of built (*e.g.* buildings) or natural (*e.g.* forest) obstacles. The areas from which it is possible to see the Quarry n.º 6637 “Vale de Videiro II” are displayed in Figure 24. It can be concluded that there is little possibility of seeing the project area, with sightings only more likely from the slopes closest to the project to the west, southwest and south and on the access road to the Poio quarries.

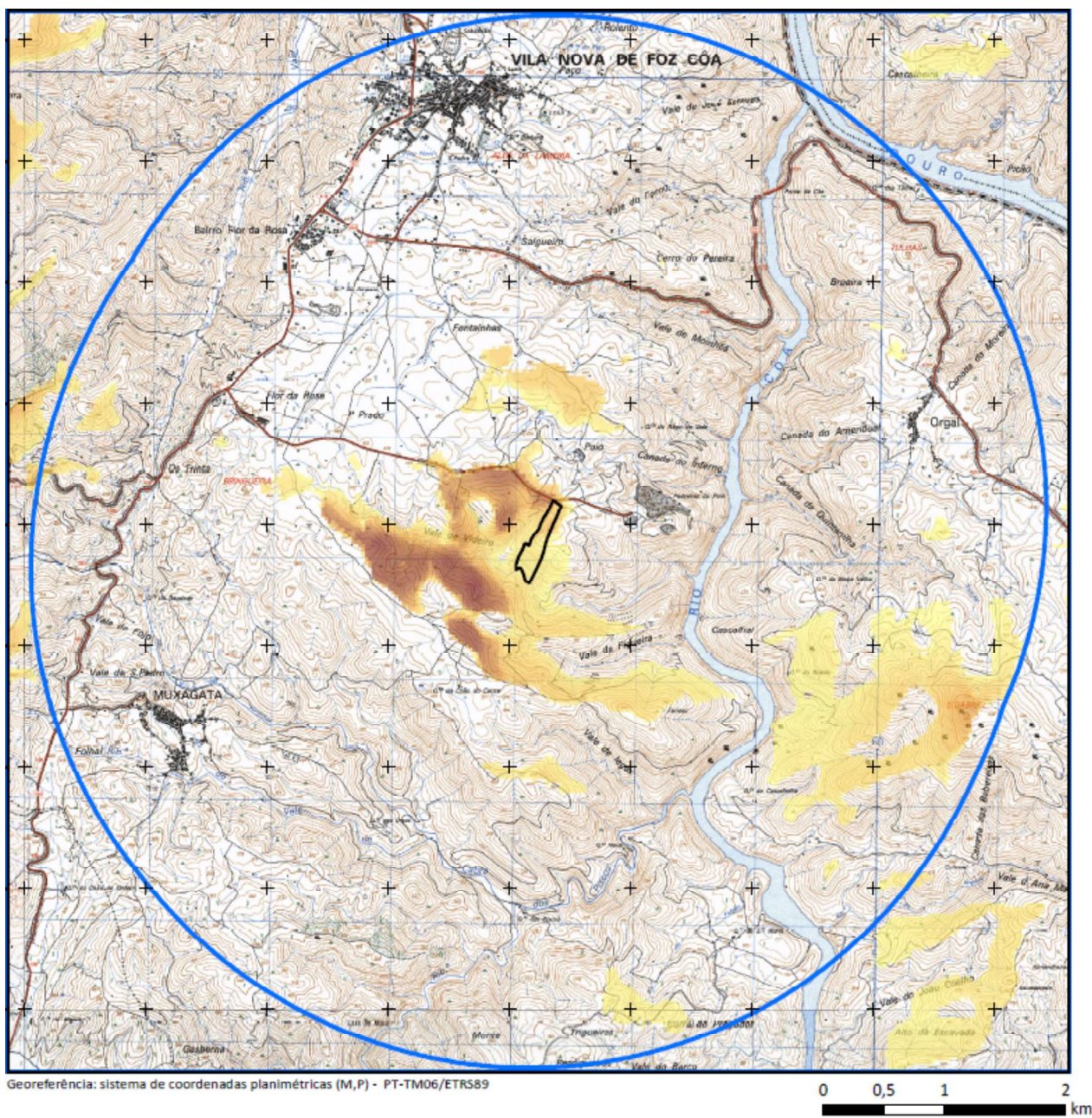
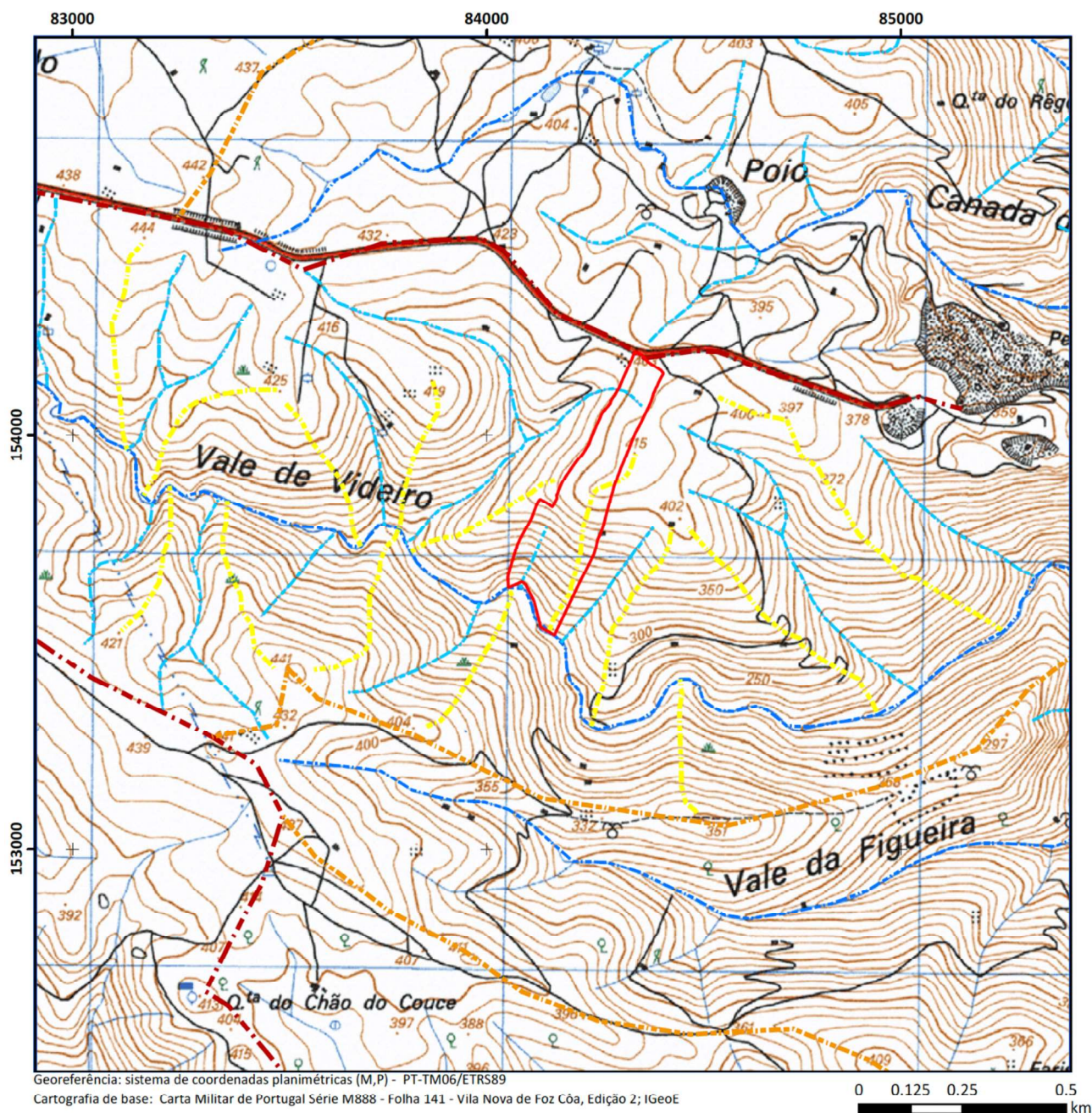


Figure 24: Extract from the Visibility cartography.

Next to the northern boundary of the area to be licensed, there is a main groove line separating the two valleys: the Canada do Inferno Valley and the Videiro Valley. To the south of the project area, there is the secondary thalweg, the water line of the Videiro Valley, and to the west there is a tertiary thalweg, roughly parallel to the project (*vide* Figura 25).



Legenda:



Figura 25: Grooves and thalwegs in the area of implantation of Quarry n.º 6637 “Vale de Videiro II”.

“Douro was, with the charter of the institution of the Companhia Geral da Agricultura das Vinhas do Alto Douro, on September 10, 1756, the first demarcated and regulated wine region in the world. Strict discipline of production and trade, control and certification and protection of the designation of origin 'Porto' has distinguished the legal system Portuguese. The name "Porto" appears in the individualization of wine as early as 1619. In 1699, the name 'Wine Port' was already used, and in 1713 the 'Port trade mark' was already called. In 1756, with the aforementioned charter of the institution of the Companhia Geral da Agricultura das Vinhas do Alto Douro, we have, “ante litteram”, the first controlled designation of origin. Exports of wine under the name 'Porto' had been carried out at least since the 17th century. This historical origin and international diffusion, added to the quality of Douro Demarcated Region wines, gives the designation of origin 'Porto' an internationally recognized prestige.” (Decreto-Lei n.º 173/2009, August’s 3).

The Douro Demarcated Region, which has undergone geographical changes over time, is wide and has been divided into three sub-regions with very specific characteristics from the agricultural Viewpoint, climatic and socio-economic factors: Baixo Corgo, Cima Corgo and Douro Superior. Quarry n.º 6637 “Vale de Videiro II” is located in Douro Superior's landscape unit, *vide* Figure 26. Douro Superior sub-region includes: in the district of Bragança the municipalities of Carrazeda de Ansiães (with 14 parishes), Freixo de Espada à Cinta (with 4 parishes), Miranda do Douro (with 13 parishes), Mogadouro (with 21 parishes) and Torre de Moncorvo (with 13 parishes); and in the district of Guarda the municipalities of Vila Nova de Foz Côa (with 14 parishes) and Figueira de Castelo Rodrigo (with 10 parishes).

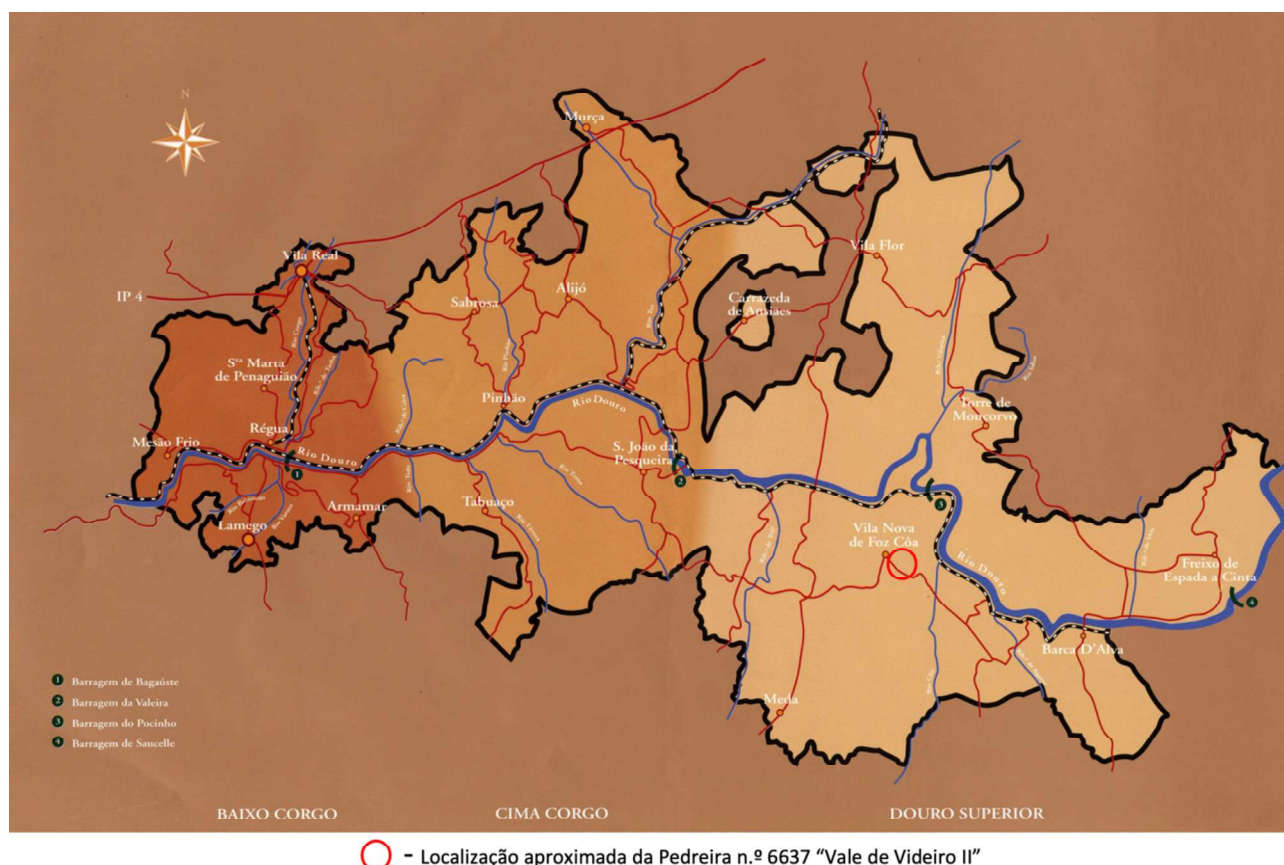


Figure 26: Quarry n.º 6637 “Vale de Videiro II” framework with the Douro Demarcated Region and sub-regions. Adapted from <https://www.ivdp.pt/pt/vinha/regiao/rdd-mapa-da-regiao/>.

Classification in regions has developed over time. One of the original demarcation limits separated the Alto Douro from Douro Superior, in the Cachão da Valeira area. This division was due to a geological accident (the granite monolith in the river that prevented the navigation of the Douro River to upstream this obstacle). The difference between the two zones was visible, just by checking the most notorious development of the vineyard culture in the Alto Douro. Later, with the removal of the granite block during the reign of D. Maria, the culture of the vineyard extended to the East, although continuing to represent in Douro Superior a lower importance than in Alto Douro. With the administrative reform of 1936, the Alto Douro region itself came to be called Baixo Corgo and Alto Corgo, serving this subdivision also to differentiate the wines produced in one or another sub-region. Each of the sub-regions has its own microclimate that gives different properties to the grapes, which are later used in the production of different types of Port Wines, such as Tawny, Ruby and White. The vineyard area assumes greater importance in Baixo Corgo, where it occupies about 29% of the area of this sub-region, which extends from Barqueiros on the North margin and Barrô on the South margin to the confluence of the Corgo and Ribeiro de Temilobos rivers with Douro River. Cima Corgo extends upstream to

Cachão da Valeira, with less importance of the cultivated area of vineyard (22%). The Douro Superior continues to the border with Spain having only 9% of cultivated area of vineyards¹. The vineyard occupies in the Douro Demarcated Region an effective area of about 17% of the total area (*vide* Tabela 5).

Tabela 5: Characterization of sub-regions in terms of area with vineyards. 2020 data.
(<https://www.ivdp.pt/pt/vinha/regiao/regiao-caracteristicas/>).

| Subregion | Total Area (ha) | Area with vineyard (ha) | % of the Total Area |
|----------------|-----------------|-------------------------|---------------------|
| Baixo Corgo | 45 000 | 13 204 | 29% |
| Cima Corgo | 95 000 | 20 427 | 22% |
| Douro Superior | 110 000 | 10 077 | 9% |
| Total | 250 000 | 43 708 | 17% |

Regarding the distribution of vineyard area by exploiter and plot, it is verified that the vineyard area is worked by approximately 20 000 winegrowers, each of them has, on average, about 2 ha of vines (*vide* Table 6). So, it is the small producers that have a great weight in the production of Port Wine.

Table 6: Characterization of sub-regions in terms of area with vineyards, exploiters and number of parcels. 2020 data.
(<https://www.ivdp.pt/pt/vinha/regiao/regiao-caracteristicas/>).

| Região | Área de vinha | | Exploradores | | Parcelas | | Área vinha / explorador (ha) | Nº parcelas / explorador |
|----------------|---------------|----|--------------|----|----------|----|---------------------------------|-----------------------------|
| | ha | % | Nº | % | Nº | % | | |
| Baixo Corgo | 13 204 | 30 | 8 189 | 42 | 41 527 | 40 | 1,6124 | 5,07 |
| Cima Corgo | 20 427 | 47 | 8 337 | 42 | 48 936 | 47 | 2,4502 | 5,87 |
| Douro Superior | 10 077 | 23 | 3 107 | 16 | 14 159 | 14 | 3,2433 | 4,56 |
| TOTAL RDD | 43 708 | - | 19 633 | - | 104 622 | - | 2,2262 | 5,33 |

The small parcels are present throughout the region, and the large explorations are located mainly in Cima Corgo (*vide* Tabela 7).

¹ <https://www.ivdp.pt/pt/vinha/regiao/regiao-caracteristicas/>

Tabela 7: Characterization of sub-regions in terms of exploration area ranges. 2020 data.

(<https://www.ivdp.pt/pt/vinha/regiao/regiao-caracteristicas/>)

| Exploration area ranges (ha) | Baixo Corgo | | Cima Corgo | | Douro Superior | | RDD | |
|---------------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|
| | Total area (ha) | Parcels Number | Total area (ha) | Parcels Number | Área total (ha) | Total area (ha) | Parcels Number | Total area (ha) |
| total area <= 0,1 | 48 | 1 244 | 34 | 858 | 6 | 132 | 88 | 2 234 |
| 0,1 < total area <= 0,5 | 859 | 8 942 | 724 | 7 300 | 231 | 1 723 | 1 814 | 17 965 |
| 0,5 < total area <= 1 | 1 139 | 8 104 | 1 175 | 7 695 | 471 | 1 884 | 2 785 | 17 683 |
| 1 < total area <= 2 | 1 637 | 8 482 | 2 106 | 9 897 | 859 | 2 525 | 4 602 | 20 904 |
| 2 < total area <= 5 | 2 736 | 7 694 | 3 863 | 11 179 | 1 773 | 3 301 | 8 371 | 22 174 |
| 5 < total area <= 8 | 1 473 | 2 433 | 2 273 | 3 972 | 1 109 | 1 346 | 4 854 | 7 751 |
| 8 < total area <= 10 | 743 | 1 066 | 1 082 | 1 469 | 495 | 447 | 2 320 | 2 982 |
| 10 < total area <= 20 | 1 995 | 2 035 | 3 096 | 3 412 | 1 581 | 1 314 | 6 672 | 6 761 |
| total area > 20 | 2 574 | 1 527 | 6 076 | 3 154 | 3 551 | 1 487 | 12 201 | 6 168 |
| TOTAL | 13 204 | 41 527 | 20 427 | 48 936 | 10 077 | 14 159 | 43 708 | 104 622 |

Since land use is considered as a cultural system of the landscape and a particularly relevant characteristic in aesthetic and scenic appreciation, for a more detailed analysis of the structural and functional characteristics of the landscape, taking into account the work scale, landscape units were defined, based on the Map of use and occupation of the soil (COS 2018) and the survey of biotopes present in the characterization of ecological systems carried out in the context of the Environmental Impact Study.

In view of the biophysical conditions, edaphon climatic characteristics and the human occupation of this territory, the quarry n.º 6637 “Vale de Videiro II” area and its surroundings (6000 m buffer) are characterized by valleys occupied mainly by vineyards, olive groves, almond groves, scrubland and natural pastures, and occasionally by family farms.

In the area of the quarry and its immediate surroundings, strong human intervention is evident, in the Poio Quarries industry zone, with the forest areas mainly consisting of almond and olive plantations for agricultural exploitation.

For the landscape analysis, 5 main landscape subunits were defined:

- Scattered forest, scrub and natural pastures;
- Quarries;
- Artificialized territories;
- Natural watercourses;
- Farming areas.

Landscape subunit - Scattered forests, scrubland and natural pastures

This subunit is essentially made up of bushes and shrubs, natural pastures and areas of sparse vegetation, which occur on poor, stony soils both on the slopes and at the highest points. Tree species are often found in areas of scrub, in more or less significant densities, mainly almond and holm oak, with occasional juniper and maritime pine trees. The presence of almond and olive trees is frequent in areas of scrub, indicative of the agricultural abandonment of certain areas and consequent natural succession. Occasionally, a small patch of low scrub and cypress trees was identified, distributed irregularly.

Between the forest stands there are also rocky outcrops, which create small clearings and transition zones. This situation enhances the ecological diversity of this landscape subunit. Figure 27 presents an aerial image indicating the locations from which photographs were taken that characterize this landscape subunit. This landscape subunit can be seen both inside and outside the project area. Figure 28 presents photographs taken to characterize this landscape subunit.



Figure 27: Aerial image indicating the locations from which the photographs used to characterize the landscape subunit Scattered forest were taken, scrub and natural pastures (area identified in green on the aerial photograph)).





F1, F2, F3 e F4 - Quarry area: scrubland and sparse vegetation





F5, F7, F8 e F10 – Scrubland, natural grassland and scattered tree species



F9 – Bushes and cypress trees

Figure 28: Landscape subunit - Scattered forests, scrubland and natural pastures.

Landscape subunit – Quarries

The "Quarries" landscape subunit includes areas of shale exploitation, heaps, support infrastructures and accesses, which are characterized by a uniformity of colour and major morphological changes and in which areas of bare rock dominate, although there are pockets of vegetation with mostly undergrowth and temporary water points that give these areas greater heterogeneity.

Figure 29 presents an aerial image indicating the locations from which photographs were taken that characterize this landscape subunit. This landscape unit can be seen inside and outside the project area. Figure 30 presents the photographs obtained that characterize this landscape subunit.

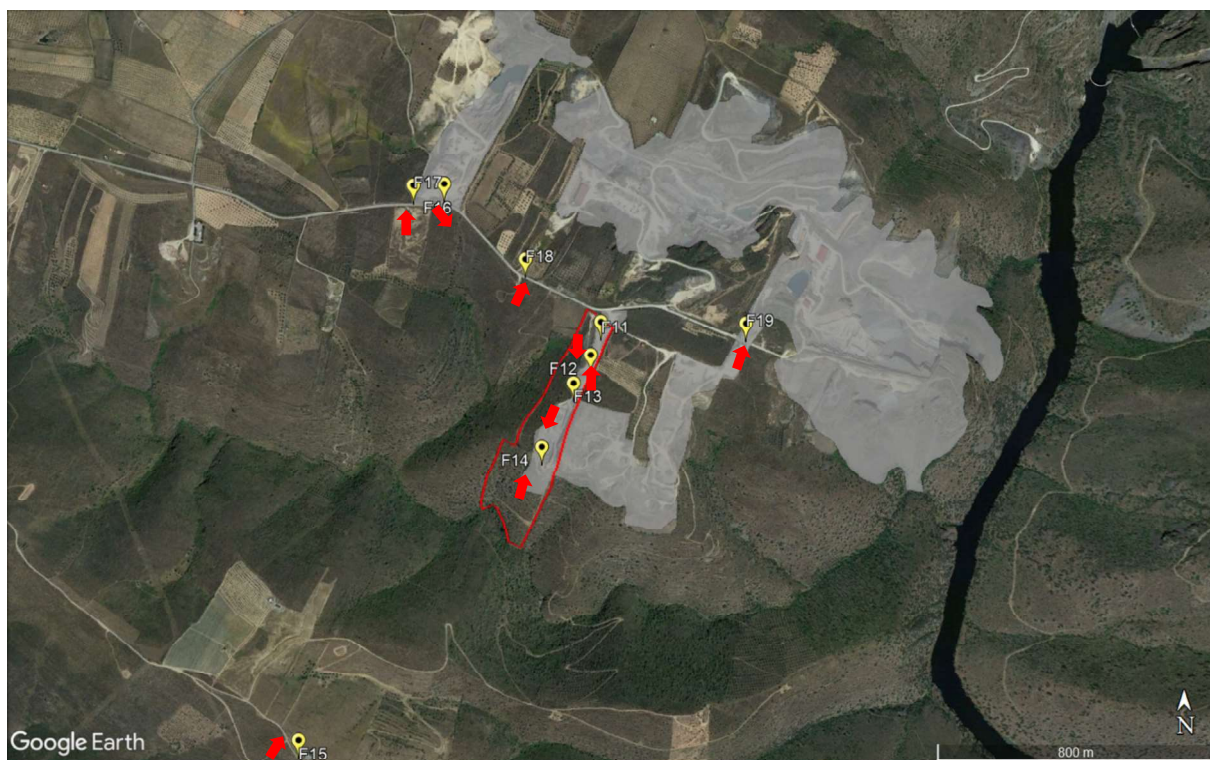


Figure 29: Aerial image indicating the locations from which the photographs used to characterize the Quarries landscape subunit were taken (area identified in grey on the aerial photograph).



F11 - Quarry n.º 6637 “Vale de Videiro II”



F12 - Quarry n.º 6637 “Vale de Videiro II”



F13 - Quarry n.º 6637 “Vale de Videiro II”



F14 - Quarry n.º 6637 “Vale de Videiro II”



F15 - Quarry n.º 6637 “Vale de Videiro II”



F16 - Quarry n.º 6637 “Vale de Videiro II”



F17 – Poio Quarries core



F18 - Poio Quarries core



F19 - Poio Quarries core

Figure 30: Landscape subunit - Quarries.

Landscape subunit - Artificialized territories

The "Artificialized Territories" subunit includes urban areas, industry (excluding quarries), the road network and associated spaces.

As mentioned, there are three settlements in the area surrounding the project: Orgal, Vila Nova de Foz Côa and Muxagata (*vide* Figure 32).

The settlements of Orgal and Muxagata are characterized by being relatively small and concentrated settlements, with a smaller and mostly elderly population, as is the case with other small towns in the interior. Vila Nova de Foz Côa is characterized by a small and concentrated rural town, with a low population concentration and an elderly population, typical of an interior town. However, there is recent construction,

infrastructure and housing, possibly boosted by the region's very important mining and wine industries.

In the vicinity of the study area there are three major freeways, namely the main IP2 route, to the west of the quarry, and the N102 and N222 national roads, to the northwest and north of the project, respectively.

Figura 31 presents aerial images indicating the locations from which photographs were taken that characterize this landscape subunit. Figure 32 photographs taken to characterize this landscape subunit are shown.



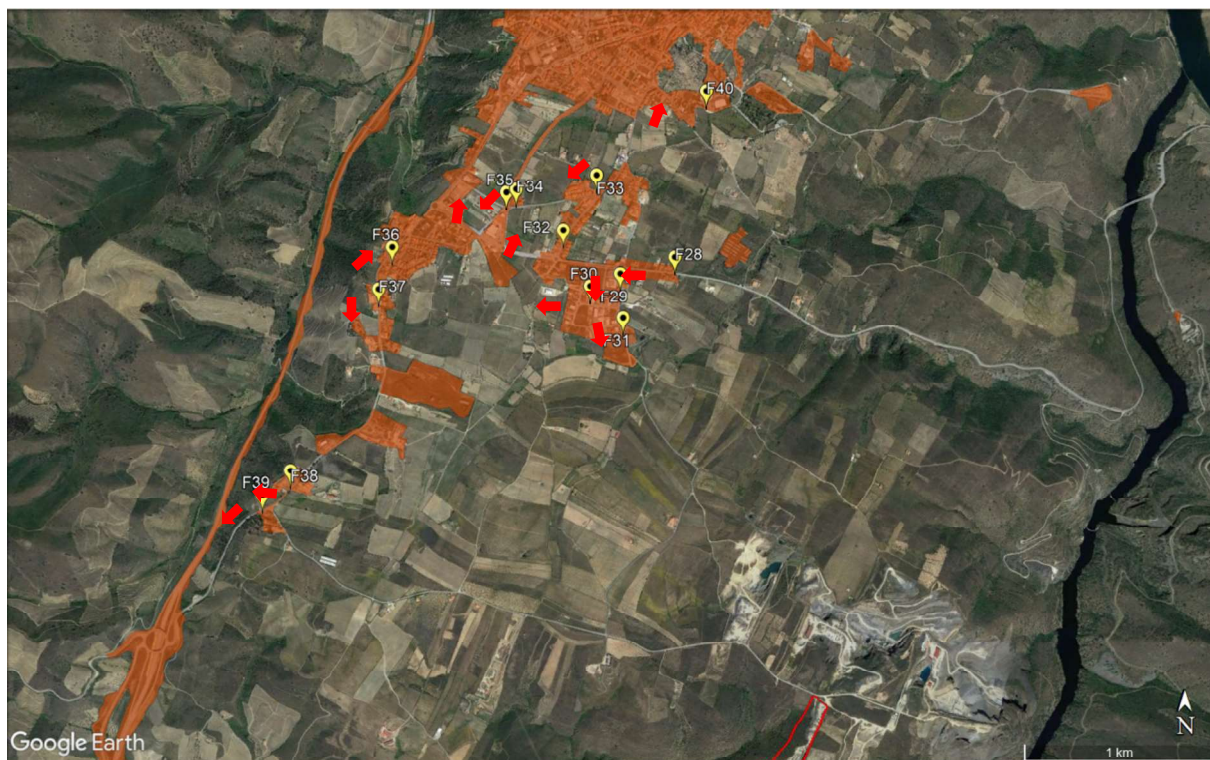


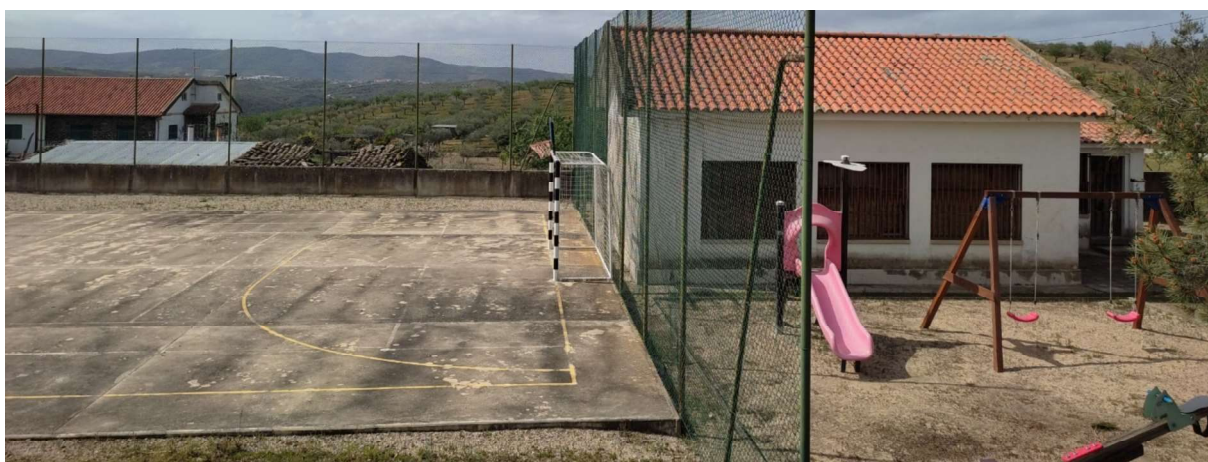
Figura 31: Aerial image indicating the locations from which the photographs used to characterize the landscape subunit Artificialized territories were taken (area identified in orange on the aerial photograph).



F20 - Locality of Orgal



F21 - Locality of Orgal



F22 - Locality of Orgal



F23 - Locality of Orgal



F24 - Locality of Orgal



F25 - Locality of Orgal



F26 - Locality of Orgal



F27 - Locality of Orgal



F28 - Locality of Vila Nova de Foz Côa



F29 - Locality of Vila Nova de Foz Côa



F30 - Locality of Vila Nova de Foz Côa



F31 - Locality of Vila Nova de Foz Côa



F32 - Locality of Vila Nova de Foz Côa



F33 - Locality of Vila Nova de Foz Côa



F34 - Locality of Vila Nova de Foz Côa



F35 - Locality of Vila Nova de Foz Côa



F36 - Locality of Vila Nova de Foz Côa



F37 - Locality of Vila Nova de Foz Côa



F38 - Locality of Vila Nova de Foz Côa



F39 - Locality of Vila Nova de Foz Côa



F40 - Locality of Vila Nova de Foz Côa



F41 - Locality of Muxagata



F42 - Locality of Muxagata





F43 - Locality of Muxagata



F43 - Locality of Muxagata



F44 - Locality of Muxagata



F45 - Locality of Muxagata



F46 - Locality of Muxagata



F47 - Locality of Muxagata



F48 - Locality of Muxagata

Figure 32: Landscape subunit - Artificialized territories.

Landscape subunit - Natural watercourses

Water lines are of great importance because they give the landscape seasonal variability in color and texture due to their more or less defined riparian galleries, and they introduce sound into the space, especially in winter, when the flows are more significant. In the study area, there are permanent and seasonal natural watercourses belonging to the Côa river sub-basin, which in turn belongs to the Douro river basin. In the area under study, the existing water lines can be identified by their expression on the ground, specifically by the riparian vegetation that surrounds them. However, the water lines identified on the maps and located within the area to be licensed are currently non-existent due to the progress of quarrying. In the southeast and southwest of the project area there are two well-demarcated seasonal water lines. The Côa River, located about 1,300 m to the east of the project area, is not visible from quarry n.º 6637 “Vale de Videiro II”. Figura 33 presents an aerial image indicating the locations from which photographs were taken that characterize this landscape sub-unit. Figure 34 presents the photographs obtained characterizing this landscape subunit.



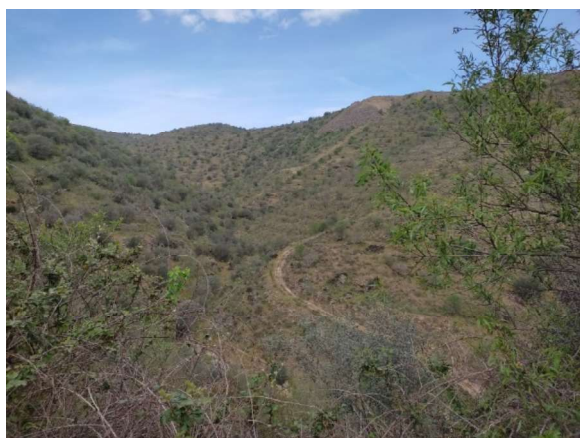
Figura 33: Aerial image indicating the locations from which the photographs used to characterize the Natural Watercourses landscape subunit were taken (area identified in blue on the aerial photograph).



F49



F50





F51



F52



F53 – Rio Côa

Figure 34: Landscape subunit - Natural watercourses. Images taken on 31/03/2023.

Landscape subunit - Farming areas

In the study area there are agricultural and pasture areas, characterized by the presence of multiple crops, namely almonds, olive trees, vines, fig trees, strawberry trees and semi-natural pastures. These areas constitute a humanized system because it is maintained in a young state and, as such, is considered ecologically poor.

In general, the study area has seen the abandonment of traditional, family-based agricultural areas, such as the cultivation of vegetables, cereals and fruit trees, which have now been replaced by areas of intensive cultivation with vineyards, olive groves and orchards, including large plantations of almond trees and other areas with fig trees, strawberry trees and quince trees. Figure 35 presents an aerial image indicating the locations from which photographs were taken that characterize this landscape subunit. Figure 36 shows the photographs taken of this landscape subunit.

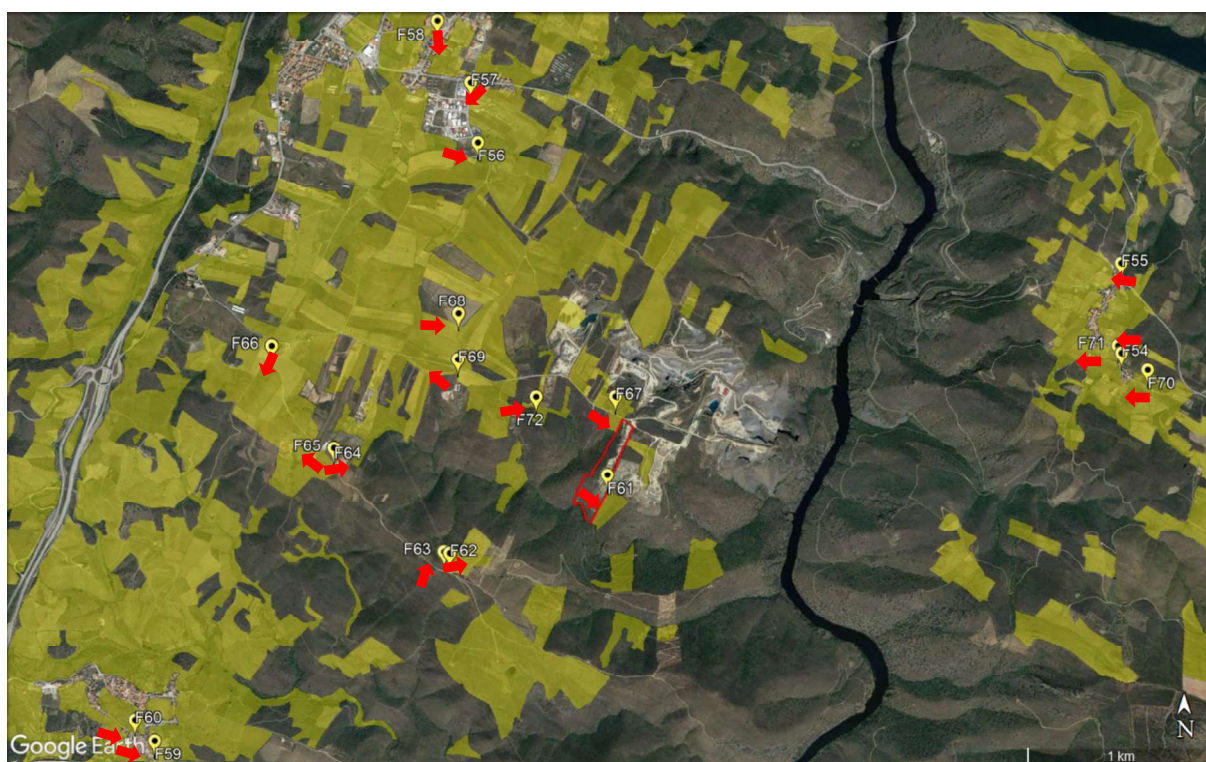


Figure 35: Aerial image indicating the locations from which the photographs used to characterize the Farming Areas landscape subunit were taken (area identified in yellow on the aerial photograph).





F54, F55, F58, F59 e F60 – Polycultural and family-based system





F56 e F57 – Polycultural system and pastures





F61, F70 e F71 – Olive and almond groves



F62 – Vineyard



F63 – Quince trees



F64 – Arbutus trees





F65, F66 e F67 – Olive groves and pastures



F68 – Olive grove



F69 – Almond groves and pastures



F72 – Fig trees

Figure 36: Landscape subunit - Farming areas.

6.2 ADWR CULTURAL VALUES

6.2.1 LANDSCAPE PATTERN (THE DOMINANCE OF VINES ALTERNATING WITH MEDITERRANEAN SCRUB)

The combined work of nature and man is reflected in the landscape of the ADWR, resulting from the balance achieved between the steep slopes, the scarcity of water and the shale soils with the crops selected and adapted to the medium, over centuries (Application of the Alto Douro Wine Region to World Heritage, 2000). The pattern of the landscape in the ADWR is marked by the permanent crops of vineyards, olive groves and almond, side by side with extensive patches of Mediterranean bushes, villages and Quintas, by the water plan created by the Douro River and its main affluents and associated riparian galleries.

The vineyards located up to the 600 m are traditionally used for the production of Port wine, while the remaining vineyards, present at higher rates (between 600 and 700 m) are for the production of other Douro wines (Cancela d’Abreu et al., 2004).

The terraces, supported by stone walls extracted from the shale slope itself for the plantation of the vineyard, are located on slopes where once dominated bushes. There are, however, some slopes or hillside parts where the landscape of traditional terraces (pre- and post-phyllloxeric terraces) has been altered in recent decades (Cancela d’Abreu et al., 2004).

The need for mechanization to monetize production combined with labour shortages, caused different planting and cultivation systems to be started. Thus, currently, traditional terraces are still dominant, in terms of area, but it is already common to observe also vineyards planted on landings, vineyards planted vertically