We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900
Open access books available

185,000
International authors and editors

200M
Downloads

Our authors are among the

154
Countries delivered to

TOP 1%
most cited scientists

12.2%
Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Chapter 5

Alliances: An Innovative Management Model for Public and Private Investments

Fco. Javier Carrillo de Albornoz Portes

Additional information is available at the end of the chapter

http://dx.doi.org/10.5772/intechopen.68228

Abstract

Although Alliancing has been in use since the 1990s in Australia and New Zealand, this method of procuring and managing major capital assets and services has become more popular also in Europe in the past few years. Under an Alliance contract, a public or private entity contractually works collaboratively with the contractor to deliver the project under the principle of 'open books', that is, sharing gains and pains. This chapter will analyse the Alliance contracting model, which is characterised by three main features: It requires parties to work collaboratively, act with integrity and make best-for-project decisions. The project team, formed with members of the promoter and contractors, works as an integrated, collaborative team to deal with all project matters. In alliance contracts, risks are jointly managed by the parties together, except financial exposure, which lies mostly on the owner/promoter. Through the examples presented in the chapter, including the desalinations plants of Perth or Adelaide water supply system, in Australia, it will be concluded which kind of projects are more suitable for potential delivery as Alliances.

Keywords: Alliance, PPP, open books, mining, water, contract, management

1. Alliances for public and private investment management

In recent years, globalisation has meant that large infrastructures in any country are executed by international consortiums, formed by large multinationals (in many cases, Spanish) and by local companies. Examples of this are various water treatment plants in Australia (Melbourne, Perth, Adelaide, etc.), the expansion of the Panama Canal, the Heathrow terminal or the high-speed train from Medina to Mecca, among others (**Figure 1**).

INTECH
open science | open minds

© 2017 The Author(s). Licensee InTech. This chapter is distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/3.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. CC BY

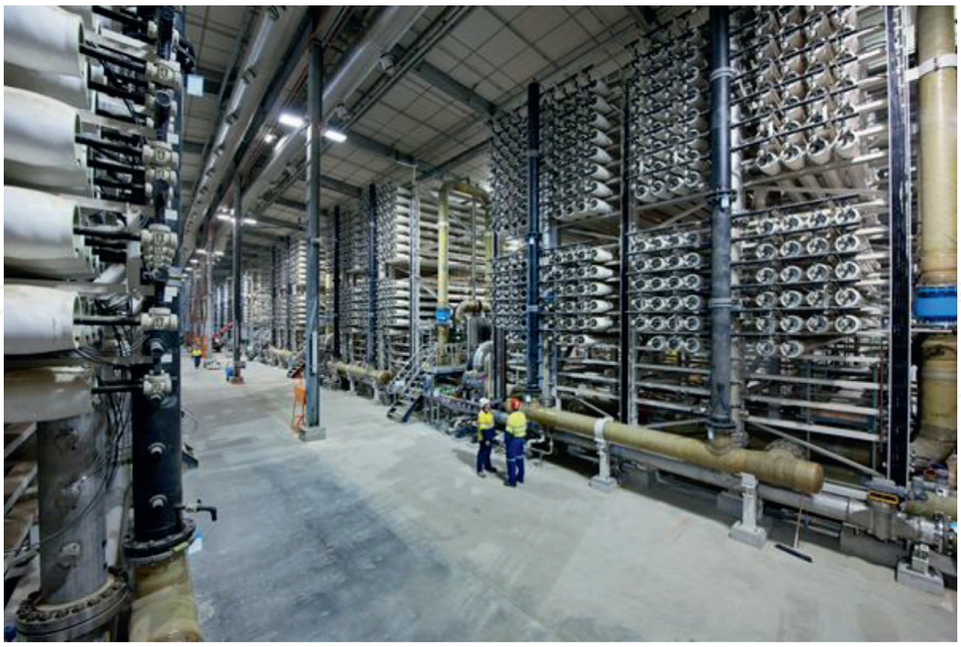


Figure 1. Desalination plant of Melbourne. 450,000 m^3/d. PPP built by SUEZ/Thiess.

In these megaprojects, to their intrinsic technical complexity, legal and financial aspects help to generate a climate of mutual mistrust between the promoters and the contractors, since the benefit of one part seems to be obtained to the detriment of the other.

In these circumstances, the quality of the project and its optimisation are relegated to a second order of priorities, both for contractors and for the promoters themselves, whose main focus may be on avoiding being deceived and enforcing the contract in force, even if the time elapsed between designing the solution and executing the state of the art would make significant changes that would improve the final result.

Given this situation, several countries, notably Australia and New Zealand, as well as some Nordic countries, such as Finland or England, have developed a form of recruitment that focuses on obtaining the best possible result of the project.

These are the contracts of Alliance.

In this type of contracting, the promoter and the contractor sign an agreement of Alianza by which they commit to work the project in equipment, under the philosophy of open books.

A multi-disciplinary team, made up of professionals from both the developer and the contractor, will develop the best possible technical and economic solution, both entities managing all available information, so that the decision-making is based on real data contributed and analysed by both entities.

In this model, the contractor and the developer agree on the benefit that the contractor will have over the costs of the project (direct costs plus own structure). If the project comes out better than expected and costs are reduced, this reduction will benefit both parties in the agreed proportion. If the project shows extracts in which it is agreed to incur, the developer will at

http://dx.doi.org/10.5772/intechopen.68228

least be responsible for covering all direct and structural costs that the contractor has, which may not have a benefit, but is guaranteed to have no losses.

Let us see below the origin of these types of contracts, some of their most important characteristics, their advantages and disadvantages and some examples.

2. Origin of Alliances

Alliance model was the solution to the dissatisfaction within the oil industry for delays in project deliveries together with escalating costs. This led to litigations for years with their main contractors and induced their legal departments to account for every eventuality in increasingly long and complicated contracts, which were difficult to be accepted by any contractor.

The first project to be managed as an Alliance was promoted by Ampolex, an Australian oil company, which was acquired by the Mobil group. Ampolex opted for this model to carry out the construction of a tank to store crude oil and gas from the oil field Wandoo in 1996.

It was an investment of 100 million Australian dollars, which consisted of the construction of an 80,000 t reinforced concrete structure that was built in the port of Bunbury and transported 1700 km away to be sunk and weighted next to the marine reservoir.

In 1998, this Alliance won the second edition of the Australian construction achievement award (ACAA), the Australian construction industry's most prestigious award, in recognition of its innovation and the highest standard of work.

Since then, this hiring system has been widely used in Australia, where about 30% of infrastructure investments are contracted following this model [1]. And the percentage is higher if we consider only investments in water, roads and railways exclusively.

Another well-known example is the Alliance that was created in New Zealand for the recovery of areas devastated by the earthquakes of 2010 and 2011 (**Figure 2**). More than 1.6 million m^2 of roads were damaged and 1100 buildings had to be demolished. The Alliance, sponsored



Figure 2. Effects of earthquake in New Zealand.

by the Canterbury earthquake recovery authority (CERA), the New Zealand transport agency (NZTA) and the Christchurch city council, had 5 contractors who, in total, managed a budget close to 2000 million dollars.

In Europe, it is in the United Kingdom along with the Nordic countries where more implementation is having such agreements. The latest is the one announced on 13 July 2016 between Network rail and Northern rail operator to improve the rail system of the north of England, which serves 15 million people and manages around 2500 trains a day. Network rail started using the Alliances with the different rail operators in 2012 currently counting on seven Alliances with different railway operators. According to David Higgins, NR chief executive: '*Working more closely with the train operators will deliver a better service for passengers and freight users and at lower overall cost to the taxpayer*' [2].

'*Demand for our railway continues to grow and we need to work smarter with our rail industry partners if we are to continue with the improvements we have made to services over the last decade. Maintaining high levels of performance on an ever congested network, while investing billions of pounds and cutting costs, is a major challenge for all of us, a challenge that alliances will help to tackle*'.

But Alliances are not only for building huge infrastructures. The National Health Service (NHS) in England is also considering Alliances for their health and social care services contracts.

The King's fund [3, 4], probably the most important independent think tank in England working to improve health and care services in the country, emphasises that one of the most important characteristics of Alliances is that '*Commissioners and providers are legally bound together to deliver the specific contracted service, and to share risk and responsibility for meeting the agreed outcomes. As such, they should be incentivised to innovate and identify efficiencies across the system, rather than solely within their organisation*' [3].

In their paper published in November 2014 with the title: '*Contractual models for commissioning integrated care*' [3], they summarise the advantages and disadvantages of Alliancing contracting for the health and care services (**Table 1**).

Advantages of alliance contract model	Disadvantages of alliance contract model
• Strong incentives to collaborate between commissioners and providers	• Shared financial and clinical risk, reliant on the performance of other providers
• Limits dominance of a single organisation	• More complex for commissioners to manage
• Strengthens relationship between commissioners and providers	• Requires existing relationships founded on strong trust, which might not be present in all areas
• Retains the active involvement of commissioners	• Possibility of weak leadership and accountability unless appropriate governance arrangements are established

Origin: King's Fund.

Table 1. Advantages and disadvantages of Alliance contract model.

http://dx.doi.org/10.5772/intechopen.68228

3. Alliance characteristics

As we said, Alliancing is a method of procuring and managing major capital assets. Under an Alliance contract, a promoter (public or private entity or entities) contractually works collaboratively with private service providers (designers, contractors and suppliers) to deliver the project.

'*Alliance contracting is characterised by a number of key features, which generally require the parties to work together in good faith, act with integrity and make best-for-project decisions. The alliance participants work as an integrated, collaborative team to deal with key project delivery matters'* (Treasury and Finance department, Victoria State) [5].

Under Alliance contracts, all parties assume collectively responsibilities, take collectively ownership of all risks and share any 'gain or pain', although financial exposure lies mostly with the promoter.

Alliancing should be used to deliver large, complex and high-risk projects in which the promoter has skills and expertise to improve the delivery. Mining and oil & gas projects are good examples of this in the private sector [6], such as infrastructures are in the public sector.

Typical projects suitable for Alliances should share most of the following characteristics:

1. The scope is difficult to define upfront or it is expected that changes will occur.
2. The risks cannot be adequately defined or measured before the tender.
3. The cost of transferring project risks to the contractor is too high or nobody would accept it.
4. Very tight timeframes that prevent having enough time to fully identify all risks and/or define better the project scope.
5. Promoter/owner can add value if he is involved in the design/delivery of the project due to his knowledge, skills, experience and/or capacities.

So, before selecting an Alliance, promoters should take into account how the structure of an Alliance contract has different benefits and risks that differ from the associated with more traditional forms of contract.

In addition, Alliance contracts have not been tested so much compared with traditional models, and most of the promoters will lack experience in handling this type of contracts, beginning with the initial phase: The preparation of the contract itself!

This initial phase, together with the limited experiences worldwide with this type of contracts, will demand from the owner an important amount of work.

Also, an Alliance contract is potentially more complex for owners to put together and they would still retain considerable responsibility for co-ordination and act as a 'partner' of the Alliance during the term of the contract.

The four main characteristics of Alliance contracts compared with traditional Engineering, Procurement and Construction contracts (EPC) are:

3.1. One common objective

All members in an Alliance share the same commercial outcomes under one overarching performance framework unlike traditional models, which encourage parties to look after their own interests under their separate respective contracts.

This common goal encourages the parties to act in the best interests for the project as a whole, which should reduce overall costs and project duration, also improving the quality of deliverables.

This does not mean that final investment could be higher than initially expected. But this risk will be managed by the owner earlier and with full knowledge to take the best decision.

To promote teamwork, Alliance contracts include an incentive through a shared reward pain-share and gain-share scheme linked to the Alliance performance.

3.2. One-team mentality

In a contract of this type, success is judged by the performance of the Alliance overall rather than the performance of each single organisations within it. This carries both greater risk and greater reward for owners and providers.

The potential drawback of this is that the success of the project depends on personal commitment and trusting relationships among all parties, something which may be difficult to develop. So, given the mutual dependencies, an Alliance contract might be most suitable where there are ongoing well-established relationships between the owner and the providers.

The Alliance contract will need to define clearly the governance framework through which the money can flow and decisions can be made. This unified agreement under which all parties share the benefits and risks should help to create an integrated structure whereby multiple suppliers and the owner work together in order to deliver the project as a whole.

3.3. Flexibility

Because owner and contractor acts as a team, any information that can cause a change in the delivery is immediately received and analysed by all parties, so they can react and adapt easily the project to the new circumstances. This is critical on large scale, multi-disciplinary projects to solve complex design, construction and environmental issues that may not be evident at the beginning of the project. This is perhaps the key advantage of the Alliance model. With traditional contracts, any changes use to cause a dispute and, very often, a delay.

Also, and even more important, there is a flexible attitude to negotiations, because of the long-term relationship between parties and their common goals, in opposition to the fight to defend each party rights that occur with traditional contracts.

On the other hand, the focus on outcome as opposed to process could create uncertainties in terms of timing and budget. However, a unified cost structure ('open books') as well as enhanced project synchronisation should allow to achieve completion on time and within budget.

3.4. Dispute resolution

In traditional contracts, in case of dispute, it is expected that each party blames the other for any problem that may appear, trying to demonstrate that any failure has been provoked by the other and releasing themselves from any liabilities linked with any problem that may occur.

With both parties acting and working as one team, this attitude disappears because any problem or wrong decision has been taken by the team. Anyway, Alliances include forums for the effective resolution of disagreements amicably and on a cost-effective basis promoting active project management to prevent problems escalating.

At the end, the Alliance steering committee has the final word in case of dispute that usually appears due to uncertainties at the time of the project launch, legal aspects, etc.

4. Alliances practices

To develop an Alliance contract, there are certain activities that should be done by each member of the Alliance (owner and contractors) that could be summarised as follow:

4.1. Owner actions

Owner actions begins before the project is launched, at the time the decision to develop the project is taken.

4.1.1. Decision

Obviously, main and first of the owners action is the decision of using a relationship contract, such as an Alliance, to develop its project. This decision should be based on the reasons previously described.

Considering the complexity of the Alliance model of contracting, they should be used only to deliver large, complex and high-risk projects in which the promoter has skills and expertise that can improve the delivery.

4.1.2. Contract preparation

Regarding contracts, there are a number of possible forms. The best known is the '*National Alliance Contracting Policy and Guidelines for Project Alliance Agreement*' [5] prepared by the Department of Infrastructure and Regional Development of the Australian Government in September 2015.

This template is available for free in the webpage of the Australian government who has developed national guidelines '*for the delivery of infrastructure projects to promote cross-government consistency and the use of best practice approaches'* [5]. These guidelines cover not only Alliance contracting but also traditional contracting and public-private partnerships (PPP).

In the case of the 'National Alliance Contracting Policy and Guidelines', they '*have been developed to promote knowledge, best practice, and give rise to cost savings by creating a consistent national alliance contracting standard, whilst ensuring the existing benefits of alliancing around the nation are maintained'* [5].

These documents include all the resources needed for any owner (public mainly, but can also been easily adapted by private promoters) to develop their own Alliance contract for any kind of infrastructure or even service.

The following documents are available:

- Policy Principles
- Guide to Alliance Contracting
- Guidance Note 1: Language in Alliance Contracting
- Guidance Note 2: Insurance in Alliance Contracting
- Guidance Note 3: Key Risk Areas and Trade Offs
- Guidance Note 4: Reporting VFM Outcomes
- Guidance Note 5: Developing the TOC in Alliance Contracting
- Guidance Note 6: Early Contractor Involvement and Other Methods
- Template 1: Project Alliance Agreement
- Template 2: Alliance Development Agreement
- Template 3: Expression of Interest
- Template 4: Request for Proposal
- Jurisdictional Requirements
- Document Change Protocols
- Appendix A—Developing Governance Plan

As it is stated in the guidance note of the document that Project Alliance Agreement '*has been prepared on the basis that the Project Owner will first enter into an Alliance Development Agreement with one or more Proponents selected under the Request for Proposals for the development of a Project Proposal (which will include the TOC or part of the TOC for the Project). The Alliance Development Agreement will be attached to the Request for Proposals. This Project Alliance Agreement will itself be attached to the Alliance Development Agreement and will form the basis for the development of the final Project Alliance Agreement which will be entered into between the Project Owner and the Proponent whose Project Proposal is accepted under the Alliance Development Agreement'* [5].

http://dx.doi.org/10.5772/intechopen.68228

4.1.3. Pre-qualification of contractors

One of the key factors of success is the selection of bidders. In traditional EPC contracting (or even in other more complex contracting models, such as BOT, BOOT, etc.), this is not so critical because the effort requested to the owner is not so important and the contractors that want to participate in the tender spend most of the resources needed to prepare the tender.

The pre-qualification process begins with the owner announcing their interest in developing a certain project under an Alliance model (**Figure 3**).

All possible interested contractors apply for the project and present their credentials for the job basically, their references, resources and capabilities. Among all, owner selects a shortlist of contractors who are competent and suited for the project. The selection criteria are determined by the owner/promoter but, in some cases, contractors could provide inputs to these required criteria to improve them.

This shortlist is carefully examined by the owner. For example, in 2007, the Water Corporation of Western Australia launched the project for the construction and operation of the desalination plant of Perth. The shortlist included around a dozen of international contractors. All of them were visited and evaluated by the Water Corporation.

In February 2008, two Spanish led consortia, one formed by Técnicas Reunidas S.A & Valoriza Agua, S.L, and the other by Acciona Agua Australia Pty Ltd & United Utilities Australia Pty Ltd were chosen as finalist [7].

Both consortia moved their teams to Australia, where they formed mixed teams with people coming from the Water Corporation and they developed their solutions for half a year. In November 2008, after a careful evaluation of both proposals, winner was announced. They were chosen to develop their solution while the loser consortium was refunded of all cost and expenses incurred during the elaboration of their proposal.

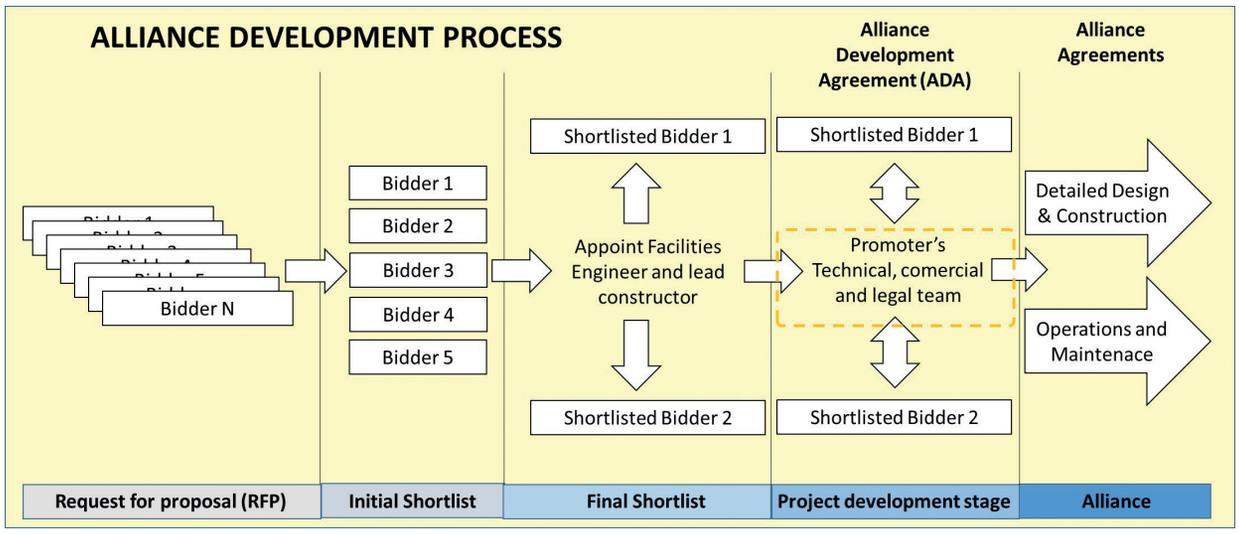


Figure 3. Alliance development process.

This way of working ensures that the selected tenderers (both finalists) commit to dedicating sufficient resources to the tender, because their chances of success are clearly higher than in an open tender with lots of competitors. Further, the evaluation of both proposals by the promoter is done with all available information at his disposal and, even more: best ideas of the loser solution can be incorporated to the chosen project to enrich the final solution.

From a global point of view, this way of working benefits the industry in general because it reduces the costs of preparing/presenting bids. Only the finalists actually spend a significant amount of money and win the contract or are reimbursed.

4.1.4. Right time to tender

Tenderers must have a reasonable amount of time to prepare the tender. The same applies to the owner, who should have enough time to do a professional evaluation process of all characteristics of the project. Time will vary depending on many factors, such as project size, complexity and delivery method.

As we saw in the example of Perth, the full process would take not less than a year since the launching of it to the awarding, divided between: announcement and reception of credentials (2 months); preparation of shortlist (1 month); evaluation of shortlist (1 month); development of the project (+6 months); final evaluation and decision (2 months).

4.1.5. Terms sheet of fundamental issues in the contract

Agreement on the contract terms is one of the more exhausting (and important) activities that are developed in a project. And it is critical for both parties. Even using a standard contract model, such as the one mentioned before, there are a certain number of issues that are fundamental to the establishment of the relationship for each specific project.

In the case of Alliances, where trust and openness is an essential ingredient for the success of the project, the agreement and not the imposition of the terms of the contract is critical, so the contract cannot be documented without contractor input. Contractors should be open and frank in their input to these discussions.

Without intending to be an exhaustive list, here are some of the fundamental elements that must be well defined by the contract:

- Form and scope of contract;
- Owner representative and team members including duties;
- Contractor representative and team members including duties;
- Time aspects, including risks, extensions of time, cost and responsibilities;
- Payment terms, certainty of payment;
- Existing conditions/latent conditions;
- Acceptance/reward/loss;

- Warranties to be provided;
- Guarantees to be provided;
- Risk identification/allocation;
- Securities, retentions and performance requirements;
- Management regimes/forums/reporting requirements/project communication;
- Insurance requirements;
- Change management process;
- Default, suspension, termination;
- Force majeure;
- Dispute resolution procedures;
- Quality requirements;
- Environmental standards.

4.1.6. Risk allocation

It is important to identify in the contract all the risks that are expected to be found in the project and that will require management. After identification, the project team will determine the risk management strategies, including assignment of responsibility and final contingent liability and reward.

4.1.7. Acceptable contract performance rewards

A critical point in any kind of contract is the compensation scheme. In the case of Alliances, where the open books policy entitles the owners to see the benefits of the contractors, this is even more critical.

Both parties, but mainly the owner, should understand and accept that the contractor is entitled to an industry acceptable level of margin (profit plus head office overheads), which could be increased in case of a superior project performance and/or would be decreased or even nullified for an inferior performance.

This generally requires the contractor risking an agreed portion of total margin in exchange for the opportunity to increase the margin for superior project outcome. In any case, due to the risks associated with uncertainties in this kind of contracts, all direct costs incurred by contractors are compensated and only margin could be nullified.

4.1.8. Knowledge protection

After pre-qualification, owners should provide adequate processes to ensure that any tenderer that provides intellectual property or innovation, remains as a 'commercial in confidence' matter

between the specific tenderer and the owner during the tender process and it is protected through confidentiality agreements.

This is a particularly sensible issue during the final phase, when the owners' staff is working with both competitors developing competing solutions.

Once the decision is made and the winner is chosen, the payment of the project produced by the losing team will allow the winning team to use their ideas to improve their project.

4.2. Contractor actions

The contractor's actions change clearly in the Alliance contract compared with traditional contracts, with the main difference being the defence of the global project rather than the interest of their company.

4.2.1. Trust and openness in dealings

As we have just said, the Alliance contract means 'one team for one project'. To be successful, both owners and contractors must be open and confident in their mutual dealings and solve all problems with the 'best for the project' approach.

Among others, this mean that any change in the project that could mean a benefit for the project, even if it does not mean a direct benefit for the contractor, should be shared with the project team for its evaluation. This includes any potential risk.

4.2.2. Appropriate behaviour

Most contractors' and promoters' staff have acquired their professional experience using traditional forms of contract, which means that they have engaged in contracts in which they have played adversarial roles. This behaviour associated with traditional contracting is the opposite to the needed with this new method of project development.

Due to this, behavioural modification is one of the key points to change before starting an Alliance. The staff of both sides, including the staff of the main subcontractors and suppliers, will need to be trained and educated in the particular management and social disciplines required in this type of relationship contracts.

Main point in this education should be to add, among others, the criteria 'best for project' on top of the usual 'bottom line profit at the expense of anything', including other parties' outcome. Other criteria needed both for the owner and for the contractor staff would include relationships, attitude to repeat business, environmental aspects and health and safety performance.

According to the staff working in this kind of projects, this is simpler than could appear at the beginning, because the 'open book' policy that rules this kind of project favours this change of attitude: Because both parties are working together, they can easily detect any mistake or trick tried by the other party.

http://dx.doi.org/10.5772/intechopen.68228

4.2.3. Right subcontractors and suppliers

The project team, consisting of the owner and contractor's staff, will select subcontractors and suppliers to achieve the best results without compromising safety, quality and environmental impact.

The 'best results' will probably require a greater emphasis on the strategy of buying 'better value' than on the 'lowest price' strategy.

Again, an open books approach (or, at least, behaviour) with the subcontractors and suppliers, respecting their entitlement for a reasonable profit and the implementation of progressive reviews of subcontractors' work rather than historical assessment, enables more cost effective and early rectification of deficient works or underperformance, to the benefit of all parties.

5. Alliances compensation model

One of the particularities of the Alliance model is the compensation scheme.

As stated before, owner and contractor share gains and pains, but with the main financial risk on the side of the owner. In practice, this means that contractor will be reimbursed of all direct project cost incurred during the development of the project, in all phases (engineering, construction, commissioning and operation) plus the project specific overheads.

On top of this, contractors declare a certain corporate overheads and the net margin he wants to obtain with the project. With the open books policy, this is clearly stated and accepted by both parties.

At the end of the project, if the direct cost finally results above the budgeted, the deviation will be shared between owner and contractor according to the specific agreement of the project. In the same way, if the cost results lower than expected, the benefits will be shared.

For example, if we have an Alliance with an agreed budget for direct cost of 90 M€, project specific overheads of 10 M€ and a profit + corporate overheads of 20 M€, and finally the direct costs at the end of the project are only 80 M€, the 10 M€ of savings (gains) will be split between contractor and owner (e.g. 50/50). In this case, contractor will receive 80 M€ + 10 M€ (specific overheads) + 20 M€ (profit + corporate overheads) + 5 M€ (savings) for a total of 115 M€ (21% margin).

On the other hand, if the cost grows to 100 M€, extra cost will also been shared (pains) and the contractor will receive 100 M€ (direct cost) + 10 M€ (specific overheads) + 20 M€ (profit + corporate overheads) + 5 M€ (extra cost) for a total of 125 M€ (12% margin).

In all cases, direct costs and specific overheads are reimbursed, so the worst condition for contractor should be neither profit nor SG & A (**Figure 4**).

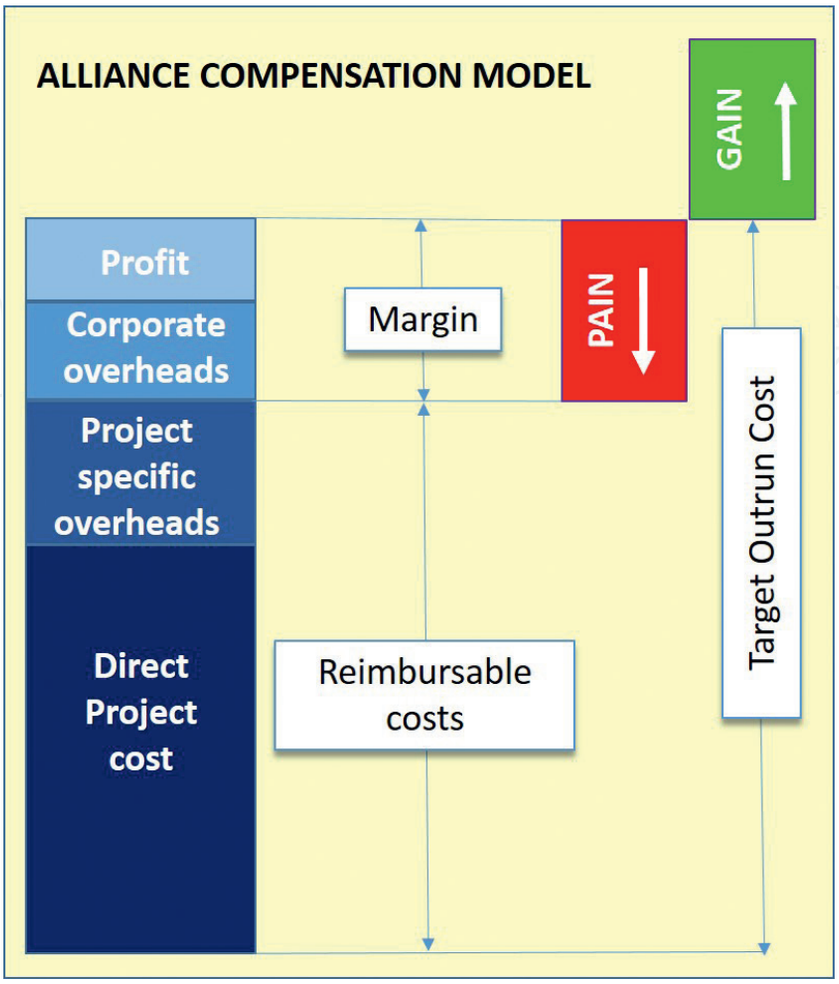


Figure 4. Alliance compensation scheme.

6. Case studies

6.1. Perth desalination plant

In April 2005, Western Australia's Water Corporation chose Degrémont to design, build and operate Perth's first seawater desalination plant using reverse osmosis technology, the largest such plant in the southern hemisphere. Construction commenced in June 2005 after a unique tendering process, which involved a design competition between 2 shortlisted finalists from 11 original submissions [8].

The 143,000 m^3/d plant (**Figure 5**) was built at Kwinana, 25 km south of Perth in Western Australia. The aim was to increase drinking water production capacity for Perth, where conventional freshwater resources are in very short supply.

The facility was designed and built under a joint venture between Degrémont and its Australian civil engineering partner Multiplex Engineering Pty Ltd. It includes seawater intake, pre-treatment structures, reverse osmosis desalination units and pumping and

http://dx.doi.org/10.5772/intechopen.68228



Figure 5. Perth desalination plant.

remineralisation units. The facility started operating at the beginning of the Australian summer in October 2006, just 18 months after the award.

The success of the project in this short timeframe hinges on effective Alliance between the Water Corporation and Degrémont-Multiplex. The partners are engaged in a trust-based relationship that goes beyond turnkey delivery of the desalination plant: in particular, the Water Corporation has been directly involved in the day-to-day construction of the plant. Then, Degrémont teams will operate the plant during 25 years (**Figure 6**).

The Perth's plant reached 100 GL production threshold, since start of operation in 2008 and achieved 3 certifications:

- ISO 9001 2008 (Quality)
- ISO 14001 2004 (Environment)
- AS/NZS 4801: 2001 (Safety)

6.2. Adelaide water supply and waste water services

In July 2011, South Australia Water commenced an Alliance model for the operations and maintenance of Adelaide's metropolitan water and wastewater systems for, at least, 10 years. The estimated population served is 1,200,000 people [9, 10].

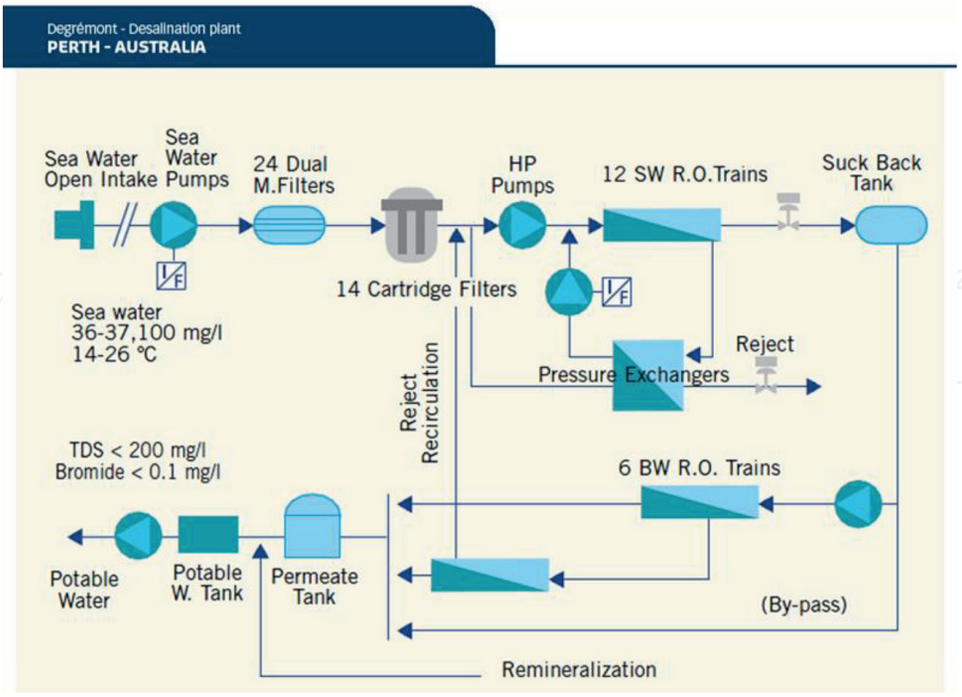


Figure 6. Perth desalination plant. Water treatment line. Origin: SUEZ.

The concept is for the client and its Alliance partners to work collaboratively in a flexible manner, utilising the best skills and resources of each partner, under a shared risk and reward arrangement.

Allwater, a joint venture between SUEZ and Broadspectrum, works in partnership with South Australia Water to define objectives, set targets, established relevant systems and processes to critically deliver improvements to South Australia Water.

The objective is to manage a water network spanning a massive 16,000 km^2, including 6 water treatment plants, 9000 km of water mains, 6 wastewater treatment plants, 7200 km of wastewater mains along with water reuse systems (**Figure 7**).

Highlights in the beginning of the project were:

- Successful transition with no impact on customers despite challenging timeframe and conditions.
- 100% compliance with drinking water, wastewater and recycled water standards.
- Networks: improved efficiency for burst & leak repairs and sewer overflows management.
- Full delivery of the maintenance plans.
- 20 minor capital projects compliant on delivery time, cost and quality.

Key facts in 2015 were:

- $500,000 cost savings on energy

- 93% of capital works delivered on time and on budget
- 5% more energy efficiency at WWTPs1
- >90% overall customer satisfaction with network field crew
- $1.2M fund on Research & Innovation from SUEZ
- 14 Technical Assistance projects

Additionally, Allwater was the first Australian company certified for energy management, achieving ISO 50001 certification for energy management, showcasing the dedication of the teams and the ultimate value of partnerships.

Wastewater treatment plants account for 63% of Allwater's total energy usage. Delivering efficiencies in this area is a key priority. This involves various improvements in aeration control, flow balance between different treatment lines, as well as maximising energy from biogas. Over the past three years, the energy efficiency at the three major wastewater treatment plants has continuously improved by 10–18%.

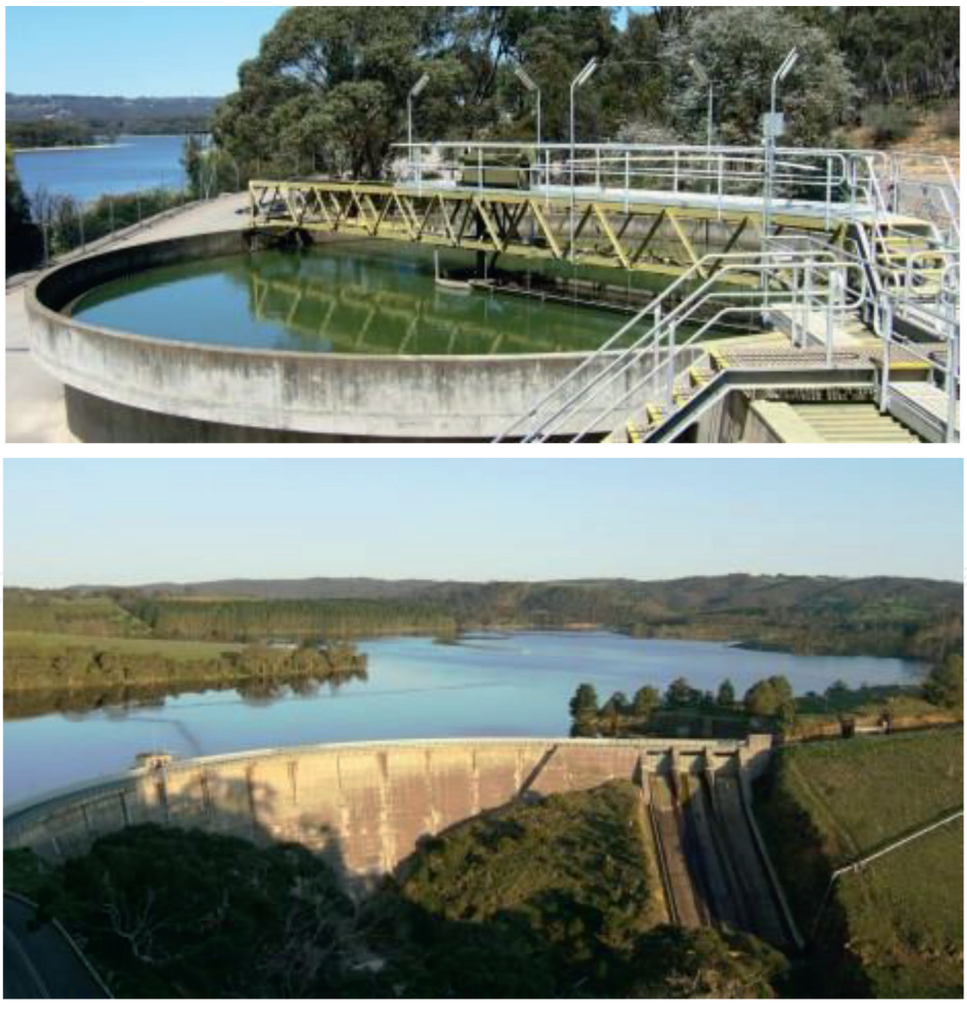


Figure 7. Adelaide water infrastructures.

6.3. Perth water supply and wastewater treatment

The Western Australian Water Corporation selected SUEZ and its partner Transfield Services to operate and maintain the water production and wastewater treatment assets of Perth (**Figure 8**), the fourth largest city in Australia and one of the driest in the world [11].

The contract began on 1 July 2012, and has an initial term of 10 years (with a possible extension of a further 5 years).

Overall, SUEZ and its partners manage and operate 6 groundwater treatment plants, 14 wastewater treatment plants and 2 advanced water recycling plants, as well as 13 dams, 190 boreholes and 520 km trunk mains to deliver reliable services to Perth's 1.9 million residents, through an Integrated Alliance named AROONA.

The AROONA Alliance has a strong focus on driving efficiencies and improving operational performance. It continues to focus on delivering excellent quality and reliable services to the people of Perth, as well as protecting water as a precious resource for Western Australia's future generations.

Highlights at the beginning of the project were:

- $1.4 million of sustainable savings delivered in 2012/2013
- 99.9% compliance with groundwater allocation license (2012/2013)
- 97% compliance with Department of Environment and Conservation (DEC) requirements for wastewater treatment (2012/2013)



Figure 8. AROONA water infrastructures.

- 7% increase in productivity rate
- 100% minor capital works projects delivered on time and on budget

Through the '*Good to Great*' strategy, AROONA continues to present sustainable savings. After 2 years, great results have been achieved across all areas. Significantly, at the end of the 2014/2015, almost 5% of cost savings was obtained. This represents approximately AUD 16 M of cumulative sustainable savings since the commencement of the Alliance.

7. Conclusion

Alliances have showed their success as a good contracting model for managing important investments and services in both public and private sectors.

The experience in Australia and New Zealand, with many European contractors involved, such as SUEZ, Acciona or Técnicas Reunidas, the railways alliances in the United Kingdom and other experiences in northern Europe, demonstrate that this method can be adopted in Europe with little effort [12]. And the same in other areas, such as Latin America or Asia.

In Spain, public concessions for water management share some similarities with alliances (joint venture between administration and private company, long-term focus) and have demonstrated their efficiency in improving water services in cities, such as Barcelona, Granada or Alicante.

Obviously, this requires a shift in the mind of many administrations, used to the traditional methods, and a preliminary work to adapt the legislation and prepare the new tendering documents, even if they could be based on the successful Australians.

But fight against climate change should remove any doubt, because public and private partnership is critical to manage the huge investments needed in this fight.

How complex could be for a city council, who wants to electrify their streets to promote the use of electrical automotives, to prepare a tender that includes all possible aspects of the projects so a contractor can quote a fixed price? What about the evaluations of all possible risks (legal, ownerships, technological, etc.) including problems if they choose the wrong solution? And the time to do it with continues improvements and changes in technology, legislations, etc.?

What about upgrading existing wastewater treatment plants and dumps to transform them into producers of renewable biogas for the municipal buses, taxis, waste collecting trucks, etc.? What are the cost of production and the selling price of the biogas, once fossil fuels are banned? And the technology risk?

In both cases, it is not just to manage the investment; it is also to manage the production and delivery of the electricity or biogas to the users in an efficient way and profitable, not only in terms of economy but also environmental. And to do it with many risk (legal, technological) very difficult to precise now.

The European Union has long been committed to international efforts to tackle climate change, so it should be a matter of time that they promote PPP in their countries to manage those investments. And Alliance would be one of the best ways to do it.

Author details

Fco. Javier Carrillo de Albornoz Portes

Address all correspondence to: fjcarrillo@gmail.com

SUEZ Advanced Solutions Spain, Madrid, Spain

References

[1] Australian Construction Association. Relationship Contracting. Optimising Project Outcomes. Available from: http://www.constructors.com.au/wp-content/uploads/1999/02/Relationship-Contracting-Optimising-Project-Outcomes-1999.pdf

[2] Network Rail UK. Alliances. Working with Us [Internet]. 2017. Available from: https://www.networkrail.co.uk/working-with-us/alliances/

[3] The King's Fund. Commissioning and Contracting for Integrated Care [Internet]. 2017. Available from: https://www.kingsfund.org.uk/sites/files/kf/kings-fund-commissioning-contracting-integrated-care-nov14.pdf

[4] Timmins N, Ham C. King's Fund. The Quest for Integrated Health and Social Care. A Case Study in Canterbury, New Zealand [Internet]. 2013. Available from: https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/quest-integrated-care-new-zealand-timmins-ham-sept13.pdf

[5] Commonwealth of Australia. National Alliance Contracting Guidelines Template 1 Project Alliance Agreement [Internet]. 2015. Available from: https://infrastructure.gov.au/infrastructure/ngpd/files/Template_1_PAA.pdf

[6] Australian Cons. Association. Relationship Contracting in the Australian Mineral Industry Available from: http://www.constructors.com.au/wp-content/uploads/2003/06/Relationship-Contracting-in-the-Australian-Minerals-Industry2.pdf

[7] Domingo Zarzo, Valoriza Agua. Desarrollo de la licitación y proyecto de la Southern Seawater Desalination Plant (Perth, Australia) [Internet]. 2010. Available from: http://www.sadyt.com/es_es/Images/Desarrollo%20de%20la%20licitacion%20y%20proyecto%20de%20la%20SSDP_tcm22-4417.pdf

[8] SUEZ. PERTH Australia [Internet]. 2017. Available from: http://www.degremont.com/en/activities/references/references/?reference_id=49

[9] Avril A, Gobbie M. Adelaide Services Alliance. Allwater. Available from: http://www.awa.asn.au/documents/142%20AnneliseAvril.pdf

[10] SUEZ. Allwater. Delivering Value through Partnerships [Internet]. 2017. Available from: http://www.degremont.com.au/media/general/SUEZ_Allwater_8pp_WEB.pdf

[11] SUEZ. Aroona Alliance. The 'Good to Great' Journey through Engaging Partnerships [Internet]. 2017. Available from: http://www.degremont.com.au/media/general/SUEZ_Aroona_Alliance_8pp_WEB.pdf

[12] Alternative Models of Project Delivery and Financing. Available from: http://esir.fi/wp-content/uploads/2016/01/Alternative-Models-of-Project-Delivery-and-Financing-Inspira-Liikennevirasto.pdf

IntechOpen

IntechOpen

IntechOpen

IntechOpen