



Industrial Heritage in Granada and Almería - The Recovery of the Zurgena Railway Station as an Example of the Reinterpretation of the Lorca-Baza Railway Line

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Abstract. In this paper we present the history of an old railway line in Andalucía: the Lorca - Baza railway line. In the paper we recall the beginning and development, the rise and fall of the British company that kept the line alive from the late nineteenth century until the Spanish Civil War, and the exploitation by RENFE until 1984. The railway line was of enormous importance in the transport of iron ore and goods from Andalusia to the port of Águilas (Murcia), and in the supply of all types of goods throughout the provinces of Almería and Granada. The most important station, that of Zurgena, was restored at the beginning of the 21st century by the Town Council of Zurgena. Currently, a project of rehabilitation and reconstruction of all the railway structures, workshops, turntable and a set of tracks is being developed to reinstall a historic train using the original rolling stock, as a way to recover old techniques and knowledge and offer, in a new way, a real vision of this incredible train line.

Keywords: Granada heritage · Train · Railway line · Zurgena station

1 Introduction

The Great Southern of Spain Railway Company Limited (GSSR), a British company, was incorporated on 15th December 1885 to build a railway from Águilas and Lorca to Granada via the Almanzora Valley, passing through Baza, thus connecting the provinces of Murcia, Almería and Granada (Fig. 1). The history of this railway line, is a fascinating story of trials and tribulations, riches to rags, the triumph of hope over experience and the final painful death by civil war.

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Building the line was a daunting prospect due to the mountainous nature of the terrain, thus requiring many bridges, tunnels, cuttings, embankments, culverts and walls to be built. This employed some two thousand four hundred work-men in the late 1880s. As in every story, there has to be a hero and that was Gustave Gillman who was a relatively lowly member of The GSSR staff but who saved the company on many occasions mainly by selling The GSSR's services to the mines in the area, and by that token was almost single handedly responsible for the explosion of iron, lead, talcum etc. mining in the area. The railway functioned up until 31st December 1984 under the state railway operator Renfe. In the 1980s due to the parlous state of the railway system and the lack of money, many lines were closed including The GSSR (however, with support from Águilas council the section Águilas to Lorca and Murcia was kept open up until recently).

This is a terrible shame, as the line would have been a perfect tourist route for steam enthusiasts and would have brought much needed revenue to the Almanzora Valley. This would have been possible before the track was removed, as a steam locomotive still exists.



Fig. 1. Localization of Lorca-Baza line, Spain [2]

2 A Short History of the GSSR

2.1 The GSSR Until Spanish Civil War

In 1879 the government auctioned a concession to build a line between Granada and Murcia. A British retired ship-ping merchant called Edmund Sykes Hett was the only bidder and so, on 15th December 1885, the GSSR was incorporated and construction started.

In October of 1885, the sum of £1,250,000 was raised (approximately £200 million today - not a lot compared to Hereford- Sheffield line for example considering that the

distances are almost the same –299 km), later to be increased to £1,684,357 for the construction of the GSSR. In addition, the Spanish government subsidy was only £532,000 (£70 million at today's rates, making the grant £150,000 per mile). However, The GSSR wasn't the construction company, which was 'Hett, Maylor & Co Ltd' (Edmund Sykes Hett & John Maylor) to be paid a fixed sum of £2,089,184 (£270 million today) on completion of the project, they do not seem to have done much work, as the main construction was subcontracted to the Marquis de Loring (Jorge Enrique Loring y Oyarzabal), who had been successful in the past as a railroad builder, and to August Lecoq, an expert in metal construction.

The original Board of Directors comprised:

- The Right Hon. Sir James Fergusson, Bart., M.P., G.C.H.L., K.C.M.G., 24 Grosvenor Gardens, S.W. (Chairman).
- Sir George Russell, Bart., M.P., Swallowfield Park, Reading. Director of the South-Eastern Railway company.
- David Davies, Esq., M.P., Llandinam, Montgomeryshire. Deputy Chairman of the Barry dock and Railway Company.
- Edward K Hett Esq., Eltham, Kent. Director of the Great Western of Brazil Railway Company (Limited).
- W. Goodwin Barnes, Esq., Beaufort Lodge, Cambridge Park, Twickenham. Shipowner.
- Perry F. Nursey, Esq., 161, Fleet Street, London, E.C. President of the Society of Engineers.
- Alfred Fernandez Yarrow, Esq., Isle of Dogs, Poplar, London, E. Engineer.

Each of the above bought 100 £10 shares in the company, as did:

- Howard Webb, Cardiff. Colliery prospector.
- Robert Mercer, Bromley, Kent. Civil engineer.

Nearly everything needed for the construction of the line was brought from Great Britain, France or Antwerp by ship.

Considering the difficult topography, construction went on at an impressive pace, the section between Almendricos and Águilas, having been started in October 1887, opened in April 1890. As an example of the topography from the point of view of a railway engineer, 133 km (41.8%) of the track between Granada and Lorca has inclines of 1 in 66 or steeper. The gauge was 1.668 m (5 ft 5¾ in.) as opposed to the British 1.435 m (4 ft 8½ in.).

The amount of work involved was enormous, there being more than three kilometres of construction by way of bridges, culverts, tunnels etc.

On March 24, 1890 the inauguration was held in which locomotive No. 2 "LORCA" took all the dignitaries to each of the stations on the line (Pilar de Jaravía, Pulpí and Almendricos during which Gustave Gillman took photographs. Figure 2 is that corresponding to Almendricos station.

As mentioned, the line included the difficult section Pulpí to Pilar de Jaravía part of which was the Puerto de los Peines, that is still in service (Fig. 3). However, a few



Fig. 2. Inauguration of the line in Almedricos [2].

months later, by the end of 1890, Hett, Maylor & Company were declared bankrupt. This was mainly due to the gross underestimation of the difficulties of constructing a railway in a countryside such as that in Andalusia: the elevated costs of buying land, the lack of a road network making it difficult to transport heavy construction equipments and thus the need of access roads before stations could be built, track laid or bridges constructed. Also, Hett, Maylor & Co were being ripped off by sub-contractors. On top of all of this was the endemic bureaucracy in Spain at the time. The Hett, Maylor & Co bankruptcy had dire consequences for The GSSR.



Fig. 3. Puerto de los Peines (section between Pulpí and Pilar de Jaravía). (author’s collection)

Notwithstanding, The GSSR pressed on with the construction of the rest of the railway (Fig. 4).

The bankruptcy of Hett, Maylor & Co left the GSSR in very bad situation as creditors, especially George Loring, successfully filed claims in court to seize all GSSR-owned material and freeze its assets. This despite the fact that the debt was owed to HM and not The GSSR. He also organized the placement of blockades on the Huércal-Overa to Zurgena section that was ready to open, as mentioned in *El Boletín* (the newspaper of The GSSR) [1].

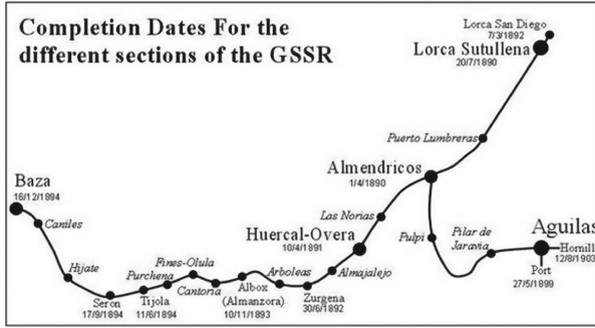


Fig. 4. Completion dates for the different sections of the GSSR [2].

2.2 Restructuring of the GSSR

The GSSR was in serious trouble, and wasn't even close to finishing the Baza to Granada section and they didn't have enough money to do this. They had, in fact, already built Deifontes and Piñar Stations and possibly much more. The answer was to restructure the company by first going into voluntary liquidation. Their main creditor (created in 1888 to build railways in Spain) was 'The Spanish Railways Trust and Investment Company' which re-arranged the concessions so that The GSSR only had the concessions for Lorca - Baza and Almendricos - Águilas/Hornillo (Table 1).

Table 1. Companies operating the different sections of the line

Section	Company
Granada-Guadix	South of Spain Railway
Guadix-Baza	The Granada Railway
Baza-Lorca	The GSSR
Lorca-Alcantarilla	Alcantarilla-Lorca Railway
Alcantarilla-Murcia	Madrid-Zaragoza-Alicante Railway

Other section, that corresponding to Baza and Guadix was taken on by 'The Granada Railway Company Limited' (TGR) which paid to The GSSR for services rendered. TGR also had almost insurmountable problems with construction which is why that section didn't open until 1907. It seems that The GSSR had brought in quite a lot of hardware for the Baza - Granada section which they proceeded to sell to The Granada Railway, and this probably helped the accounts somewhat.

The GSSR had to go back to their investors for more money. As the track was already laid between Lorca - Baza and Almendricos - El Hornillo, they were only asking for a small amount to keep the company solvent until the fares rolled in! (they didn't). This was mainly because the section between Baza and Granada hadn't been finished, so there was little incentive for passengers to use The GSSR.

However, now that there was a link to the north of Spain via Lorca/Murcia and to the port of Águilas there was a reasonable trade in merchandise such as esparto grass, marble, fruit, vegetables, wheat, barley, sugar beet and retail goods. In addition there was some passenger traffic although in 1897 it only warranted one passenger train each way per day.

The journey from Lorca to Baza took 6 h (1 h 30 min by car today) and a third class ticket cost an average worker nearly two days pay.

Anyway, the company had to go back to the investors and cancel all investments issuing new bonds, debentures etc. referring only to Lorca - Baza/Águilas and not Murcia – Granada/Águilas.

In fact, there was another restructuring of The GSSR in 1904 due to the need to purchase 150 40 tonne mineral wagons as a result of Gustave Gillman's amazing efforts to encourage mining along the route of The GSSR as well as more rolling stock so The GSSR restructured again. The fact that they were able to do this shows that the investors knew that without the mining transport their shares, debentures etc. would be totally worthless. So, in 1904 the company managed to get its rolling stock and so a new era began for the GSSR.

2.3 Operation in the Early 20th Century

The income from passengers at the turn of the 20th Century was very poor as the section between Baza and Granada hadn't been completed, so there was little interest for passengers. Thus, for example, in 1902 there was only one passenger train in each direction per day. This was a mail train with first, second and third class passenger cars. It left Lorca San Diego at 13.24 h and stopped at all stations. It passed Almendricos at 15.03 h, arriving at Baza at 19.58 h, averaging 20 km/h (12 mph). In 1908 the first train from Alicante to Granada passed through The GSSR and ran until it was suspended by RENFE in 1970 whereby they instigated an express between Barcelona, Granada and Almería.

The transport of goods was somewhat more promising although business started slowly. Most freight was marble (Fines-Olula), esparto grass, animals, minerals from mines near to Almendricos and Jaravía etc. nearly all of which went to Águilas Port for loading onto ships. It has to be said that The GSSR was certainly saved by the opening of the mines in Las Menas, Bacares and El Tesorero and the pier El Hornillo in Águilas as well as government grants. However, matters improved in the early years of the twentieth century with a total of 124,396 tonnes of ore from the Sierra de En-medio (Almendricos Station being in the foothills) as well as 403,272 tonnes from the Sierra de Los Filabres representing 1,257 trains of 12 wagons that year. The transport costs to the mining companies were significant, being approximately half of the costs of extraction and transport to the loaders. Due to the topography between Serón and Águilas there were stretches where double and triple headers were needed (two locos at the front, one rear).

It is interesting to note that in 1915 (when there was a reduced market in iron ore due to the First World War) the chairman of the board, Mr. Thomas Harrison said, when talking about sales in 1914: "Minerals account for nearly £30,000, goods for £4,000, passengers £1,000".

There was a large variety of goods carried, including coffins, livestock, citrus, tomatoes, olives (and their oil), almonds, potatoes etc., wood, pine bark (for tanning), fertilizer, copper, calamine, sulphur, talcum, barium, gypsum, ochres, porphyry, lead, tin, silver and gold.

Agricultural products such as melons and tomatoes continued to be transported from Alicante to Águilas right up until the 1960s.

2.4 The Line Under RENFE Rules up to the End in 1984

The death of The GSSR came at the beginning of the Spanish Civil War when, on 17th July 1936 the Railway Worker's Council took control of the running of The GSSR, all its track and stock. This was part of the Republican side's activities and the Republicans ran the railway from this point. Eventually, the Nationalists under General Francisco Franco took control and set up a national railway network called RENFE which still functions today as Renfe Operadora.

The GSSR board of directors said this as part of their 1936 report to shareholders:

“The directors regret to report that on 5th September 1936, control of the railway was assumed by The Local Railway Worker's Council with the indulgence of the state representative. Subsequently, a decree of 26th December 1936 enacted that the state provisionally should take charge of the working of the remainder of the railways not comprehended in an earlier decree of 3rd August 1936, under the terms of which the workings of the large systems had already been taken over by The State and confided to the Railway's Exploitation Committee.”

In fact, RENFE was served a poisoned chalice as much of the rolling stock and track had been destroyed during the war, although The GSSR stock survived better than most of the Spanish railways as Almería and environs remained in republican hands until the bitter end, thus preventing much destruction to rolling stock and track. The other problem for RENFE was lack of investment over many years such that the situation in 1963 was as follows (Table 2):

Table 2. Length of the line

Period	Km/miles track
Over 45 years old	2891/1796
35–45 years old	4430/2752
25–35 years old	2335/1450
10–25 years old	1705/1059
Less than 5 years old	2063/1282
Total	13424/8341

Just for comparison, the total length of track in Great Britain is 15,811 km (9,824 miles). Additionally, during The Spanish Civil War 1,309 (42%) locomotives, 32,000 (40%) goods wagons and 3,700 (70%) passenger wagons were destroyed.

The GSSR gamely carried on as a company based in London until on 4th February 1955 the company was dissolved. In the restructuring of 1904, many of the investors nearly everything. As Bladó said in [1]: “Those that had invested in the company came out very badly. The money lenders received debentures for their money and paper of dubious value for the interest. The debenture holders lost 50% of their capital with the remainder in shares that today (1918) are quoted on the stock exchange at 10% of their face value. The shareholders lost 90% and 95% respectively of their money. So, the first shareholders (if they had not already burnt their certificates in desperation) now owned 5 pesetas for every 1,000 pesetas invested. Probably they had sold them as scrap paper”.

Although one might think that the GSSR management were swindlers, the reality was different. Touring the rail line allows one to see that the work that was done, without the aid of machinery, only with pick and shovel, was incredibly arduous and required thousands of workers, to the tune of 2,400. As far as is known, the company was overwhelmed by the problems created by the topography of the area and was forced to overcome the problems of gorges, hills, rivers, etc. Only the management of Gustave Gillman, allowed GSSR to continue. He convinced the investors to invest in the mines of Los Filabres, in the construction of a loader in Serón, of a pier in El Hornillo for the transport of millions of tons of iron ore.

The end came finally on 31st December 1984 when Renfe closed the line between Guadix and Lorca, ripping up track in the late 1990s. Thanks to the efforts of Águilas Town Hall, the line between Águilas and Lorca (is still open with a limited service of two trains each way per day).

Some town halls have tried to maintain the station buildings: Zurgena, Serón, Cantoria, Almanzora and Tíjola being notable examples. Other buildings are in danger of falling down, especially Gor, Gorafe, Fines-Olula and Arboleas. Almanzora is currently (2019) being renovated again.

What is left of the track is mainly ballast although certain areas have been converted to green routes. Either way, they present excellent opportunities for walkers and mountain bikers to see the sublime Andalusian countryside first hand, and to appreciate the enormous amount of work that went in to constructing The GSSR. And, more recently, with the recovery project of the railway facilities of the Zurgena train station, the laying of a section of railway on the original route and the creation of a railway industrial heritage restoration school with the support of the Zurgena City Council and the Almanzora Association of Municipalities we are facing a reinterpretation of this railway line of capital importance in the communication of Andalusia and the Spanish Levante that will mark the line to be followed by similar projects in the coming years.

3 Works of Recovery

3.1 The Zurgena Railway Station, a First Class Train Station in Progress to Return to the Service for Historic Trains

This station was very important from the point of view of the running of the railway. Apart from the station, there were engine sheds, workshops, supplies departments and offices. It was a storage point for goods trains to stay overnight and to continue their journeys to Águilas/El Hornillo or Guadix in the early hours. In Fig. 5 an old drawing of the station can be seen.

Although it had no track machinery assigned to the station like Águilas and Lorca-San Diego did, it was the site for the track machinery to be kept when not in use. However, it did have permanent engineering staff. There was, also, a turntable (see Fig. 6) and the engine sheds had inspection pits for the locos. In addition, there were staff to manage sleep-overs for the train crews and their charges.

The main reason for all this activity was that this station is where the triple header iron-ore trains would leave for Huércal-Overa, labouring up the 40 m in 11 km incline and then two of the three returning.

Zurgena was also a commercially important station, both in passenger and freight traffic. This was not due to the population of Zurgena, which was quite small, but because it also served other towns in the region such as Lubrín, Cuevas de Almanzora, Vera, Garrucha, Los Gallardos, Mojácar, etc. The installation was completed with two additional private lines for two factories: Carlos Tortosa (marble) and Campsa (fuel).

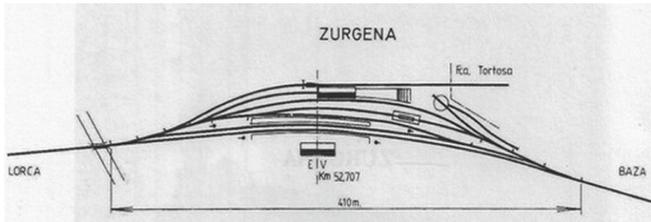


Fig. 5. Drawings of Zurgena railway station by Pedro Pintado Quintana.

The actual shape of the station is, in general, good but the tracks and sleepers, buried under a 40 cm layer of ground last 20 years, are in regular or poor condition. An “escuela-taller” promoted by Zurgena’s Town Hall at the end of last century, guaranteed the integrity of the main buildings (see Fig. 7 and Fig. 8) much better than other stations of the line, in very poor condition or, directly, destroyed.

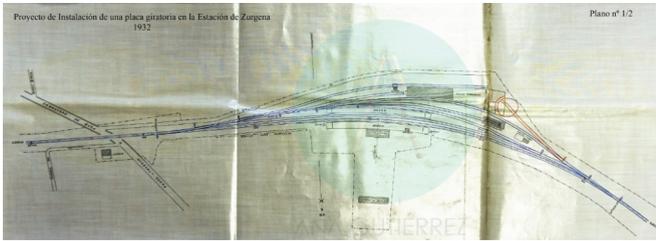


Fig. 6. Drawings of the works to install the turntable (in red colour) in 1932 (Railway Historic Archive of Spain)



Fig. 7. Works of rehabilitation of the interior of Zurgena station (author's collection)

This fact, moreover, is the real will of the City Council of Zurgena to improve its industrial heritage. Proof of this is the subscription in early 2021 of an agreement to collaborate in this project with the technology company of the University of Granada “Restaura, Gestión Museística y Restauración Siglo XXI”, experts in the conservation of industrial heritage. Thus, at this moment there is an advance of the recovery works of the entire railway infrastructure of the station, the turntable, the conservation workshops of railway material and the laying of a railway line between the towns of Zurgena and Arboleas, in a first phase, within what was the line Lorca - Baza. The objective is the exhibition of historic railway material and the creation of a training school in classic railway material, in order to train technical personnel for the maintenance of this historic line and its facilities and to collaborate with other historic lines in Spain and abroad. This type of school is almost non-existent at present, and there is a great demand for qualified technical personnel in this field.



Fig. 8. Passengers terminal of Zurgena Railway station (author's collection)

4 The Rolling Stock for the New Railway Line. Units to Restore and Put in Service. New Adaptions of the Original Engines and Technologies to the New Enviromental Requirements

The rolling stock that will equip the historic train line that will circulate in the Zurgena train station facilities and the section of track that is currently being installed is intended to be a representative sample of the units that circulated on this railway line during its entire operating life, that is, it will have steam locomotives and diesel traction locomotives, with the adequate adaptation of their fuels to meet the criteria of low or zero polluting emissions and that they do not pose fire risks in the summer season, so common in steam locomotives that use coal as fuel.

Already in the 19th century there were shunting locomotives in the sugar industries of the Vega de Granada that moved exclusively with fuels of vegetable origin (cotton seed, marc, almond shells, wood, etc.). Both Granada, Almería and Murcia have been and are traditional producers of rainfed almonds and the almond shell is a fuel with a very high energy value and zero kilometer, affordable and with close and immediate availability, being the main fuel that will be used in the steam locomotives that will be added to the historic train, specifically the steam locomotive 020 WT, brand Orenstein and Koppel from 1912 (Fig. 9), with manufacturing number 5,894 and the steam locomotive

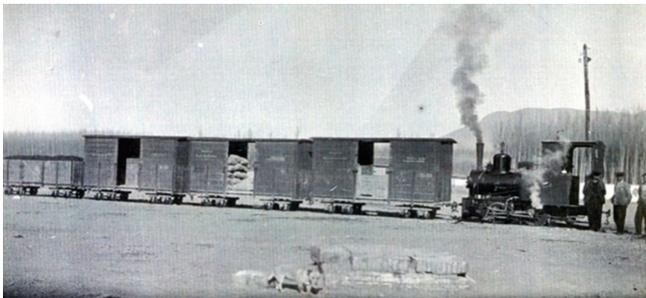


Fig. 9. Locomotive 020 WT Orenstein and Koppel in 1923 [2].

020 T from 1902 (Fig. 10), brand Ateliers de Tubize, former Andalusians 05 after their restoration period in the workshops of the Zurgena station.



Fig. 10. Locomotive De Tubize – Andaluces 05 [2].

5 Conclusions

In this work we intend to recall part of the industrial heritage of southeastern Spain showing the historical evolution, from construction to dismantling, with all the drawbacks, technical and economic, found in the Lorca-Baza railway line. In the first part of the work we offer a historical summary of the railway line being of capital importance in the communication and for the transport of raw materials. In the second part, we briefly present the recovery works of the main station of the line, the Zurgena station, as well as the recently initiated restoration works of some rolling stock, wagons, locomotives and other old railway equipment. The intention of this project is a new interpretation that restores part of the splendor that the line had for almost 100 years with a reopening project that represents a before and after in the new uses of industrial heritage in Spain.

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