PROJECT FOR A GREENWAY ON THE VASCO-NAVARRO RAILWAY

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Summary
The last ten to fifteen years have seen a great boost given to the use of the bicycle, both as a leisure pursuit and as an increasingly established alternative means of transport for wide sectors of the population.

Against this background, various public authorities have been preparing, with greater or lesser intensity, action programs to allow the rational development of a network of cycling routes able to meet the demand for this type of infrastructure.

In the planning of this network of routes for non-motorized traffic, the conditioning and rehabilitation of old disused railway lines (greenways) is particularly important; in themselves they form a real mainstay of the region, promoting inter-regional cohesion and the socio-economic revitalization of rural areas.

In the case of the Autonomous Community of Navarra, the local Government has drawn up a Cycle Master Plan for Navarra (PBD NAVARRA) which provides for the completion of 10 priority routes, one of which is based on the Greenway of the Vasco-Navarro Railway.

The paper presented here develops the formal and functional aspects considered in the drafting of a section of that route.

Keywords: Infrastructures, EuroVelo network, Sustainability, Alternative transport, Cycleways, Rehabilitation of the railway heritage.

1. Introduction

Apparently, the public’s increasing fondness for the cycle cannot be explained away as a fleeting or temporary phenomenon; rather, increasingly broad sectors of the population see this mode of transport as a viable alternative, combining two social concerns of the greatest importance: the energy crisis and the preservation of the environment.

This phenomenon, very widespread in the rest of Europe (for example, in the cases of the Netherlands, Sweden, Denmark, Germany, etc.), has suddenly arrived in Spain, revealing a substantial lack of the infrastructures needed to support this specific type of traffic.

In the particular case of Navarra, as well as the interest in establishing its own internal cycle network infrastructure, there is also the opportunity to link up with the European system through the so-called “EuroVelo Network” (Plan 1), two of whose paths, namely
the Atlantic Coast Route and the Pilgrims’ Route (Way of St James) to Santiago de Compostela, run through Navarre.

In view of its importance at the continental level, it is perhaps appropriate to make a brief comment on this ambitious international project: EuroVelo is a project to develop 12 trans-European cycle routes, and involves the completion of a network of over 60,000 km. The EuroVelo routes are being constructed taking advantage of existing cycle paths and others planned on local, regional and national levels, with the aim of providing a logical and reliable network. These routes include both long stretches of traffic-free routes suitable even for inexperienced cyclists and other sections shared with city traffic or quiet rural roads (EuroVelo Project).

The first of these routes, the North Sea Cycle Route, which passes through Germany, Denmark, Sweden, Norway, Scotland, England, and Holland, was opened in June 2001.

As far as Spain is concerned, three of the twelve routes planned throughout Europe run for part of their course through Spanish territory: The Atlantic Coast Route (EV1), The Pilgrims’ Route or Way of St James (EV3) and the Mediterranean Route (EV8).

There is yet another interesting point to add with reference to the project presented here: the course of the Atlantic Coast Route (EV1) and the Pilgrims’ Route (EV3) share a common section from the Pyrenees to the city of Burgos, where they divide. This means that in the Community of Navarra the two routes are superimposed, so any activity may therefore be considered to have a twofold impact, a twofold usefulness.

The need to optimize investment, the priority for programming operations which respect the environment, and the chance to rehabilitate an important heritage both of civil engineering (bridges, tunnels, etc) and of buildings, took shape in the plan to reuse old
disused railway tracks, reconditioning them to carry sections free of motor-vehicles. These new corridors are known as “Greenways”.

This paper refers specifically to the construction project consisting of operations on a section of the Greenway of the Vasco-Navarro railway (Cycle Master Plan for Navarra). This section forms part of the cycle-path projected between the limits of the Province of Álava in Zuñiga and the town of Estella in Navarra, where it joins the Way of St James (Plan 2).

2. Development of cycleways in Navarra

The design and definition of a complete network of infrastructures for cycles in the Autonomous Community took shape with the preparation of the Cycle Master Plan for Navarra in March 2007 (PDB NAVARRA, in its Spanish initials). Until that time, although some activities had taken place to promote the use of cycles and to create sections of cycleways in different locations in Navarra, the actual result was a geographically dispersed collection of sections of cycleway unconnected to each other or to the main centres generating potential cycle traffic.

The PBD NAVARRA is justified on the following grounds:

1.- It is a response to the increased use of the bicycle as a sustainable alternative means of transport, and also to an increasing demand from society.

2.- It is an initiative forming part of the Territorial Strategy of Navarra which, among its 75 measures, includes the encouragement of a collective interest in sustainable mobility, as well as promoting energy saving and efficiency.
3.- It is in line with other action on a national scale, such as the Spanish Strategy for Energy Saving and Efficiency (E4), or the Strategic Plan for Infrastructure and Transport of the Spanish Ministry of Works.

4.- It is compatible with the EuroVelo Project, financed by the European Union, whose aim is to create a Europe-wide network of twelve major routes across the continent, two of which affect the territory of Navarra.

2.1 Development of the route network

The Plan includes up to a total of ten priority routes, involving a total of 745 km of cycle network (Plan 2). The selection of these priority routes has been made according to the following criteria:

* To complete internal routes within the Community. The intention is thus to give continuity to the scattered sections of cycleway already completed, joining them together and connecting them to main centres generating potential cycle traffic. Within this group of activities the most notable, due to its environmental importance, is the establishment of Greenways using abandoned sections of railway (Plazaola, Tarazonica, Vasco-Navarra, Bidasoa and Irati).

* To connect internal Community routes with similar infrastructures in the neighbouring Autonomous Communities (e.g. Way of St James).

* To connect cycle routes in Navarra with the EuroVelo Network (Plan 1).

* To unite population centres having local plans, where a potential to attract cyclists for inter-urban journeys has been observed.

Included in this package of priority routes is the old Vasco-Navarro railway, running for 25km from Estella to Zúñiga. This project forms part of the so-called “Greenways”, which at the time of preparing the project had been partially completed.

3. Presentation of the project

By way of an introduction, we shall give a brief historical note about the Vasco-Navarro Railway. The forerunners of this historical railway go back to the year 1882 with the concession to the Herrán brothers of the construction and operation of a railway line to unite the towns of Durango (Vizcaya) and Estella (Navarra).

Various financial problems made it impossible for the original contractors to carry out the project, which led to the introduction of British capital and the setting-up of the Anglo-Vasco-Navarro Railway Company Limited.

The bankruptcy of this company caused the Navarrese and Basque local authorities to join forces in 1892, and they managed to resume the work. And so, in 1914, work went ahead again, with the inauguration of the section to Escoriaza en 1915, to Mondragon in February 1916 and finally, on 3 September 1918, they reached Bergara.

In 1919 work began on the section from Vitoria to Estella, which went into operation for the first time on 21 September 1927, although it was not opened until two years later.
This railway had electric traction, a novel system for the time, which would not be applied to other lines until 1938. During these early years, it became the star of the State-run railways, due to its use of “new” technology and to its technical equipment.

In the 1950s competition from road transport, which began to develop at that time, gradually replaced the railway. State subsidies were withdrawn in 1965, leading the Vasco-Navarro into a rapid decline (Olaizola, 2001).

4. Planning of the project

The existence of these abandoned railway track beds which criss-cross the territory and form its infrastructure, together with the opportunity to rehabilitate the buildings and the associated structures (stations, bridges, tunnels, etc.), make the conversion of these old transport corridors into greenways for cycle and pedestrian traffic particularly attractive.

As an example of this, photographs 3 and 4 show some individual places of particular interest.

4.1 Characteristics: The present section of this route in Navarra which has already been completed has a width of 4 metres, with a variable surface of concrete, asphalt, random rubble, or earth. Gradients are slight, and the classification of the cycle path is
SB which means that it has an independent route from motor roads, and that moderate traffic is allowed for access to properties.

The prediction for the number of cyclists per annum on this stretch is between 10,000 and 15,000 cyclists.

4.2 Description of the landscape: The landscape consists of mixed countryside, contrasting between open spaces of cereals and forested areas of holm-oaks and lineal vegetation along the banks of the River Ega. From the route’s position at the bottom of a valley can be seen distant views of the Codés hills to the south, and those of Lókiz to the north. The route runs though the following bio-geographical areas: Mediterranean Region, Aragonese Province 3, Castilian-Cantabrian subsector.

In addition it should be mentioned that in the geographical site of these operations is the confluence of two Sites of Community Importance (SCI): the SCI River Ega for its whole length and the Mountain SCIs of the Codés range and the Lókiz range.

This special characteristic proves to be an important determining factor in the project since, as is well-known, SCIs are all those ecosystems protected with the aim of contributing to guaranteeing biodiversity through the conservation of natural habitats and of wild flora and fauna in the territory, and which are considered a priority under Directive 92/43/EEC of the member states of The European Union. These sites, selected by the different countries on the basis of scientific research, will form part of the Special Areas of Conservation, which will be included within the European Natura 2000 Network.

4.3 Determining design factors: The directions contained in the PBD NAVARRA, in the recommendations for the EuroVelo network and in the NICE Project (Networks Integration for Cycling in Europe), include different types of path according to the greater or lesser degree of separation of cycle traffic:

- Cycle Hard shoulders (Arcenes Bici): these are hard shoulders of roads, prepared for use by cyclists.

- Pedestrian and cycle paths (Sendas Bici): pedestrian paths used by cyclists or specifically designed for both non-motorized forms of transport. This solution can be adopted when, in view of the expected traffic and expected speeds, it is thought unnecessary to segregate the two types of user.

- Mixed roads or roads shared with motor traffic: on interurban roads, secondary roads with an ADI of fewer than 1000 vehicles/day may be considered as “mixed roads” and may be included in the Community Network of Cycle Routes. In principle, on these roads it would not be necessary to segregate cycle traffic, although it might be advisable to adopt measures aimed at moderating the speed of motor vehicles.

Width and protection: in the design of cycle lanes account must be taken not only of the space occupied by the pedalling rider, but also of requirements for passing, overtaking and circulation in parallel wherever required. We must also consider potential conflicts with other users on the basis of how the cycle-track is integrated, and the protection and clearances needed to make the cycle-track attractive and to facilitate manoeuvres and evasive action in unforeseen circumstances, and stopping and starting (Wijsenbeek, 1987).

Unsegregated paths for pedestrian and cycle use (cycle paths) should have a minimum width of three metres in order to ensure the safe and convenient coexistence of the

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two. The recommended width in order to enhance the facilities of this type of road is 4 metres.

5. Design criteria
With the foregoing essential points, together with some designs and solutions contained in the Manual of cycle routes published by the Provincial Council of Guipúzkoa (DGF, 2006), a series of basic criteria have been adopted for the preparation of the project: They may be summed up in the following quantitative and qualitative aspects:

* Functionally, the route will adopt two types of solution: separate cycle path and mixed path. In this way it is hoped to optimize the use of existing infrastructures.

In sections where the cycle path coincides with roads of ADI < 500 vehicles/day, they will be combined so long as there is adequate width and visibility.

* For the structural cross-section mixed materials were acceptable (concrete surface, compacted granular material, asphalt concrete, etc), always bearing in mind the best use of pre-existing roads and the minimum effect on the environment. Plan 3 shows the cross-sections adopted.

* Gradients on the route should in no case exceed 6%.

Plan 3: Types of cross-section adopted
* In segregated sections of cycle way (for exclusive use of cyclists and pedestrians) the effective clear width was set at 4m.
* Crossings with vehicular traffic should be planned to ensure suitable safety conditions (over/underpasses, signing, visibility,…).
* The plan of the projected section should respect the special features of its environment and bypass any pre-existing items of interest that might be affected. This point calls for a detailed field study in order to identify and locate the special features to be protected.

Minimum planned radius of curves were fixed at 10m.

In sections where it is necessary the roadbed will be widened in order to ensure a constant width of 4 metres (Plan 4).

![Plan 4: Cross-section of widening of carriageway](image)

6. Description of the planned action

As mentioned above, solutions are varied, ranging from the construction of concrete road surfaces to the consolidation of “bare earth” sections, from minor works (isolated patching and repairs), or even sections to be repaired, to operations of greater magnitude involving excavation and levelling, and the widening of the roadbed with a new structural package (Plans 5, 6, 7 and 8).
Plan 5: First section of projected route
Plan 6: Second section of projected route

Plan 7: Third section of projected route

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In addition, the development of the route has called for the planning of some accompanying elements. Some are strictly structural and others are distinctly institutional. This would notably include:

- **Masonry work**: basically necessary to modify existing irrigation supplies to farms as well as the construction of transversal draining of the roadbed of the cycle path.

- **Recreational areas**: improvement and enhancement is planned for two areas in particular. The first of them is an area notable for containing not only a more or less circular natural pond with a diameter of about 80 m but also a section of the river Ega which is a preserve for crayfish; the second area is a space occupied by a leafy poplar grove, with interesting views of the river.

- **Highway underpasses**: two crossing-points at different levels have been planned where the cycle path crosses the NA-132 B and NA-132 A Estella-Vitoria road. The aim is to segregate bicycle traffic from vehicle traffic for the convenience and safety of users.

  This has been solved structurally by means of prefabricated casing modules, leaving a clear internal space of 3.50 m wide and 2.50 m high.

  The modules are 0.30 m thick on the bottom and sides with a 0.40 m upper slab. They are 1 m long with tongue-and-groove joints. They will be laid directly on a levelling surface of concrete 15 cm thick.

Finally, the work is expected to take three months, and the total budget amounts to approximately 400,000 €.

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