

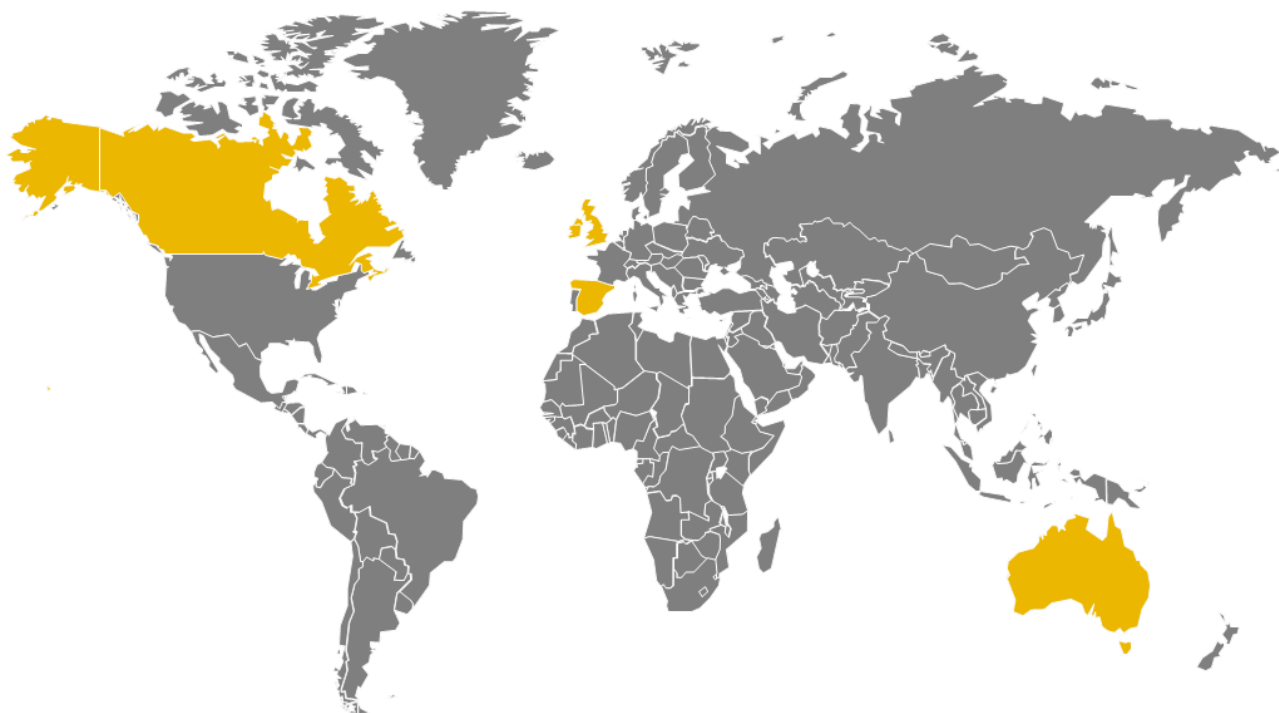


Catalogue of biodiversity initiatives Fauna 2022

ferrovial

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Track assembly Pedralba-Campobecerros

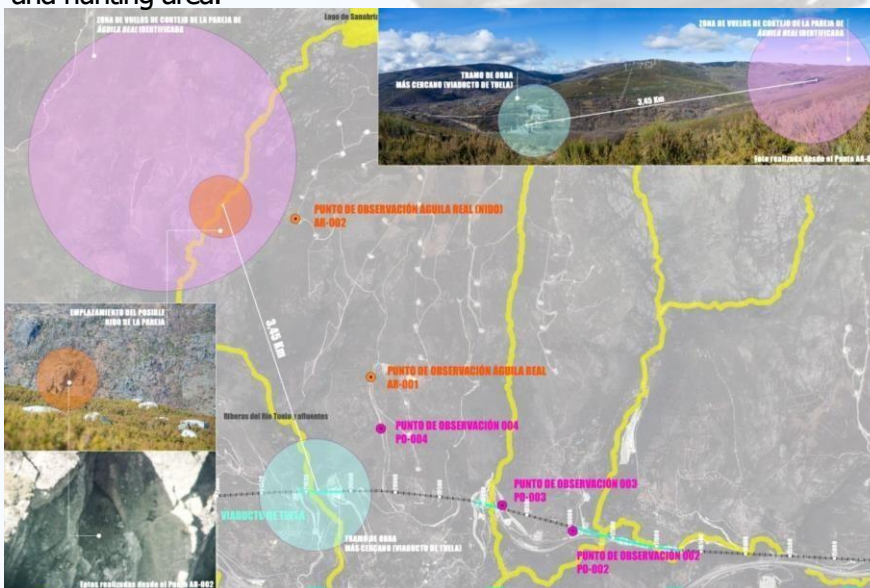
The upper stretches of the Tuela and Pedro rivers, located within the scope of the works on the Pedralba-Campobecerros section of the High-Speed Line, next to the Tuela viaduct (surface section that continues and comes from the tunnels), constitute a relevant part of the territory of a pair of golden eagles that have been located on successive visits to the area.

According to the project, it was necessary to carry out an initial study of the fauna. Monitoring was planned and the presence of a pair of golden eagles was detected. Consequently, it was proposed to ADIF to extend the monitoring to ensure that the works did not affect their breeding and hunting area.

environmental benefits:

- ✓ **Monitoring the presence of a sensitive species**
- ✓ **Confirming reproductive success during the construction phase**
- ✓ **Ensure no impact on particularly sensitive fauna.**

Monitoring since 2019 has shown that the flights made by this pair have been taking place with increasing "assiduity", especially in the lower basin of the river Tuela, on the vertical of the viaduct of the same name.



Águila real (*Aquila chrysaetos*)

The area of the Tuela valley where the works are located is part of the golden eagle's territory.

With the first extension of monitoring in 2019, courtship flights were observed that suggested a possible nearby nesting in the area, although no occupied nest was detected during monitoring and no new members of the family unit were found.

In 2020, the presence of an immature juvenile, i.e. born in 2019, accompanied the two adults on flights, which is the best evidence of the reproductive success of this species in the area.

These works carried out in the area by Ferrovial Construction demonstrate our clear commitment to respect and care for the environment, as well as the sustainable development criteria we apply to all our activities.

Furthermore, it has been possible to confirm that the works have not caused any disturbance or direct impact on this species, given that they have continued to occupy the territory (perpendicular to the works) and it has been possible to observe their hunting activity during some of the observations.



Toowoomba Second Reach Crossing Project (Australia)

Delma torquata, also known as the 'collared delma', is the smallest of the legless lizards within the genus *Delma*. It is endemic to south-east Queensland and has been identified at a number of sites across the Toowoomba Ranges, including within the Toowoomba Second Range Crossing (TSRC) project. As a result of its very specific habitat requirements and fragmented distribution, the collared delma has been given special protection status to ensure that habitat loss is minimised.

The TSRC project team has a specific management plan for the *Delma torquata* that includes minimising disturbance to its habitat, as well as the translocation of specimens that have the potential to be affected by the proposed works.



A first global two-year scientific monitoring programme was carried out to protect and study *Delma torquata* and to analyse the success of the relocation and rehabilitation programme. Individuals were relocated from impacted habitat areas to a "soft release" enclosure. There were a total of 10 soft-release enclosures spanning several terrestrial areas. In total, 113 individuals were safely relocated. It was discovered through this programme that each *Delma torquata* has a unique chin pattern. Using these identifiable chin patterns, no tagging techniques were required and 7 new individuals have been identified within the soft-release cabinets. The *Delma torquata* is breeding within the enclosures and this will add to the.

The *Delma torquata* is breeding within the enclosures and this will add to the genetic diversity of the species population and future research opportunities. The cameras were used to learn more about predation of these species in the wild. Translated with www.DeepL.com/Translator (free version).

Ventajas:

El Proyecto TSRC demuestra la Gestión de las Mejores Prácticas Ambientales para minimizar el impacto en la fauna nativa australiana. Los principales beneficios del exitoso programa de translocación son los siguientes:

- ✓ **Cumplimiento de la legislación** federal australiana, la Ley EPBC de 1999
- ✓ **Establecer el punto de referencia** de la industria como el primer programa de translocación exitoso del mundo en el registro
- ✓ **Proporciona un hábitat sostenible** para los animales vulnerables
- ✓ **Ayudar a proteger el hábitat** de una especie poco conocida
- ✓ Una **mejor comprensión** de la reproducción y depredación de una especie vulnerable
- ✓ **Ningún retraso en la finalización del proyecto** debido a posibles problemas y potenciales medios de comunicación
- ✓ Proporcionar vía para **seguir investigando** animales nativos australianos.



El patrón de barbilla único de un *Delma torquata*

Delma torquata, considered a vulnerable species of national importance, was found along the TSRC corridor, which required relocation to construct the project. The following challenges were overcome during the translocation and monitoring programme:

- Establishing a pilot programme for translocation
- Selection of suitable/alternative habitats for relocation
- Changes in programme and construction methodology to allow time for identification and capture
- Discovery of unique chin pattern to aid in identification
- Very cryptic and small animals, very difficult to find and trap in the wild.
- Little literature available on the species and its habitat.



North Tarrant Extensions Project

In North Tarrant Extension Segment 3A prior to begin with the drill shaft in Trinity River Bridge, was necessary assess the current status of **freshwater native mussel** population in order to contribute their conservation and persistence. The mussel have to be removed and relocate upstream by specialist in relocation of this macro invertebrates. While the construction was in progress, the water condition was controlled by NTE Environmental Department.

Mitigation measures consisted of the removal of the live specimens and relocation out of the construction zone to **prevent accidental burying** of specimens and potential death caused by sediment entering the waterway as a result of the construction activities.



Scientists identified and relocated **33 native freshwater mussels** and identified an additional **66 shell-only** specimens; the four species of freshwater mussels recovered during survey activities are:

- fragile papershell (*Leptodea fragilis*)
- giant floater (*Pyganodon grandis*)
- southern mapleleaf (*Quadrula apiculata*)
- yellow sandshell (*Lampsilis teres*) [shell-only]

No state-listed freshwater mussels or Species of Greatest Conservation Need were identified during the freshwater mussel survey of the West Fork of the Trinity River and an unnamed tributary of the West Fork of the Trinity River.

Bluebonnet Contractors, LLC; NTEMP; and the North Tarrant Express Project were chosen by an independent panel of environmental specialists as a recipient of the **ARTBA 2014 Globe Award** for environmental excellence. The Globe Awards are an annual competition to honor and draw attention to private-sector firms and public-sector transportation agencies that do an outstanding job in **protecting and/or enhancing the natural environment** in the planning, design and construction of U.S. transportation infrastructure projects.

Freshwater mussel relocation:

- ✓ 4 species affected
- ✓ 33 specimens relocated



In addition to avoidance and minimization, mitigation for temporary project impacts that might occur to mollusk habitat consisted of implementing **water quality measures**.

Prior to sediment disturbance in the river by bridge construction background concentration levels of Polychlorinated Biphenyl, Total Organic Carbon and Total Suspended Solids were established to provide data needed to deal with sediments that could affect the water quality, native freshwater mussels habitat and Total Maximum Daily Load concentrations in the river if disturbed.

While the construction was in progress, erosion and sedimentation control devices were installed along the river bank to control run-off, turbidity curtains deployed in the river, and real-time surface water turbidity measurements were taken to continually monitor the water conditions.



During construction, eight active **red-winged blackbird nests** were discovered in conflict with construction. All eight nests were protected and monitored, and project schedule was adjusted, until nesting was completed.



Pacifico Acciona Ferrovial JV

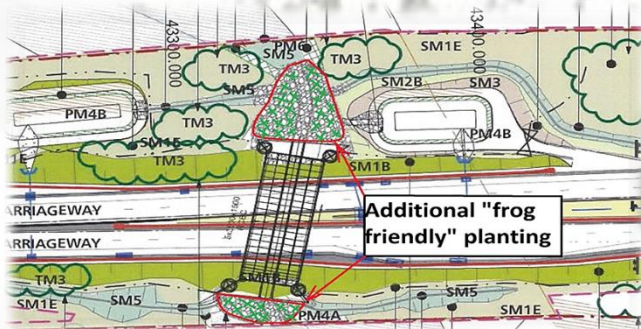
Pacifico is Joint Venture (JV) established to deliver the Warrell Creek to Nambucca Heads section of the Pacific Highway upgrade on the Mid-North Coast of NSW.



A **Frog-Friendly Treatment** (Giant Barred Frog EPBC Listed) was developed following an Unexpected Find at Butchers Creek Five Cell Reinforced Concrete Box Culvert.

The Unexpected Find of **Giant Barred Frog Tadpoles** (EPBC Protected Fauna Specie) at Butchers Creek occurred post RCBC Line Design finalization, as well as after the commencement of construction works.

The Environment team ensured the **protection of native fauna** through the use of an innovative and sustainable approach that is appropriate as a long-term solution.



Following the discovery, provision of a “frog-friendly” treatment to each invert of the five-cell box culverts was developed. Roads and Maritime coordinated a functional re-design with the contractor, Pacifico, using cobble stones salvaged from the culvert excavation that **emulated the natural creek bed** either side of the culvert.

Without compromising the drainage design, this method would encourage dispersal and **passage of adult frogs** and tadpoles by facilitating a more natural deposition of sediment and detritus during flood flows. In the floor of each culvert cell, cobble stones were set into a bed of wet concrete and dressed similarly to the pebble-crete finish of a concrete drive way.

Environmental benefits:

- ✓ Savings in terms of a redesign of the culvert to a plank bridge and removal of the constructed component of the RCBC Line.
- ✓ Saving in terms of Program Delays due to redesign.
- ✓ Best practice with fauna management.
- ✓ Stakeholder satisfaction: implementing such system increases the client and stakeholder satisfaction by demonstrating that the contractor is always looking for improved performance.



Giant Barred Frog

Pacifico prepared innovative sample test panels for review and approval by Agency officers



This initiative won the Australian Business Awards for Sustainability



Torrelaguna East Branch

The project to reinforce the eastern branch of the Torrelaguna-Alapardo section of the water supply system affected two unique areas: the "Jarama and Henares river basins" SCI and the "Jarama and Henares river cereal steppes" SPA. According to the EIS, given the presence of protected fauna in the area, work could not be carried out during the nesting period, from 1 March to 31 July.



In December 2015, a bibliographic study was carried out on the presence of breeding areas of endangered steppe bird species in the project area, with the aim of identifying the nesting fauna beforehand. The study concluded that there are large areas within the study area where there are no historical records of breeding of these steppe bird species. It was therefore considered feasible to carry out the works without generating "a priori" effects on the reproduction of these species.

Este estudio sirvió de base para solicitar a la Dirección General del Medio Ambiente de la Comunidad de Madrid, que en los tramos referenciados, puede realizarse la obra durante cualquier periodo del año adoptando las oportunas medidas preventivas.



Advantages obtained :

- ✓ The absence of damage to threatened bird species in the area was ensured.
- ✓ With the studies and work carried out, the work stoppage, which would have meant an increase of at least 10 months, was avoided.

Prior to the start of the works, field reports were carried out in order to verify the presence/absence of fauna breeding areas in particularly sensitive areas such as the surroundings of watercourses, verifying the absence of nests, clutches or litters in the fields and watercourses crossed by the branch line.



The study area has been established at 500 m on each side of the route, given that this is the average distance the Great Bustard flees from human presence, as well as the protection distance taken into account by the Regional Ministry of the Environment for endangered species. The steppe bird species studied were the following:

- * Montagu's harrier *Circus pygargus*
- * Hen Harrier *Circus cyaneus*
- * Marsh Harrier *Circus aeruginosus*
- * Lesser kestrel *Falco naumanni*
- * Great Bustard *Otis tarda*
- * Little Bustard *Tetrax tetrax*
- * Black-bellied Sandgrouse *Pterocles orientalis*
- * Pin-tailed Sandgrouse *Pterocles alchata*

Likewise, the ends of the pipeline were closed at the end of each day, and in the case of manholes, grilles were installed to avoid trapping fauna inside them.



Monitoring and coordination of the work together with the Brown Bear Foundation (FOP).

Túnel de Rañadoiro.Asturias

The work is located in an environment of the highest ecological value in terms of fauna and flora, where we find species such as the brown bear and the capercaillie, protected species in danger of extinction. The challenge, therefore, is to make its execution compatible with the environment, so as not to alter it or even improve the existing conditions.

The development of the actions consisted of:

Detailed prior analysis and practical interpretation of the EIS for effective and rigorous implementation:

- Study of the road network and access roads prior to the start of work.
- start of work.
- Elimination of a 4,800 m stretch of the AS-15 to eliminate the barrier effect.
- Compensatory planting of 40 ha.

Monitoring of fauna during the execution of the work:

- Establishment of fixed transects in the environment.
- Continuous presence of FOP patrols.
- Preparation of quarterly and annual reports.
- Complementary planting with species of high interest for the brown bear: beech, oak, cherry, hazel, wild apple tree, etc.

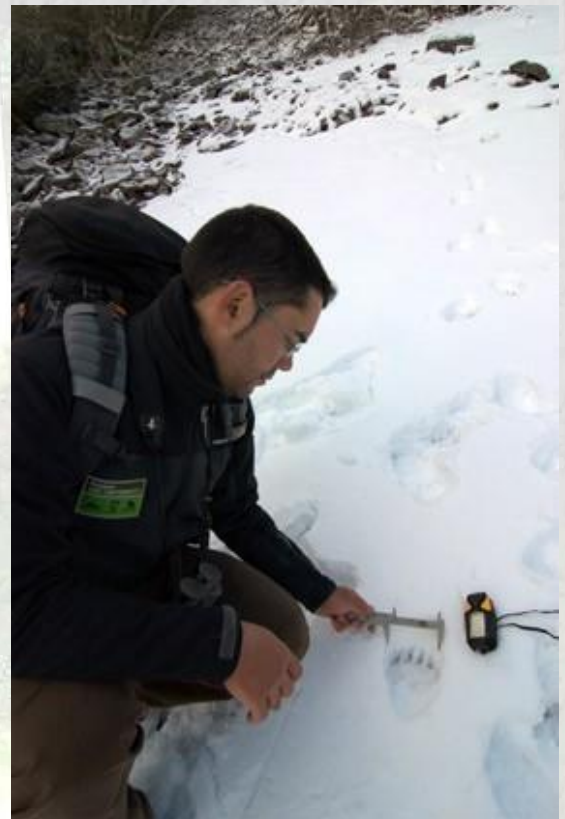
Detection of environmental improvements and study of their possible implementation during the work:

- Replacement of landfill sites by quarry restoration.
- Elimination of the ventilation chimney.
- Planting to improve the permeability of large mammals under the viaducts.
- Adequate hunting closure to facilitate the permeability of large mammals.

The improvement of the permeability of the territory and the high degree of restitution of the environment achieved with the elimination of the road, has been demonstrated in the following areas **April 2011 when a Patrol of the Brown Bear Foundation sighted a 15-month-old bear in this area, which they named Lara.**

Environmental advantages:

- Collaboration with the **Brown Bear Foundation** in achieving its objectives for the conservation of this species.
- Improvement of the **permeability** of the fauna with respect to the pre-existing situation.
- Complementary **plantations**, appropriate to the needs of the fauna in the area.



Técnico de la F.O.P. realizando un seguimiento de fauna



Ejemplares de oso pardo



Plantación complementaria



Antigua carretera restaurada



Ferrovial Agroman and SEO/BirdLife collaborate in the protection of the sapper plane.

Refurbishment of the San Quintín Barracks, El Pardo. Madrid.

During the execution of the project, it was detected that a colony of sapper planes had nested in a large temporary sand stockpile in the works area. Specifically, between 16 and 18 nests of this trans-Saharan migratory species, which visits this area in spring and summer to breed, were located.

The Sand martin is a bird with a significant population decline, is internationally protected and is listed as a bird of "special interest" in the Regional Catalogue of Threatened Species of the Community of Madrid.

In view of this circumstance, Ferrovial Agroman adopted a commitment in collaboration with the Spanish Ornithological Society (SEO/BirdLife) to avoid earthworks in the sand stockpile where the colony was located until the end of the breeding period. In addition, Ferrovial Agroman undertook to minimise disturbance in the vicinity of the colony.

Nicolás López, Técnico de Conservación de SEO/BirdLife afirma que "se trata de un ejemplo de buenas prácticas, ya que la empresa constructora ha tenido en cuenta las consideraciones propuestas por SEO/BirdLife para asegurar la supervivencia y reproducción de esta especie".

No ha sido el único caso de protección de esta especie llevada a cabo por Ferrovial Agroman. En la obra ejecutada en el eje Atlántico de Alta Velocidad, en el tramo Rialíño-Padrón, se produjo la colonización de un talud por unas 20 parejas de aviones zapadores.

Work at this point was restricted until the chicks had finally left the nests, thus achieving the objective of not interfering with their nesting.

Environmental advantages:

- Collaborate with the Spanish Ornithological Society in the definition of good practices to be taken into account during the aircraft nesting season on the site.
- To ensure the survival and reproduction of this protected species.



Colonia de avión zapador en desmonte de la obra AVE Rialíño-Padrón



Sand martin (*Riparia riparia*) nests in a building site. Photo courtesy of Gabi Sierra (SEO/BirdLife).



Avión zapador

Project in collaboration with:



Author: Juan José Rosado

Fauna
2016



Madrid-Galicia High Speed Train. Padornelo-Lubian Tunnel. Zamora

The work is located in the vicinity of riverbeds included in the Natura 2000 Network, such as the Site of Community Interest (SCI) "Riberas del río Tuela y Afluentes", where there are species that are highly sensitive to variations in environmental conditions in the riverbeds:

- Iberian desman (*Galemys pyrenaicus*).
- Common trout (*Salmo trutta*).
- Naiads (*Margaritifera margaritifera*).

Environmental advantages:

- Collaboration with the Territorial Environmental Service of Castilla y León in the study and protection of fauna.
- Confirmation of the absence of damage to the most vulnerable fauna during the execution of the work.

Iberian desman (*Galemys pyrenaicus*)

It is a species classified as Vulnerable / Endangered. in danger of extinction. This species is a bio-indicator of the state of conservation of river ecosystems. Surveys and sampling are carried out to determine the abundance of the species and to assess the potential of the habitat:

- Direct sampling (capture-marking-tracking of specimens)
- Indirect sampling (genetic analysis of droppings)



Ejemplar de Desmán ibérico capturado para su marcaje

Brown trout (*Salmo trutta*)

Studies are carried out to determine the composition of the fish communities:

- **Water quality control, upstream and downstream of the below the construction site**
- Direct sampling by electrofishing.



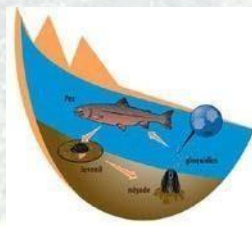
Trucha común



Muestreo mediante pesca eléctrica

Naiads or River Mussel (*Margaritifera margaritifera*)

- Infestation of trout caught with naiad larvae.
- Direct and indirect sampling to determine the presence of *Margaritifera* and its evolution while the works are being carried out.



Ciclo del mejillón de río



Mejillón de río



Development of a new design for chiropteran-specific wildlife crossings

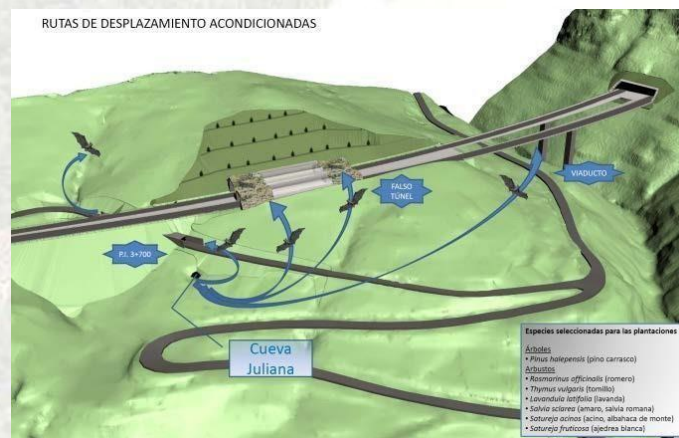
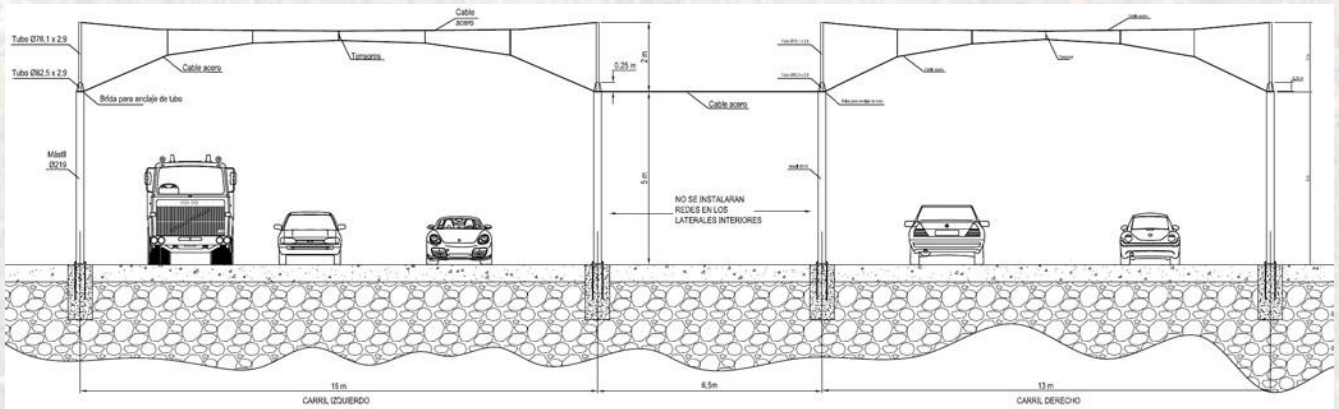
A-7 motorway. Variante Barranco de la Batalla. Alicante

The project deals with the design, construction and evaluation of the usefulness of a new wildlife crossing specifically for bats.

An alternative solution to the usual fauna tunnel or passageway is proposed, designed to favour the passage of terrestrial fauna. Given the uniqueness of the bat's movement, a light structure is proposed that meets the objective of avoiding fragmentation processes of the important populations of existing bats and at the same time does not involve the additional costs of a large infrastructure such as a cut-and-cover tunnel.

Environmental advantages :

- Minimisation of bat mortality in infrastructure.
- To demonstrate the importance of the design, implementation and monitoring of wildlife protection measures



Detail of the protection structure of the bat passageway



View of the section where the bat crossing protection structure is being installed.

In addition, this action also includes a period of evaluation and monitoring of the new structure in order to verify the results of the programme, its effectiveness in terms of permeability of passage for bats and the absence of mortality with traffic; and, if necessary, to propose possible improvements to develop the model already implemented.

The innovative nature of this Project has been accredited by an External Entity, by obtaining certification as an R&D&I Project according to the UNE 166.001 standard.

