

Identification

<i>Nomination</i>	Le Canal du Midi
<i>Location</i>	Région Midi-Pyrénées (Départements de la Haute-Garonne et du Tarn); Région Languedoc-Roussillon (Départements de l'Aude et de l'Hérault)
<i>State Party</i>	France
<i>Date</i>	28 September 1995

Justification by State Party

The Canal du Midi is living testimony to the creativity of the engineers of the time of Louis XIV, which marked the turning point between the Renaissance and the modern period in terms of the development of construction techniques. For this reason the canal is acknowledged to be the one that inaugurated the modern era of creating navigable networks across the industrialized countries of Europe and North America.

Even though the idea of a canal linking the Atlantic and the Mediterranean may be considered the realization of a continuing search by earlier generations, genius is manifest in various aspects of the design and construction of the Canal du Midi - in the initial concept and the detailed studies of the supply network, in the organization of the work and the constant modification of the project to meet the realities of the terrain, and in the concept of the canal as a linear park.

Criterion i

Constructing the Canal du Midi was the largest public works project in Europe since the fall of the Roman Empire. The work was carried out boldly and in a constant search for perfection in order to ensure its efficiency and its survival. It is even more remarkable that, for the first time on this scale, the contractor and his engineers sought to mould the landscape and the planting to provide a framework of greenery, a source of enchantment, and an example of linear planning worthy of the Roman masterpieces. The Canal inspired many famous men of the time who visited it while it was being built and later, such as the Prince of Denmark, the English agronomist Arthur Young, Francis Egerton, future Duke of Bridgewater and initiator of the great age of English canal building, the English civil engineer Thomas Telford, and Thomas Jefferson, future President of the United States of America.

Criterion ii

The Canal is the symbol of a brilliant era of prosperity during which engineers and entrepreneurs strove, for the glory of the Sun King, to bring together the aesthetic and the utilitarian. The main functions of the Canal were transportation and irrigation of agricultural land, but its builders were tireless in seeking to create works that gave an impression of global harmony at both the architectural and the designed landscape level. This symbolic value was powerful enough bring people to the region and to found a culture and traditions linked with the world of these "water people."

The Canal generated social ideas and many technological and architectural ideas, sometimes bizarre ones but most often well conceived and effectively implemented, and always with a sense of proportion and of the aesthetics of the overall composition.

The Canal represents a significant period in European history, that of the development of water transport as a result of mastery of hydraulic civil engineering. It was a period that owed its roots to the Italian Renaissance and extended up to the Industrial Revolution and the arrival of the railways.

Criterion iv

With its construction the Canal du Midi became the most significant element in the landscape through which it passed, the better assimilated by the environment for having gently modelled the landscape. By following contours the canal emphasized and complemented changes in relief.

Remarkable for a canal that was still in service carrying goods a few years ago is the fact that the occupation of the countryside has remained virtually unchanged. The transformation wrought by the introduction of the Freycinet vessel size has affected navigation works but not over the entire length of the Canal. The impact of the introduction of these larger vessels has been much less than elsewhere in Europe. Plans to

modify the locks to accommodate the change in size have been dropped and three-quarters of the locks will be unaffected.

The policy in the future will be to protect the Canal and keep its traditions alive. Its new role in tourism and recreation and its traditional one for irrigation require continuous efforts on the part of all concerned to ensure the best possible level of maintenance. The value of the Canal should be acknowledged as a tribute to a world of agriculture and landscape and to its "water people," so that it may survive and be managed through activities appropriate to the present age.

Criterion v

Category of property

In terms of the categories of property set out in Article 1 of the 1972 World Heritage Convention, the Canal du Midi is a *group of buildings*. It should also be considered to be a cultural landscape of the type proposed in paragraph 39 of the *Operational Guidelines for the Implementation of the World Heritage Convention*, although it was not nominated as such by the State Party.

History and Description

History

Investigations into the possibilities of creating canals joining the major natural waterways began in the early 16th century, when François I brought Leonardo da Vinci with him on his return to France. One of their projects envisaged linking the Garonne and the Aude rivers, and thus the Mediterranean with the Atlantic. The first successful enterprise was the Canal de Briare, joining the Loire and the Seine, which was completed in 1642. Solution of the technical problems involved rekindled interest in the Mediterranean-Atlantic link and a number of projects were put forward. It was to become a reality thanks to a very favourable political climate in France at the time, and also to the availability of an exceptional man, with the vision and determination to see a project on this scale through to completion.

Pierre-Paul Riquet was 50 when he began work on the project in 1654. He considered a number of possible routes to link the Garonne with the Aude and surmount the watershed between the two rivers at Naurouze, which presented special problems of water supply. He enlisted the aid of local experts, notably Pierre Campmas, who was responsible for the water supply of the town of Revel, at the foot of the Montagne Noire massif. He also recruited François Andreossi, a civil engineer specializing in hydraulic projects.

In 1662 Riquet secured a powerful supporter in Jean-Baptiste Colbert, at that time Intendant des Finances for Louis XIV, who was tireless in his efforts to encourage the creation of industries in France. Colbert quickly realized the importance of the proposed canal in this connection, and he gave his full support to Riquet's project. He also imparted his enthusiasm to the king, who saw it as imparting more lustre to his reign. A Royal Commission was set up to study the technical and financial viability of the project and, following its favourable report, letters-patent were granted to Riquet in May 1665 to excavate a narrow watercourse over the entire route, which demonstrated that water could be raised sufficiently to cross the watershed at Naurouze. The project was to be financed on a tripartite basis, from the Royal Treasury, the Province of Languedoc, and Riquet himself. The Treasury funds would be used for purchasing the land over which the canal would pass and those from the province for the works themselves. Management of the completed canal and use of the eventual revenue was assigned to the entrepreneur and his successors. A Royal Edict announcing the construction of the canal was issued in October 1666 and letters-patent were granted to Riquet; however, this authorized him to construct only the western section, between the Garonne at Toulouse and the Aude at Trèbes. The work was to be completed in eight years and 3.36 million livres were allocated for the project. He was authorized to construct the second section, between Trèbes and Sète, on the Mediterranean coast, in 1669.

Two thousand workers were engaged for the project in January 1667; this number was to reach a peak of twelve thousand, including six hundred women brought in to make up for a shortage of male workers. They were divided into twelve divisions, each under the control of an *inspecteur général*, and further divided into squads of fifty people under a foreman.

The project underwent many vicissitudes and financial crises in the years that followed, but it was largely completed when Riquet died in 1681. Following persistent complaints about the flooding of neighbouring agricultural land, the great military architect Vauban was sent to the Canal; as a result of his report a number of aqueducts were built and the Saint-Ferréol dam was raised in height. The final elements of the entire system were completed in 1694. Its total cost was over fifteen million livres, exceeding the original estimates by some 70%, which was not unreasonable given the number of unexpected problems that arose. Ancillary works carried out

subsequently were the Canal de Saint-Pierre (or Canal de Brienne) at Toulouse and the Canal de Jonction to serve the Canal de Robine and Narbonne (1768-87) and the canal-bridge on the Orb (1854-57).

Description

There are five components of this nominated property. The main Canal du Midi runs from Toulouse (Haute-Garonne) to the Étang de Thau on the Mediterranean coast at Marseillan (Hérault), a total of 240 km. There is a 36.6 km branch between Moussan and Port-la-Nouvelle (Aude), incorporating part of the earlier Canal de la Robine. The waters of the Montagne Noire are brought to the Canal through two channels that join together and flow into the Canal at Naurouze (Aude). The 1.6 km of the Canal de Saint-Pierre is the link between the main Canal and the Garonne at Toulouse. Finally, there is a short section of 0.5 km joining the Hérault river to the round lock at Agde. The total length of the waterway that is the subject of this nomination is 360 km. The ensemble contains 328 works of art - locks, aqueducts, bridges, spillways, tunnels.

One of its most noteworthy features is the Saint-Ferréol dam on the Laudot river in the Montagne Noire region. This is the largest project on the entire Canal and the greatest work of civil engineering of its period, according to L T C Rolt, the distinguished historian of engineering and industry. Its dimensions are impressive for its period: 780 m long at the top and 140 m at the base, made up of 153,000 m³ of mixed stone and earth between two masonry retaining walls and a central impermeable stone barrier. Its features include innovative installations for evacuating water at different levels and for disposal of silt.

Riquet was conscious that he was creating a symbol of the power of 17th century France as well as a functional communication waterway. He was assiduous, therefore, in ensuring that the quality of the architecture on the Canal was worthy of this role. The bridges, the locks and their associated structures, and the tunnel entrances were therefore designed with monumental dignity and simplicity. He was also very conscious of the impact of his work on the landscape, and took great pains to ensure that it was suitably framed by trees and plantations that harmonized with the landscape through which it passed.

Management and Protection

Legal status

The Canal du Midi is covered by the *Code du Domaine Public Fluvial et de la Navigation Intérieure*, which regulates all waterways in France; apart from the international waterways of the Rhine and the Moselle, it is the only one to be the subject of a separate Chapter (Articles 236-246). Article 245 lays a responsibility on the canal management and the *communes* through which it passes to protect and maintain the works of art.

A number of the structures on the Canal are listed as historic monuments under the 1913 law, as amended, and certain sites and landscapes are also protected under the 1930 Law. The competent authorities (see below) must be consulted when works are planned.

Management

Although the Canal was granted in perpetuity to Riquet and his successors in 1666, it was purchased by the State in 1897.

Overall management of the Canal is the responsibility of Voies Navigables de France (VNF), a national public institution created in 1991, which comes under the aegis of the Ministère de l'Aménagement du Territoire, de l'Équipement et des Transports. Direct managerial responsibility is delegated at regional level to the Service de la Navigation de Toulouse.

The Direction de l'Architecture et de l'Urbanisme is responsible for the management of protected sites and landscapes, working at regional level through the Direction Régionale de l'Environnement, with the Direction Régionale des Affaires Culturelles of the Ministère de la Culture having special responsibilities in respect of listed historic monuments. Coordination is carried out at regional level, and a plan has been put in place for the complete rehabilitation of the entire Canal, which will be spread over ten years.

A preliminary attempt to define a buffer zone that would embrace the entire landscape as viewed from the Canal proved to be impracticable. The buffer zone that is proposed is therefore restricted to the *communes* that border it (and in certain cases *communes* lying a little further back, where they have a direct impact on the Canal itself), over which it is possible to exercise an effective control. The area proposed for inscription on the World Heritage List is 360 km long, covering an estimated 1172 ha, and the buffer zone 2014 km².

There is at present no overall management plan in existence. However, a "White Book," prepared by representatives of the relevant regional authorities, was published in June 1996. Its main purpose is to identify funding sources for the future operation and maintenance of the Canal. It also gives consideration to the extension of legislative protection to the entire length of the Canal, including its banks and buildings.

Conservation and Authenticity

Conservation history

While the Canal was in full use as a means of transportation it was maintained in good order, along with its ancillary structures. However, as this decreased between the 1960s and 1993, when a partnership was set up between the State, the Régions, and the VNF, a severe diminution of the available funds led to a significant degree of deterioration. However, the totality of the Canal and its components remains in place.

It was estimated in 1991 that the total sum needed to rehabilitate the Canal and modernize it so as to be capable of dealing with modern water-borne traffic requirements was 145 million French francs. The funds made available have been rising steadily since that time: 1992 6.5 million; 1993 10 million; 1994 17.8 million; 1995 23.8 million. Work is in progress on locks, spillways, bridges, and hydraulic installations. Certain other works associated with leisure activities, such as the provision of facilities for pleasure craft, car-parks, cycle-ways, new bridges, etc, have also been undertaken.

The guidance of the specialized services is essential in the case of listed and protected monuments and landscapes, but these do not cover the totality of the Canal. However, a *Cahier de Prescriptions Architecturales*, laying down guidelines for new constructions, has been produced and is being applied so as to ensure that these are in harmony with the history of the Canal and its designed landscape.

Authenticity

When evaluating the authenticity of the Canal, it must be borne in mind that it has evolved over a period of three hundred years and that it is still in use for the transportation of goods and for recreational purposes. It has therefore undergone numerous changes over time, resulting from four causes: reactions to technical problems (breaches, collapses due to erosion), external demands (clearance of trees, facilities for pleasure craft and associated constructions), "determinist" interventions (responses to new commercial requirements), and "spontaneous" interventions (changes in the type of vessels using the Canal and new uses such as hiking, horse-riding, and cycling routes).

However, in spite of these different modifications, it is incontestable that the Canal du Midi retains its authenticity as a major work of 17th century civil engineering, with subsequent evolutionary interventions that illustrate its history, and also as a fundamental element in the landscape of the region. It may also be argued, with justification, that the changes over time have an authenticity and value of their own, inasmuch as they reflect developments in canal engineering skills, applied technology, and management practices.

Evaluation

Action by ICOMOS

An ICOMOS expert mission visited the Canal du Midi in January 1996. The TICCIH *International Canal Monuments List*, commissioned as part of the ICOMOS-TICCIH industrial monuments project, was consulted as the major comparative study of its kind.

Qualities and comparative analysis

The TICCIH study (p 9) states that "... sophisticated canal engineering was evolved in France in the sixteenth century culminating in the Canal du Midi, arguably the world's greatest civil-engineering project since the constructions of the Roman period." According to the classification used in that study, the Canal merits maximum ratings in respect of its lock staircases (Fonserannes), reservoirs (Saint-Ferréol, Lampy), aqueducts (Repudre), dams (Saint-Ferréol), bridges, and tunnels (Malpas). The study concludes with a list of the seven "Technologically Significant Canals" in the world. Along with the Grand Canal in China, the Canal du Midi is given the highest rating.

ICOMOS comments

ICOMOS has no reservations about the cultural significance of the Canal du Midi, and does not wish to recommend that consideration of the nomination be deferred. It hopes, however, that in inscribing the Canal on the World Heritage List the Committee will urge the State Party to complete the legislative protection of its entire length and also to incorporate its existing excellent management and maintenance policies into a formal management plan.

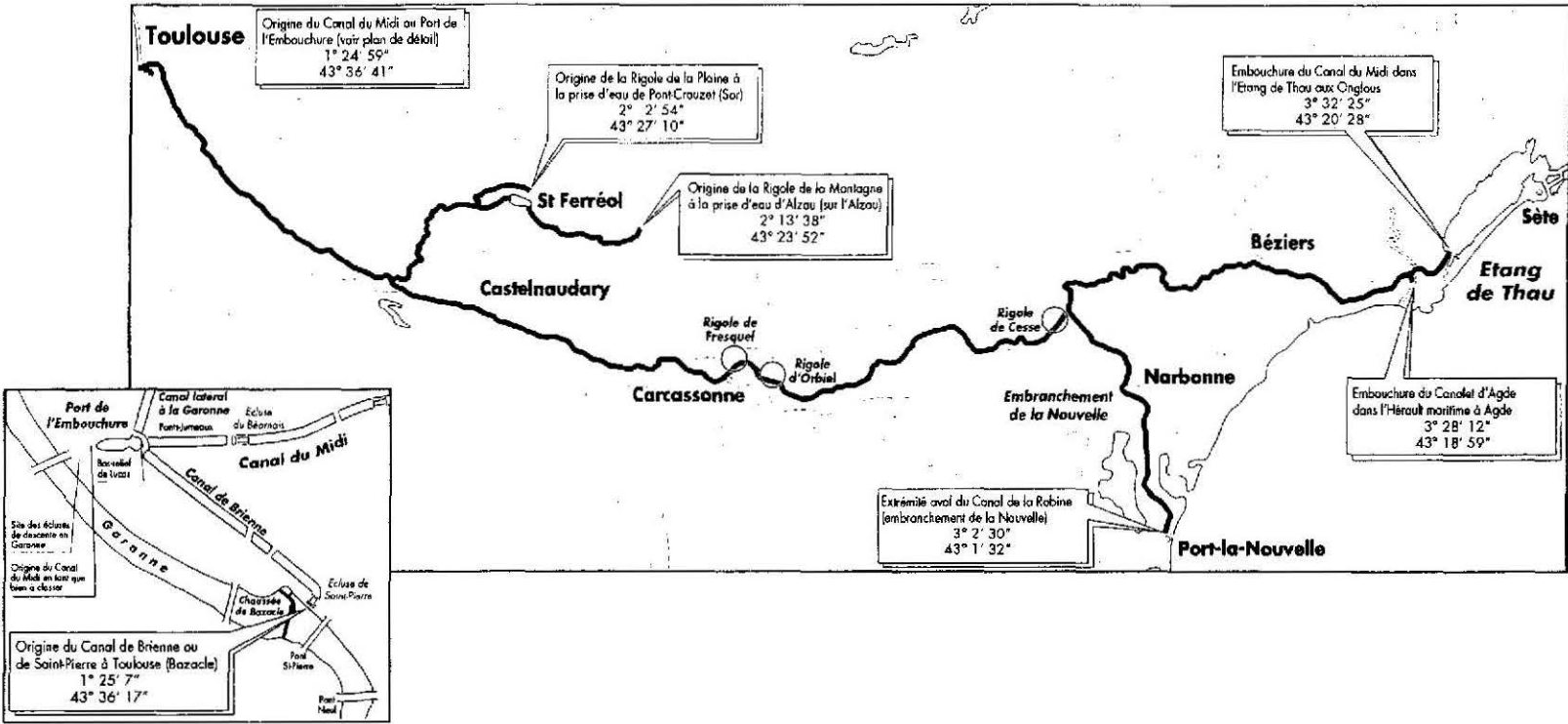
Recommendation

That this property be inscribed on the World Heritage List on the basis of *criteria i, ii, iv and vi*:

The Canal du Midi is one of the greatest engineering achievements of the modern age, providing the model for the flowering of technology that led directly to the Industrial Revolution and the modern technological age. Additionally, it combines with its technological innovation a concern for high aesthetic architectural and landscape design that has few parallels.

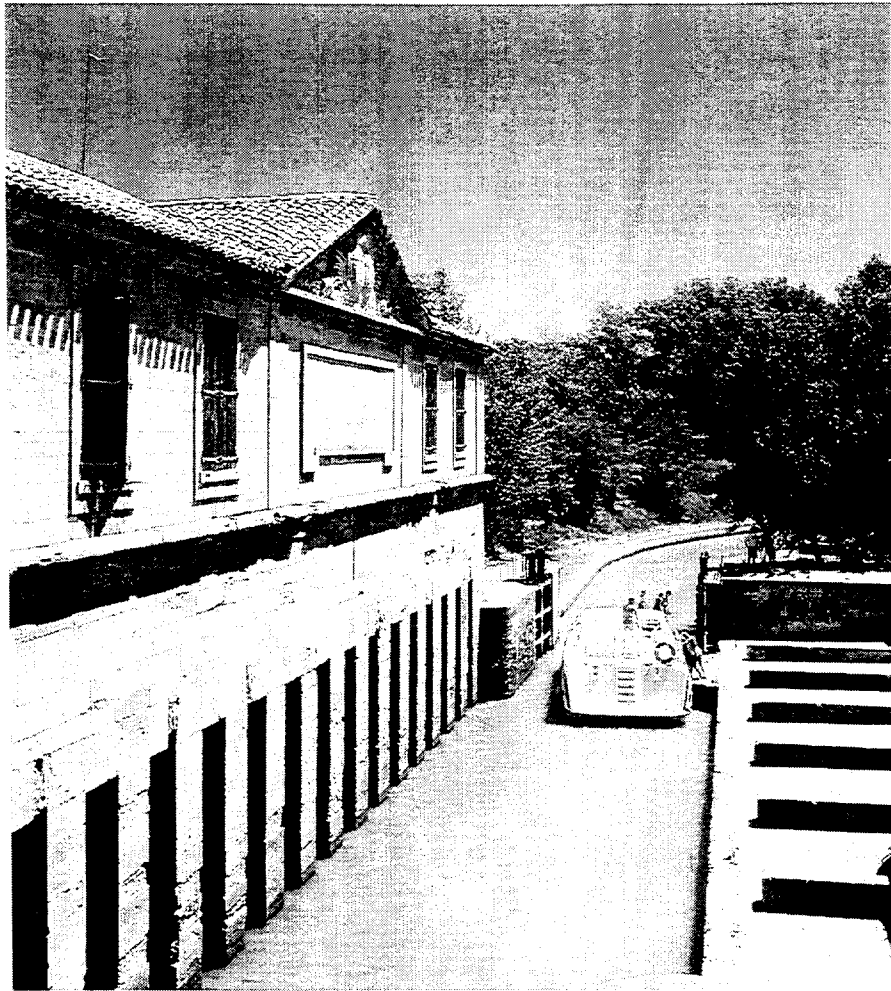
ICOMOS, October 1996

Le Canal du Midi : carte
Le Canal du Midi : map





Le Canal du Midi : le tunnel de Commazes
Le Canal du Midi : the Commazes tunnel



Le Canal du Midi : le bâtiment de l'écluse de Gailhousty
Le Canal du Midi : the lock building at Gailhousty