

**Nuclear Inter Jura 2018**  
**International Cooperation in Nuclear – Sustainability, Excellence and**  
**Innovation**  
**Abu Dhabi, United Arab Emirates (UAE)**  
**4-8 November, 2018**

Excellence and Innovation in Decommissioning – Long term approaches  
to decommissioning project contracts

Graham Alty – Pinsent Masons

Andrew Carr – Sellafield Limited

**Summary**

All countries with a history of generating electrical power from nuclear energy have a nuclear infrastructure and waste inventory which needs to be decommissioned and disposed at a future point in time. This task is faced whether those countries have future plans to use nuclear power or not.

Arrangements for decommissioning need to be structured so as to enable key partners to combine their unique skills over a long period of time and deliver key objectives in an integrated manner. A sequential "project by project" approach often fails to capture real value and learning from experience or enable acquired knowledge to be used effectively. A longer term strategy, which retains and integrates the key contributors and stakeholders, has a much better chance of succeeding.

An example is Sellafield Ltd, whom are tasked with delivering major decommissioning programmes on a significant and complex site. Recognising the need to manage integrated Major Projects and large scale construction activity, it has sought to develop innovative commercial contracting solutions that will change the way the company manages its construction projects over the longer term.

This paper will consider the new models being utilised in decommissioning nuclear estates on long term projects. It focusses on the direction that contracting is moving in the UK and other countries.

## **Framing the Problem**

### **Case Study: Sellafield Ltd**

#### **Objective – to develop innovative commercial contract solutions to face the challenges in Major Project delivery on the Sellafield Nuclear Licensed Site**

Introductions and aims: over many years, complex and high value bespoke projects and programmes of work have been delivered by Sellafield Ltd on the nuclear licensed site. These are competed and then delivered on a project by project basis, which has necessitated the procurement, design, ramp up, delivery, hand over and then demobilisation of a significant contractor team and workforce. Whilst there have been many notable successful projects at Sellafield the aims of this presentation are to explain how business has recognised the challenges and inefficiencies of managing such specialist programmes of work on an individual basis and embraced the opportunities to develop a longer term solution that builds upon the capability and expertise gleaned from each project. Retaining experienced teams, with a vested interest in developing capability in support of the business over a longer term will deliver greater efficiency and co-operation.

#### **1. Nature of the Challenge at Sellafield**

Overview of the Sellafield site (see public domain aerial photograph of the site)

*Description:* Sellafield site in Cumbria, England is a large and complex nuclear site owned by the UK Government through the Nuclear Decommissioning Authority (NDA). The operating company that holds the site licence to manage the site is Sellafield Ltd (SL). Sellafield Ltd is a wholly owned subsidiary of the NDA. SL's mission is to safely and securely remediate the site; reducing hazard and risk, including through the successful delivery of a portfolio of major projects. The successful delivery of these projects and the associated hazard and risk reduction is a national priority. The site is allocated a budget by NDA with which it must deliver against an approved Annual Plan. Part of this plan includes delivery on major projects which include significant infrastructure projects costing several hundreds of millions of pounds.

Historic (legacy) plant

The Sellafield site is a remediation site. Although still delivering commercial nuclear fuel reprocessing, there is a significant legacy on the site dating back to the development of the nuclear industry in the 1950s and 1960s. Back then less thought was given to how the facilities would ultimately be emptied and decommissioned. The UK is now dealing with this legacy. There are ponds and silos, reprocessing and vitrification operations, storage of high active liquors and management of special nuclear materials. In order to address this legacy, Sellafield Ltd requires a new fleet of waste management facilities to optimise waste retrievals and decommissioning and enable interim storage of nuclear material pending a final disposal.

Major Projects (construction sites)

There is a large portfolio of very sizeable and complex projects to be delivered over the next 20 years to support the remediation of the site. In order to manage the historic legacy these are not demolition programmes but new-build facilities encompassing complex infrastructure projects. Aim being to take materials out of current legacy storage and management and into modern sustainable facilities.

Drivers include: reducing the risk and hazard, regulatory requirements, safeguarding, security, efficient management of public finances to mitigate the lifetime costs etc. All these drivers have caused SL to consider carefully its long term plans for the delivery of its major project portfolio

## **2. Need to Change**

Benchmarking: Sellafeld Ltd is not alone in seeking to optimise how it engages with its supply chain to find new ways of contracting and harvest the benefits of long term committed relationships over a range of projects. HMG; Crossrail; Highways England; London Olympics to name but a few have sought to develop new commercial solutions.

Following HMG reviews of major project performance at Sellafeld and across the NDA estate SL undertook significant benchmarking across a number of different fields to establish a more effective way of working to deliver its objectives.

Its research and feedback identified that a new way was required and the company set out to build upon new practices to develop a commercial contracting solution that would support the company into the future.

In the past SL managed and delivered complex major projects by a combination of self-performing early design and then engaging a contractor to deliver detailed design and construction phases for each particular project. This project by project approach had, historically, delivered projects safely and securely but had not demonstrated the cost and schedule benefits that the company and its shareholder required.

These challenges are not uncommon in organisations managing a portfolio of complex works but are exacerbated by the particular requirements of contracting on a nuclear licensed site. They include:

Common problems experienced in major projects.

- Retaining the strength of capability throughout the project – senior staff retention (keeping the “A” team)
- Workforce deployed on a shorter term basis for one project then moving on, taking the skills and experiences gained on the job.
- Lack of shared incentives and vision for the corporate/site mission
- Poor integration of projects into broader programmes
- Weaknesses in knowledge transfer following the project – next contractor starting again.
- Challenges in scope, specification and schedule leading to claims not collaboration

All of the above can be and were managed through improvements in project management but it highlighted the benefits of a longer term collaborative arrangement with the supply chain.

### **3. Opportunity**

#### **A revised approach**

Characteristics of a revised approach to project and programme delivery

- Longer term relationship. 20 years; Partners have clarity and assurance that they will deliver a substantial volume of work.
- Bringing into scope other projects. Much broader requirements than individual projects
- Opportunity to learn and improve over time.
- Invest in outcomes
- Collaboration across a range of delivery partners
  - Integration
  - Design and Engineering
  - Civil Construction
  - Process Construction
  - Sellafield Ltd resource and capability

### **4. Features of the Commercial relationship**

Working with Pinsent Masons to develop the contractual arrangements to deliver these objectives. SL experience is not uncommon and Pinsent Masons have shared experience from a wide range of projects. Many of the features are being used by SL on its own projects.

### **5. Notable Successes with "Traditional" Contracts**

Important not to ignore that traditional contracting has continued for 100+ years and been very successful. Features of successful use:

- definable scope;
- site risks which can be surveyed, assessed, measured and priced;
- period of time which does not allow for significant change in wider circumstances;
- supply chain market familiar with assuming "lead contractor" risk;
- low tech or no tech;
- not "first of a kind" FOAK;
- client able to give site possession to contractor;
- contractor history making profit by managing risk;
- fixed price;
- defined completion date;
- familiar list of grounds for more money/extra time;
- little regulator influence;
- interfaces between contractors easier to define and manage.

These contracts work less well when these ingredients are not present as the contracts themselves focus on allocating to specific parties risks which they are not capable of managing.

## **6. A Change in Attitudes**

From an original reluctance to consider long term solutions (amidst an enthusiasm to get the projects done in the first place), attitudes in many industries have changed, including in the nuclear industry.

- longer term views are being taken - this requires less focus on the initial lowest bid price and more focus on overall delivery;
- metrics are developed to assess performance, good and not so good, and consequences are set out in terms of rewards (financial or more work) and penalties (financial, less work or termination);
- a focus is placed on creating an open and transparent culture that identifies and shares problems that arise so that the combined team can learn from those issues and avoid them in future;
- structures which encourage blame between parties or parties seeking to establish their own innocence, at the cost of focussing more on achieving project goals, are to be avoided;

Few people disagree with these goals but when it comes to contracting approaches there is a very broad range of approaches that purport to have regard to them.

## **7. New Contract Structures**

Initially new structures focussed on the single project contracts but simply added more mechanisms to gauge performance such as:

- key performance indicators which enable release of certain financial or other benefits when achieved;
- partnering principles requiring all parties to focus on doing what is best for the project rather than themselves (but without much consequence);
- principles of transparency between parties, good faith obligations and duties to act collaboratively
- target costing whereby a target price is set instead of a fixed price – completing under target earns a bonus and over target attracts a penalty.

This was welcome in changing mind sets but the contracts still operated very traditionally. The contracts still ultimately incentivised contractors prioritising protecting their own position at the cost of other parties.

The goal for a longer term strategy has lead to the development of new contracting models.

- Framework agreements – these contracts typically bring together a group of contractors for a period of up to 4 years under which specific contracts can be awarded according to the framework rules. They allow lesson learned in one

project to be carried across to the next and for sharing of know-how between participants. The issues that arise are:

- often that the framework participants feel less not more collaborative, as they are constantly reminded of the next mini-competition for work and can see their competitors up close;
- 4 years is not a very long period so after the end of that period a new competition may lead to different framework participants and a loss of knowledge;
- each project tends to run in a project specific way and use a traditional contract for the actual implementation.

Hence frameworks only go part of the way to being able to achieve the headline objectives and create real change. More often they become about reducing market pricing whilst giving assurances about a steady flow of work and in the EU avoiding the need to fully procure every significant contract. Once a contract is implemented the traditional approaches and issues tend to be repeated.

However none of these contracts focussed on *behaviours* and what contractual provisions do to promote the right behaviours. For example different team behavioural studies have found:

- teams which have senior executives demonstrating highly collaborative behaviours tend to generate highly collaborative teams;
- team leaders that are both task and relationship orientated creates better leadership;
- excusing one party the consequences of poor team performance because that party was not at fault generates a blame culture;
- blame culture is contagious and distracts the primary purpose of the group – "power of loss" leads a party to spend more effort blaming others than doing a good job;
- the more that rewards are shared the more likely they are to help other members of their team;
- individually based rewards tend to reduce levels of collaboration;
- if you impose a sanction, people direct their energies into proving the sanction doesn't apply to them.

All these factors are directly relevant to the management of contracts for decommissioning due to bespoke design development, uncertain work scope, technological complexity, propensity for pricing inflation and schedule extension.

UK industry sought a contracting model which took a further bold step. This is called "Alliancing". There are many different contracts in the UK and Europe using this badge but only some embrace alliancing in its purest form.

- Alliancing Agreements – these contracts take a different approach.
  - focus on project goals;
  - if achieved all parties benefit from bonus;
  - if not achieved, no-one receives benefit;

- expectations of client team re performance are included in the budgets, hence poor client performance can lead to loss of benefits for all;
  - expectations of all alliance members/supply chain included in budgets, hence poor performance by any of them can lead to loss of benefits for all;
  - management responsibilities are more integrated; less "us and them", all wear the same T shirt;
  - sharing of individual skills between parties – "best athlete";
  - requires strong strategic leadership and direction from combined senior management team;
  - transparent governance and accountability;
  - clear lines of responsibility but supportive structure when problems occur;
  - dispute avoidance structure within senior management structure, possible expert intervention;
  - budget set and agreed profit levels for good performance; poor performance diminishes profit but doesn't impose huge financial penalties;
  - retention of intelligent operator client body for licensing purposes;
  - basis for paying for reasonable costs incurred but also rules which exclude recovery of inappropriate items;
  - defects correction is reimbursable on certain grounds;
  - parties not permitted to institute legal proceedings against each other save in certain circumstances
- Enterprise – Alliancing contracts have been adopted in different forms for many UK projects but the industry keeps moving to embrace a further iteration and extension of those principles. In UK this is referred to in a recent new initiative called "Project 13", and is referred to as "Enterprise". This will be used by four pathfinder projects in the UK - Anglian Water's Capital Delivery Alliances, the Environment Agency's Next Generation Supplier Arrangements, Heathrow's expansion and National Grid's London Power Tunnels project.
    - An enterprise can be defined as an integrated organisation, aligned and commercially incentivised to deliver better outcomes for customers from infrastructure investment. Such organisations are characterised by sophisticated, maturing and typically longer-term relationships between owners, investors, integrators, advisors and suppliers.
    - The enterprise is led by the owner who manages and operates the assets. The owner may be either an organisation who owns and manages multiple assets across several locations (for example a regulated utility) or may be an entirely new owner who is created alongside a brand-new asset (for example with the Olympic Park). They will lead in identifying the needs of the asset network and promote these to the investor.
    - The investor's remit is concerned with affordability, societal and financial benefits derived from optimal management of the assets, they are an enabler of the enterprise.

- In management of the overarching system the owner has a direct relationship with the suppliers and advisors. The relationship is facilitated by the integrator. The integrator brings in appropriate suppliers and advisors at relevant points within the enterprise as and when they can best add value. They employ a 'systems thinking' approach which links individual capabilities to attainment of programme or project outcomes. The suppliers and advisors are experts in their subject area; they are accountable for delivery of specific aspects.
- The main differences between an enterprise model and a traditional construction programme model are:
  - Reward in the enterprise is based on value added to the overall outcomes, not service provided.
  - There is greater understanding of cost drivers and risk across all organisations in the enterprise, with commercial incentives for collaboration to jointly mitigate risk, not transfer it.
  - Establishing a high-performing enterprise requires fundamentally different leadership, governance, behaviours and skills to succeed. This will be underpinned by organisations with increasingly diverse skills and backgrounds.

The success of the ideas behind Project 13 and Enterprise are dependent upon parties embracing them in the manner intended and that includes ensuring their own organisations have the right structure and behaviours to participate.

Enterprise is an extremely interesting model for nuclear decommissioning as many factors are present to suggest it would be a suitable model for improving delivery of nuclear decommissioning long term plans.

## **8. Sellafield's New Approach**

Sellafield's new approach to project and programme delivery carries many of the features of both Alliancing and Enterprise. It is a 20 year multi-party relationship which invests in outcomes for the ultimate customers and stakeholders and capture's the benefits of long term learning.

With major decommissioning plans in other countries, not least Germany and France, there is scope for a significant extension of the use of Alliancing and Enterprise in this market.