

**ENVIRONMENTAL IMPACT ASSESSMENT (IN THE PHASE OF PREVIOUS STUDY)
OF DOURO MARINA HOTEL, IN REDE, MESÃO FRIO**

HERITAGE IMPACT ASSESSMENT

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List of acronyms

ADWR – Alto Douro Wine Region

CCRD – Commission for Coordination and Regional Development

COS – Land use maps

DWDR – Douro Wine Demarcated Region

DL – Decree-Law

DP – Detail Plan

EIA – Environmental Impact Assessment

EN – *Estrada Nacional (National Road)*

OUV – Outstanding Universal Valor

HIA – Heritage Impact Assessment

ICOMOS – International Council on Monuments and Sites

LREIA – Legal Regime of Environmental Impact Assessment

SPA – Special Protection Area

UNESCO – United Nations Educational, Scientific and Cultural Organization

1. INTRODUCTION

The Environmental Impact Assessment (EIA) of the **Douro Marina Hotel** was delivered by **Douro Marina Hotel, S.A.** as a proponent of the project, to the **Northern Commission for Coordination and Regional Development (CCRD)**, pursuant to the Legal Regime of Environmental Impact Assessment (LREIA), established by Decree-Law (DL) No. 151-B/2013, of October 31, in the wording given by DL No. 152-B/2017, of December 11. The Environmental Impact Assessment (EIA) procedure began on May 4, 2020.

In the context of the conformity assessment of the EIA, provided for in Article 14 of the LREIA, the Northern CCRD, through the letter **Case AIA4/2020 – Document Anx10330/2020** of 4 June 2020, considered it necessary to clarify some aspects, as well as the presentation of additional elements.

This document, **Heritage Impact Assessment** of the Douro Marina Hotel project on the **Alto Douro Wine Region (ADWR)**, intends to respond to the request made by the Assessment Committee, in accordance with the request for the conformity assessment of the EIA, namely the request for additional elements no. 28 and 30, constituting the Heritage Impact Assessment an autonomous document.

Although the EIA has addressed, in its own chapters, the ADWR as a sensitive area in which the project is located, the presentation of a Heritage Impact Assessment corresponds to the provisions arising from the ADWR Property inscribed in the **World Heritage List**, in the category of **Living and Evolutionary Cultural Landscape**, by Decision 25 COM X.A, adopted at the 25th session of the World Heritage Committee held in Helsinki (Finland) in 2001. The establishment of this designation, or typology, took place within the framework of the Convention for the Protection of World, Cultural and Natural Heritage, adopted by the General Conference of UNESCO - United Nations Educational, Science and Culture Organization on November 16, 1972 and opened for signature in Paris on November 23, 1972. The Convention was approved for ratification by Portugal by Decree No. 49/79 of 6 June.

Pursuant to paragraphs 3 and 7 of Article 15 of Law No. 107/2001 of September 8 (Cultural Heritage Bases Law), the ADWR is part of the list of assets classified as of national interest, being classified as a **national monument**.

Notice No. 15170/2010 of July 30, advertises the classification of the ADWR as the site of the World Heritage list and presents its delimitation, as well as that of its **Special Protection Area (SPA)** (*ZEP – Zona Proteção Especial*), the latter coincident almost entirely with the **Douro Wine Demarcated Region (DWDR)** (*RDD – Região Demarcada do Douro*).

As a reinforcement of these measures, The Council of Ministers Resolution No. 4/2014, of 10 January, gives the Northern CCRD, the mission of protecting, conserving and valuing, as well as disseminating and promoting the "Evolutionary and Living Cultural Landscape of the Alto Douro Wine Region", and CCRD of the North is simultaneously, in this case, the EIA Authority of the Douro Marina Hotel project.

The HIA was elaborated in compliance with the methodology recommended in the "Guidance on Heritage Impact Assessment for Cultural World Heritage Properties", ICOMOS 2011 (**Guide on the Assessment of Heritage Impact on World Heritage Cultural Assets**).

In particular, and as requested by the Assessment Committee, it is intended to evaluate the possible affectation of **cultural and natural attributes that confer Outstanding Universal Value (OUV)** to the ADWR, as:

- Cultural Attributes of ADWR - Vineyards with frame system of frame in terraces; Vine with other frame systems of the ground; Walls; *Mortórios* (Abandoned Vineyards); Olive, almond and orange groves; Farms; Cultural heritage properties classified or in the process of being classified at national level; Villages; Places of worship; Viewpoints and Panoramic Pathways;

- Natural Attributes of ADWR – Bushes and forests; Riparian Galleries; Geosites; Douro River and relevant career.

The identification of these attributes and the assessment of the impacts on them is based on the assessment carried out in the EIA relating to the impacts on the ADWR.

1.1 Project location and identification

The area of intervention of the Douro Marina Hotel project is located very close to the western limit of the ADWR, in the municipality of *Mesão Frio*, parish of *Santo André*, in village of *Rede*; this parish of *Santo André* results from the administrative reform of 2013, located this place in the area of the former parish of *Santa Cristina*.

Considering the projected roadside to the hotel, connecting to the EN108 and the village of *Rede*, it is also covered a small strip of the parish of *Vila Marim*, from the same municipality of *Mesão Frio*.

The project, authored by ARQ 2525 – Architects, Lda., comprises the implementation of a hotel unit with the proposed classification of 5 stars, direct access road, landscape framing and connections to service networks. These components are intended to achieve the objectives of the Rede's Detail Plan (DP) (*Rede's Plano de Pormenor*), in the area defined as Execution Unit 4.

The hotel unit, with a height of 18 m, will be implanted in 6 floors, two of which develop below the sill quota.

The tourist resort will present, after its implementation, an area of about 23.100 m², with 8.497 m² for the area to be occupied by the hotel building. The hotel unit will have 180 accommodation units, of which twelve correspond to suites and three will be adapted for disabled people. The remaining area of outdoor spaces (14.603 m²) develops around the building and will be destined for the implementation of green spaces, leisure areas and car parking.

The project includes road access to the hotel according to the provisions of Rede's Detail Plan. This access allows the connection between the project area and the national road no. 108 through the valley of the local stream, by crossing railway line in tunnel.

It is expected a duration of 24 months for the work, composed of the activities of making available the land (6 months), primary execution of accesses (4 months), construction of the hotel (15 months), completion of the execution of accesses (4 months) and landscape framing (6 months), the latter two activities simultaneous to the construction of the hotel.

The proponent is **Douro Marina Hotel, S.A.**

The licensing authority or competent for the authorization is the **Municipality of Mesão Frio**.

The EIA authority is the **Northern Regional Coordination and Development Commission (CCRD)**.

1.2 Environmental Impact Assessment of the project

The Douro Marina Hotel project, due to its size and location, is subject to the Environmental Assessment procedure, and the assessment of the corresponding Environmental Impact Assessment is ongoing.

The EIA was prepared by consortium of two companies, Júlio de Jesus Consultores, Lda. and NEMUS – Gestão e Requalificação Ambiental, Lda, and its preparation took place between September 2019 and January 2020, but much of its content is based on the two previous EIA, prepared between 2014 and 2017.

The EIA of projects is governed by Decree-Law No. 151-B/2013, of October 31, with the current wording given by Decree-Law No. 152-B/2017 of December 11, which establishes the legal regime for the environmental impact assessment (LREIA) of public and private projects that may have significant effects

on the environment, transposing directive no. 2011/92/EU, the European Parliament and the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.

2. THE ADWR AND THE PROJECT AREA

2.1 Historical and territorial framework of the ADWR

The ADWR region was classified in 2001 as a World Heritage Site by UNESCO, in the category of cultural, evolutionary and living landscape, which led to its classification as a National Monument and establishment of its Special Protection Area (SPA) (*Zona Especial de Proteção*), corresponding to the Demarcated Region of Douro (DWDR) (*Região Demarcada do Douro*), as already described above.

The classification of the ADWR was based **on the criteria iii), iv) and v)** defined in the Operational Guidelines for the Implementation of the World Heritage Centre (UNESCO World Heritage Centre, 2012), and these criteria are presented in the Proposal for a Retrospective Declaration of the ADWR Outstanding Universal Value (OUV) (2012) as follows:

- Criterion (iii): The ADWR has been producing wine for almost two thousand years and its landscape has been shaped by human activities;
- Criterion (iv): The components of the Alto Douro landscape are representative of the full range of activities associated with wine production – terraces, farms, villages, chapels and paths;
- Criterion (v): The cultural landscape of the Alto Douro is an outstanding example of a traditional European wine-producing region, reflecting the evolution of this human activity over time.

The ADWR's Application dossier to World Heritage states that " its character is determined by a wise management of soil and water scarcity and the high slope of the land, and results from the permanent and intense observation, the localized test and the in-depth knowledge of the adaptation of the vine culture to such an adverse situation". (...) The landscape is a whole and is evolutionary. It is a diverse mosaic of crops, bushes, water courses, clusters and agricultural seating distributed by farms and couples. Today, the evolution of the forms of landscape construction continued in coexistence with traditional forms, contributing to the perpetuation of a prosperous and sustainable economic activity (Bianchi de-Aguiar e Dias, 2000, in Andresen and Rebelo, 2013a).

The ADWR has about 24 600 hectares, corresponding to a central portion of the Douro Demarcated Region (which, overall, covers about 250 000 hectares). The remaining area of the DWDR not classified, functions as a "buffer zone", subject to the same measures of management and safeguarding of the classified landscape. The DWDR covers, in addition to the municipality where the project is located (*Mesão Frio*), the municipalities of *Vila Real*, *Vila Nova de Foz Côa*, *Torre de Moncorvo*, *Carrazeda de Ansiães*, *S. João da Pesqueira*, *Tabuaço*, *Santa Marta Penaguião*, *Sabrosa*, *Peso da Régua*, *Lamego*, *Armamar* and *Alijó*.

In addition to the general legislation and regulations on protection of property values and land uses, interventions in the ADWR are subject to the following specific documents:

- Resolution of the Council of Ministers No. 150/2003: Intermunicipal Plan for the ADWR, which stems from the commitment made by Portugal to effectively protect classified heritage and to preserve the characteristics that give it an "outstanding value";
- Joint Order No. 473/2004: defines the requirements of public interest for land movement interventions and destruction of vegetation cover in the ADWR region.

In the ADWR is prohibited the destruction of vernacular values (walls, buildings, sidewalks, nuclei of tree vegetation and riparian galleries), the obstruction of water courses and alteration of watercourses banks morphology. The legislation imposes rules on the vineyards installation system, depending on the natural slopes.

The Model of Territorial Organization in the ADWR gives priority to the landscape, where the diversity of singular manifestations and, in particular, the forms of land frame system in an mountain viticulture environment and full harmony with the patches of natural vegetation, the olive grove and the water plan stand out.

2.2 Regional characterization of the ADWR

The Douro Demarcated Region is divided into three sub-regions that are distinguished by climatic and socio-economic factors: Baixo Corgo – in which the project area is located (from Barqueiros/Borro to the confluence of the Corgo and Temilobos rivers), Alto Corgo (from the eastern limit of Baixo Corgo to Cachão da Valeira) and Douro Superior (from Cachão da Valeira to the border). The ADWR, located within the DWDR, is covered by these three sub-regions, dividing itself, in turn, into several landscape units.

Figure 2.1 shows these areas schematically, marking the area of incidence of the Douro Marina Hotel project.

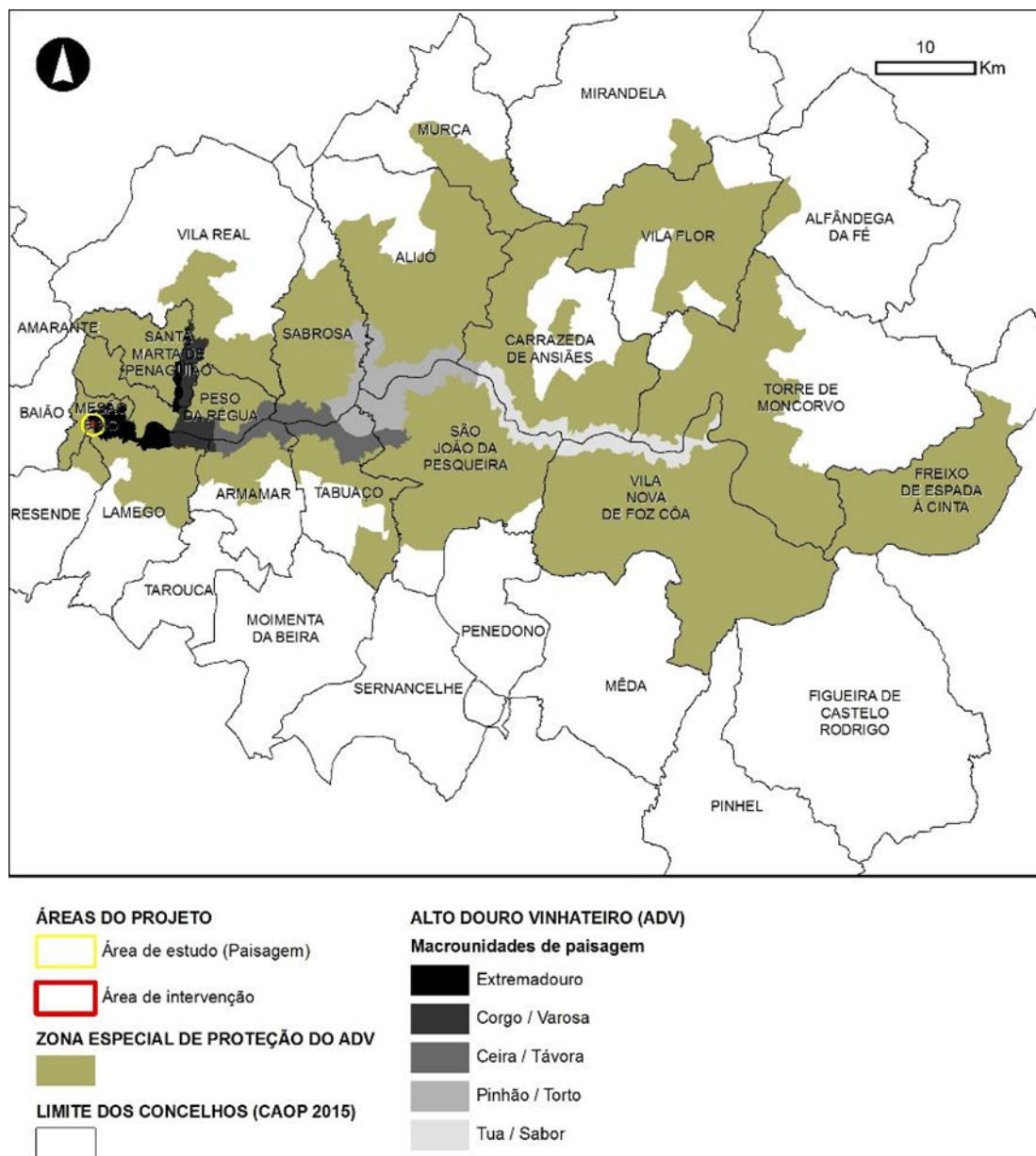


Figure 2.1 - Douro Demarcated Region: ADWR, buffer zone and landscape units (Source: ARQ 2525 (2017); DGT (2015); Resolution of the Council of Ministers No. 150/2003) (Translation: *Áreas de Projeto* – Project Areas; *Área de estudo (paisagem)* – Study Area (landscape); *Área de Intervenção* - Area of Intervention; *Zona Especial de Proteção do ADV* - Special Protection Zone of ADWR; *Limite dos Concelhos* – Council limits; *Alto Douro Vinhateiro* – Alto Douro Wine Region; *Macrounidades de paisagem* - landscape macrounits)

Centered on the valley of the Douro River, the dominant water course in the landscape, the DWDR is marked by steep slopes and embedded valleys, where the plateaus appear only above 400 m of altitude.

The ADWR is the result of an intense human action on the environment, which has developed over time, creating specific habitats, until they reach the built landscape that can be observed today. The skeletal terrains of steep slopes were worked until transforming the stone into productive land.

In this mosaic of cultures, you can see terraced with ancient execution techniques alongside vineyards on landings and vineyards “*ao alto*” of the 19th century. The oldest terraces are located mainly in Baixo Corgo, by the influence of the monks who settled there and by the proximity to urban centers, but visible a little throughout the ADWR region. They are generically designated as pre-*filoxeric*, and are characterized by being narrow and irregular, with one or two rows of vines, following the level curve; they are supported by walls 1 to 2 m high, sometimes connected by stone stairs. Some of these terraces have associated old pillar techniques, that is, the planting of vines on the walls of the *shim*, allowing the use of “*geio*” for other crops such as cereal. With the occurrence of *phylloxera* many of these vineyard lands were abandoned, becoming plots covered with spontaneous vegetation, which in the meantime developed there, sometimes co-existing with olive groves or fruit trees, having the current designation of *mortórios*.

Post-phylloxera vineyard plantations are extensive and continuous terraces, maintaining progression according to the topography of the terrain, in broken lines supported by high walls. These modern terraces (mostly built between the late 19th century and 1930s) are generally wider than the previous ones and slightly inclined, favoring the exposure of the vineyard to the sun. They may have five or more vine swells.

In addition to the traditional land frame system there are also areas of vineyards on landings and vineyards “*ao alto*”. The landings are built on *mortórios*, choosing to build sloped slopes that support two bards of separate vines about 2 m, and which allowed the introduction of mechanized systems. The vine “*ao alto*” – perpendicular to the level curves and with rows of vines separated by paths with about 3 m, allowing the movement of machines – is not allowed on slopes greater than 40%.

Viticulture is the main economic base of the DWDR (in 2011 it occupied 20% of the area), corresponding to the largest and most heterogeneous wine region in the world (Andersen, T. and Rebelo, J.:2013, 24). Olive trees often appear in the compartmentalization of the landscape, at the edge of the vineyards, delimiting the farms or in the repopulated *mortórios*. In the higher lands and embedded slopes of the subsidiary water courses of the Douro grow low forests of heather, broom, *trovisco*, rosemary, *carqueja* and other species of Mediterranean bushes, and patchwork of pine forest, oak, cork oak, etc.

At the level of the settlement, the large farms by the Douro River predominate, facilitating the flow of production. The villages are spread throughout the territory, especially those that grew in the areas facing the subsidia riodes of the Douro. They are generally poor places, with the difficulties inherent in the strong slopes where they are positioned.

Spread throughout this territory, there is a whole vernacular heritage composed of clusters and farms, dwelling houses and production annexes, vineyard terraces, paths and *levadas*, loading docks and the railway, that is, material heritage that associated with an intangible heritage gives life to the identity of the Douro Wine Region.

2.2.1 ADWR Landscape Units

In the ADWR five landscape units are differentiated: Extremadouro; Corgo/ Varosa; Ceira/ Távora; Pinhão / Torto; and Tua/ Sabor.

The Extremadouro landscape unit, in which the project is located, is, along with the Corgo/ Varosa unit, which has a greater presence of settlements and greater occupation of agricultural spaces. The project area is located at the downstream limit of this unit, in the transition to the Special Protection Zone, and it can be observed in the surrounding agricultural areas with vineyards by landings or vines “*ao alto*”, planted right next to the banks of the Douro river.

2.3 ADWR's heritage value

Annex 3A of the ICOMOS Example Guide for Assessing Value of Heritage Assets presents (*Illustrative table of the assessment of the importance of an asset*) the criteria for the evaluation/classification of

various types of property (Archaeological Sites, Architectural Heritage/Historical Urban Landscape, Cultural Landscapes and Imaterial Heritage), resulting from this evaluation the classification of a certain heritage property as a World Heritage Site (in which case it was recognized as a very high and international importance), National Heritage (recognized its importance as High), Regional or Local Heritage (recognized as its importance as Average), etc.

Thus, based on the adaptation of the illustrative table in Annex 3A of the ICOMOS Guide, Table 2.2 shows its application to the ADWR world heritage asset (that is, in this case, the completion only of the very high importance line of the table and the Cultural Landscapes column), thus showing, in a synthetic and systematized way, the foundation of its classification by UNESCO as a World Heritage Site.

Table 2.2 - Importance of The Property ADWR, as Cultural Landscape

Value	ADWR cultural landscape
Very high	<ul style="list-style-type: none"> • Landscape of recognized international importance inscribed as world heritage; • The viticultural region of Alto Douro has been producing wine for about 2000 years (viticulture has been practiced in the region at least since Roman times), and since the 18th century, produces port wine, world renowned, quality, unique and regulated since 1756 (date of establishment of the Douro Demarcated Region, the oldest regulated region in the world); • This long tradition has produced a cultural landscape of outstanding beauty that is at the same time a reflection of its technological, social and economic evolution; • The Alto Douro region has been producing wine for about 2000 years and its landscape has been shaped by human activities (criterion iii of UNESCO registration); • The components of the Alto Douro landscape illustrate the entire palette of activities associated with viticulture – terraces, farms (agricultural complexes of wine production), villages, chapels and roads (criterion iv of UNESCO registration); • The cultural landscape of the Alto Douro is an outstanding example of a traditional European wine-growing region, reflecting the evolution of this human activity over time (criterion v of UNESCO registration); • Outstanding Universal Value (OUV), Authenticity and Integrity: <ul style="list-style-type: none"> ○ the landscape of the ADWR is an eminent example of man's unique relationship with his natural environment, defining itself as a wise management of resources limited in water and soil, in a relief of abrupt pendants; ○ This landscape is, however, a constantly evolving whole, which reflects the use of new techniques of cultivation and land frame system and the use of new technologies. ○ The ADWR has an Outstanding Universal Value both as a monumental construction in a demanding environment, as a unique production site of an outstanding product; • The ADWR site benefits from a Special Protection Zone, corresponding almost entirely to the Douro Demarcated Region.

2.3.1 Cultural and natural attributes of ADWR

In the World Heritage – ADWR identify, as the most expressive attributes that confer OUV, the following (adapted from Ramos and Fonseca, 2014):

- Natural attributes – the Douro River and its affluents; complex geomorphology, scarcity of fertile soil and water, abrupt slopes and geosites, Atlantic-Mediterranean climate gradation, Mediterranean vegetation and crops, including vegetation associated with water courses, diversity of wine genetic heritage, habitat diversity, and other so-called intangible aspects such as light, colours and odors;
- Cultural attributes – the dominance of the vineyard alternating with Mediterranean bushes, villages, farms and *casais*, terraces and walls in shale, access roads and highways, railways and the navigability of the Douro, the different types of planting of the vineyard, the antrosols and the conservation of the water, the mosaic of the landscape.

According to the guidelines applicable to cultural landscapes (Annex 3A of the ICOMOS Guide), all **attributes conferring OUV** to a global heritage asset should be considered to have very high **value**.

For the present assessment, the cultural and natural **attributes of the ADWR** in the project area were identified through:

- Bibliographic survey and interpretation of the following elements:
 - Photointerpretation of aerial photos;
 - Land use charters (COS), 2010, of the PGI; 2001 land use charter of *PIOT-ADV*; (e) 2012 Land Use Charter of the *ASCG -ADV*;
 - Surveys of the *ASCG -ADV* in the ADWR (with limitations, in view of the scale of the assessment), namely: plot of land in the vineyard 2012: structures that shape the landscape; villages and Vineyard Villages in DWDR; main farms; adjective constructions; vernacular heritage areas; places of worship; main viewpoints; classified heritage; elements of cultural heritage classified or in the process of classification; stations and railway lines; new levels, created in the period 2001 - 2012; new constructions that occurred in the period 2001 - 2012; main itinerary and adjacent areas.
- Visit to the project area and its surrounding area, as a complement and measurement of the information obtained, in view of the limitations of the existing cartography, for the scale of the assessment.

In the framing area of the project predominate, on the right bank of the Douro (where the Douro Marina Hotel is projected), the vineyard with frame system in post-phyllloxerics terraces; and on the left bank of the river, came with the same system, although interspersed with extensions of olive grove and almond. Next to the village of Rede, refer to the stately houses – Solar da Rede and Solar de Santiago (18th to 19th century) and the heritage related to industrialization and the introduction of the railway (at the end of the 19th century) – the Douro railway line and the Rede’s Station.

These surveys were initially directed to the identification and assessment of environmental impacts within the EIA carried out, and serve as the basis, in this document, for the assessment of the potential affection of the ADWR, the objective of the present assessment, and which focuses especially on the verification of cultural and natural attributes that confer OUV to the ADWR listed in the request for additional elements, already mentioned above and which are recapitulated here:

- Cultural Attributes of ADWR - Vineyards with land frame systems in terraces; Vine with other frame systems of the ground; Walls; *Mortórios* (Abandoned Vineyards); Olive groves, almond trees; Orange groves; Farms; Property heritage classified or in the process of being classified; Villages; Places of worship; Viewpoints and Panoramic Pathways;

- Natural Attributes of ADWR – Bushes and forests; Riparian Galleries; Geosites; Douro River and relevant career.

Seeking to aim these attributes at the specific case of the area to be intervened, Table 2.3 indicates its occurrences and the components of the project that may cause its affectation. In the EIA, the 31st Drawing "Cultural and natural attributes of the ADWR in the project's surroundings " (Volume II, Annex II) presents the location of these occurrences.

Table 2.3 - Cultural and Natural attributes of the ADWR arising in the project area

ADWR attributes	Construction phase			Construction and operation phase			
	Construction site	Access	Wastewater treatment plant Link	Hotel	Outdoor spaces		Road access
					Green spaces	Parking	
Cultural							
Vineyards with ground frame systems in terraces							
Vineyard with other field frame systems		•	•				•
Walls and <i>latadas</i>		•	•	•	•		•
<i>Mortórios</i>							
Olive Groves, Almond sands and Orange groves							
Farms							
Property Heritage, classified or in the process of being classified							
Settlements		•					•
Places of worship	•				•	•	
Viewpoints							
Panoramic roads (including the Douro railway line)		•	•				•
Natural							
Mediterranean forests and bushes							
Riparian galleries and flood-bed communities							
Geosites							
Douro River							
Other water courses		•					•
Relevant crest lines							

Given the current state of the intervention area (little structured and with signs of abandonment, corresponding to land with former agricultural farm), it is considered that in general it does not contribute

to the OUV of the ADWR, although it constitutes a sensitive area, due to its visual exposure and proximity to the right bank of the Douro.

The character of the ADWR landscape results from the overlap and interaction of many environmental factors. In this sense, it refers to the analyses of these most significant factors as contributors to the construction of the value of the ADWR:

- Ecology – the habitats identified in the intervention area do not present relevant ecological value, hence not considering a natural attribute of the ADWR; in the surroundings of this area, there are patches of vegetation that can be generically classified as "Mediterranean forests and bushes and as "Riparian galleries and flood bed communities", which, depending on the state of conservation in which they are and their floristic composition (present species) and structural (age complexity and plant strata), may have greater or lesser ecological value and significance as a natural attribute of the OUV, but its affectation by the actions of the project is not expected;
- Architectural and archaeological heritage – in visual prospects no occurrences of archaeological interest were identified; it should be said that this does not necessarily mean the absence of occurrences of this nature, since the works were conditioned by the visibility of the terrain. The surveys carried out allowed the identification of walls that have constructive and functional characteristics that allow their integration into the attributes of the ADWR. However, the abandonment of the action of the project, which consisted of the opening of a specific access to the work from EN 108-4, however replaced by the option of using road access for this purpose, which will remain as definitive access to the hotel, it has allowed us to obviate the need to tear down the walls with these characteristics; thus, the walls that are expected to be affected do not have the same characteristics or function of the structure of terraces, but rather of sustaining the platform of local paths and containment of land. The only property with a heritage interest identified in the surveys concerns the ruins of the Chapel of Santo Mártir, building the last quarter of the 18th century of which there are already only a few traces left; this chapel is located outside the intervention area and is not directly affected.

Also in relation to this Heritage factor, it should be reported that the municipality of Mesão Frio has 10 classified heritage elements, in addition to the ADWR itself, none of them with the category of National Monument and none of them, or their protection zones, covered by the projected actions;

- Geological heritage – despite the geological diversity and geomorphological characteristics of the ADWR, in the area to be intervened or in its direct surroundings is not classified any natural monument or geological site endowed with attributed value. Nevertheless, it should be stated that in the recognition of the land, two water mines were identified in the area of the hotel unit, natural discharges of the underground runoff that play a role of particular relevance in the functioning of the water system, and in the surrounding north to the project, but without interference from the project, there are also the strands of steep slope, striking geoforms in the ADWR;
- Landscape – although inserted in an area of very high visual quality, with reduced visual absorption capacity (and hence landscape sensitivity elevated to very high in most of the intervention area), locally, the project area does not have high structural or functional value, except for the landscape unit corresponding to the affluent valley of the Rede river.

2.4 Summary of the characterization of the ADWR

ADWR is a representative and particularly valued area of the landscape of the Douro Demarcated Region, the oldest regulated wine-growing region in the world, with a remarkably diverse heritage richness, resulting from the variety of natural resources and human modeling. The recognition of its outstanding

value led to the classification of the ADWR by UNESCO in 2001, as a World Heritage Site, in the category of Cultural Landscape, evolutionary and living.

In the area of direct influence of the project (inserted in the ADWR, a few hundred meters from its west limit), although benefiting from a framework of high landscape value, in the current situation, in global terms, there are few natural and cultural attributes that provide, in view of its effective patrimonial value, Outstanding Universal Value to the ADWR..

However, because it is a sensitive area, as a result of their visual exposure, any intervention that may be proposed requires rigorous assessment and monitoring of the impacts on theADWR.

3. ASSESSMENT OF THE IMPACTS OF THE DOURO MARINA HOTEL PROJECT ON THE ADWR

3.1 Introduction and methodology

According to the ICOMOS methodology, the analysis of the impacts of the project on the ADWR focuses on the potential affectation of the natural and cultural attributes of this cultural landscape, whose magnitude and significance may induce changes at the global level (authenticity and integrity) of the ADWR.

The impacts on ADWR attributes can potentially occur in the following ways:

- Physical affectation (by destruction) – occurs essentially in the construction phase, but prolonging the effect in the operation phase;
- Visual impact by introducing new elements in the landscape, including the potential impact of the intervention on the visual framing of heritage elements, which will begin in the construction phase, reaching its full in the operation phase.

These **impacts can be direct**, that is, resulting from actions of construction, presence or exploitation of the hotel unit, or **indirect**, as a secondary consequence resulting from the construction or operation of the project, which may cause physical loss or changes to the state of the property, and which go out of the scope of the project.

The assessment of the **magnitude of impacts**, that means, the degree of changes that the attributes of the ADWR could potentially suffer from the implementation of the project, is systematized in Table 3.1, which constitutes an adaptation of the methodological table in Annex 3B of the ICOMOS Guide – *Example Guide for Assessing Magnitude of Impact*.

Table 3.1 - Scale for assessing the magnitude of the impact (Source: ICOMOS 2011)

Classification	Type of change
High	Landscape of recognized international importance inscribed as world heritage; Changes in all or most of the attributes, plots or key components that characterize the cultural landscape of the ADWR (attributes that give it OUV); extreme visual change; considerable change in the sound environment of the framework of the patrimonial element, fundamental changes in uses or access; actions that result in total change in the character of the cultural landscape and loss of the OUV
Moderate	Changes in several attributes, plots or key components that characterize the cultural landscape of the ADWR (attributes that give it OUV); visual changes of several components; considerable changes in the sound environment of the heritage element, considerable changes in uses or access; actions resulting in moderate change in the character of the cultural landscape
Reduced	Few changes in the attributes, plots or key components that characterize the cultural landscape of the ADWR (attributes that give it OUV); slight visual changes; limited changes in the sound environment of the patrimonial element, reduced changes in uses or access; actions that result in limited change in the character of the cultural landscape

Classification	Type of change
Negligible	Very small changes in attributes, plots or key components that characterize the cultural landscape of the ADWR (attributes that give it OUV); without visual changes; very small changes in the sound environment of the patrimonial element, very reduced changes in uses or access; actions that result in very little change in the character of the cultural landscape
Null	No changes in attributes, plots or key components that characterize the cultural landscape of the ADWR (attributes that give it OUV); no visual or audible changes; no changes in amenity and local communities

The attribution of the **significance (or importance) of impacts**, results from crossing the importance of the asset ADWR, considering its cultural or natural attributes (Table 2.3), with the magnitude of the impact (Table 3.1) provoked, on a scale that follows the rules indicated in the ICOMOS Guide, here applied to the ADWR: neutral / reduced / moderate / high / veryhigh.

Table 3.2 aims to illustrate this assessment of the significance of impacts.

Table 3.2 - Assessment of the significance of impacts

Importance of the asset	Scale of magnitude of predicted change /impact				
	Null	Negligible	Reduced	Moderate	High
ADWR (Cultural Landscape World Heritage) - Very High - Attributes that confer OUV to ADWR	Impact significance (adverse or beneficial)				
	Neutral	Reduced	Moderate	High	Very high
Other values or attributes, non-conferring of OUV to ADWR	Impact significance (adverse or beneficial)				
Very high	Neutral	Reduced	Moderate/Elevated	High / Very high	Very high
High	Neutral	Reduced	Moderate /Reduced	Moderate/Elevated	Very high /High
Medium	Neutral	Neutral/Reduced	Reduced	Moderate	Moderate/Elevated
Reduced	Neutral	Neutral/Reduced	Neutral/Reduced	Reduced	Reduced /Moderate
Negligible	Neutral	Neutral	Neutral/Reduced	Neutral/Reduced	Reduced

Taking into account the survey of occurrences of cultural and natural values and attributes of the ADWR presented in Table 2.3, it is verified that in the area of incidence of the Douro Marina Hotel project **no occurrences** were identified regarding:

- Vineyards with frame systems in terraces;
- *Mortórios* (Abandoned Vineyards);

- Olive, almonds and orange groves;
- Farms;
- Property Heritage, classified or in the process of being classified;
- Viewpoints;
- Mediterranean forests and bushes;
- Riparian galleries and flood-bed communities;
- Geosites;
- Douro River;
- Relevant crest lines.

The reference to the viewpoints and the Douro River is made here, from the perspective of the direct interference of project actions on these elements (e.g. interference on viewpoints, or on the riverbank).

The question of the visualization of the project area and its future implementation from viewpoints or from the Douro itself is assessed separately, as will be dealt with below, assuming the principle of assessing the so-called environmental dissonances causing negative visual intrusions.

The identified impacts and their assessment are then broken down, according to the methodology presented above.

3.2 Identification and assessment of the significance of impacts

3.2.1 Construction phase

3.2.1.1 *Physical impacts on ADWR attributes*

The project components with potential physical impacts on ADWR attributes are the following:

- Construction site – the expected location does not concern the natural or cultural attributes of the ADWR. Despite the relative proximity to the ruins of the Chapel of *Santo Mártir*, there will be no interference with this area, besides that, the ruined state of this place of worship contributes to the elimination of indirect effects, namely by the disturbance that may be caused by the construction site facilities or works to be carried out – Thus, it is assessed as **neutral impact**;
- Access during the construction phase – as mentioned above, access to work will be made by road access that will be open for main access to the hotel unit, abandoning the initial intention of a provisional opening for the work, partially by the street of Praia Fluvial and connection to EN 108-4, which would imply the demolition of walls to support vineyard frame systems, which, in this way, will no longer happen. Thus, this intervention will last through the operation phase and implies a lower passage to the Douro Line (without affecting this railway element), the marginal passage of the village of Rede, the crossing of the river and the destruction of some land occupied with vineyards with no frame systems in terraces, and vegetable gardens, including the dismantling of some walls of partitioning of land and land support, of contemporary construction and considered as of low patrimonial interest. The road access construction will also imply the formation of a landfill that will reach a maximum height of 8.5 m, partly in a flood area, constituting a new presence in this area, with an important change in the local land modelling, although in a relatively small extension – Thus, it is assessed as **reduced to moderate impact**;
- Connection to the wastewater treatment plant – its implementation, partially covered by a valley with terraced vineyards (cultural attribute of the ADWR), will be defined along the existing road

network, and will not be visible in the operation phase of the hotel (since it will be buried), not foreseeing impacts on attributes of the ADWR – Thus, it is evaluated as **neutral impact**;

- Implementation of the hotel and the landscape architecture project – water mines and two retaining walls were identified, coincident with one of the volumes of the building to be built and the other in the exterior spaces, coincident with the boundary of the plot. The construction apparatus of the walls fits the values of the ADWR: a border wall of landing, for land containment, and a border wall of property. However, they were evaluated as having low patrimonial interest due to their chronology, so they were not considered determinants for the OUV of the ADWR, although one of the walls constitutes an important visual filter of the plot – Thus, it is evaluated as **neutral impact**.

3.2.2 Operation phase

3.2.2.1 Potential impact on the visual framing of the ADWR and its heritage assets

In this phase, the analysis focuses on the **visual impact** by introducing the new elements in the ADWR, which will begin in the construction phase, reaching the full in the operation phase, specifically:

- Building that makes up the hotel structure;
- Landscape integration;
- Road access.

The implementation of hotel unit is considered as the creation of environmental dissonances in the ADWR, according to the document *Avaliação do Estado de Conservação do Bem Alto Douro Vinhateiro – Paisagem Cultural Evolutiva Viva* (Andresen and Rebelo, 2013a):

“(...) em resultado da maior procura turística que o ADV passou a registar, esta categoria deveria constar em futuros planos de gestão devido a dissonâncias, principalmente de carácter visual que podem potencialmente introduzir. Se bem que no Douro se tenha registado um forte movimento no sentido de uma cultura de turismo em espaço rural reabilitando construções existentes, o surgimento de novas estruturas acaba por procurar localizações privilegiadas, com grande abrangência visual, o que aumenta o impacte potencialmente provocado. Estes impactes são causados pela volumetria, cor, materiais de construção e revestimento das edificações e também, por vezes, pelo tratamento do espaço envolvente, com a criação de estruturas de apoio” (Andresen e Rebelo, 2013a).

(Translation: “(...) because of the increased tourist demand that the ADWR has now registered, this category should be included in future management plans due to disdain, mainly of visual nature that they can potentially introduce. Although in the Douro there has been a strong movement towards a culture of tourism in rural areas rehabilitating existing buildings, the emergence of new structures ends up looking for privileged locations, with great visual coverage, which increases the potential impact caused. These impacts are caused by the volumetry, color, building materials and coating of buildings and sometimes by the treatment of the surrounding space, with the creation of support structures” (Andresen and Rebelo, 2013a))

In this assessment, the dissonances resulting from the new hotel structures are characterized by having:

- Duration: permanent;
- Extension: punctual or local;
- Possibility of mitigation: difficult to mitigate;
- Coverage: Proximity/medium plan;

- Distribution: concentrated.

In the Intermunicipal Plan for the ADWR, environmental dissonances are referred to as visual intrusions in the ADWR landscape, with **negative landscape impact**, which are "the result of an territorial activity that causes a rupture in the metabolism and order of the landscape, which translates into an abusive occurrence to reference situation" (Bianchi de Aguiar et al., 2001), even if the new hotel unit is not explicitly indicated here.

This issue of project visibility was analyzed specifically in the EIA Landscape factor, and the visual basin of the project was traced (Drawing 28 - Annex II - Volume II) and identified potential observation points on the Douro Marina Hotel.

Taking into account the classification of "new hotel structures" as environmental **dissonances of the ADWR**, to assess the potential impact of the hotel's intervention on the visual framing of heritage elements, its presence in the visual basin of the project was analyzed (such as villages, viewpoints, farms, other elements of the heritage).

In terms of **settlements** in the visual basin of the project, it was identified, in addition to some dispersed settlement, only the settlement of Rede and the whole of the Island, at a short distance, although they are not considered, by its urban structure and the built elements that constitute them, these settlements as determining nuclei for the OUV of the ADWR.

For **Farms and Solares do Douro**, which are a form of settlement/farm, and traditionally comprise a larger housing nucleus, often in the form of a manor house, and may associate to the main core a private chapel, gardens, accommodation for agricultural workers and production buildings, in the visual basin of the project (Drawing 28, in Annex II - Volume II) were identified on the north bank (naturally more populated, given the most favorable orientation of the slopes): the *Solar de Santiago*, the *Solar da Rede*, *Quinta de Reimonde* and *Quinta da Boavista*. From the *Solar de Santiago*, the perception of the project will be essentially at the level of the roof and the eastern elevation of the hotel building. In the other three locations, it will be mostly at the level of the hotel's roof. On the south bank stands out the *Quinta das Adegas*, with direct visibility and without conditioning for the project area, except for marginal vegetation that will develop. However, these farms are not considered to be decisive for the ADWR OUV, or that the new envisaged perspective will call into question their asset value.

In the following, photographs of the current situation are presented, and the location of image capture point is indicated in Figure 3.1. Simulations, from the east, south (from the river and opposite bank), west and north (half slope), as well as some intermediate perspectives are also presented.

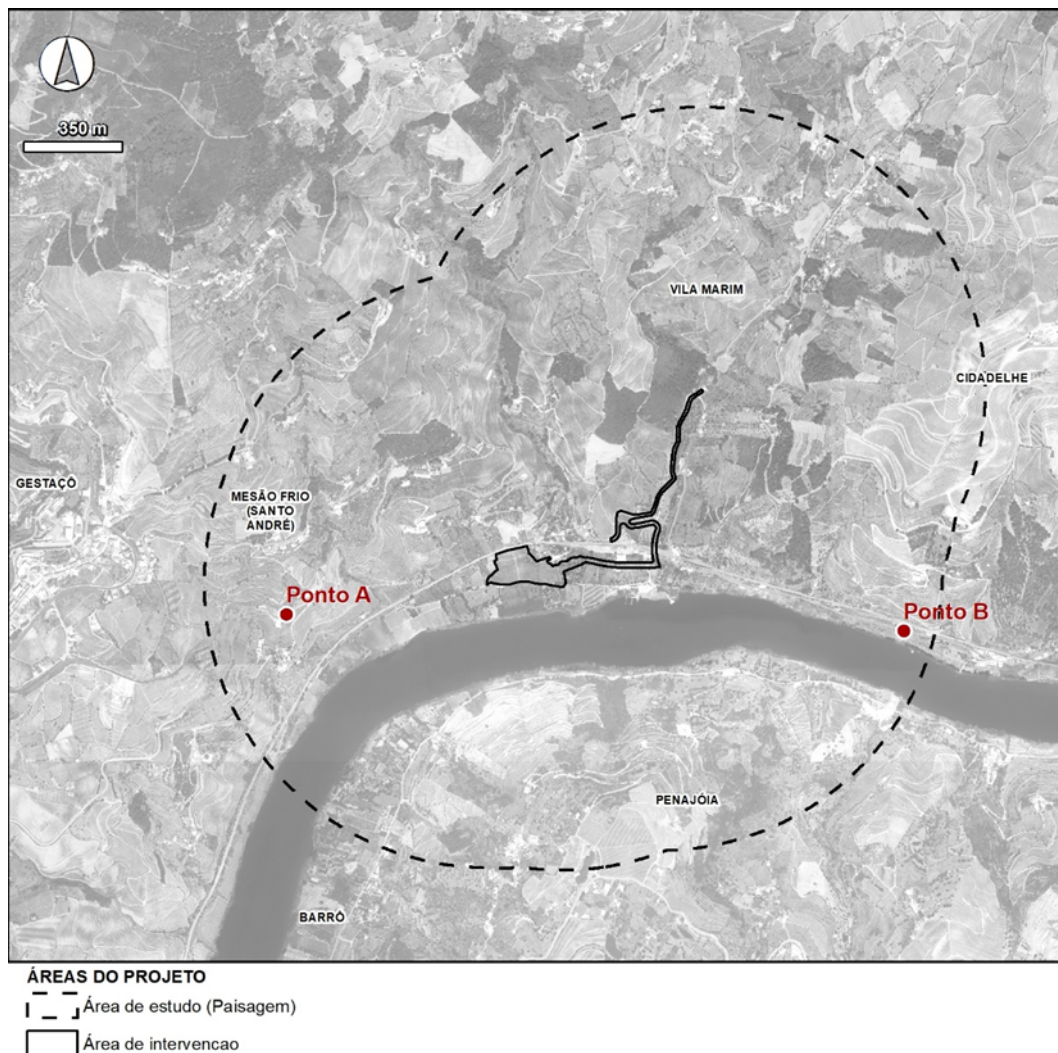


Figure 3.1 - Photo capture locations (Translation: *Área de estudo (Paisagem)* – Study area (landscape); *Área de Intervenção* – Intervention area)



Figure1.2 - View of the project area from EN 108 (point A)



Figure 3.3 - View of the project area from EN 108 (point B)



Figure 3.4 - Simulation, from east



Figure 3.5 - Simulation, from southeast



Figure 3.6 - Simulation, from the south (from the Douro River)



Figure 3.2- Simulation, from the opposite bank of the Douro



Figure 3.8 – Simulation, from southwest



Figure 3.9 - Simulation, from the west



Figure 3.10 - Simulation, from the north

Road access (which will be carried out mostly in landfill) in some sections over flooded areas, will constitute a strong visual presence. This will be particularly sensitive on the section connecting the EN108 between the planned roundabout and the railway line, where the landfill section will reach a maximum height of 8.5 metres. It is highlighted that this difference in quotas focuses on a location with high visual accessibility, from east (from EN108).



Figure 3.11 - Expected location of the link to future road access to the EN108 (Google Maps Streetview, July 2019)

The presence of the hotel and road access and the graduation of its potential visual impact, however, is inseparable from the implementation of the respective **landscape integration study**. The landscape integration project should be considered as a constituent element of the Douro Marina Hotel project, and not as an autonomous intervention aimed at mitigating the negative impacts that may occur.

The landscaping proposal is based on the concepts of the traditional *duriense* landscape, emphasizing and valuing compartmentalization, the framing using dry stone support walls and a network of routes; and reinforcing the covered riverside vegetation. In this assumption, despite configuring a change in the existing situation, it is considered that it will contribute to the valorization of the local landscape, currently degraded, and to the strengthening of the criteria that distinguish the ADWR as a world heritage. In this context, the village of Rede will benefit from a requalification of its riverside landscape, providing a greater fruition of this area.

Additionally, it is considered that the proposal of landscape integration will contribute to the integration of the building volumetry, with emphasis on the visualization from the water plan, through large tree plantations. On the other hand, it is considered essential for the mitigation of the visual impact of the large slopes foreseen for road access, resulting from the staggered modelling of the land associated to plantations.

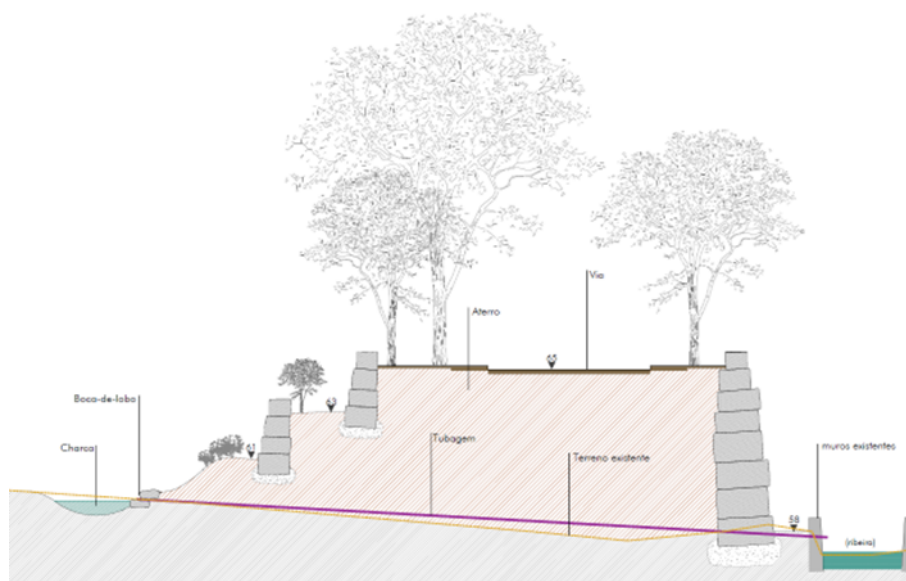


Figure 3.12 - Road access - proposed modeling cut (Source: Pardal et al. (2017))

In short, the implementation of the landscape integration study, to be detailed at the implementation project level, contributes to a significant positive impact, reversible to nullable, considering that over time it will no longer constitute an impact, by constituting itself as the new local landscape, in medium / long term, depending on the time of execution of the plantations and the characteristics of the planned plant material (size, e.g.), and local scope.



Figure 3.13 - Valuing the local landscape - hotel access avenue (Source: Pardal et al. (2017))

On another scale of analysis, the territory of the ADWR is punctuated by the presence of isolated chapels and churches, often in dominant points of the surrounding landscape, which constitute places with votive and social importance in the region but also function as privileged viewpoints over the Douro valley.

The Assessment of the State of Conservation of the Property ADWR only identified a headland coincident with a place of worship / viewpoint of the ADWR, with visual accessibility to most of the project area, located to the west – the Chapel / viewpoint of *São Silvestre*. This point is located at a distance of about 3 km, so although it allows the perception of the area as a whole, it will not allow a clear view.

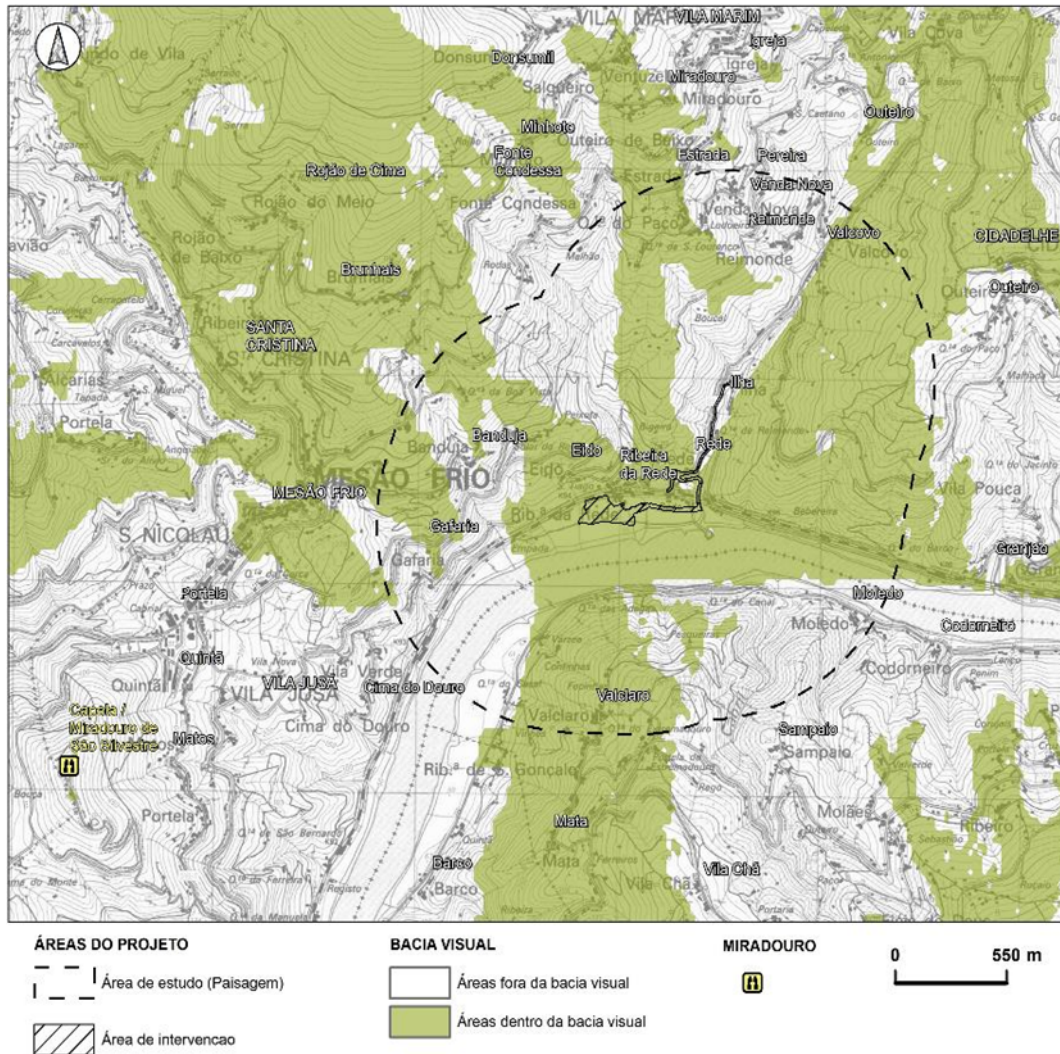


Figure 3.14 - Visual Basin of the Viewpoint/Chapel of São Silvestre, covering the project area (Source: IGeoE (1998)) (Translation: *Áreas do Projeto* – Project areas; *Área de estudo (Paisagem)* – Study area (landscape); *Área de Intervenção* – Intervention area; *Bacia Visual* – Visual basin; *Áreas fora da bacia visual* - Areas outside the visual basin; *Áreas dentro da bacia visual* - Areas within the visual basin; *Miradouro* – Viewpoint)



Figure 3.15 - View of the project area, from the Viewpoint/Chapel of *São Silvestre*



Figure 3.16 - Simulation of the view of the project, from the Viewpoint/Chapel of *São Silvestre*

The location of the *Castro de Cidadelhe* (northeast, coincident with a valued archaeological patrimonial occurrence), was also analyzed, but whose visual basin was verified does not cover the project area. The visual basin of this point obtained through the spatial analysis tools was proven on the ground.

Finally, to mention the impact on the visual framework from the Douro River, which constitutes an simultaneously cultural and natural attribute, as a panoramic and communication route where there is a very significant presence of potential observers, although visibility is filtered by the riparian gallery (itself a natural attribute of the ADWR).

Thus, in terms of affectation of the visual framing of ADWR attributes in the project's surroundings, negative impacts are predicted, with reduced to moderate magnitude (given the relatively small number of attributes affected and the reduced extent of these affects, and given the scale of the landscape and the ADWR region), but focusing on attributes of high value of the ADWR - Thus, it is evaluated as **moderate impact**.

3.2.3 Deactivation phase

The impacts of the eventual decommissioning of the project will depend on the type of land use that will be given to the different areas. In a scenario of infrastructure removal from the built areas, negative impacts similar to those of the construction phase, determined by the functioning of the yards and the circulation of machinery supporting the works, are to be expected, but it is considered extemporaneous to make an objective assessment here.

3.3 Quantification of impacts on ADWR attributes

Seeking to systematize here the approach of the impacts discussed in the previous points, is presented a quantification of the predicted affects of the various attributes of the ADWR identified in Table 2.3.

Table 3.3 – Impacts on vineyards with other land frame systems

Location / identification	Number / area / extension	Significance
Some plots with vineyard, without terrace frame systems, in places crossed by the road access to be built	About 1.2 ha	Reduced

Table 3.4 – Impacts on walls and *latadas*

Location / identification	Number / area / extension	Significance
Two stretches of contemporary walls, land containment and demarcation of property, non-conferring OUV	About 380 meters	Neutral to Reduced

Table 3.5 – Impacts on villages

Location / identification	Number / area / extension	Significance
Some buildings dispersed in the surroundings of the area of intervention and the village of Rede, non-conferring of OUV	A village	Neutral to Reduced

Table 3.6 – Impacts on places of worship

Location / identification	Number / area / extension	Significance
Ruins of the chapel of <i>Santo Mártir</i> , immediately north of the area of intervention	A chapel, in a state of ruin	Neutral to Reduced

Table 3.7 - Impacts on panoramic routes

Location / identification	Number / area / extension	Significance
There is no direct effect in road or railway access, with a panoramic character, by the actions of the project	-	Neutral

Table 3.8 - Impacts on water courses

Location / identification	Number / area / extension	Significance
Crossing the river of Rede, by the highway access	About 200 m ²	Reduced

In the approach of assessing the significance of the project's impacts on the ADWR, the expected **visual impact** of the installation of this hotel unit and its surrounding areas and services was also discussed above, considering that this impact has a **moderate negative** significance.

3.4 Mitigation

In the assessment developed in the EIA, some negative impacts were identified, resulting from the construction, installation or presence of the Douro Marina Hotel, being proposed a set of measures for the mitigation or elimination of these impacts.

Regarding the impacts related on the ADWR, the following are explicitly presented:

3.4.1 Implementation project phase

ADWR1. Implement the general measure recommended for Landscape, concerning the integration in the project of the minimization measures for the hotel structures provided for in the Intermunicipal Plan for the ADWR.

3.4.2 Construction phase

ADWR2. It is recommended the integration/preservation of structures that delimitate the property (wall and stone) and vegetation of relevant size preexisting in the proposed intervention, whenever possible.

As already addressed in point 3.2.2.1, the Douro Marina Hotel project considers a **landscape integration study**, to be detailed in the implementation project phase, which not only fulfills this need, according to the provisions of Intermunicipal Plan for the ADWR, but is a full part of the project itself, while seeking to mitigate negative visual impacts and contribute to the requalification of this area and the landscape valuation of the hotel unit itself.

4. CONCLUSIONS

The analysis of the impacts of the Douro Marina Hotel project on the ADWR allowed the identification of a small number of cultural or natural attributes conferring OUV to the ADWR potentially affected by the proposed intervention.

From attributes list requested, only the occurrence of vineyards without terrace stoneware, land support walls, delimitation of land ownership or land support was identified without characteristics that allow the OUV conferring, a village and some scattered buildings, also without characteristics that confer OUV, a chapel, in advanced state of ruin, interference with squeege and railway roads and crossing a stream.

It is not like the absence of terraced vineyards, terraced walls, pre or post-phylloxera, vineyard villages or elements of cultural heritage classified or in the process of classification, *mortórios*, groves, mediterranean forests and bushes, geosites and other natural values of greater importance for the attribution of OUV to the ADWR.

In framing and guiding documents regarding conservation of the ADWR and the interventions that are carried out in this landscape, the implementation of hotel units is generally considered as an environmental dissonance and evaluated as a potentiator of negative visual impacts.

In this project, these negative visual impacts were also identified, especially in the views from the Douro River itself and its left bank, from points on the road and railway tracks closest to the hotel site and the S. *Silvestre* chapel viewpoint.

This negative visual impact was evaluated as moderate.

In this way, under this HIS it was concluded that, although the project fits into the categories of environmental dissonances identified in the ADWR (new hotel structures) and that associated negative impacts have been identified, essentially by visual impairment in the operation phase, it should be mitigated by the integration into the project and the implementation of constant measures in Rede's Detail Plan Regulation and Intermunicipal Plan for the ADWR, in particular the landscape integration project (to detail at the level of the implementation project) **the project implementation and operation will not jeopardize the safeguarding of the authenticity and integrity of the landscape of the ADWR landscape**, which led to its classification by UNESCO as cultural landscape, living and evolutionary.

5. REFERENCES

ABREU, A.; CORREIA, T.P; OLIVEIRA, R.(coord.) (2002). Contributos para a identificação e caracterização da paisagem em Portugal Continental. Vol.II Grupos de Unidades de Paisagem A (entre Douro e Minho) a E (Douro). DGOTDU. [s.l].

AGUIAR, F.B. (2002) O Alto Douro Vinhateiro, uma paisagem cultural, evolutiva e viva. In Douro – Estudos & Documentos. Vol. VII (13). p.143-152.

ANDERSEN, T. (s.d.). A paisagem do Alto Douro Vinhateiro: evolução e sustentabilidade. [disponível em: <http://www.unizar.es/fnca/duero/docu/p315.pdf> (consulted in May, 2012)]

ANDERSEN, T.; REBELO, J. (2013a). Avaliação do Estado de Conservação do Bem Alto Douro Vinhateiro - Paisagem Cultural Evolutiva Viva. Volume 1 - Relatório de Avaliação. CIBIO UP/UTAD. Porto.

ANDERSEN, T.; REBELO, J. (2013b). Avaliação do Estado de Conservação do Bem Alto Douro Vinhateiro - Paisagem Cultural Evolutiva Viva. Volume 2 - Estudos de Base. CIBIO UP/UTAD. Porto.

ARQ2525 (2019). Memória Descritiva e Justificativa. Vila Nova de Gaia.

CÂMARA MUNICIPAL DE MESÃO FRIO (CMMF) (2019). Sítio da Câmara Municipal de Mesão Frio. Available at: <https://www.cm-mesaofrio.pt/> [consulted in November, 2019]

CANCELA D'ABREU, A, ET AL. (2004). Contributos para a Identificação e Caracterização da paisagem em Portugal Continental. Vol.II Grupos de Unidades de Paisagem A (entre Douro e Minho) a E (Douro). Direção Geral do Ordenamento do Território e Desenvolvimento Urbano. Lisboa.

CCDR-N (2017). Missão Douro. Available at: <http://www.ccdr-n.pt/missaodouro> [consulted in December, 2019].

CMMF – Câmara Municipal de Mesão Frio (2009), Avaliação Ambiental Estratégica do Plano de Pormenor da Rede.

DOURO COMUNIDADE INTERMUNICIPAL (2014). Proposta de Alteração do Plano Intermunicipal de Ordenamento do Território do Alto Douro Vinhateiro. Estudos de Base. Anexo A - Avaliação do Estado de Conservação do Bem Alto Douro Vinhateiro – Paisagem Cultural Evolutiva Viva. Volume 2.

DOURO VALLEY (2015). Quintas – Vale do Douro. IVDP - Instituto dos Vinhos do Douro e do Porto. Available at: http://www.dourovalley.eu/PageGen.aspx?WMCM_Paginald=79223#page=1&order=1&text=&subCats=61,60&areaPOI=DV [consultado em setembro de 2015].

DOURO VALLEY (2019). Via navegável do Douro – navegação de recreio. Available at: <http://www.dourovalley.com/poi?id=8073&r=8> [consultado em novembro de 2019].

ICOMOS (1999) Carta Sobre o Património Construído Vernáculo. Ratificada pela 12.^a Assembleia Geral do ICOMOS, México. Conselho Internacional dos Monumentos e dos Sítios (ICOMOS). México.

ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Conselho Internacional dos Monumentos e dos Sítios (International Council on Monuments and Sites – ICOMOS). Available at: http://www.icomos.org/world_heritage/HIA_20110201.pdf [consulted in May, 2016].

LOURENÇO-GOMES, L.; REBELO, J. (2012). “Alto Douro Vinhateiro património da humanidade: a complexidade de um programa de preservação” in Pasos. Revista de turismo y Património Cultural. vol 10, nº 1: 3-17.

PARDAL, S.; PEIXOTO, F. DE L.; DETUERK, J.; SÍTIMA, L.; LOUREIRO, A. R.; DOS SANTOS, D. R. M.; SAAVEDRA, N. (2017). Douro Marina Hotel – Projeto de Integração Paisagista. Outubro de 2017.

RAMOS, C.; FONSECA, G. (Missão Douro – CCDR-N) (2014). “Interpretação do significado de Paisagem cultural: O valor da chancela UNESCO no caso do Alto Douro Vinhateiro” in Seminário “Alto Douro Vinhateiro: Território de Ciência e Cultura - UTAD, 25 e 26 de junho de 2014.

SOEIRO, T.; ROSAS, L.; FAUVRELLE, N. (2002). In Douro – Estudos & Documentos. Vol. VII (14), p.147-163.

SOUSA, M; CARDOSO, M.; QUEIROZ, j.; CASTRO, R.; GUIMARAENS, D; MAGALHÃES, A. (s.d.). Douro Património Mundial. Preservação e formas de armação do terreno numa paisagem evolutiva e viva. In [Available at://www.drapn.minagricultura.pt/drapn/conteudos/fil_trab/Trabalho%20Douro%20Património%20Mundial.pdf (consulted in April, 2012)]

SOUSA, M; CARDOSO, M.; QUEIROZ, J.; CASTRO, R.; GUIMARAENS, D; MAGALHÃES, A. (s.d.). Douro Património Mundial. Preservação e formas de armação do terreno numa paisagem evolutiva e viva. Available at: www.drapn.minagricultura.pt/drapn/conteudos/fil_trab/Trabalho%20Douro%20Património%20Mundial.pdf [consulted in April, 2012].