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THE UKAEA APPROACH TO ALLIANCING

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Summary

This paper introduces the concept of alliance contracting which is seen as especially applicable to high complexity high client involvement projects. It outlines UKAEA's experience to date in this area and describes alliance organisational requirements and overarching alliance agreement key clauses. The paper goes on to give the principles, together with an example of their application, to an incentivised target works gain/pain share contract as applied on a typical reactor decommissioning alliance project.

1. INTRODUCTION

The UKAEA has pioneered the introduction of alliancing as a contract strategy for its Dounreay reactor decommissioning projects. The approach is now being extended to both the new Harwell Waste Encapsulation and Treatment Plant and the Dounreay Intermediate Level Conditioned Waste Store.

Partnering is a wide arrangement associated with the business of two companies (client and contractor) with a view to entering into a longer term relationship involving possibly several contracts.

In contrast a Joint Venture (JV) is a legal entity set up by a group of contractors so as to form a single contract with a client.

An alliance is seen by UKAEA as a form of partnering. It is a contract strategy most appropriate for those works of high complexity and in need of a high level of client involvement ^{Ref 1}. It is applicable to a group of contractors brought together in conjunction with the client on a specific project under a single overarching alliance agreement between all parties. The agreement provides a financial incentive scheme which links the rewards of each of the alliance members to specified and agreed overall project outcomes. It also enables interim deliverables and target costs to be set under a framework for incentivisation. Individual modern standard forms of contract (such as the New Engineering Contract - NEC) are struck between the client and the individual contractor organisations forming the alliance as illustrated in Figure 1.

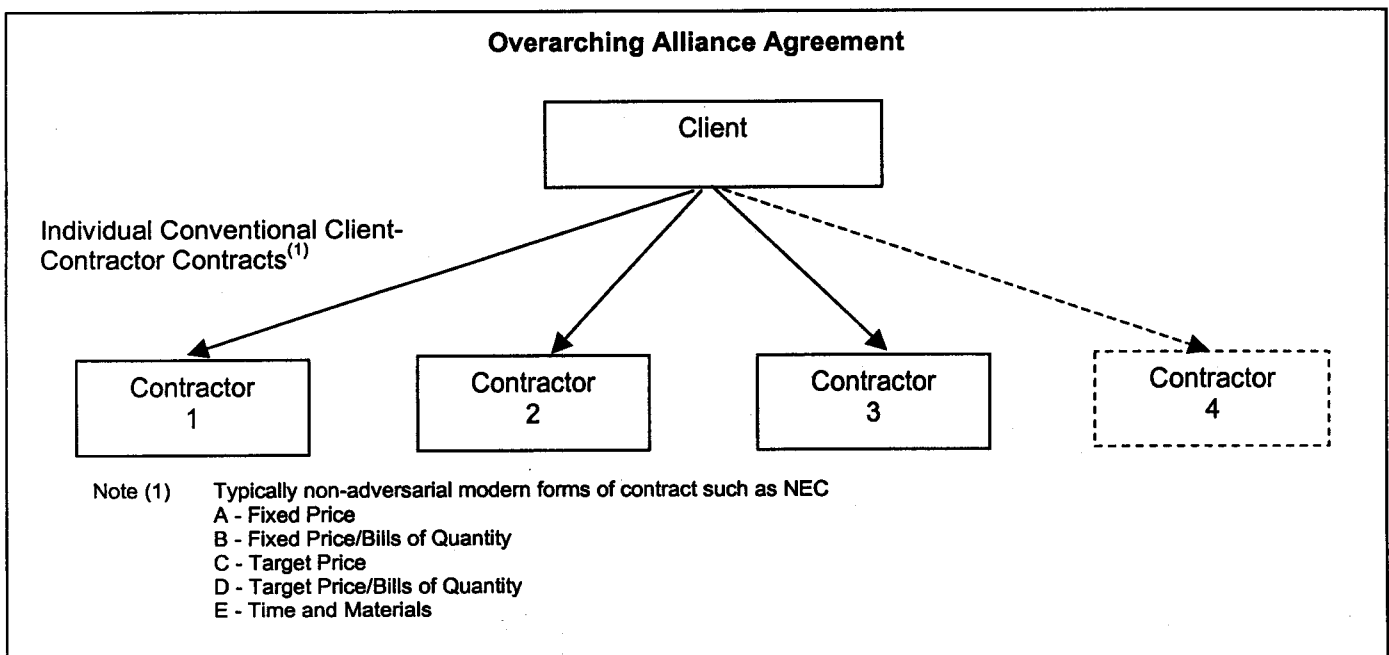


Figure 1: Alliance of Contractors and the Client Organisation

The alliance agreement is applicable to both client and all contractor organisations as equal parties. From the suite of NEC contract forms UKAEA has used C and D with incentivised

^{Ref 1} R D Nicol, Contract Strategy Selection, C596/043/2001, IMechE Nuclear Decom 2001 conference transactions, The Cromwell Press ISBN 1 86058 329 6

target gain/pain share arrangements applied in all cases to date. The NEC is particularly well suited to handle changes with its early warning and compensation event controls.

2. WHY ALLIANCE?

For complex nuclear decommissioning, or to a lesser extent new build nuclear facility works, the client organisation may well know the end-point required but has not done sufficient work to clearly define the route map to achieve these end-point requirements. The client at this early stage could spend time and money in a conventional manner with individual consultancy or contractor companies to optioneer, make the business case, prepare the specification and then separately tender for the main works and sub-projects as required.

UKAEA's market experience has indicated that alliance structures bring to bear more optimum and collaborative skills sets in the currently limited UK nuclear contracting market sector. The alliance arrangements give a more co-ordinated approach to the production of the route map. Further it acts as an important vehicle to attract players into a high risk and currently limited contractor environment.

The more traditional turnkey, lump sum, fixed price contracting strategy has, in several cases, now resulted in the need for re-negotiation or even contract supervision and termination. In contrast our experience with alliancing to date has led to the Client organisation having:

- better control of key people and company skills;
- a stronger ability to change personnel or alliance partners;
- a better ability to manage unsatisfactory performance
- avoidance of arms length client/contractor relationships when there is a need for high client involvement.

In summary alliances afford the opportunity to collaboratively bring together the capabilities required on complex multi-disciplinary nuclear decommissioning projects. They act as a vehicle for entry into the market place for contractors under a pre-established and shared limited risk regime.

3. WHAT ARE THE SUCCESS CRITERIA?

Essentially, like every client organisation, the UKAEA wants its projects completed to within the estimated cost and schedule profiles and to the required quality (safety, environmental, security, planning, etc) levels. We also wish to help expand the contractor market. From the contractor perspective they also wish to bring on their people skills, achieve a fair profit, and obtain a good reputation thus increasing their likelihood of gaining subsequent work.

The alliance structure helps align the behaviour of alliance members (including the client) - as driven by common commercial interests - to act as a single entity. This is certainly less common with more conventional JV or Management Contractor arrangements which do not involve common goals between JV members or main and sub-contractors. Gain share through incentivised target works is therefore seen by UKAEA as a key building block for the successful outcome of the works.

Of particular importance on a multi-contractor, complex, nuclear site project is the co-operative working between contractors. If the gain share is set correctly then this goes a long

way to avoidance of a small but essential contractor holding up the overall works for disproportionate self interest. Further, with safety targets built into the alliance agreement then again alignment of goals and high standards are maintained with the contractors all supporting one another.

Interim deliverables and good performance indicators are also essential so as to be best able to monitor and control progress. Figure 2 illustrates the type of graphical progress reporting used on a current UKAEA reactor decommissioning project. Such data forms part of the typical contents of a quarterly progress report (see Figure 4).

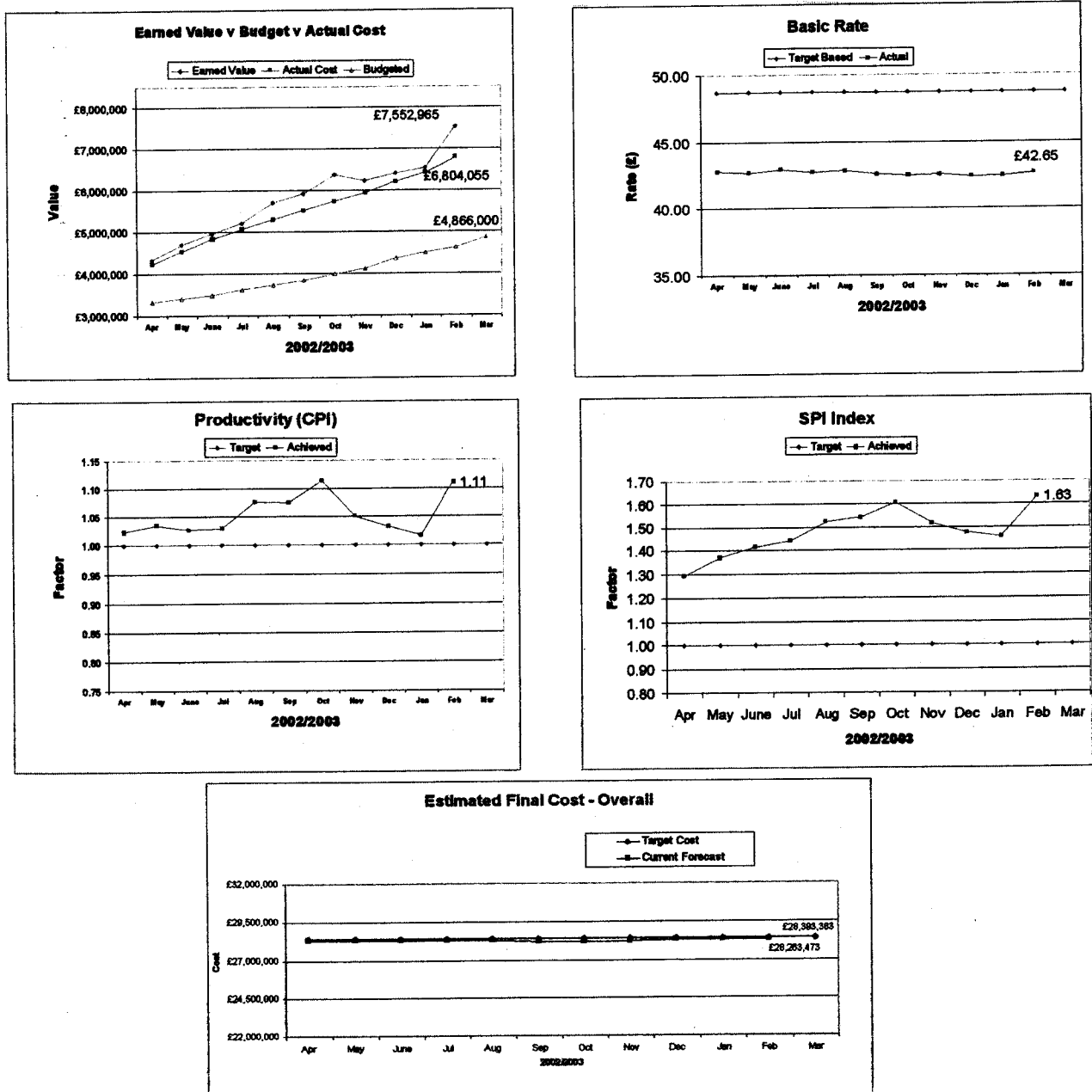


Figure 2: Project 1 - Target Cost Status - Overall

Such information may also be displayed to show the performance of the individual contractors making up the alliance. Earned Value (Basic Cost of Work Performed - BCWP),

Schedule and Cost Performance Indices (SPI and CPI) are used at senior management level to quickly grasp the current alliance project status and projected forward trends.

4. WHAT ARE OUR EXPERIENCES TO DATE?

A simplified analysis of current progress (Q4, 2002/03) against cost and schedule on four complex UKAEA alliance reactor decommissioning projects is shown in Figure 3 below.

	Schedule Performance		Cost Performance	
	Progress to Date	Estimated Project End Progress	Cost to Date	Estimated Project End Cost
Project A	→	↑	→	↑
Project B	↓	↓	→	Under review
Project C	→	→	→	↓
Project D	→	→	→	↓

Notes

- (1)
- ↑ Project ahead of programme, or project within budget estimates ☺
 - Project on schedule ($\pm 10\%$), or project on budget ($\pm 10\%$) ☹
 - ↓ Project behind programme or, project over budget ☹
- (2) More specific "earned value" reporting is covered in Section 3 of the paper

Figure 3: Complex Reactor Decommissioning Project Performances Under Alliance Structures

The results are varied and are not, at this early project definition stage, very helpful in drawing definitive conclusions as to the advantages of alliances over other contract structures for such specialised works. However UKAEA's experiences to date suggest that costing and planning issues need to be rigorously addressed from the outset for the very reason that the forward route map is in such need of development. In addition our experiences to date certainly indicate the essential need to appreciate the more complex management systems required to efficiently handle such alliance arrangements. The role of the "project integrator" is seen as key. The client and contractors making up the alliance are likely to have different in-house technical interface and space co-ordination management systems, different cost and schedule controls, project and engineering management processes, QA systems and planning processes; all of which need to be integrated into a single co-ordinated system. In particular UKAEA wishes to avoid having separate client and alliance contractor member programmes.

Figure 4 indicates the contents of a typical quarterly project progress report as required by a project sponsor and senior management. Additional features for the alliance arrangement include target performance and the split of gain/pain share between alliance members. Note that the target is set for all alliance members, including the client organisation.

- | | |
|-----|-------------------------------------------------------|
| 1. | Safety |
| 2. | Sanction Status Report |
| 3. | Key Points and Issues |
| 4. | Work Breakdown Structure |
| 5. | 'S' Curve (Project Schedule and Cost Performance) |
| 6. | Risk Register (Key Points and Mitigation) |
| 7. | Change Control |
| 8. | Schedule and Cost Performance Summary (Arrow Diagram) |
| 9. | Summary Programme |
| 10. | Milestone Report |
| 11. | Target Performance |
| 12. | Alliance Member Gain/Pain Share |

Figure 4: Typical Content of Project Manager's Quarterly Project Report

Organisational arrangements, lead to the opinion of putting those resources, from whichever alliance member, best suited to do the work into those roles. The alliance structures operated by UKAEA have an Integrated Alliance Board meeting on a quarterly basis with Director representation. The remit of the Board is not to manage the project but rather to monitor progress and help clear blockages. Under this sits an Integrated Project Management Team meeting at least monthly under the chairmanship of the Project Manager. Client resourcing has had to be strengthened to meet these more complex arrangements.

A client organisation may well find that its processes are more aligned with traditional contracting methodologies. These procedures will require to be reviewed prior to pursuit of the alliancing path. For example, UKAEA's traditional procurement progresses stress QA inspections by others and competitive purchasing.

In summary UKAEA has recognised the more complex nature of alliance arrangements and is now putting the appropriate management systems in place to address this.

5. THE ALLIANCE AGREEMENT - KEY CLAUSES & ALLIANCE STRUCTURE

The UKAEA and its contractors have developed a standard form of alliance agreement. The articles of which are included in Figure 5 below. The typical content of a statement of Alliance Principles and Terms of Reference for an Alliance Board and an Alliance Integrated Project Team are given in Appendix 1, 2 and 3 of this paper respectively. A typical alliance organisation structure used on a Dounreay reactor decommissioning project is given in Figure 6. The diagram shows the rather complex organisational structure necessary to allow the UKAEA support managers who are responsible for operations, safety and design to have a direct input into the running of the project.

The alliance structure also introduces nuclear site licensing issues. In particular these revolve around the licensees control:

- Control of the project
- Control of the design
- Control of safety cases
- Competency of the contractor's workforce

- Safety culture
- Control of the work

Article	Notes
1. Alliance Concept*	Client/contractor alignment, integration and common interests
2. Definitions and Interpretation	Commonly used terms such as "gain share", "target cost", etc
3. Purpose	To set out the basis on which payments are made, behaviours required, dispute resolution, alliance board and risk management/budgets
4. Term*	Duration
5. Termination*	Termination arrangements
6. Alliance Principles*	See Appendix 1 to this paper
7. Alliance Board*	See Appendix 2 to this paper
8. Integrated Project Team*	See Appendix 3 to this paper
9. Confidentiality†	Safeguards for contractor intellectual property
10. Publicity	Seeking prior consent
11. Notices	
12. Precedence	Individual client/contractor works contracts over-ride the Alliance agreement except for disputes resolution procedure
13. Relationship of the Alliance Participants†*	Several and not joint liabilities to the client (employer). Relationship for the works and not ongoing, etc
14. Agreement amongst Alliance Participants	Agreements not unreasonably withheld.
15. Entire Agreement	Supersedes all prior negotiations, agreements, etc
16. Reasonableness	Alliance participants to do all things reasonably necessary
17. Corporate Power and Authority	Each alliance member has full power to perform obligations under the Agreement
18. Liabilities between Contractors†	Joint working and liabilities defined
19. Overall Limitation of Liability with Regard to Overruns†*	Limit of liability
20. Application of Indemnities, etc†	Survival beyond expiry or termination defined
21. Right of Audit*	Open book policy and regular commercial audits by client
22. Applicable Law	English, etc defined
23. Disputes Resolution Procedure	Alliance agreement takes precedence over individual works contracts

* specific importance as seen by UKAEA

† of particular interest to contractors

Figure 5: Alliance Agreement - Key Clauses

6.1 Criteria

		<i>15% Underspend</i>	<i>15% Overspend</i>
Target Cost	£2,644,238		
Final Stage Cost		£2,247,602	£3,040,874
Gain/Pain Share \pm	£396,636		

6.2 Equity Split

An equity split between client and other alliance members was, in this case, a 40%:60% split. Therefore up to \pm £237,982 was available for allocation to/from alliance contractors. The percentage split may vary at different phases of the project.

6.3 Performance Criteria

The make up of this section of the works covering the KPIs involved was:

<i>Work Area</i>	<i>Pain/Gain Share Work Section Allocations for all KPIs Met</i>	<i>Pain/Gain Share Monies Available</i>
1. PSR	20%	£47,596
2. Audit	5%	£11,900
3. On-Site Works	20%	£47,596
4. Procure Equipment	15%	£35,698
5. Cost	40%	£95,192
Total	100%	£237,982

6.4 Alliance Individual Participation Values

The alliance agreement is such that the gain/pain share applies to all alliance contractors. This helps to ensure that the team all pulls together. However, it is recognised that some contractors may be more involved than others as the different phases of the works progress. Individual participation values are therefore applied to the different alliance contractors. For this phase of the works the following values were agreed to be assigned:

<i>Contractor</i>	<i>% Share</i>	<i>15% Underspend, All KPIs Met</i>	<i>15% Overspend, 50% KPIs Met¹</i>	<i>15% Overspend No KPIs Met²</i>
1	28.52	£67,872	£47,511	£67,872
2	31.16	£74,155	£51,908	£74,155
3	15.66	£37,268	£26,087	£37,268
4	9.68	£23,037	£16,125	£23,037
5	5.34	£12,708	£8,896	£12,708
6	9.64	£22,942	£16,060	£22,942
	100%	£237,982	£166,587	£237,982
		<i>gain share</i>	<i>pain share</i>	<i>pain share</i>

Note ¹ for 50% KPIs met these percentage share award figures fall by half to 10%, 2.5%, 10% and 7.5% but retaining the 40% cost allocation giving a pain share available of £166,587

Note ² for 15% overspend and no KPIs met the situation is reversed with a pain share of £237,982 split between the contractors

Risks and rewards may then be split between alliance contractors and between the contractors and client organisations. The incentivisation is best applied to all alliance members so as to drive forward the cultural mindset of collaborative working. The arrangements need to bear in mind the requirements that focus on the alliance contractors meeting targets for improved profitability and away from open-ended increased turnover mentalities or "them and us" contractor/client attitudes. Typically the general application of such incentivised target works principles is as illustrated in Figure 7.

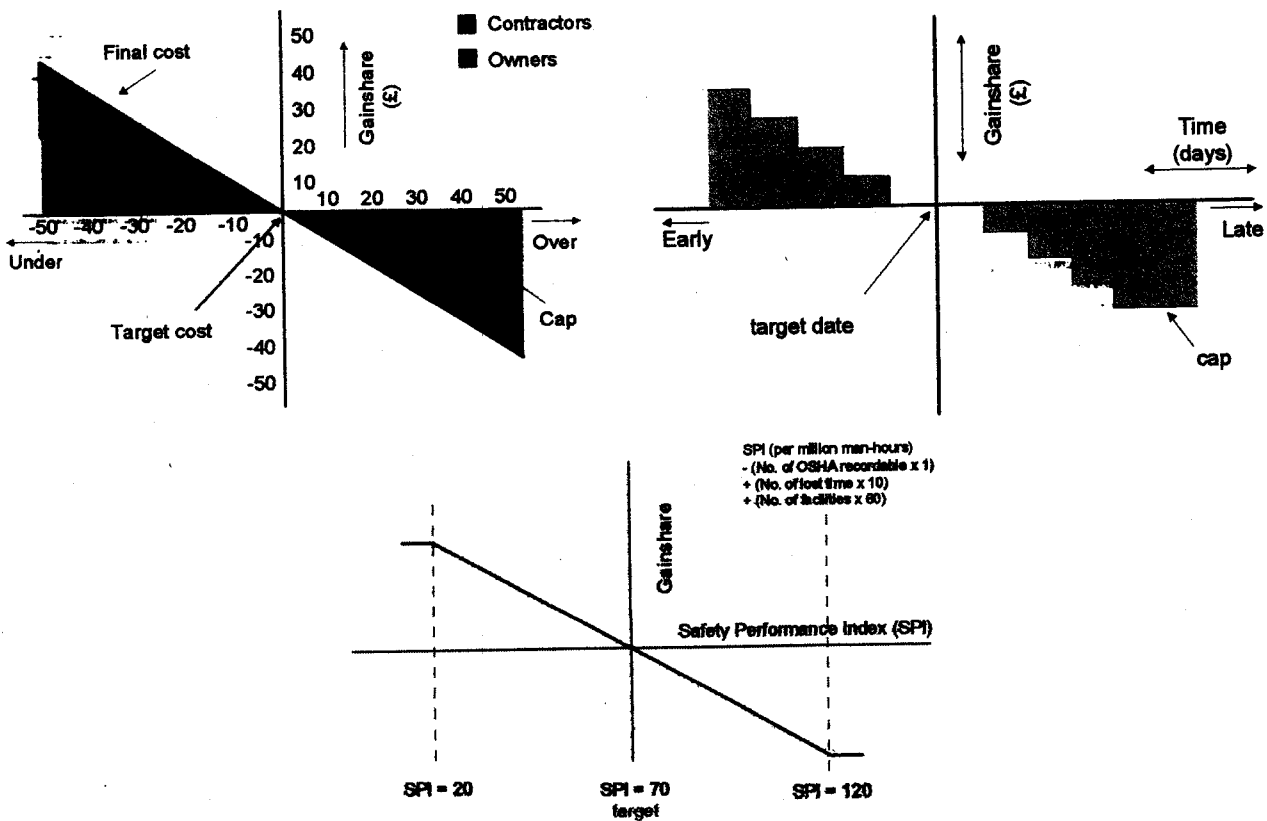
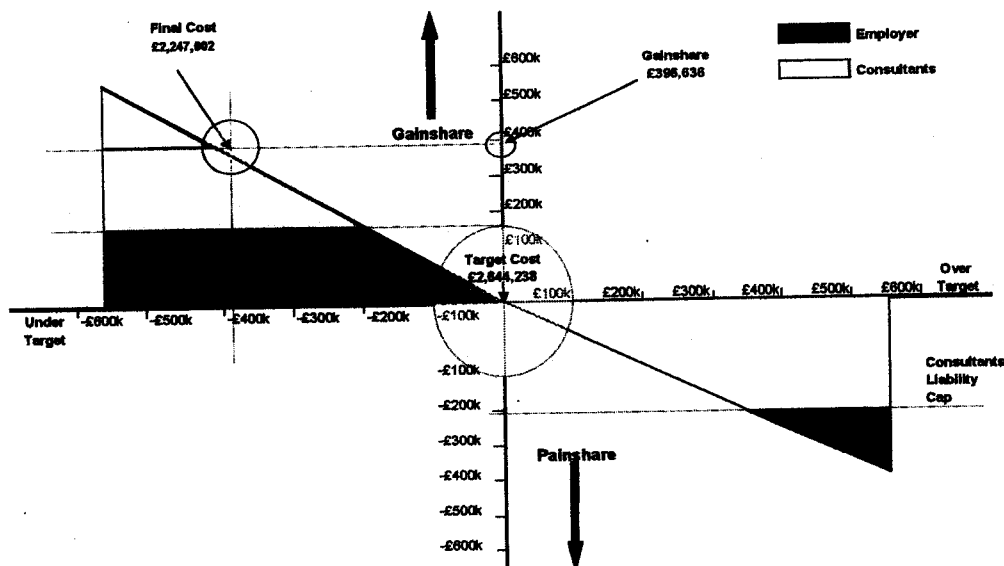


Figure 7: Typical Application of Target Principles as Applied to Cost, Schedule and Safety Indices

The overall incentivisation may be seen graphically as shown in Figure 8. When pain share is being assessed it is necessary to distinguish between project and business risk. The pain share may, if part of the alliance agreement, only be applied to the individual alliance contractors profit margins and not their gross price.



Scenario assumes full attainment of KPI Criteria

Figure 8: Graphical Representation of Incentivised Target Works Gain/Pain Share for the Example Given in the Text (+15% Under/Overspend Expenditure and All to No KPIs Met)

In summary, it is essential to clearly define project completion and milestone achievement/ Key Performance Indicators (KPIs) at an early stage in the project so as to be able to generate the necessary project cost estimates and costed implementation schedules. From these factors the principles for setting the project cost targets may be agreed and then applied to incentivised target schemes.

7. ALLIANCE SELECTION

The UKAEA is a public sector organisation and uses a very open and transparent process for alliance contractor selection. The process starts with identification of the skills sets required. For example a current UKAEA Conditioned Intermediate Level Waste Store for Dounreay has identified the skills sets as shown in Figure 9. The importance of the design integrator role is emphasised together with the client/alliance contractor interfaces. The process continues with the placement of a notification advert in the Official Journal of the European Community (OJEC). A short list is drawn up from the respondents by marking them against a selection criteria such as:

- Technical competency on skill required
- Cost of the service against a financial model of the project
- Ability and experience of key staff and the firm
- Ability and experience of working in alliance relationships

A key part of the selection is face to face interviews with the contractor's proposed staff. This has been extremely revealing and where necessary the process has been reinforced by visits to the contractor's offices. In some cases UKAEA may select the alliance members individually and broker the alliance marriage.

In other cases the alliance formation has been left to the contractors themselves.

Once the contractors have been selected both formal and informal teambuilding has been recognised as important and has taken place on our current alliance projects at Alliance Board level, Integrated Project Team level, and in conjunction with UKAEA support staff. Because of UKAEA's legal responsibilities under the nuclear Site Licence requirements UKAEA cannot be seen as a totally equal alliance partner. UKAEA retains the fundamental right to control the works and to fill all key safety related posts. UKAEA's systems, which are compliant with Site Licence requirements, are adopted for working on the licensed sites.

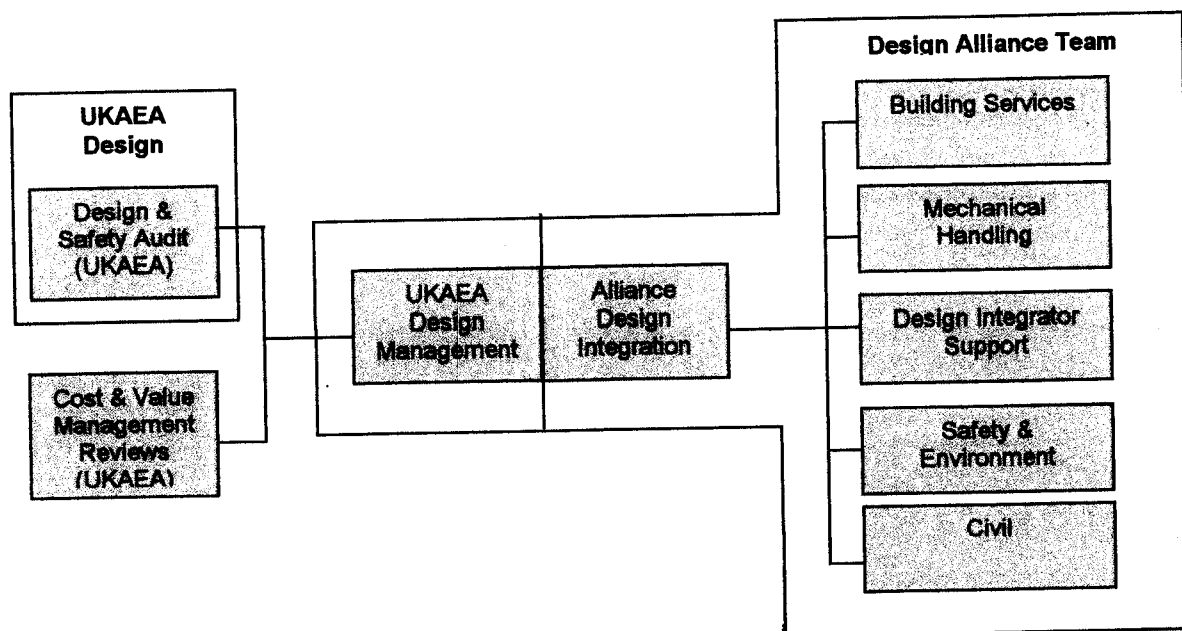


Figure 9: UKAEA/Design Development Alliance Interface - Conditioned Waste Store Project, Dounreay

8. CONCLUSIONS

Alliancing brings the advantage of involvement of the contractors who will be involved in the eventual construction/decommissioning of the works at the earliest stage. Therefore, if adequate common incentives can be built into the alliance agreement, there is every reason for the designs to take into account project lifecycle issues. Nevertheless it is important before embarking upon such arrangements for the client organisation to appreciate the higher degree of management processes and organisation required to achieve success.

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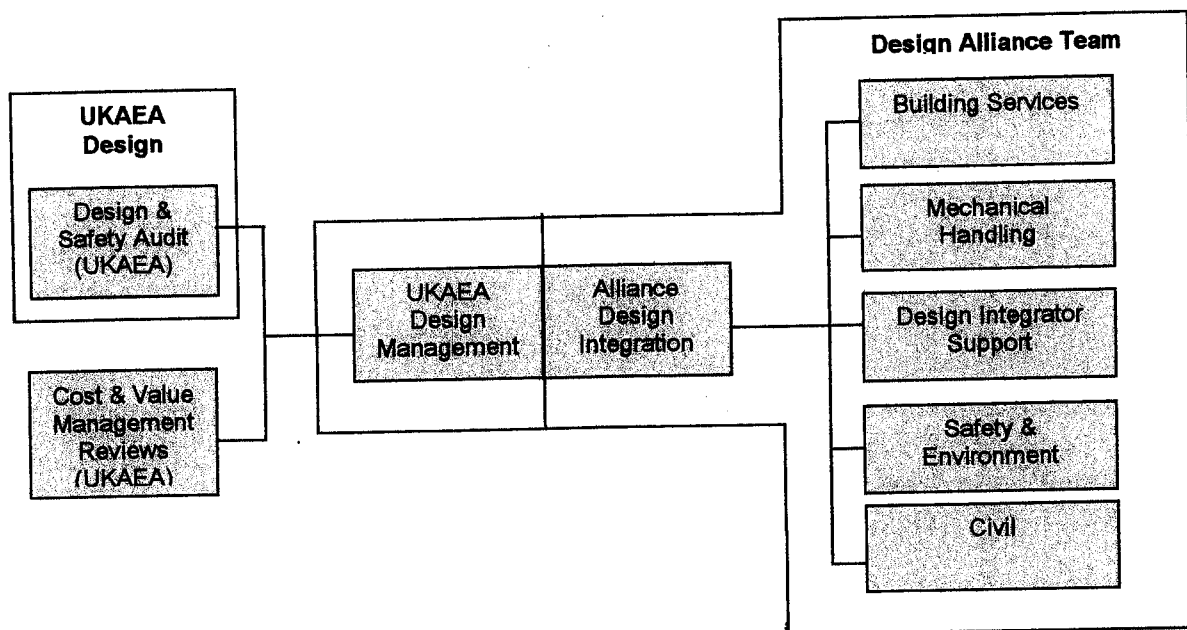


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APPENDIX 1

Alliance Principles

The parties work together in accordance with the following principles:-

- To work together in a spirit of openness and co-operation in which the achievement of overall benefit to the Project is the prime consideration.
- To use a combination of innovative methods and experience from other disciplines in the development of the Project so that it can be completed meeting the Scope and Programme at the lowest practicable cost below the Target Phase Cost whilst maintaining the highest level of performance against agreed Performance criteria.
- Subject to the Participant's Business confidentiality, to disclose to each other their respective forward business plan, engineering programme, technical and business requirements and cost information relating to the Project.
- To bring full commitment to achieving effective interfacing between the parties in all areas of work and between the parties, their suppliers and subcontractors to eliminate all sources of duplication and inefficiency wherever they exist.
- Each Consultant shall be ultimately responsible for the management, quality, safety and technical supervision of the performance of the services defined in its own Works Contract.
- Each Alliance Participant shall strive constantly for continuous improvement in all areas, through the application of effective business management, excellent engineering and integration with each other.
- Where UKAEA's staff are integrated into any Alliance Participant's team of dedicated personnel, that
 - such personnel shall work under the technical management of the Alliance Participant concerned who shall be responsible for ensuring that all work undertaken by UKAEA's staff under such management meets the necessary technical quality standards and safety; and
 - any agreement by such personnel shall in no circumstances be construed as acceptance of a request to vary the work or as an instruction from UKAEA to vary the work in the absence of specific instructions from UKAEA in respect of any such variation pursuant to the relevant Works Contract.
 - UKAEA will ensure that such personnel are Suitably Qualified and Experienced (SQEP) for the tasks they intend to perform.
 - such personnel will accept the technical and management requirements of the Participant as if it were his UKAEA Employer.
- The same points in the above four bullets apply to all seconded or integrated employees of any Alliance company seconded or integrated into another Alliance team or company.

APPENDIX 2

Alliance Board

The objective of the Alliance Board is to contribute its knowledge and experience to the Project enabling safe and satisfactory completion of the Project. This Project encompasses issues of nuclear and environmental safety and the responsibility for control and management of the Project resides with the Employer. In fulfilling this objective at a Nuclear Licensed Site it must be clear that the Alliance Board does not have executive powers over the Project or the UKAEA Project Manager. The Alliance Board is aware of this responsibility and acts and advises accordingly.

The Alliance Board responsibilities are:

To implement the Alliance Agreement.

- To provide advice and guidance to the UKAEA Project Manager in his direction of the Integrated Project Team.
- To develop and agree Phase Data and variations thereto

Each member of the Alliance Board instructs its representative under its Works Contract such that the aims and objectives of this Agreement are achieved.

The Alliance Board:

- Agrees the organisation and membership of the Integrated Alliance Project Team.
- Advises the UKAEA Project Manager on strategies relating to the Scope, Programme, and Target Costs.
- Monitors the performance of the Alliance Participants and advises on measures that may be required to retrieve any adverse trends in the Programme, Target Phase Costs, Safety or Quality.
- Considers and determines the extent and impact of variations to the Scope, Target Phase Completion Dates and Target Phase Costs of the Project.
- Agrees the terms and conditions under which new Alliance Participants can be introduced.
- Monitors the performance of the Alliance Participants with regard to the Alliance Principles
- Fosters and monitors continuous performance improvement.
- Seeks to resolve any disputes between the Alliance Participants by use of an agreed Disputes Resolution Procedure.
- Considers and determines such other things as the Alliance Participants may from time to time require to be addressed.

APPENDIX 2 continued

- Advising UKAEA if a Consultant should be removed, replaced or a new Consultant added.

Representation and Chairman

The Alliance Board consists of one representative from each Consultant participating in the Alliance and two representatives from the Employer. Each representative is a member of the senior management of the relevant party. Each Alliance Participant appoints a representative and an alternate each of which may be replaced from time to time by notice to the other Alliance Participants. The representative of the Employer is the chairman of the Alliance Board, he shall nominate an alternate. The representative of a party or his alternate is deemed authorised to represent and bind such party with respect to any matter on the Alliance Participants Works Contracts. All of the reasonable costs and expenses of each party in respect of the attendance of its representative or alternate at such meetings, when attendance is requested by the Chairman, is for the account of the Employer.

Any Alliance Participant not represented at a meeting may vote on any matter on the agenda for the meeting by either

- appointing a proxy by notice in writing to the chairman not less than twenty four hours prior to the meeting; or
- giving notice in writing of such vote to the chairman not less than twenty four hours prior to the meeting.

Notice of Meetings, Agendas, Minutes of Meetings

These will be issued in a timely manner by the Chairman, to ensure adequate time for: response, completion of actions, requests for additional agenda items, and arrangements for attendance at meetings.

Meetings

- The Alliance Board holds meetings every three months or otherwise when deemed necessary by the Employer or when requested in writing by at least two other Alliance Participants.
- The Employer calls meetings giving at least seven working days notice of the time and date or shorter period for matters requiring urgent consideration as may be agreed by the Alliance Participants.

The Employer appoints a secretary for the Alliance Board who prepares the minutes of each meeting. The Employer shall provide each party with a copy within seven working days of the meeting. Each party notifies the Employer of its approval or disapproval of the minutes within seven working days of receipt. Any Alliance Participant failing to notify' disapproval is deemed to have approved the minutes. Disapproval of the minutes does not affect the validity of any vote taken at a meeting

APPENDIX 2 continued

Voting Procedures

The Alliance Participants endeavor to achieve unanimity in respect of decisions to be made by the Alliance Board. In the event that unanimity of the Alliance Board is not achieved, decisions are achieved by the vote of a majority of those parties entitled to exercise a vote provided that the Employer's vote is with the majority. Each Alliance Participant, including the Employer, is entitled to exercise one vote. The chairman of the Alliance Board is not entitled to vote unless the chairman is the only recognised representative present for the Employer at the Alliance Board Meeting.

Nothing contained in this Agreement constrains the Employer from taking any action considered necessary if unanimous agreement or an affirmative majority is not obtained in which case the other Alliance Participants follow such instructions given by the Employer. The Employer gives the other Alliance Participants a period of time to comply with the instructions issued to them in accordance with and through the relevant Works Contracts.

The setting of terms of each Phase Data requires unanimous agreement of the Alliance Board

Amendments

Any amendment to this Agreement requires the unanimous agreement of the Alliance Participants and such agreement shall not be unreasonably withheld.

APPENDIX 3

Integrated Project Team

The Integrated Project Team is established by the Alliance Participants. The objective of the Integrated Project Team is to coordinate the completion of Consultants' Works Contracts within an alliance structure to facilitate the efficient implementation of the Project.

The functions of the Integrated Project Team under the direction of the UKAEA Project Manager are:

- The day to day supervision of the Project

The Integrated Project Team receives guidance from the Alliance Board on matters pertaining to the Project within the remit of the Alliance Board.

The Integrated Project Team inter alia:

- Ensures that the safety and quality requirements of the Employer and of the regulatory authorities are observed and complied with
- Directs, co-ordinates, controls and implements the design, documentation, construction, installation, commissioning, operation, and maintenance, and potentially decommissioning, of the Project
- Advises on the strategies relating to the Performance Criteria for consideration by the Alliance Board
- Ensures that all necessary resources are available to expedite the Project
- Prepares regular status reports and forecasts on all aspects of the Project for review by the Employer and the Alliance Board.
- Presents to the Employer and the Alliance Board measures to reverse any adverse trends. Reviews, considers and, as appropriate, implements all measures which the Project Manager directs; bringing to the attention of the Alliance Board any issues or such measures as are deemed to affect cost, programme, quality or safety (etc).

Further details of the roles and responsibilities of the IPT are detailed in Section 4.5 of the Works Contracts and does not contradict any of the information in this Appendix.