Cordouan Lighthouse
(France)
No 1625

Official name as proposed by the State Party
Cordouan Lighthouse

Location
Nouvelle Aquitaine Region
Gironde Department
France

Brief description
The Lighthouse of Cordouan rises up on a shallow rocky plateau in the Atlantic Ocean at the mouth of the Gironde estuary. Built in white limestone dressed blocks at the turn of the 16th and 17th centuries by the will of Kings Henry III and Henry IV, and to engineer Louis de Foix's designs, then remodelled by engineer Joseph Teulère in the late 18th century, Cordouan has been ever since in use for maritime signalling. Its architectural forms drew inspiration from ancient models, Renaissance Mannerism and the specific architectural language of the École des Ponts et Chaussées.

Category of property
In terms of categories of cultural property set out in Article I of the 1972 World Heritage Convention, this is a *monument.*

1 Basic data

Included in the Tentative List
1 February 2002

Background
This is a new nomination.

Consultations and Technical Evaluation Mission
Desk reviews have been provided by ICOMOS International Scientific Committees, members and independent experts.

An ICOMOS Technical Evaluation mission visited the property from 30 September to 4 October 2019.

Additional information received by ICOMOS
A letter was sent to the State Party on 16 September 2019 requesting further information about the management system and development projects.

An Interim Report was provided to the State Party on 20 December 2019 summarising the issues identified by the ICOMOS World Heritage Panel.

Further information was requested in the Interim Report including: the potential impact of human activities on the lighthouse; tourism; protection measures of the buffer zone; and the management plan.

Additional information was received from the State Party on 9 August 2019, 18 October 2019, and on 26 February 2020, and has been incorporated into the relevant sections of this evaluation report.

Date of ICOMOS approval of this report
12 March 2020

2 Description of the property

Note: The nomination dossier and additional information contain detailed descriptions of this property, its history and its state of conservation. Due to limitations on the length of evaluation reports, this report only provides a short summary of the most relevant aspects.

Description and history
The Lighthouse of Cordouan rises up on the homonymous rocky plateau at the centre of the 12 km-wide mouth of the Gironde estuary (635 sqkm).

The shallow plateau is made up of white and beige limestone outcrops. Around it, between the end of the mouth of the Gironde and the coast, a series of sandbanks are found, moving under the effect of the swell, tidal currents and storms. Two "natural" channels surround the Cordouan plateau: the southern passage, for small pleasure boats, and the northern passage, for large cruise ships or commercial vessels. The south passage is shallow and stable, as it is cut into the rocky plateau itself. The northern passage is much deeper (15 to 30 meters) and stable only in its inner section.

The Lighthouse of Cordouan is located on the eastern side of the rocky plateau. Leading to it is a 270m long pier, built in stone and called *le peyrat*, to facilitate landings. The structure bearing the lighthouse is founded on 2,000 stilts of oak, sunk into the rocky plateau and supporting a first course of large stones, which serves as a base for the platform from which the tower rises.

The platform and the tower are protected from the waves by a surrounding ring-shaped structure: *l'anneau*. Rising 7.50 meters above the bedrock, it is also built out of freestone, bonded with hydraulic mortar and joined by iron staples sealed with lead. In order to protect the whole structure from the pounding of the waves, there is, in addition, a reinforced concrete "cuirass" on the face of the western side of the ring-shaped structure. There is a gap of about twenty centimeters between it and the stone masonry of the ring, which absorbs the shock of the waves and diffuses its effects.

On the eastern side of the ring, two thick oak doors open to a staircase which leads to the top of the platform and thence to the tower. The buildings at platform level, built within the inner walls of the ring structure, in Saint-Savinien stone and brick, house the kitchen and the living areas of the keepers, as well as the technical spaces for the operation of the lighthouse.

The tower itself rises above the platform to a height of about 63 meters, bringing the total height of the structure to about 67 meters above the rocky plateau. It is architecturally composed of five registers. The first two registers correspond to the part built at the turn of the 16th and the 17th centuries, while the upper part of the tower corresponds to the addition built at the end of the 18th century.

The first register has a dressed-stone elevation with Tuscan columns. A monumental doorway, decorated with allegories of the Ocean or the River, opens on the eastern side of the tower.

The second register corresponds to the first and second floors. It is adorned with a colossal order of composite pilasters supporting an architrave, cornice and modillions. Between the pilasters, two levels of bays punctuate the façade.

The third register conceals the inner cupola of the chapel, whilst the fourth register extends from the fourth to the seventh floors, the elevation taking the form of a frustoconical tower completed by a modillion cornice.

The fifth register corresponds to the lantern level, its windows equipped with white, green and red glass. A cornice with gargoyles supports a metal dome crowned by a ball topped with a point and an iron wind vane.

The interiors of the lighthouse house functional and ceremonial spaces, and all are richly decorated with a symbolic ornamental programme – Tuscan columns, allegories and decorative architectural ornament representative of the French 16th, 17th and 18th centuries. The floors/ceilings of the rooms are pierced at their centres by open oculi which allow for spatial interconnection.

The lighthouse rises up above a large vaulted semicircular cellar, arranged inside the platform and accessible from the vestibule, a square room roofed with a vault, pierced at its centre by an oculus which opens into the room above, and with three other openings. The four former sleeping cells of the keepers sit at the NW, NE, SE, and SW corners. The entrances are decorated with classic architectural motifs.

Before the present Lighthouse was erected, there existed already a much smaller tower, the origins of which are not fully ascertained, presumably dating back to the 13th–14th centuries. It was named the Tower of the Black Prince or Tower of England, for it was built or rehabilitated by the Prince of Wales, Edward of Woodstock, who was based in Bordeaux in order to protect the Anglo–Aquitainian possessions. By the end of the 16th century, the Tower was ruinous and could not perform its function; despite Aquitaine being regained by the French during the mid-15th century, it took several decades before any repairs were undertaken.

Construction of the new lighthouse began in the 1580's to Louis de Foix's designs, but it was delayed by conflict and lack of resources. King Henry IV gave renewed support to the undertaking and, in 1611, after de Foix's death, the Lighthouse was finally completed and the beacon lit.

The building conceived by Louis de Foix combined utilitarian functions with a highly symbolic form, thanks to architectural composition, high quality construction techniques and a full-fledged decoration programme. De Foix drew inspiration from several ancient and contemporary models to achieve a completely new architectural form, reflecting Henry IV's royal ambitions and legitimation programme as Henry III's heir.

The 17th century Lighthouse had a different appearance to the construction we know today: the third register, corresponding to the chapel dome, had a conical shape and the upper levels had a smaller section. Already in 1617 a storm had seriously damaged the upper parts of the building but it was only with Louis XIV's ascent to the throne that repair works began in 1663 at the lighthouse.

The harsh conditions to which the Lighthouse was exposed continued to damage the building and by the second half of the 18th century new interventions were needed. The repair proposals first advanced by Joseph Teulère included increasing the height of the structure: various projects were submitted but eventually a second project by Teulère, proposing an increase in height of 60 feet (48m) was approved in 1787. His designs correspond to the appearance of the building today. The reinforcement and heightening of the lighthouse began in 1788.

A metallic lantern crowns the building and houses a completely new type of lighting system which was able to produce a specific lighting sequence and made the lighthouse distinguishable among the other beacons along the coast.

In 1823 the optical system invented by Augustin Fresnel was installed at the Lighthouse, demonstrating its efficiency and giving Cordouan international fame.

In the mid-19th century, the state of conservation of the buildings located in the ring was reported as poor, non-functional and humid: beginning in the summer of 1850, they were demolished and rebuilt. The new structures were insulated from the ring-wall and provided with adequate living spaces. The interior and exterior of the beacon house were restored and the lantern was

reconstructed to house a modernised Fresnel-type lighting system.

In 1862 the Lighthouse was classified as a historic monument: until 1904 it remained the only structure of this type to enjoy this status.

Several technical improvements took place to the lantern in 1896, 1907, 1949 and in the 2000's.

In 1926 a reinforced concrete "cuirass" was built on the west side of the ring, and subsequently repaired in 1963, 1975, and 1983.

During the 1980's the Lighthouse of Cordouan risked being declassified and sold; grassroots movements contributed to raising public awareness which led to the State deciding to keep the beacon in use.

Boundaries

The nominated property has an area of 17,015 ha, and a buffer zone of 83,879 ha. From south-west to north-west, the boundary of the nominated property follows the 10m bathymetric limit as measured by the Hydrographic and Oceanographic Marine Service. From north-west to east, the perimeter follows the limits of the historic navigation routes of the north passages from 1757 to 2014; from east to south-east, the perimeter follows the limits of the historic navigation routes of the south passages from 1757 to 2014, as measured by the Inter-Regional Directorate of the *Mer Sud-Atlantique*. The boundary of the nominated property includes the rocky outcrop which surfaces during low tide and the sandbars defining the navigation routes.

On the mainland, the buffer zone extends on both sides of the mouth of the Gironde and encompasses stretches of coastal land from which the Lighthouse is visible, including former tidal areas, state forests, protected sites as well as other beacons which are part of the signalling system of the Gironde. In the sea, the boundary follows a regular circular shape, which reflects the area of exclusion for off-shore wind turbines.

Nobody lives permanently within the nominated property, whilst the buffer zone is home to 47,626 inhabitants, distributed among 11 municipalities, the most populous being Royan with 18,393 inhabitants.

In its Interim Report, ICOMOS requested additional information on the rationale for the boundary of the buffer zone towards the sea: the State Party has provided satisfactory information, which is dealt with in the next section on protection.

ICOMOS considers that the boundaries are clearly discernible and are all provided with protection measures that ensure the additional layer of protection demanded of a buffer zone.

State of conservation

Due to the harsh environment in which the nominated property is located, it has been the object of several repair and restoration campaigns since its construction. These are partly outlined in the Description section above, whilst the most recent ones are discussed below.

Restoration and rehabilitation campaigns took place between the 1980's and 1990's. Eventually, the 1926 concrete "cuirass" was reconstructed in the early 2000's as a self-standing structure for a more effective protection of the ring. For the stone masonry and decorative components, the most used restoration method is the replacement of the degraded elements with new ones, having closely matching characteristics.

Further conservation works were carried out in 2010, 2015 and will continue until 2021, all preceded by careful diagnostic campaigns.

Based on the information provided by the State Party and the observations of the ICOMOS Technical Evaluation mission, ICOMOS considers that the state of conservation is overall good and being monitored, although the rate of degradation of the surfaces is rather high, due to the extreme environmental conditions. At the time the mission took place, the internal surfaces of the chapel were in an advanced state of decay. However, a restoration programme is underway and interventions are planned for implementation.

ICOMOS considers that the need for substitution of deteriorated building elements should be carefully considered if not strictly necessary for the conservation and the prolongation of the life of the monument. Reproduction and replacement of decayed sculptural elements might not always be necessary or useful.

Factors affecting the property

Based on the information provided by the State Party and the observations of the ICOMOS Technical Evaluation mission, ICOMOS considers that the main affecting factors include:

- Sea storms and inundation;
- Dispersion of pollutants (e.g. in the case of maritime accidents and during the recharging of the lighthouse fuel chamber);
- Potential fire (related to the fuel storage);
- Potential wind-farm development;
- Gravel extraction.

However, the State Party has put in place measures to counteract the potential effects of the above-mentioned factors. In particular, the buffer zone is defined as an exclusion zone for wind farms up to 29.2km distance from the Lighthouse. ICOMOS requested clarification with regards to the rationale for establishing the exclusion zone in its Interim Report. The State Party explained that the size of the buffer zone in the sea has been based on principles of visibility and co-visibility as well as the earth's curvature, which has resulted in

29km. This limit is locally reduced to respect the limits of French territorial waters (22.22 km). Furthermore, all areas favourable for wind farm construction, both offshore and on the land have been excluded from the buffer zone.

Urban development pressure might be a factor affecting the buffer zone; however, a system of planning instruments and protected areas provides the zone with protecting mechanisms from development. ICOMOS requested additional information on how planning provisions would guarantee the protection of the nominated property. The State Party has provided sufficient additional information, which is dealt with in the section on protection and management.

The State Party informed on 19 August 2019 about several projects within the nominated property and the buffer zone, in particular, about concessions for the extraction of marine gravels from areas within the nominated property and in the buffer zone. The concession is planned to expire in 2023, with the potential for renewal. On the other hand, mining exploitation requests within the buffer zone are repeatedly denied. Information was provided to ICOMOS during the technical evaluation mission as regards: scientific investigations and mapping for conservation works; areas in public ownership; and perimeters of protected monuments.

In its Interim Report, ICOMOS requested additional information concerning potential affecting factors, particularly on the gravel extraction. The State Party has informed about the size of the concession, the average and authorised maximum volume of extraction: as of February 2020 no request for the renewal of the concession has been submitted and the deadline is July 2021. The Local commission of the SAGE – a planning tool for the management of water and aquatic resources – has made a stand against gravel extraction in the estuary.

ICOMOS notes that the level of knowledge on the hydraulic and sediment system of the estuary is still being developed. Therefore it recommends that the concession in the nominated property is not renewed, and no concessions be issued within the buffer zone or the estuary until a much clearer understanding of the hydraulic and sedimentation dynamics of the area is achieved, so as not to disturb the dynamic hydraulic balance of the Gironde estuary, which might impact negatively on the nominated property.

Upon a request by ICOMOS, the State Party has also informed that studies have been initiated to seek alternative sources of energy for the lighthouse, although at the moment only a reduction of the energy consumption of the lantern can be achieved.

With regards to the accessibility of the channels to large ships, the State Party informs that in 2014 the navigation channel was modified; ships with a maximum of 12.5m draught can sail through the channel to Verdon sur Mer, whilst in Bordeaux the maximum draught is 11m. There is no plan to upgrade the channels and ports to increase ship draught.

ICOMOS notes that the information provided does not rule out the possibility of increasing the ship draught; ICOMOS also recommends monitoring the effects of the current navigation arrangements and to inform promptly the World Heritage Centre in case of any plan to increase the current ship draught.

3 Proposed justification for inscription

Proposed justification
The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

- The Lighthouse of Cordouan is a unique and grandiose creation: built for utilitarian and symbolic purposes, which illustrates in an outstanding manner the genius of its conceivers and builders, who were able to combine technical, architectural, stylistic and symbolic dimensions in one single building, which is still used for its original function;
- Erected in a hostile environment for maritime signalling, it illustrates through its unique architecture the major phases of the history of lighthouses, including the technological advancements that made possible its continued use to this day.

Comparative analysis
The comparative analysis is organised according to four categories of immovable properties: works for maritime signalling, utilitarian buildings, places of power manifestation, and isolated buildings. For this aspect of the comparison, the selection has taken into account properties expressing heritage features as close as possible to the 'Phare de Cordouan' as well as geo-cultural diversity.

The key parameters used for the comparative exercise include:

- Symbolism or representation of power;
- Technical challenge;
- Architectural quality;
- Eminent example of the history/evolution of its category;
- Scientific experimentation.

The comparative exercise includes a typological analysis, an analysis based on the above-mentioned parameters and a detailed textual analysis of the tables. Thirteen lighthouses have been compared with the

nominated property. In addition, 32 other properties, either or not on the World Heritage List and on Tentative Lists of States Parties, have been compared with the nominated property.

ICOMOS considers that the methodology used for the comparative analysis is good, but that it could have been sufficient to present only a restricted relevant selection of comparators to demonstrate that there is room for the nominated property on the World Heritage List.

ICOMOS considers that the comparative analysis justifies consideration of this property for the World Heritage List.

Criteria under which inscription is proposed

The property is nominated on the basis of cultural criteria (i) and (iv).

Criterion (i): *represent a masterpiece of human creative genius;*

This criterion is justified by the State Party on the grounds that the Cordouan Lighthouse illustrates the achievements of the will to conceive a signalling structure in a highly inhospitable environment as a monument of great artistic ambitions.

ICOMOS considers that Cordouan is indeed a masterpiece of maritime signalling from the 17th century up until today. Since it was first built, to Louis de Foix's designs, this lighthouse has been acknowledged as an architectural and engineering masterpiece as well as a symbolic endowment to the glory of the King of France at the time. In the 18th century, Joseph Teulère heightened and strengthened Cordouan. The masterly application of the stereometry and stereotomy has allowed for a superb integration between the existing fabric and the new addition, which confirmed also the symbolic function of the lighthouse. The aggressive natural environment it was erected in consolidates the status of this building as an eminent example of artistic, technical and technological human ingenuity.

Criterion (iv): *be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;*

This criterion is justified by the State Party on the grounds that the nominated property embodies in an outstanding manner the great stages of the history of lighthouses. Cordouan was built with the ambition to continue the tradition of famous beacons of antiquity and illustrates the art of building lighthouses in a period of renewed navigation between the 16th and the 17th centuries, when beacons played an important role as territorial markers and as instruments of safety. Finally, the increase of its height, in the late 18th century, and the changes to its light chamber, attests to the progress made by science and technology of the period. Thanks to its fame, the Cordouan Lighthouse witnessed several experiments to improve lighthouses' capacity to assist navigation: Augustin Fresnel chose to install at Cordouan, for the first time, his optic system.

ICOMOS observes that, ever since its building in the 17th century, Cordouan has preserved, without interruption, its original function as a lighthouse and territorial marker on the Atlantic shores of France. Its architectural typology, structural system, ornamentation and decorative themes are the result of two major building campaigns – in the 16th-early 17th centuries (L. de Foix) and in the late 17th-early 18th centuries (J. Teulère's raising of the height).

The architect chosen for the initial structure was clearly oriented towards monumentality and drew inspiration from several ancient and Renaissance buildings. This trait has been confirmed throughout its construction/restoration phases. The architectural language of the facades and the interior decorative elements reflect the different periods that the building evolved through.

The building typology of the Lighthouse of Cordouan, and the technology of its lighting mechanism, had an influence far beyond the territory of France. Therefore, the property illustrates important phases in the history of lighthouses in the regional and global contexts. The Lighthouse of Cordouan can be considered as a significant representative of monumental lighthouses of the Renaissance, pre-modern and modern periods in the world.

ICOMOS considers that the nominated property meets criteria (i) and (iv).

Integrity and authenticity

Integrity

The architectural, technical and symbolic monumental dimensions of the Lighthouse of Cordouan are clearly perceivable. The intervention campaigns throughout its history in the 17th, 18th and 19th centuries have all pursued the perpetuation of its monumentality and ensured its continuous use. The works carried out in the 20th and 21stcenturies have contributed to protecting it more effectively from the effects of its harsh environment and to guarantee its functionality with the necessary technological updates. All attributes supporting the proposed justification for inscription are within the boundary of the nominated property, whilst the buffer zone encompasses and protects the historic and territorial setting of Cordouan.

ICOMOS concurs with the State Party's view and considers that environmental and anthropic pressures are, to the extent it is possible given the location of the property, under control and active measures have been established to avoid or reduce their negative effects.

Authenticity

The nominated property with its immediate and wider setting appears fully authentic and it continues to be used for maritime signalling. Its use has made necessary throughout the centuries technological adaptations to meet the needed operational requirements.

The monumental character of the original concept, to L. de Foix's designs, has been perpetuated, even if the Lighthouse's forms were thoroughly modified in the 18thcentury major intervention, designed by J. Teulère. He raised the height of the lighthouse but retained much of the built fabric of de Foix's phase.

Due to its extreme environment, its construction materials and components suffer from constant degradation, therefore they need to be periodically repaired and replaced. Much care is given to the documentation of the interventions and to match old materials with compatible new ones.

In conclusion, ICOMOS considers that the conditions of integrity and authenticity have been met.

Evaluation of the proposed justification for inscription

ICOMOS considers the proposed justification for inscription and the chosen criteria are adequate and justified through the comparative analysis and supported by all architectural and environmental attributes of the nominated property. All relevant attributes are comprised within the boundary of the nominated property and the buffer zone encompasses a wide area which *"gives an added layer of protection to the property […] and includes the immediate setting [of Cordouan], important views [as well as] attributes that are functionally important as a support to the property and its protection"* (*Operational Guidelines*, § 104).

The conditions of integrity and authenticity have been met, taking into account the challenging environment which the nominated property is exposed to. Pressures on the nominated property can be considered under control through active measures, although further research on the hydro-sedimentary system and its dynamics is necessary to strengthen the management of the changeable attributes.

Attributes

The nomination dossier provides a careful description of the attributes of the nominated property and of their role and capacity to reflect the proposed justification for inscription and the criteria. Below only a short account is given.

The attributes of the nominated property include:

- the human-built structures (the lighthouse and its encompassing ring; the *peyrat* or pier)
- the immediate setting (the rocky plateau, the sandbars, the maritime passages).

The identification of the attributes has enabled the delineation of boundaries for the nominated property that take into account the evolution and changes that some of them may undergo due to the natural evolution of this dynamic setting.

ICOMOS considers that the attributes of the proposed justification have been carefully identified and this is a robust basis for management; further research on the dynamic attributes will further strengthen the understanding and management of the property.

4 Conservation measures and monitoring

Conservation measures

The nomination dossier summarises clearly the sequence of intervention programmes implemented or planned from 2003 until 2021.

The Cordouan Lighthouse enjoys a robust maintenance and conservation programme, backed by scientific investigations, documentation and funding (made available essentially by State budget). Following the local community's pressures and the involvement of "Les Compagnons de Saint Jacques", today suitably-skilled workers are employed to carry out the interventions.

Urgent measures to be undertaken have been identified and necessary interventions are scheduled and funded.

Monitoring

The custodians of Cordouan ensure regular control and monitoring over the state of conservation of the nominated property. The monitoring system is organised around four main challenges, for each of which qualitative complex indicators have been identified. For each indicator the measurement periodicity and the responsible actors are identified.

ICOMOS recommends that indicators be more evidently linked to the attributes of the nominated property and their main affecting factors.

Streamlining the monitoring system with the Periodic Reporting questionnaire is also advisable.

ICOMOS considers the property is in a good state of conservation and enjoys an adequate maintenance and conservation programme. Monitoring indicators would benefit from a clearer link with the attributes and their affecting factors. Synergies with the Periodic Reporting questionnaire is advisable.

5 Protection and management

Documentation

The Lighthouse has been thoroughly documented over a long period of time and is covered also by historical representations. Research campaigns have been carried out for the preparation of the nomination dossier and for the conservation programme with the involvement of various institutions (e.g. the Universities in Bordeaux, La Rochelle, Nantes), local actors, civil committees and cultural societies, e.g. the "Association des Phares de Cordouan et de Grave". These research campaigns continue and will be instrumental in the protection, conservation and interpretation of the nominated property.

ICOMOS however recommends that an updated and rigorous architectural-geometric survey is conducted with the assistance of photogrammetry, topography and 3D laser scanner technologies, in order to create a reliable basis for registering all information deriving from investigations and interventions. Equally, the elaboration of a GIS-based information system associated to a relational database would assist in recording, preserving, and managing all data on the property, thus facilitating maintenance and management and supporting interpretation.

Research is currently being implemented through a management plan of the sediments, initiated in 2020, by the *Syndicat Mixte Développement Durable de l'Estuaire de la Gironde* (SMIDDEST) – a public body involving the Gironde and the Charente-Maritime Departmental Councils, the New Aquitaine Regional Council, Bordeaux Métropole, the Royan Atlantique Agglomeration Community, the Estuary Community of Communes and the Haute-Saintonge Community of Communes; the management plan of the *Parc Naturel Marin de l'Estuaire de la Gironde et de la mer des Pertuis* also includes research activity and the Parc is preparing a bibliography on the state of knowledge of the hydro-sedimentary system of the Estuary's mouth.

ICOMOS notes that the knowledge and understanding of the changeable attributes of the nominated property is still under development and considers that the knowledge of this hydro-sedimentary system is essential for the proper management of the property and for preventing any negative impacts. Therefore ICOMOS recommends that the studies being developed or envisaged be adequately funded and carried out as a matter of priority.

Legal protection

The nominated property is owned by the State. In compliance with the *Code de l'Environnement*, *Code du Patrimoine*, *Code de l'Urbanisme* (Environment, Heritage and Urban Planning Codes), the nominated property and its buffer zone enjoy protection measures; these are detailed in the nomination dossier and only the major ones are briefly recalled below.

The *Phare de Cordouan* has had the status of classified historic monument since 1862: this designation implies protection and conservation measures, including a circular protection zone of 500m radius.

The nominated property, with the exception of the built structure of the lighthouse, is included in the Marine Natural Park of the Gironde estuary, thus enjoying protection measures that complement the ones deriving from the Heritage Code.

The buffer zone includes areas protected as *sites classés* or *inscrits* for their landscape significance: these designations imply restrictions and the need for authorising almost all types of interventions and include several protected historic monuments.

The *Loi Littoral* (coastline law) forbids any construction at less than 100m from the coastline in unbuilt-up areas and PLU (local urban plans) may increase this distance.

Some municipalities include areas protected as *Sites Patrimoniaux Remarquables* – SPR (outstanding heritage sites), equipped with regulations ensuring the protection of their heritage features. Any intervention is subordinated to the opinions issued by the *Architecte des Bâtiments de France.*

Additionally, the buffer zone up to 29.2 km away from the Lighthouse is mentioned as an 'exclusion zone' in the strategic document for wind turbines (*Document Stratégique de Façade*).

The Plan POLMAR provides the response framework in case of accidental pollution.

ICOMOS requested in the Interim Report additional information concerning protection mechanisms in place for the buffer zone. The State Party explained that the Law n. 2016-925 establishes (art. 74) that the State, its agencies and the local authorities must guarantee the protection, conservation and enhancement of the World Heritage properties through their planning instruments. Further explanation is provided in the Management system section of this report.

Management system

The nomination dossier explains that, due to the important role played by the nominated property within the area and considering the large buffer zone affecting several municipalities and communities, the SMIDDEST has acquired an active role in the management and tourist promotion of the property.

The additional information provided by the State Party in October 2019 informs that the direct responsibility for the nominated property, as part of the maritime signalling infrastructure, falls on the Inter-Regional Directorate of the *Mer Sud-Atlantique*, subdivision "*Phares et Balises Verdon-sur-Mer*"; whilst its conservation is guaranteed by the Regional Directorate of Cultural Affairs, a devolved

office of the Ministry of Culture and Communication and by the *Architecte en Chef des Monuments historiques*.

Both above-mentioned directorates are under the authority of the Prefect of the Region Nouvelle Aquitaine, who is also Prefect for the Gironde Department.

A governance system has been put in place to ensure coordination and participation of all key actors. A local pilot commission has been established as an arena for consultation and debate (instruction n. 2012/004 12 April 2012). This has been backed up by an inter-institutional agreement signed in 2013 between the State and the funding local authorities members of SMIDDEST.

A Local Commission for World Heritage (*Commission Locale du patrimoine mondial*) has been prefigured to supersede the above-mentioned pilot commission. The commission is co-presided over by the Prefect of Nouvelle Aquitaine Region and the elected president of SMIDDEST. The members of the commission belong to four strands: local collectives, State services, local public operators, civil society.

The co-presidents validate the strategic directions, decide upon the actions to be undertaken, monitor the implementation, oversee the coherence of the management plan actions, and may consult an independent advisory committee.

A technical committee implements the commission's decisions; its permanent members represent the local collectives and the state services; depending on the specific theme to be dealt with, additional members may be co-opted. SMIDDEST acts as the secretariat for the committee.

Finally, the participatory dimension is guaranteed through the involvement of the *Association des phares de Cordouan et de Grave*.

The participation of citizens in decision-making is ensured via the consultation and public survey procedure.

A number of plans, which are relevant for protection and management purposes, exist for areas included both in the nominated property and its buffer zone: the management plan for the *Parc naturel marin de la Gironde et de la mer des Pertuis*; the *Schéma régional d'aménagement, de développement durable et d'égalité des territoires* (SRADDET) for the Region Nouvelle Aquitaine; the *Schéma de cohérence territorial* (SCoT) for the two communities of Royan Atlantique (Charente Maritime) and of the townships of Pointe Médoc (Gironde); and finally the masterplans of each town (Plan Local d'Urbanisme - PLU).

ICOMOS requested additional information on the mechanisms in place or envisaged that would guarantee that planning provisions respect the proposed Outstanding Universal Value of the nominated property.

The State Party responded that, based on the law 2016-925, the Prefect of the region/department must inform the authority responsible for the development of *Schéma de cohérence territoriale* (SCoT) – a large-scale territorial plan which orients the elaboration of local plans – or of local urban plans (PLU), of the provisions of the management plan, in order to guarantee their integration into the planning system.

The SCoT Médoc Atlantique is currently under revision (diagnostic phase). The revision process for the SCoT Royan Atlantique commenced in 2016 and its draft was adopted by decree on 11 October 2019.

ICOMOS considers that these revisions offer the opportunity to guarantee that the objectives and provisions of the Management Plan be fully integrated in the SCoTs and recommends that the authority developing the Scheme be promptly notified about the objectives and provisions of the management plan.

The Local Urban Plans (PLUs) are the key planning documents at the municipal and inter-municipal levels. They are periodically updated, to comply with superior documents or policies or to allow for accommodating a project of general interest.

ICOMOS observes that, since no timeframe for the approval of the revised SCoT has been presented, the consequent revision of the PLU to make them coherent with the provisions of the Management Plan via SCoT might be much delayed. Therefore if actual PLU provisions potentially colliding with the safeguarding of the value and attributes of the nominated property are not promptly revised, they might at some point be implemented before they are modified.

ICOMOS therefore considers that the State authority should consider setting up a viable process so that revisions of the PLUs are completed as soon as possible.

On this point, ICOMOS has noted that the Management Plan indicates 2021 as the timeframe for the issuance of the Prefectoral decree to inform all actors involved on the Management Plan: ICOMOS considers that this deadline should be brought forward to 2020 to guarantee the prompt integration of the management provisions into the SCoTs and PLUs.

The nomination dossier describes in detail six strategic management goals, each articulated into operational objectives and equipped with actions. These have been identified through technical workshops involving all concerned parties and the managers of the nominated property.

ICOMOS requested additional information on the management arrangements to ensure the implementation of the outlined objectives and actions. The State Party provided additional detailed information on 18 October 2019, clarifying the role of each partner in carrying out the planned actions.

In its Interim Report, ICOMOS requested from the State Party additional information on the finalisation of a management plan. The State Party has transmitted a management plan which coordinates the activities included in the previously-submitted objectives and action plan.

Risk management objectives and actions concerning fire, pollution and flood prevention are included within the management framework.

Visitor management
Being a strategic infrastructure for navigation safety, visitation at the Cordouan Lighthouse is strictly managed in terms of number of visitors (400 people per day and no more than 49 people at the same time in the lighthouse) and visitation route.

Potential visitor pressures may derive from cruise ships, for which rehabilitation works are being carried out at Royan port. However, the current and sought after tourism audience in the area is represented by elderly people and families, rather than mass tourism.

In its Interim Report, ICOMOS requested additional information on mechanisms to manage potential tourism pressure in the future. The State Party responded that access is limited due to tidal cycles and private access by boat is very limited. For safety reasons, across the whole of France, access to lighthouses open to the public is limited to 30 people simultaneously by decree. Following ad-hoc upgrade of the safety system at Cordouan, this number has been increased to 49 there. The maximum number of visitors acceptable per tide period is 400. A pricing strategy has been deployed to encourage visitation during the low-season; additionally, a network of places on the mainland for the interpretation of the Lighthouse's significance exists already or is being organised.

ICOMOS notes that not much information is provided on how the access of private vessels is regulated: it is expected that a ceiling is fixed and that preliminary authorisation must be requested before accessing the Lighthouse by private vessels.

ICOMOS also notes that an increase in the number of visitors has been accepted compared to the limits fixed by decree: careful consideration with regard to safety should be given before any further increase is envisaged.

Community involvement
Local communities and associations have been involved throughout the nomination process. Their active role in sensitization has contributed to improving the maintenance of the nominated property. The *Association des Phares de Cordouan et de Grave* is part of the Local Commission for World Heritage.

Evaluation of the effectiveness of the protection and management of nominated property
ICOMOS considers that legal protection and associated measures are adequate to ensure the protection of the nominated property and of the buffer zone.

However, with regards to the buffer zone, effectiveness of protective measures depends largely on the coordination among the different planning instruments and their coherence with the aim of guaranteeing the necessary protection to the Cordouan Lighthouse and its immediate and wider setting. In particular the potential offered by the Law n. 2016-925 should be fully harnessed by issuing rapidly the prefectoral information decree on the management plan provisions, so that planning authorities can integrate them into the planning system. In this regard ICOMOS considers that the State Party needs to ensure that the process of conformation of SCoTs and PLUs to the Management Plan provisions is completed as soon as possible.

The governance system was initiated in 2012 and it appears to be well geared and tested, through the preparation of the nomination dossier and the implementation of management objectives. Additionally, the main responsible bodies for the nominated property are devolved offices of the State administration, under the Prefect of the Region. ICOMOS recommends that the Local Commission for World Heritage be promptly formalised.

The response to the Interim Report contains a management plan that coordinates objectives and actions illustrated in the nomination dossier and provides an adequate account of the management system.

ICOMOS considers that a formal engagement by all relevant authorities to commit to the implementation of the Management Plan will further strengthen the management system. This could be achieved through the update of the inter-institutional protocol signed in 2013.

In terms of documentation and research supporting the management, ICOMOS notes that the Lighthouse enjoys extensive historic and contemporary documentation accumulated over years of research. However, ICOMOS suggests that an updated and rigorous architectural-geometric survey is conducted through photogrammetry, topography and 3D laser scanner technologies, as a basis for registering all past and future information, possibly into a GIS-based relational database.

Studies on the hydro-sedimentary system of the Gironde Estuary exist or are planned: it is essential that adequate resources be allocated to improve the understanding of this complex system to guarantee that envisaged management measures are appropriate and permitted activities do not cause potential unknown negative impacts on the Cordouan Lighthouse.

ICOMOS considers that the nominated property enjoys adequate legal protection status and mechanisms.

6 Conclusion

The Lighthouse of Cordouan was erected at the turn of the 16th and 17th centuries on a rocky plateau at the mouth of the Gironde estuary by the will of the French kings Henry III and Henry IV, and further modified in the 18th century. The Cordouan Lighthouse has been nominated because it is a monument exhibiting a unique architectural form, drawn from ancient models and contemporary mannerist language, of exceptional construction quality and a highly symbolic decorative programme. Erected in a strategic position for territorial control and, at the same time, in an inhospitable environment, the Cordouan Lighthouse illustrates the main phases of the history of lighthouse construction, and, through its formal and craftmanship qualities, the French Kings' ambitions, after gaining control over a territory which had long been under English control. Two criteria have been identified as relevant for the nominated property – criterion (i) and (iv).

The nomination approach, which examines in depth the environmental as well as historic conditions which made possible the construction of this infrastructure and its building challenges, demonstrates a profound understanding of the significance of the Cordouan Lighthouse both as technological utilitarian infrastructure and as symbolic monument.

This approach has influenced also the delineation of the boundaries of the nominated property, which encompass the rocky platform as delimited by the 10m bathymetric line, the immediate sandbars and the maritime routes (the *passe sud* and the *fosse de jusant*), and the buffer zone, which includes a vast marine and terrestrial area, thus encompassing all attributes conveying the significance of the nominated property and those providing a support to its protection.

The nomination of the Cordouan Lighthouse covers a typology of heritage not specifically represented on the World Heritage List, thus contributing to strengthening the diversity and balance of the List.

ICOMOS concurs with the proposed justification and the selected criteria, on the basis of the comparative analysis and of the tangible and intangible attributes of Cordouan, which reflect clearly and credibly the proposed justification for inscription.

Given the inhospitable environment in which the Lighthouse of Cordouan is situated, its state of conservation can be considered overall good and monitored.

The main factors currently or potentially affecting the Cordouan Lighthouse appear to be addressed and monitored through a set of legal, planning and management mechanisms. Further research on the hydro-sedimentary system of the Gironde Estuary would improve understanding of it and the refinement of management measures, particularly addressed to the dynamic attributes.

The nominated property enjoys adequate legal protection designations and mechanisms. However, ICOMOS considers that the potential of the existing legislation should be fully harnessed and the process of revision of the SCoTs and of the PLUs should be completed as soon as possible to ensure that the Management Plan objectives and provisions be promptly included in the planning system.

A management system has existed since 2012: a local World Heritage Commission with a consultative function was established, involving State services, local administrations, local public operators and civil society representatives. The Commission is backed up by a technical committee, which implements decisions.

ICOMOS observes that efficiency, effectiveness and good results of the management of the nominated property and its buffer zone greatly depend on a constant, strong and continuously-tuned coordination among all the involved authorities, organisations and technical bodies. The role of the "Commission Locale du Patrimoine Mondial", the Prefects and the SMIDDEST is thus crucial in this regard.

A management plan exists, coordinating all actions planned by key stakeholders: an updated inter-institutional protocol engaging all relevant stakeholders in respecting and implementing the management plan would further strengthen the management framework.

Mangaement tourism seems currently satisfactory. Nevertheless, future pressures might not be excluded and it will be important that future choices about visitation and tourism be made giving predominance to Cordouan's cultural meanings and vulnerabilities.

7 Recommendations

ICOMOS recommends that the Cordouan Lighthouse, France, be inscribed on the World Heritage List on the basis of **criteria (i) and (iv)**.

Recommended Statement of Outstanding Universal Value

Brief synthesis

Erected in the open sea on a rocky plateau where the Atlantic Ocean meets the Gironde Estuary, in a highly exposed and hostile environment that is hazardous for shipping, which is also its raison-d'être, Cordouan Lighthouse has been a beacon for ships engaged in trade between Bordeaux and the rest of the world since the 16th century.

Its monumental tower in limestone dressed blocks, decorated with pilasters, columns and sculptures, has 8 levels that rise to a height of 67 metres above sea level. It is the result of two complementary construction campaigns in the 16th and then the 18th century to

enhance the technical capacities of the lighthouse, which is still in use today. The Cordouan Lighthouse was conceived from the outset as a monument, both in its stylistic features and expression, and in the engineering techniques employed.

Initial construction was undertaken in 1584 by engineer Louis de Foix, at the behest of the king of France, Henri III. Henri IV, eager to stress his legitimacy, commissioned original and unexpected features at the frontier of his kingdom: apartments for the king and a chapel. A concrete expression of political will intended to impress all the European sea powers and local communities, the Cordouan Lighthouse thus became a monumental lighthouse dedicated to the affirmation of the king's power. The height of the lighthouse was raised in 1788-1789 by engineer Joseph Teulère, who remained true to the original conception and remodelled the lighthouse in keeping with the architectural form invented in the 16th century by Louis de Foix.

Not only is the form exceptional, but also the quality of the style. The tower of Louis de Foix clearly reflects the influence of antiquity and Italy, evoking in the open sea the forms of Roman mausoleums, and the domes and most elegant features of Renaissance mannerism. Joseph Teulère, to his credit, achieved a masterpiece of French stereotomy in the language of late-18th century neoclassicism.

Cordouan Lighthouse, in its intentional monumentality, is a grandiose and unique creation, in which the human genius is not only architectural, stylistic and technical, but also symbolic and conceptual.

Criterion (i): The Cordouan Lighthouse is a masterpiece of maritime signalling, which has remained in use from the 17th century until today. Since it was first built, this lighthouse has represented a symbolic endowment to the glory of the King of France of the time. In the 18th century, Joseph Teulère heightened and strengthened the lighthouse. The masterly application of the stereometry and stereotomy has allowed for a superb integration between the existing fabric and the new addition, which confirmed also its symbolic function. The aggressive natural environment it was erected in consolidates the status of this building as an eminent example of artistic, technical and technological human ingenuity.

Criterion (iv): The Cordouan Lighthouse embodies in an outstanding manner the great stages of the history of lighthouses. It was built with the ambition to continue the tradition of famous beacons of antiquity and illustrates the art of building lighthouses in a period of renewed navigation between the 16th and the 17th centuries, when beacons played an important role as territorial markers and as instruments of safety. Finally, the increase of its height, in the late 18th century, and the changes to its light chamber, attest to the progress made by science and technology of the period. Thanks to its fame, the Cordouan Lighthouse witnessed several experiments to improve lighthouses' capacity to assist navigation.

Integrity

The conditions of integrity of Cordouan Lighthouse are very good. The monumental nature of its appearance has, in line with the conception of Louis de Foix, always guided the architectural and technical interventions necessary for its maritime signalling function. The raising of the height of the frustoconical tower in the 18th century by engineer Joseph Teulère, although it changed the original outline, respected the conception of the initial lighthouse by maintaining the symbolic significance of its guiding principles, with the chapel and the king's apartments. Its monumentality in isolation is a key element of the integrity of Cordouan Lighthouse.

Authenticity

Cordouan Lighthouse is structurally authentic and continues to be used for its original function. Its authenticity cannot be understood without taking into account its geographical situation in an extreme maritime and meteorological environment, which makes constant renovations essential. Its authenticity must also be assessed in the light of its role as an active maritime signalling unit, requiring regular technical adaptations. Similarly, the restorations in the 19th and 20th centuries have had only a slight impact on the authenticity of the lighthouse with the addition of the annular buildings and the restoration of the interior spaces. The monument has thus retained its strong visual and symbolic presence, while undergoing a process of technical modernisation in order to maintain its activity.

Protection and management requirements

Classified as a Historic Monument since 1862, Cordouan Lighthouse, a state property, is supported by conservation measures funded and directly implemented by the Ministry of Culture. The property is thus protected under the *Code du Patrimoine, Code de l'Environnement* and *Code général de la propriété des personnes publiques* (Environment and Heritage Codes, and General Code on Public Property). Maintaining and managing the functional elements of the lighthouse are the responsibility of the Inter-Regional Directorate of the *Mer Sud-Atlantique*. The whole of the property – except for Cordouan Lighthouse itself – is located in the *Parc Naturel Marin de l'Estuaire de la Gironde et de la Mer des Pertuis* and is thus covered by the natural park's management plan. Lastly, the Domaine public maritime inside which the property is located (except for the lighthouse itself) is protected by a principle of non-constructability, and only small-scale works may be carried out, subject to authorisations relating to the use of public property.

The property buffer zone on the land is covered by various conservation, protection, enhancement and planning measures (Coastline law, Historic monuments, Classified and inscribed sites, Outstanding heritage

sites, Landscape planning, SCoTs and PLUs) which contribute, under the terms of the Heritage Code and Environment Code, to the preservation of the environment and landscape of the property. The parts of the buffer zone in the sea are covered by the same measures as the natural elements located within the boundaries of the property.

The lighthouse is today the responsibility of the Ministry of Ecological and Solidarity-based Transition, while the natural elements of the property form part of the maritime public domain. The SMIDDEST (*Syndicat mixte pour le Développement durable de l'Estuaire de la Gironde*) has developed a project for the management, tourist enhancement and promotion of the Cordouan site, and organises paid visits to the lighthouse, to the spaces included in the project, and to the plateau surrounding the site. The SMIDDEST is also required to ensure that the site is guarded, to prevent any vandalism or damage to the built structure, and any damage to the fauna and flora of the natural elements.

The management framework revolves around an envisaged Local Commission for World Heritage, which is expected to supersede the pilot local commission set up for the nomination. The efficiency, effectiveness and good results of the Management Plan depend on a constant, strong and continuously-tuned coordination among all the involved authorities, organisations and technical bodies. The role of the *"Commission locale du patrimoine mondial"*, and in particular of SMIDDEST is thus essential. A management plan has been developed on the basis of objectives and actions planned by all key actors: a formal commitment by all relevant parties to implement its provision will strengthen the management system in place.

Additional recommendations
ICOMOS further recommends that the State Party give consideration to the following:

a) Promptly informing, as per the provisions of Law 2016-925, all planning authorities of the objectives and content of the management plan for the property, to ensure the rapid conformation of the SCoTs and of PLUs related to the property and its buffer zone to its provisions,

b) Ensuring that the process of revision of both the SCoTs and the PLUs is completed as soon as possible,

c) Strengthening the management system through a formal commitment among all key state, regional and local stakeholders to implement the updated management plan,

d) Ensuring that no concession for gravel extraction be renewed or issued within the property and the buffer zone until the knowledge of the hydro-sedimentary system of the Gironde Estuary has improved sufficiently to allow for an accurate assessment of the potential negative impacts,

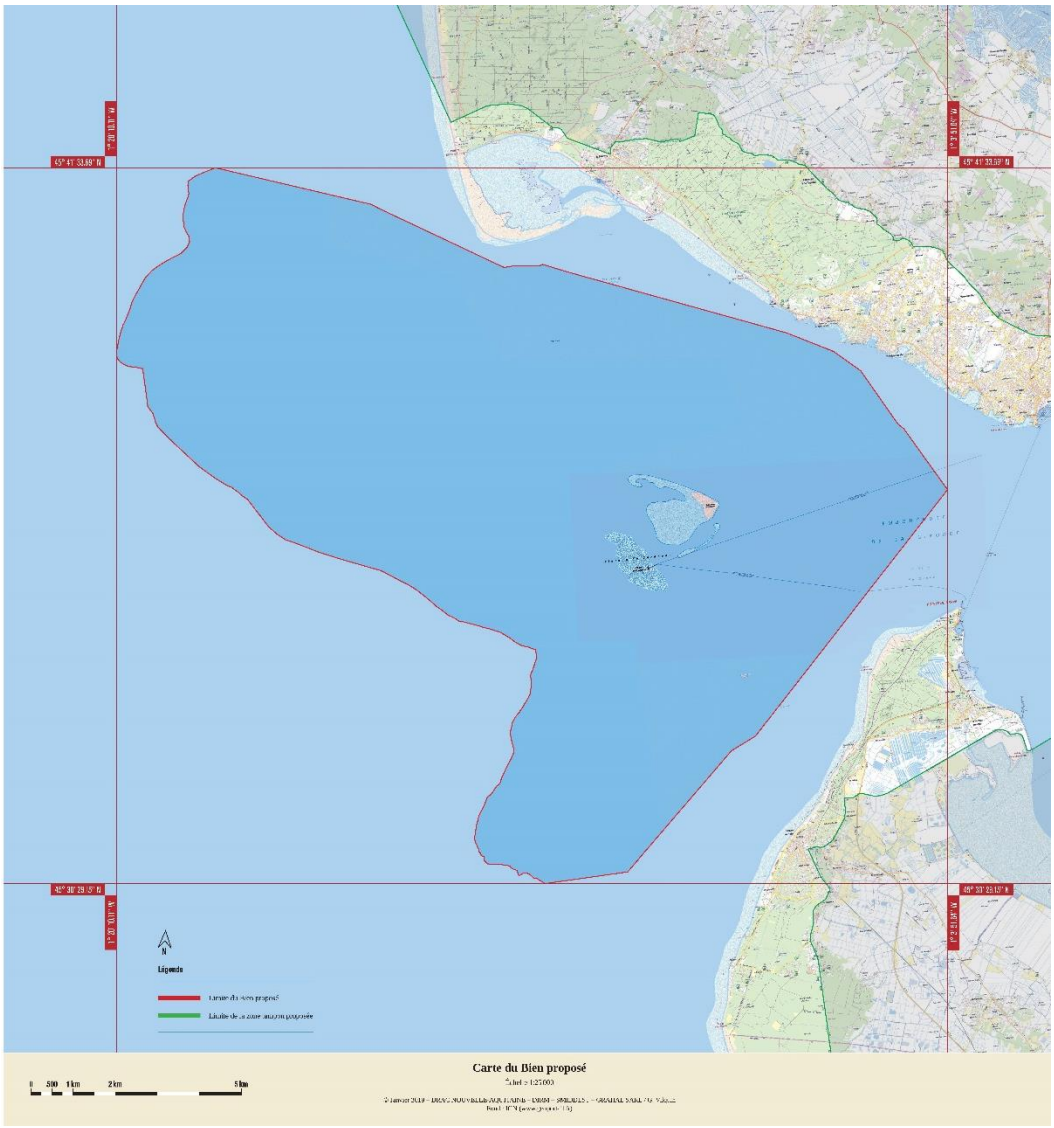
e) Guaranteeing that adequate resources be allocated to continue the research on the hydro-sedimentary system of the Gironde Estuary,

f) Carrying out a rigorous geometric-architectural survey of the Lighthouse and link it to a GIS-based relational database for the management of all information,

g) Elaborating a "structural model" in order to allow further studies of the stability and of the structural behaviour of the Lighthouse under the external demands, especially those of a dynamic nature,

h) Giving consideration to changing the fuel of the lighting system to avoid the presence and use of diesel fuel for environmental reasons,

i) Submitting to the World Heritage Centre by 1 December 2022 a report on the implementation of the recommendations set out above;



Map showing the boundaries of the nominated property