

SPAIN

Segarra Garrigues Irrigation System



OVERVIEW

Location

Region of Catalonia, Spain

Sector

Water – Irrigation

Procuring Authority

Reg Sistema Segarra-Garrigues

Project Company

Aigues del Segarra Garrigues, SA

Project Company Obligations

Design, Build, Finance, Operate and Maintain

Financial Close

8 July 2005

Capital Value

€1.2 billion

(USD \$1.431 billion – 2005 exchange rate)

Contract Duration

39 years (subject to the extensions described below)

Key Events

Scope change to ensure compliance with environmental laws, loan agreement termination, contract renegotiations

SUMMARY

The Segarra-Garrigues Irrigation System project is an important project in the development of the Lleida province of Catalonia, Spain. The aim of the project is to transform 70,000 hectares of non-irrigated land into irrigated land, benefiting an area with a population of over 350,000 people. However, the Global Financial Crisis' effect on the Procuring Authority's financial standing created significant challenges, with lenders terminating their financing arrangements with the Project Company.

Requirements to comply with European Union (EU) environmental requirements also caused delays and limited the scope of the project. As a result of these challenges, the construction phase has been extended and is not expected to finish until 2029.

SUMMARY LESSONS LEARNED

- Good engagement with end users at an early stage during project inception and throughout the project delivery is essential to ensure project viability.
- The Procuring Authority must carry out sufficient due diligence, to ensure that the scope of the project and any contractually prescribed reference design is compliant with all relevant legislation.

- Continuation of staff from construction through to operations improves the efficiency of managing the transition between the phases.
- Over-specification in the PPP contract, and development of input rather than output specifications, can have an adverse impact on the final design and whole-life costing.
- Government backing becomes very important in critical situations, such as lack of financing, and can mitigate the risk of project postponement or termination.

PROJECT INCEPTION

Goals and Objectives of the Partnership

The project was initiated to increase the availability of water through the new irrigation system. This was done to allow for the development of more profitable crops, the establishment of new businesses, and other general economic benefits in the areas covered by the project. More than 16,000 land owners are currently growing crops which have a low yield and therefore low profitability, due to the lack of water available.

The planned irrigation system comprised two elements. The first element is led by the National Government and covers an 85km irrigation canal (Canal Segarra Garrigues) and a dam (Albages). The second element, which is the project covered by this case study, is being undertaken by the Project Company, Aigues del Segarra Garrigues SA, and consists of the development of a water distribution network, which takes water from the canal to groups of landowners, who are then responsible for building the infrastructure to transfer the water to their individual farms.

The Procuring Authority was Reg Sistema Segarra-Garrigues, which is a public-sector company created for the project by the Regional Government of Catalonia. This company was later absorbed into Infrastructure of Catalonia. The Procuring Authority signed the PPP contract with the Project Company for the design, construction, finance, maintenance and operation of the project.

MANAGEMENT OF THE PPP CONTRACT

Transition Between Commercial and Financial Close

There was a major transition between commercial close and financial close. With nine equity investors and a syndicate of banks who needed to come to an agreement, the process was overly complicated and took over two years to complete. The Procuring Authority then delayed works for an additional two years, and with many changes of senior management taking place in the public sector during this time, limited progress was made. No construction works began until 2006 despite the PPP contract signing taking place in 2002, and while this may otherwise entitle the Project Company to make a claim, this was understood to be covered by the renegotiations in 2013.

Construction Phase

The project was tendered based on a conceptual design and relevant specifications developed by the Procuring Authority. All detailed designs were developed by the Project Company after the award of the PPP contract, which were then approved by the Procuring Authority, and subsequently implemented during construction.

The original construction duration was nine years, with completion expected to occur in 2014, however as of 2017, only 50% of the network had been completed. There have been various challenges to completing the design and construction which have caused this delay. The specific challenges which had the greatest impact on the construction were related to the lack of demand from the landowners, who are the key intended beneficiaries, and the project scope change required to comply with environmental laws.

During the tender process, it was assumed that landowners would be generally supportive of the project, and would sign up in groups, agreeing to procure the additional infrastructure required to connect the water directly to their individual plots of land. This would mean the Project Company would pipe water to individual areas that would not be required to be less than 12.5 hectares (referred to as the "Minimum Irrigation Area"), with the landowners covering the costs of piping the water to the individual lots within these areas. However, due to poor stakeholder engagement combined with a lack of interest from farmers, this Minimum Irrigation Area ended up averaging 2.8 hectares. This meant that the total length of pipes has increased by approximately 30%, with a direct impact on the time and cost of construction.

A ruling by the European Court of Justice on the project's lack of compliance with the relevant legislation meant that the Project Company had to introduce what are referred to as "Special Protection Areas" for birds in the area covered by the project. This reduced the areas assigned for irrigation and added costs due to re-routing of pipes around the protected regions. This is further explained under the heading "Key Events" below.

The project's contract requirements are perceived as more prescriptive than is common for PPP contracts in terms of the prescribed design solution. For example, the PPP contract specified the use of polyester pipes, which did not turn out to be the optimal solution from the whole lifecycle point of view. However, as it was a contractual requirement, it was difficult to change.

Predicting the final cost to complete the outstanding work is complicated, but the Project Company estimates that there will be a deviation of approximately 20% from the original contract sum, with approximately half of that being attributable to the compliance with the European Union

environmental requirements, and the other half due to the increase in pipe length due to the reduction of the Minimum Irrigation Area. Both of these risks, and therefore the cost overruns, were retained by the Procuring Authority.

Operations Phase

The transition from construction to operations is an ongoing process, with each irrigation sector starting operations once its construction is complete. This is taking longer than expected, as the landowners have to commit to joining the scheme before irrigation can begin and this does not always occur prior to construction works being completed.

An additional complication of the operations phase was agreeing the total duration of the PPP contract. The full operation of each sector begins once construction is complete and the landowners have committed to join the scheme. However, due to the size of the project, there was always going to be a significant time period between the completion of construction of the various sectors. The PPP contract stated that the operations phase was to last for 30 years, however it was unclear on how this would be measured. One clause stated that this 30-year period would begin once all construction was complete, implying that operations would take place on most sectors for longer than 30 years. Another clause suggested that the 30-year period would begin to be counted for each sector individually, so that no sector was in operations for longer than 30 years. This was finally clarified, and it was agreed that the contractual start date of operations for the purpose of determining the total duration of the PPP contract will be the day on which every irrigation sector is operational (that is, when construction of all sectors is complete), and the PPP contract and the operation of each section of the works will run for 30 years after that date.

The monitoring and reporting system for the operations phase is not as comprehensive and detailed as it is for construction. During the operations phase, the Project Company reports only water consumption and maintenance expenditure to the Procuring Authority, compared to a much wider range of performance metrics which are reported during construction. This is driven by the contractual arrangements, as construction costs are currently paid for by the Procuring Authority (as is detailed under the heading “Key Events” below), who therefore pay close attention to the construction works. Operational revenue comes entirely from user charges levied on landowners, and hence, there is less need for Procuring Authority involvement.

Performance Monitoring and KPIs

There is a range of milestones relating to the progress of the project, including hectares available for irrigation, number of landowner agreements joining the irrigation system, hectares in operation, and increasing water consumption.

One of the challenges of the operations phase faced by the Project Company is that there are some clauses of the PPP contract that are difficult to fulfil from an operational point of view. For example, any damage to the infrastructure must be repaired within 48 hours of discovery, with deductions applied if this is not completed. This is not always feasible for the Project Company. For example, there was an incident where cables were stolen from a pumping station and replacing them required more than two days. However, the Procuring Authority believes this is necessary. A two-day delay in irrigation can seriously damage crops, and hence the requirement must be very strict. It was also agreed between the parties when entering into the PPP contract.

Renegotiation

Various contract renegotiations took place between 2013 and 2015 to account for some changes that had occurred in the project up to that point. The changes covered by the first renegotiations were the reduction in pace of construction due to budget constraints of the Regional Government of Catalonia, as well as the change in construction scope that was required due to the requirement for the additional protected area for the birdlife. The renegotiations that occurred between 2013 and 2015, and the issues with financing and the protected areas for the birdlife, are described in more detail below under the heading “Key Events”.

It is understood that both the Procuring Authority and Project Company are now in agreement that there will be a requirement for an additional formal renegotiation of the PPP contract at a later date, to take into account the aspects that are likely to affect the financial performance of the Project Company as the project progresses. These include:

- Reduction in water available for irrigation. The requirement for additional protected area for the birdlife has limited the water available for irrigation to 300 GL/year, which is less than the 340 GL/year originally anticipated. Currently only 160 GL/year are being used, so this has not yet become an issue, however selling water is the key revenue source for the Project Company and so will have to be dealt with once the construction works are completed. The stakeholders interviewed anticipate that demand for water will be greater than what is available, given that the landowners will have already paid for construction of piping on their own land.
- To ensure financial viability of the project, the Project Company relies on landowners contributing to its revenue. If the pace at which the landowners are joining the project is slower than forecast, the Project Company may want to renegotiate a further contract extension, as it is currently taking this risk.

Project Company Ownership

When financial close was reached, the Project Company contained nine equity investors, who were a mix of construction and operations contractors. One of these equity investors sold its shares to the remaining eight, with the largest three holding approximately 85% of the shares. This change of Project Company ownership did not cause any delays to the project and no approval was required by the Procuring Authority. The Project Company perceived it beneficial to have fewer equity investors to manage. The Project Company is also of the opinion that the equity interests of the construction companies and operating companies are well balanced, which helps to reduce the risk that one element of the project (i.e. either construction or operation) is prioritised over the other.

Public Stakeholder Engagement

From the beginning, fewer landowners joined the scheme than had been expected, leading to a reduction in the Minimum Irrigation Area described above under the heading "Construction Phase". Many landowners considered the price of water too high and were unsure of the perceived benefits of joining the scheme. This has gradually improved, and the majority of landowners are expected to have joined once construction is completed. The Regional Government of Catalonia is committed to the project and is expected to budget around €30 million per year until 2030 to drive the completion of the construction phase, although this has not been formally agreed yet.

The main challenge with the landowners is the change in mind-set. They are used to managing non-irrigated land and changing to an irrigated system implies an investment and an additional operational cost that they will have to bear when joining the system. Also, the crops that can be cultivated on irrigated land are different, and many landowners are wary of this large-scale change.

Good engagement with landowners in irrigation projects must be a priority from the outset to ensure their viability. The Procuring Authority, together with the Project Company, is currently undertaking awareness-raising campaigns to engage the landowners. This involves the Procuring Authority running a publicity campaign to advertise the loans on attractive terms being offered to landowners to cover the cost of the additional work they are required to undertake, while the Project Company contributes to the campaign with information on success stories from the farmers who have already joined the scheme. So far this has been seen as a useful approach, as landowners are continuing to sign up.

RELATIONSHIP BETWEEN THE PROCURING AUTHORITY AND PROJECT COMPANY

There was some disagreement between the Procuring Authority and Project Company over how certain discussions were managed, especially those related

to environmental compliance. For example, the Project Company noted that the Procuring Authority negotiated unilaterally with the European Union environmental authorities with regard to the requirements to protect birdlife. As this was an issue that greatly affected the design and management solutions of the project for which the Project Company was responsible, the Project Company was of the opinion that it should have had some involvement in the negotiations in order to consider the impact. The Procuring Authority did not agree, and believes that the discussions with the European Union have been conducted appropriately.

KEY EVENTS

Termination of the Loan Agreement

At financial close, the Project Company signed a loan agreement with a syndicate of banks to secure the financing necessary to complete construction of the project. A bespoke financing arrangement was provided to complete construction of the sectors whereby, once each sector was certified as complete, the liability for the repayment of the associated debt was transferred to the Procuring Authority under a sale of receivables model. The arrangement was for the Procuring Authority and landowners to then make regular payments over a 20-year period to pay off the debt. Operational revenue for the Project Company was to be generated from the tariffs charged to landowners who used the irrigation system.

During the Global Financial Crisis of 2007, the investment rating of the Regional Government of Catalonia was downgraded to junk status, and consequently the lenders terminated the loan agreement in 2012. The national government had a scheme at that time which allowed regional governments to borrow at a low interest rate. The Regional Government of Catalonia took advantage of this scheme to pay off all outstanding debt to the lenders, which was approximately €300 million.

When the loan was terminated, there were some sections of work which were still in construction, and hence the debt had not yet been passed to the Procuring Authority, as required by the bespoke financing arrangement described above. The Project Company absorbed the construction costs of these unfinished parts of the irrigation system and they are yet to be refunded by the Procuring Authority.

Since the termination of the Project Company's loan agreement, the Procuring Authority has been paying for the construction directly. The Project Company now acts as a project manager for the design and construction by subcontracting out the work for each of the sectors. It is then reimbursed for the work carried out. This is similar to how the Project Company managed construction prior to the termination of the loan agreement, and there was

no change in the construction contractor. Under the new arrangements, the Project Company takes limited risk for the design and construction, as the Procuring Authority assumes liability for all construction works, together with landowners joining the irrigation system and taking the responsibility for the irrigation works on their own land. The original arrangements remain in place from an operational perspective with the Project Company generating operational revenue entirely from landowners.

Compliance with Environmental Requirements

The European Union Birds Directive stipulates the obligations of member states in relation to protecting birdlife, partly through requiring the introduction of what is referred to as "Special Protected Areas" to protect designated species of birds. In December 2007, the European Court of Justice ruled that Spain was failing to meet its obligations in the area covered by the Segarra Garrigues irrigation project. This required a significant change in the layout and size of the irrigated areas, and concurrently reduced the amount of water permitted to be removed from the Segre River. This added to the construction costs, which were entirely covered by the Procuring Authority, and required a renegotiation of the PPP contract to deal with the reduction in the water available for the irrigation. This was carried out by renegotiations between 2013 and 2015. One of the outcomes was to allow the extension of the construction period for 15 years on top of the original nine years, making a total of 24 years for the construction period. The operations phase remains as 30 years after construction is completed, and this remains viable as revenue from landowners is only used to cover operational costs, not to pay back any construction costs.

LESSONS LEARNED

Good engagement with end users at an early stage during project inception and throughout the project is essential to ensure project viability.

Engagement with end users is always important, especially when those users need to sign up to a project, i.e. pay user fees to ensure its success. In this project, it is clear that support from landowners was overestimated to begin with, leading to a lack of adequate engagement in selling the benefits of the irrigation scheme at an earlier stage.

The current awareness campaign run by the Project Company and Procuring Authority is seen as successful, as landowners are joining the project in greater numbers. Additionally, the Regional Government of Catalonia, through the Institute of Agricultural Credit, has offered soft loans to the farmers to help facilitate the inclusion of landowners in the irrigation system.

The Procuring Authority must carry out sufficient due diligence, to ensure that the scope of the project and any contractually prescribed reference design is compliant with all relevant legislation.

It is crucial to ensure adequate due diligence and stakeholder consultation from an early stage of the project design and scope definition, as regulatory compliance can have a major impact on the project. This becomes particularly important for projects which are environmentally sensitive. Although the Regional Government of Catalonia approved the Environmental Impact Statement in 2002, this was not sufficient for the European Court of Justice. This led to a significant reduction of the irrigating areas and the total volume of water available for irrigation, which was prescribed in the conceptual design set out in the PPP contract. Increasing public concern over environmental issues, together with an ongoing evolution in relevant international regulations (e.g. European Union environmental regulations) may affect a PPP project at any stage.

In a similar way, any risk of challenge from environmental groups can be mitigated through earlier stakeholder engagement. This risk cannot be removed entirely, as some activists may disagree with the project at a fundamental level, however early and genuine engagement can discourage other groups from taking legal action.

Continuation of staff from construction through to operations improves the efficiency of managing the transition between the phases.

Continuity of staff through transition phases improves performance. Many engineers who worked for the Project Company during the construction phase have continued through to the operations phase, and this has helped build trust between the parties. It is particularly important on projects that have a long crossover between the phases.

Over-specification in the PPP Contract, and development of input rather than output specifications, can have an adverse impact on the final design and whole-life costing.

Overly prescribed specifications can limit the ability of the Project Company to innovate and develop efficient solutions. The contract requirements in this case were prescriptive in terms of the design solutions. For example, the contract specified the use of polyester pipes, which did not prove to be the optimal solution from a whole lifecycle point of view. As it was a contractual requirement, it was difficult to change.

Government backing becomes very important in critical situations, such as lack of financing, and can mitigate the risk of project postponement or termination.

In this project, the decision of the Procuring Authority to step in and repay the existing debt was driven by its financial exposure on other projects and its overall financial standing. Financial backing from the Spanish government was then provided to rescue the Regional Government of Catalonia as part of a wider strategy to help regional governments settle their existing debt with the loan providers. This allowed the project to continue in a situation which otherwise may have led to postponement or even termination.
