



INFRASTRUCTURE CLIENT GROUP

Improving Infrastructure Delivery:
Alliancing Best Practice in
Infrastructure Delivery

© Crown copyright 2014
Rev 1

You may re-use Alliancing Best Practice in Infrastructure Delivery and its associated tools free of charge in any format or medium under the terms of the Open Government Licence. To obtain a copy of this licence, email psi@nationalarchives.gov.uk. Where we have identified any third party copyright tools or information you will need to obtain permission from the copyright holders concerned.

Anyone using the document does so at their own risk and no responsibility is accepted by HM Government for any loss or liability which may arise from such use directly or indirectly.

Any enquiries regarding this publication should be sent to us at public.enquiries@hmtreasury.gov.uk

You can download this publication from:
www.gov.uk/government/organisations/infrastructure-uk

ISBN 978-1-1-910337-32-5



HM Treasury

Improving Infrastructure Delivery:

Alliancing Best Practice in
Infrastructure Delivery



Infrastructure UK & the Infrastructure Client Group

Infrastructure is the backbone for the UK economy. It provides the networks and systems that supply and support reliable and cost effective transport, flood protection, energy, communications, water and waste management. These are vital to ensuring that the UK remains a competitive force in the global race.

The government is committed to establishing a long-term sustainable plan for infrastructure investment. **Infrastructure UK (IUK)**'s Cost Review Report 2010 identified the opportunity to improve infrastructure delivery. It set a target to remove wastage and make efficiency savings of at least 15 per cent by 2015 across public and private sector infrastructure delivery. The government's Construction 2025 Strategy goes further, setting a target of lowering costs by 30 per cent and reducing time by 50 per cent.

The government, through IUK, continues to work with industry to drive improved productivity and remove wastage in the delivery of infrastructure investment. These measures are providing better value for money for taxpayers and consumers. Across public and private sectors, these combined efforts are starting to yield success. However, there is no room for complacency. There is still much to be done to match the levels of efficiency and productivity seen in some other sectors.

The **Infrastructure Client Group** is demonstrating the value of effective collaboration between government and industry to support the development and exchange of best practice and delivery improvement. Initially brought together by IUK to support the Infrastructure Cost Review work, the membership of this group is representative of the major infrastructure clients. It has been instrumental in setting a common agenda for change and supports a programme of activities and applied knowledge transfer across the public and private sectors. The success of this initiative has been made possible by the continued and valuable support from industry and academic partners.

Lord Deighton
Commercial Secretary to the Treasury

Simon Kirby
Chair of the Infrastructure Client Group



Preface

The UK has a proven capability in delivering successful projects and innovation, where the imperative and conditions for success have been properly prepared. Both the Government Construction Strategy and the IUK Cost Review identified that efficiency savings could be delivered through reforming procurement practices and effecting behavioural and culture change. The wider adoption of collaborative approaches with integrated team working has been supported widely by the Government and industry. Alliancing is one form of collaborative working that has been adopted successfully in the UK and other countries. This Alliancing Best Practice in Infrastructure Delivery document is a product of the government working collaboratively with industry and academia through the Infrastructure Client Group.

This document was developed with input from industry leaders across the infrastructure sector, from transport to off-shore gas, from Clients to Contractors and Consultants. It highlights the areas in which alliancing can potentially add value and the key elements that drive a successful alliance.

The first notable alliance for capital investment delivery in the UK was the Andrew Oil Field project for BP in the 1990's. The Andrew Oil Field (Andrew) was a complex and challenging technical problem and demanded significant cost savings over traditional methods of delivery to make it economically sustainable. Whilst Andrew delivered significant time and cost savings for BP, alliancing models remained a small part of UK construction delivery for many years.

Where effective alliances have been established long term performance improvement has been achieved. There is now an industry wide track record that supports the business case for alliances.

This document provides an accessible and valuable support to those embarking on an alliance and to those who are already committed. It draws on experience from many organisations; clients, delivery teams, consultants and academics to highlight which aspects of alliance set up are most important, when they are most applicable and what needs to be done to ensure their effectiveness.

Further resources and links to contributors can be found at www.ice.org.uk/topics/industry-initiatives/about.

Infrastructure UK resources can be found on <https://www.gov.uk/government/organisations/infrastructure-uk>.

The following organisations have contributed to the Alliancing Best Practice document.







Executive Summary

1

Section 1



Introducing Alliancing Best Practice in Infrastructure Delivery

4

Section 2



Alliancing Characteristics

8

Section 2.1 Behavioural

10

Section 2.2 Integration

16

Section 2.3 Leadership

22

Section 2.4 Commercial

28



Section 3

Appendices

34

Appendix A Actions Check Lists

35

Appendix B References

39

Appendix C List of Contributors

40



Executive Summary

The main points within this document are:

- In complex delivery environments, many alliances have been shown to deliver significantly better outcomes than more traditional contractual arrangements.
- To ensure success an emphasis has to be placed on the **behavioural** aspects of both the organisations and individuals involved.
- The organisations involved in an alliance need to be highly **integrated**, including the client.
- Effective alliances depend on committed and visible client and delivery team **leadership** to drive change and performance.
- **Commercial** models that reward the delivery of agreed outcomes and drive the required behaviours deliver the best results.
- Alliancing is not easy but in projects or programmes where there is sufficient commitment, time and resources to implement alliancing fully they can pay back significantly to all participants.

These four fundamental themes of successful alliances provide the framework for the rest of this document:

- **Behaviour**
- **Integration**
- **Leadership**
- **Commercial model**

These themes are described in detail in the following sections, both in terms of the **CHARACTERISTICS** that would be evident in effective alliances and the **ACTIVITIES** required to achieve them.

During the course of the development of this document, four reference visits were undertaken by the working group. Each demonstrated different forms of alliancing and each gave the opportunity for the group to explore the individual success factors that led to the benefits each delivered.

British Gas formed alliances with lead partners and members of their onward supply chain in order to deliver their brownfield investment programme. The long term commitment from each partner to the alliance has seen a turnaround in performance and payback on their investments. This was not immediate with a long term view being essential to unlock the considerable performance benefits.

Anglian Water's @one Alliance has delivered complex programmes of projects in the Asset Management Plan 4 (AMP4) and AMP5 regulatory periods, consistently delivering significant efficiency savings. The AMP5 programme of approximately £1bn is on track to deliver ahead of its target saving.

Network Rail projects, including the Reading Capacity programme have been challenged to deliver early and to make significant savings on target cost. An alliance with lead partners and wider stakeholder groups delivered Reading more than a year early and beat the £50m saving target.



The Highways Agency brought their delivery partners together to increase the visibility of their performance and enhance the joint development of solutions through their behavior focused strategic change programme. Across all its alliances the Highways Agency has saved £1bn.

The group also undertook research and literature reviews to establish a wide base of knowledge from which to draw its conclusions. This pointed particularly to the track record of Australian project delivery and the lessons they had learned.

Appendix A provides a list of key questions or prompts to assist organisations when evaluating and developing an alliance.

One of the goals of this work was to create a network of contacts, able to share their experience of alliancing and the research undertaken for this document. Consequently, in addition to a list of contributing organisations, this document also provides details of how to contact the key personnel involved in preparation of this document.



Section 1

Introducing Alliancing Best Practice in Infrastructure Delivery

The benefits of an alliancing approach to the collaborative delivery of significant construction projects are now clear. In the right environments the benefits alliancing delivers are considerable.

The catalyst for this document is the growing track record of successful alliances set up in complex and challenging delivery environments. These alliances have delivered more value than traditional procurement arrangements with collaboration underpinned by common goals and integration.



What is an Alliance?

An alliance in general terms is an arrangement where a collaborative and integrated team is brought together from across the extended supply chain. The team shares a set of common goals which meet client requirements and work under common incentives.

As arrangements are cascaded through the supply chain they will remain back-to-back with agreed client outcomes and requirements. Alignment of outcomes should apply to the extended supply chain.

The greatest value will be achieved when client, partners, supply chain and in some cases stakeholder groups are all part of the alliance and aligned with agreed outcomes.

Alliancing differs from traditional approaches in several areas. Risks are normally shared, as is commercial return, alignment between the parties is absolute so that the interests of all participants are the same and the level of integration is high.

However, be prepared! Alliancing is not the easy option, developing alliances requires real underlying culture and behavioural change. It also requires a fundamental shift from the embedded approach of traditional contracting and can only be achieved with collective commitment.

In the context of this document an Alliance is a multiple party, collaborative arrangement where the parties have a common goal and shared incentives. This can be either:

- a collaborative arrangement between the client organisation and a number of partners (figure 1) or
- the client and a contract partner forming an integrator that works collaboratively with multiple supply chain partners (figure 2)

The exact arrangement and the number of partners will be dependent on the circumstances and should be designed around the specific project or programme requirements.

Figure 1
Multi-party integrator alliance

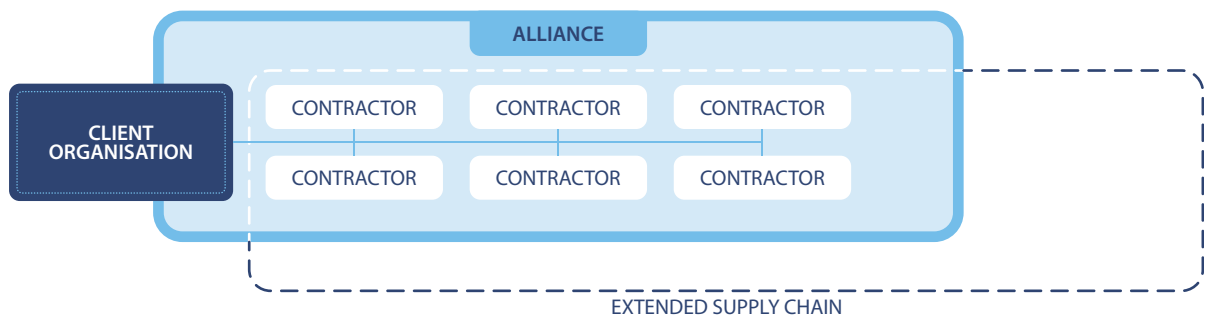


Figure 2
Single integrator multi-stakeholder alliance





“Alliancing is a form of long term partnering on a project [or programme of works] in which a financial incentive scheme links the rewards of each of the alliance members to specific and agreed overall outcomes and in which all aspects of the arrangement are incorporated in legally binding contracts.”

European Construction Institute



“The reality is that true collaboration is difficult. It requires subordinating individual goals to collective achievement; it means engaging in tough, emotional give-and-take discussions most teams find it easier to talk about... rather than do it.”

Why Teams Don't Collaborate
Harvard Business Review



Where is an Alliance Relevant?

Alliancing is likely to prove most effective where the following conditions apply:

- **Where the environment is very complex, with multiple stakeholders, competing interests and challenging goals.** In such an environment the collaboration of multiple parties is in itself a vital enabler to performance.
- **Where performance improvement and change is a business requirement.** The visibility of performance and collaborative behaviours achievable through an alliancing arrangement can be important enablers to business improvement.
- **Where access to the extended supply chain is an important performance enabler.** This could be, for example, where supply chain innovation is required or where customer contact will be through supply chain partners. The integrated teams that are a central characteristic of alliances will be an important enabler to these requirements.
- **On larger programmes or projects.** There is a set up and overhead cost to alliances that can restrict their effectiveness on smaller projects. As the programme or project size increases however, an alliance is then able to deliver enhanced value over and above traditional methods. Australian studies suggest the cut off is approximately £35m.
- **On longer term projects or programmes.** The relationship building and development of trust between the client and the supply chain takes time and effort. Medium and longer term projects provide greater opportunity for the benefits of collaboration to be delivered.

Alliancing is not likely to be as effective where the following conditions apply:

- **Where certainty of price or time is the overriding requirement.** In cases where certainty is more important than efficiency and performance improvement, it is likely that a greater degree of performance risk will be passed to the supply chain. This is more consistent with traditional contracting models than the risk balance required in a collaborative model.
- **Where the prevailing environment will not enable the associated cultural and behavioural change.** Establishing an effective alliance requires a change in culture and behaviour. Environmental factors such as commitment, capability and time will all need to exist if the degree of change required is to be achieved. The ability to take a long term view is important in establishing relationships, processes and systems to support alliancing.

Section 2

Alliancing Characteristics

“ The best practice we saw in this review has certainly shown that alliances require hard work and a long term commitment to change. However, it has also demonstrated that getting four basic characteristics right will go a long way to ensuring success. These characteristics being; an understanding of the **behavioural** change required, the capability to develop **integrated** delivery teams, a **commercial** model that creates the right environment and the **leadership** required to support the overall change. ”

Infrastructure Client Group, Alliancing Project Team

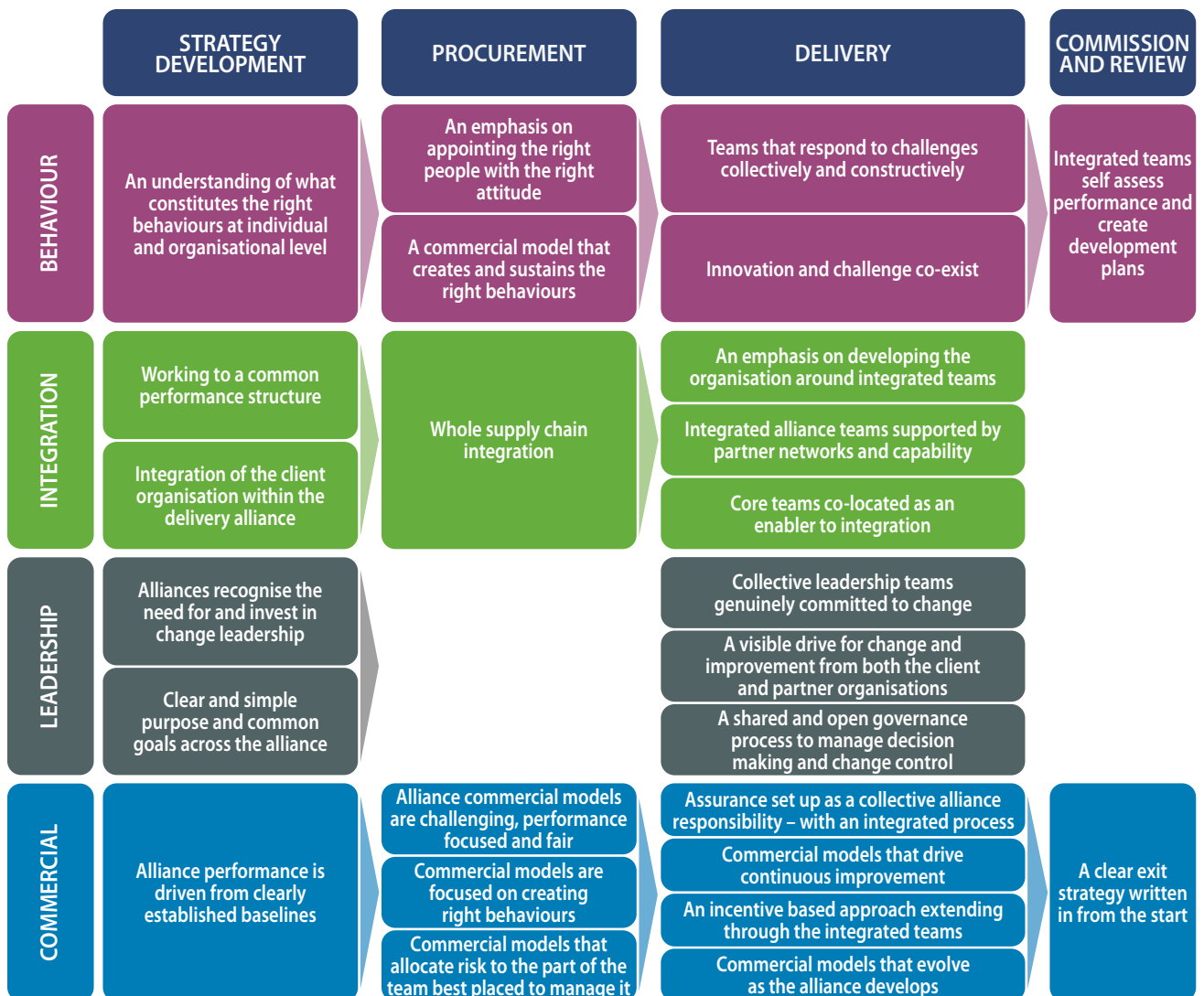


During the development of this document, the reference visits pointed to some consistent themes that had led to successful delivery. These themes were sufficiently clear and strongly identified by the organisations visited that they became the central themes of this document.

The following section sets out in more detail the main characteristics of effective alliances, within the themes of **behaviour**, **integration**, **leadership** and **commercial**. Figure 3 shows these four key themes and where the associated characteristics fit in the lifecycle of a project or programme. Establishing these twenty six characteristics within an alliance will make a significant contribution to its success.

Summary of Key Enabling Activities

Figure 3
Alliance Characteristics



Section 2.1

Behavioural Characteristics

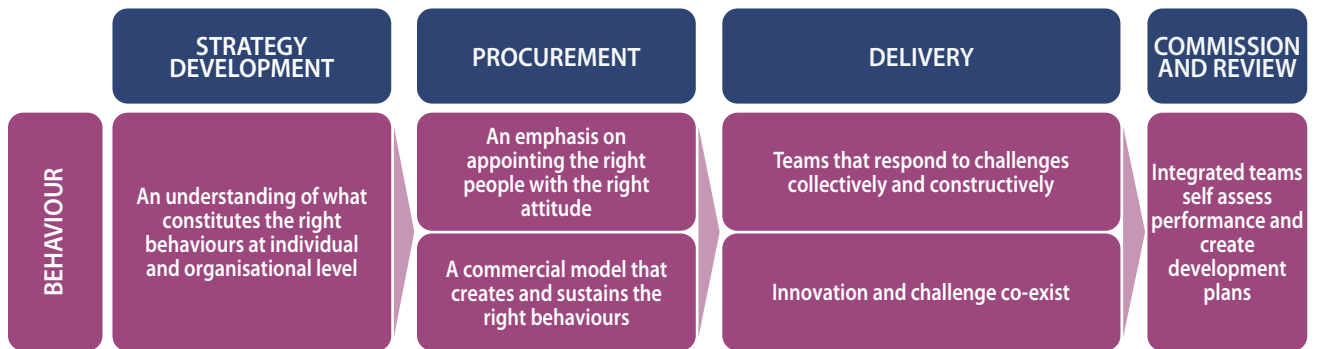
An emphasis on creating and sustaining the right behaviours is central to effective alliancing.



During the reference visits it was clear that the successes of the projects were in no small part down to the **behaviours** exhibited by not only the individuals within the project team but also by the organisations to which they belonged and the senior executives of those organisations. The literature search and discussions with practitioners from other organisations confirmed the view of the importance of **behavioural** aspects.

The following section sets out six characteristics of behaviour that the group consider were of particular importance for successful delivery.

Alliance Behavioural Characteristics



An understanding of what constitutes the right behaviours at individual and corporate level

Successful alliances will have an in depth understanding of the behaviours needed to deliver the client’s business requirements (or outcomes). An emphasis on behaviours is not soft and vague, it is performance focused and highly aligned with business requirements.

Clear requirements are translated into clear objectives and the behaviours required to deliver those objectives are clearly defined.

The behaviours relate to the whole delivery organisation, including the client. Individuals and teams will be assessed against the behaviours required and supporting development programmes implemented.

At the outset there is often an open recognition that some individuals are not able or willing to adapt and will need to leave the organisation or move to a non alliancing role.

An emphasis on appointing the right people with the right attitude

From the initial decision that alliancing is appropriate there is an emphasis on selecting the right people with the right attitude. The selection of the main partners and strategic supply chain members will invariably place an emphasis on behavioural capability and culture. Technical competency will invariably be a pre-qualification aspect and is not the predominant criteria in making the final alliance partner selection.

This initial emphasis on culture and behaviours will extend through to the on going assessment of individuals within the organisation and the development of teams that make up the overall delivery organisation.

Successful application of these behaviours includes assessment of the client’s corporate behaviour and the client’s employees’ personal behaviours and attitudes.



THE USE OF BEHAVIOURAL ASSESSMENTS IN PARTNER SELECTION

Infrastructure clients have increasingly looked to behavioural and cultural assessments when selecting partners. Network Rail, Anglian Water, Thames Water and the Highways Agency have all recently used behavioural assessments as part of their procurement process.

The assessments generally involve a cross section of the team in each partner's proposal attending assessment centres and collectively working through externally observed exercises. From this a set of behaviours are identified and a cultural assessment of each partner produced. These are then matched with the requirements of the proposed model. Experience has shown that effective assessment centres provide an accurate representation of the cultural capability of the partners and the behaviours of the potential leaders.

This approach also places an early emphasis on behaviour, culture and the importance of leadership - and so sets a tone for everything that follows when implementing a collaborative model.

A commercial model that creates and sustains the right behaviours

A commercial model that incentivises and creates the desired behaviours is an important enabler (see **commercial model** characteristics). These models tend to evolve over time as lessons are learnt and the level of trust and maturity between organisations grows, but most importantly they evolve with the aim of enabling the required behaviours.

As the commercial model is an important behavioural enabler, it must be communicated through the organisation and the supply chain. Understanding of the commercial model by individuals within the alliance becomes far more critical than in a more traditional commercial model.

Teams that respond to challenges collectively and constructively

A constructive and enthusiastic response to challenges is a characteristic of successful alliances. A collective response to challenges and the collective drive for innovation that follows is an important opportunity area.

Establishing alignment is an enabling condition for this characteristic; alignment of objectives across the organisation will ensure a collective response to challenges. A collaborative environment will then provide the openness and visibility that ensures a constructive response. This becomes a powerful driver of improvement.



Innovation and challenge co-exist

Leaders within the alliance will challenge the organisation to deliver improved performance and also encourage innovation as part of the response. In doing so there is an acceptance that failure will occur. There is also a collective ownership of the failure that arises from this challenge and innovation.

Successful alliances will respond to failure by learning what went wrong and embedding that learning in future activity, they do not seek to blame particular individuals or organisations.

However, a no blame approach does not mean no accountability; alliances will use their more open and constructive culture to be clear about accountability and responsibility and how they manage performance. An alliance's approach to improvement is driven by a shared expectation for excellence and high standards. If parts of the alliance do not meet the required performance, provide the right capability or meet the behavioural requirements they are managed, as would any under performing team in a high performing environment.

ANGLIAN WATER'S @ONE ALLIANCE CARBON CHALLENGE

Anglian Water has effectively used alliances and collaboration to enable innovation. The @one Alliance was challenged to deliver stretching efficiency and carbon targets – the 50% reduction in embodied carbon being particularly challenging.

In an effective alliance these challenges are met with a positive response, with numerous examples of innovation being introduced as part of that response. In an effective alliance, challenges will be met with constructive behaviours – not with defensive contractual positioning.

The @one Alliance experience on carbon has demonstrated that collaborative and integrated teams have pooled their combined expertise and their broader partner capability to deliver innovative solutions and have been driven to meet what at first sight looked an unlikely target.

As an example, the expansion of the Bedford Water Recycling centre would traditionally have been delivered with extra capacity being built on new sections of the site. However, these would have failed the carbon and cost targets.

Following collaborations across the home organisations and the supply chain and close joint development of the solution with the operational team, two new processes were retrofitted to existing civil assets.

This led to reduced costs and carbon and a solution the operations team were able to manage and maintain from day one.



Integrated teams that self assess performance and create development plans

The very process of bringing together and forming integrated teams provides an additional emphasis on the aspects that underpin high performance; such as clarity of common goals, clarity of roles and accountabilities and stakeholder management.

As they progress, integrated teams maintain a focus on these aspects. They frequently review performance as an integrated team and identify areas for further improvement. This provides a greater emphasis on the best practice and improvement that underpins the alliance.

ANGLIAN WATER'S @ONE ALLIANCE HIGH PERFORMING TEAMS PROCESS

High Performing Teams (HPT) is a process that enables the @one Alliance to develop and maintain integrated teams. Teams regularly review their progress and performance using the HPT framework. This provides teams with a set of characteristics that describe high performance and a framework for them to collectively undertake self assessments.

A development plan is agreed covering leadership, behaviours, how the team interact, clarity on roles and responsibilities, through to development plans to support individual team members.

The overall process continues to learn and develop as more teams undertake self assessments, allowing the characteristics of high performance to be periodically reviewed and updated. Teams are, therefore, always comparing themselves against a current view of best practice.



Behavioural Actions

In compiling this document the following list of actions has been identified. It provides a starting point for establishing the right behavioural emphasis in an alliance:

- Identify the corporate and individual behaviours that will deliver success and make them an explicit part of the overall delivery strategy.
- Embed behavioural assessment in the partner selection process at a weighting that makes it an important contributor to determining future partners.
- Embed behavioural assessment in the selection of individuals for key roles, including key client positions.
- Establish an initial commercial model that rewards the right behaviours and be prepared to review and adapt the model as necessary to continue to encourage these behaviours.
- Ensure joint and widespread communication of the commercial model – so creating the right behaviours across all parts of the organisation; including client, partners and supply chain.
- Ensure the alignment of partner, team and individual goals so that responses to challenge are collective and collaborative.
- Set up individual and team programmes that develop, support and encourage collaboration.
- Establish a culture in which innovation is encouraged and welcomed.
- Establish a learning process to ensure that lessons from innovation are embedded in the organisation.
- Create a programme to support integrated teams in self assessment and improvement.
- Ensure performance information is highly visible to the integrated teams to allow them to drive continuous improvement.

Refer to Appendix A for the Behavioural Actions Check List.

Section 2.2

Integration Characteristics

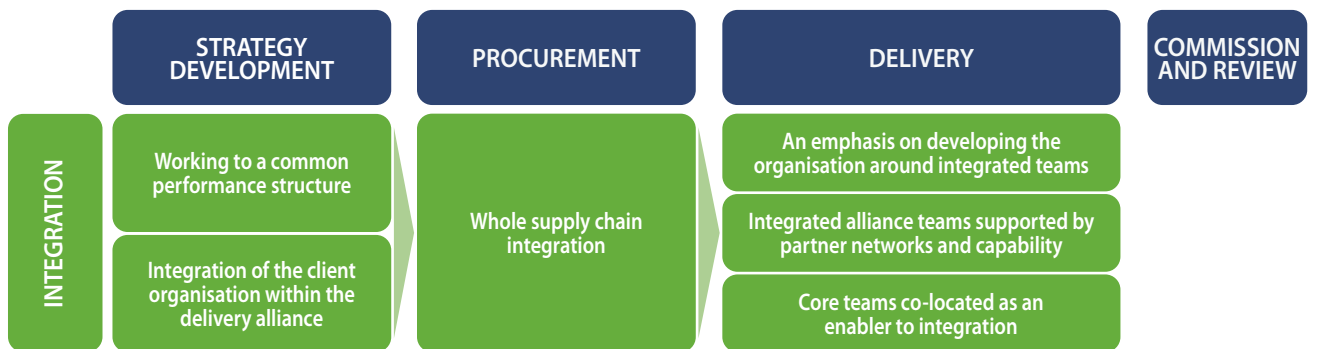
With potentially multiple organisations being brought together to form a single delivery entity, **integration** of these organisations and the development of integrated teams is an essential capability.



The organisations that were visited all made a conscious effort to bring together their partner companies. The reference visits showed that bringing them together to form **integrated**, high performing teams, co-located with common processes and systems contributed positively to overall performance.

The following characteristics are important in establishing and maintaining high performing, **integrated teams**.

Alliance Integration Characteristics



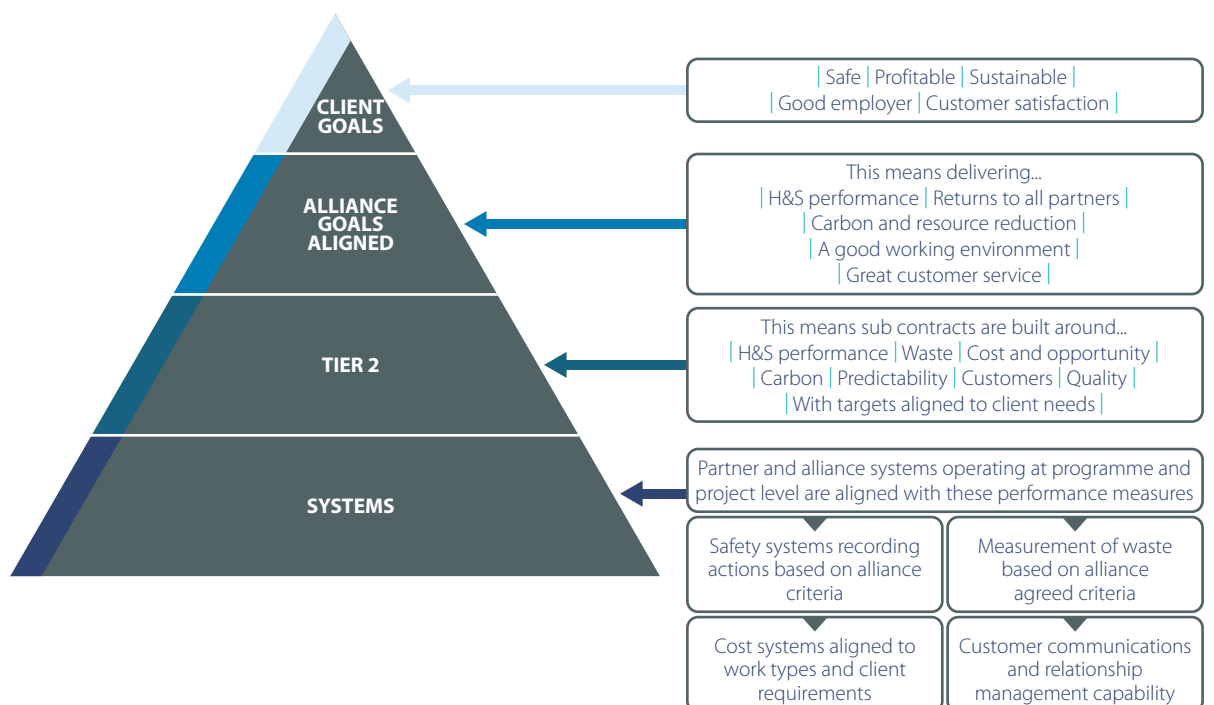
Working to a common performance structure

In order to ensure sufficient visibility of performance a common performance and information structure will be maintained. This single view of the alliance’s performance will align directly with requirements (outcomes) defined by the client.

Alignment is the prime driver in establishing the performance structure for the alliance and its extended supply chain.

Figure 4

Example alignment of goals between client, alliance partners, contractors and supportive systems.





A highly visible performance structure...

The open and collaborative nature of an alliance enables a visible and dynamic view of performance. This is a fundamental opportunity; best practice, performance gaps and waste become visible and then more easily subject to improvement initiatives when performance is so clearly visible.

A common view of performance will lead to a shared review and action planning process. This in turn enables more collective ownership of improvement plans.

There is a clear link between open and collaborative teams and visibility of performance.

HIGHWAYS AGENCY DELIVERY HUB, PERFORMANCE VISIBILITY BOARDS

The Highways Agency's Delivery Hub in Birmingham needed to get a single, highly visible view of their performance so everyone could see the collective goal and progress towards its achievement. They set up the visualisation centre/Vis boards to drive a more collaborative approach to identifying and solving common issues.

The visualisation is about openness and clarity. Problems are identified and allocated to a named individual to progress the solution. The problem is shared openly for others in the team and Agency, not only to visually see progress, but also to offer input and support – a collaborative approach.

Dates for resolutions are set in advance, and agreed with the team or individual who raised the initial problem. Progress is recorded using the RAG (Red, Amber, Green) rating.

“...if there are red crosses, it's easy to see - and it drives everybody to achieve. At the end of the day nobody likes their board to be full of red crosses!”

Highway Agency Delivery Hub, The Cube, Birmingham

Integration of the client organisation within the delivery alliance

The best performing alliances have members of the client organisation as a core part of their team. These team members are seen to play a crucial role as part of the team, they also bring an understanding of stakeholder and customer issues. Having client members integrated into delivery teams sets the tone for integration and helps develop relationships across the alliance.

In more mature arrangements integrated delivery teams will include operational representatives. This high degree of integration increases the knowledge that is available for designing and delivering operable solutions.



With clear contract management...

While the alliance will be highly integrated with the clients overall organisation, a clear contract management role must be maintained. In an alliance the contractual client role will be thinner than in a traditional model and will utilise the intelligence gained from the visibility of cost and performance.

It is, however, important that as integration is developed a clear client role is maintained to manage the contract and associated governance. Losing sight of the need for contract management and governance has been a clear lesson from some of the early integrated alliances.

Whole supply chain integration

Successful alliances are about integrating as much of the value chain as is practical. Effective integration of the supply chain into the alliance gives genuine opportunity for meaningful early contractor involvement. Early involvement providing a greater degree of influence over the release of value.

This is illustrated in the diagrams below where supply chain involvement is related to spend and influence for both traditional and alliancing approaches.

Figure 5
Traditional Approach

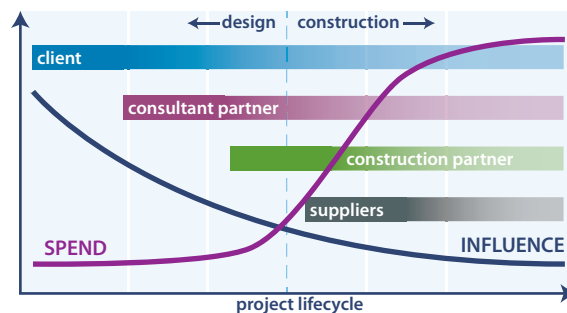
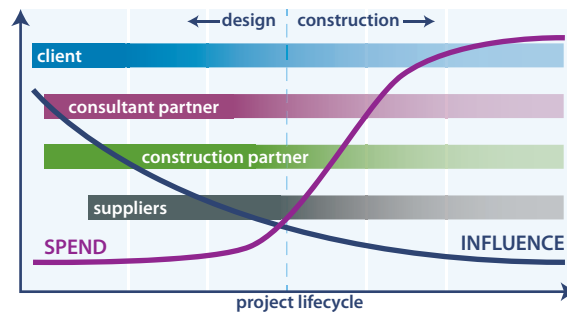


Figure 6
Alliancing Approach



This is particularly important for complex delivery environments where innovation and new solutions are the only way to achieve the desired outcomes.

Before project delivery the client needs to be engaging or 'pre conditioning' the supply chain to ensure that the supply chain is capable of meeting potential future requirements, providing the supply chain with the opportunity to influence even earlier in the process.



An emphasis on developing the organisation around integrated teams

Successful alliances will develop and maintain integrated teams, brought together on a best person for the task basis. A shared commercial model (see **Commercial** section) should enable the development of integrated teams by ensuring:

- teams have a common set of overriding goals
- that the constituent organisations are incentivised to find the right person or team, not simply to use their available people.

Effective alliances will often have a unifying brand or identity that brings teams together. Within integrated teams it will not be immediately obvious which organisation an individual comes from.

Where more mature strategic supply chain relationships have been developed, individuals from the extended supply chain will also be included in integrated teams.

Integrated teams supported by partner networks and capability

Effective alliances can deliver value by developing highly integrated teams while also maintaining active relationships and networks with the constituent partners. The ability to simultaneously deliver value from integrated teams and cross partner networks is a key difference between an alliance and a joint venture.

Processes will be in place to maintain both team integration and partner alignment. Teams will review their own performance and how they are using integration to deliver value.

The connection with partners will be maintained through a structured and formal review process that focuses on alignment, partner contribution to the alliance and relationships.

Core teams co-located as an enabler to integration

The physical co-location of the teams helps ensure a common identity, more collective ownership and dynamic communication. This goes a long way to creating the right relationships and the right behaviour. Where it has been developed well, co-location is recognised as a fundamental enabler to the integration of teams and hence to performance.

The joint location will be backed up by an effective joint working platform allowing shared access to information, documentation and common processes.



Integration Actions

From the research conducted for this document, the following list of actions, necessary for establishing effective integrated collaborative teams, has been compiled.

- Establish alliance objectives aligned to the Client's desired outcomes and ensure visible sign off by all partners and the client.
- Establish highly visible communication platforms and channels for performance information based on 'single version' data processes.
- Ensure performance information drives the teams together not apart by insisting performance is displayed based on outcome and output delivery and whole team performance, not the performance of individual partners.
- Exploit client team member's advantages in establishing relationships with key stakeholders of the alliance.
- Ensure separation of contract management and assurance from contract delivery within the client function or through a client appointed third party.
- Develop team structures that include strategic subcontractors and suppliers in integrated delivery teams.
- Establish a delivery process with early, formal, intervention points for supplier and operator input to solution development.
- Develop an organisation that includes strategic subcontractors and suppliers as part of integrated delivery teams.
- Establish a look and feel for the alliance that reinforces the integrated team and supports collective ownership by all partners.
- Establish a process for selection of team members based on 'best person for the task' from across all alliance members including the Client teams.
- Celebrate success as integrated teams, not as individual partners.
- Develop relationships and networks that link partner capability to the alliance, encourage individuals to bring learning from their home organisations into the alliance.
- Ensure individuals are connected with their home organisations and that processes ensure individuals are recognised and valued by their home partner.
- Establish a co-location strategy for core teams.
- Establish joint communication routes for all parties that provides consistency among all partners.
- Provide a working platform that enables collaboration and integrated working.
- Ensure integration – and change programmes – include satellite and remote locations.

Refer to Appendix A for the Integration Actions Check List.

Section 2.3

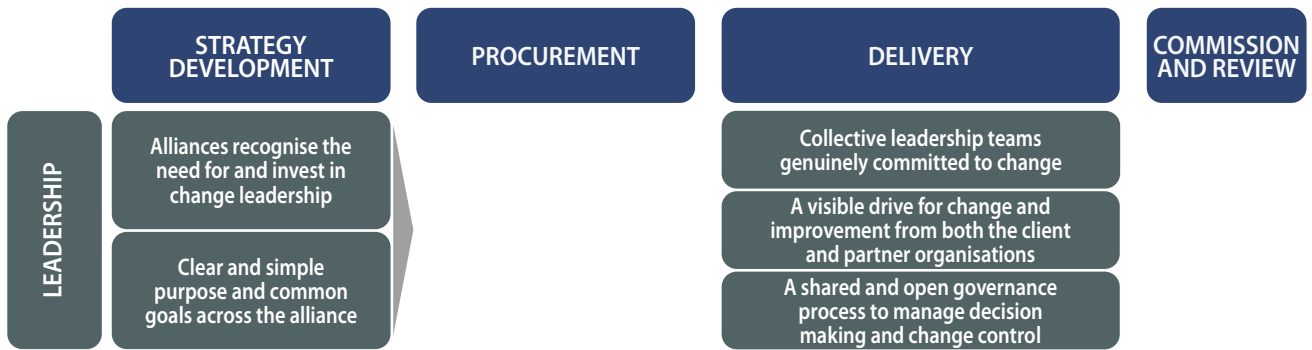
Leadership Characteristics

In the complex environment of an alliance, committed, visible and consistent **leadership** is important across all the participating organisations.



Demonstrated by all of the reference visits and clearly articulated within the literature was the need for strong, positive, committed **leadership** to drive the alliances' performance. This **leadership** was demonstrated not just by members of the alliances in the offices established for the delivery, but also by leaders in the home organisations. The principle characteristics of this leadership are shown below.

Alliance Leadership Characteristics



Alliances recognise the need for and invest in change leadership

In establishing a new approach, senior roles in the client organisation not only need to deliver effectively in a collaborative environment, but they also need to create and manage change. There will be a focus on collaboration and new ways of working.

Alliances recognise this critical dependency on change leadership and establish programmes that develop the required leadership capability.

Development programmes will cover both senior leadership and delivery team leadership roles. The aim being to provide a critical mass of collaborative leaders to drive the delivery of the programme.

ALLIANCING IN THE UK RAILWAY SECTOR

Introducing alliancing into the UK Railway sector required a major cultural change programme. Companies and people with years of experience in more adversarial contracts require a major change in mind-set and behaviour. **Unless behaviour changes nothing changes.** Such a change programme needs to be led by the client organisation and must have the support of managers throughout the alliance as "Change Leaders".

Research by RMIT University in Australia has identified that the alliance manager requires discernibly different qualities from project managers in traditional contracts. Their research identified that the culture of collaboration, innovation through cross-company learning and best-for-project focus drives the need for greater relational management, people management, leadership skills and experience. The outcome was the Australian construction industry sponsoring Alliance Management courses, up to degree level, at RMIT University and Victoria University.

With Network Rail PTP used a Personality Assessment tool to support the selection for leadership positions focussed on behaviour and attitudes. The first Network Rail alliance, Hitchin, led by an Alliance Manager who had never been in an Alliance before, was delivered six months early.



Clear and simple purpose and common goals across the alliance

The one single most important aspect of leadership is to establish a clear common overriding purpose for the alliance and a simple set of common objectives.

Collective leadership of the alliance purpose and objectives will create the absolute alignment needed for an alliance to be effective and will ensure a collaborative response to challenges.

Collective leadership teams genuinely committed to change

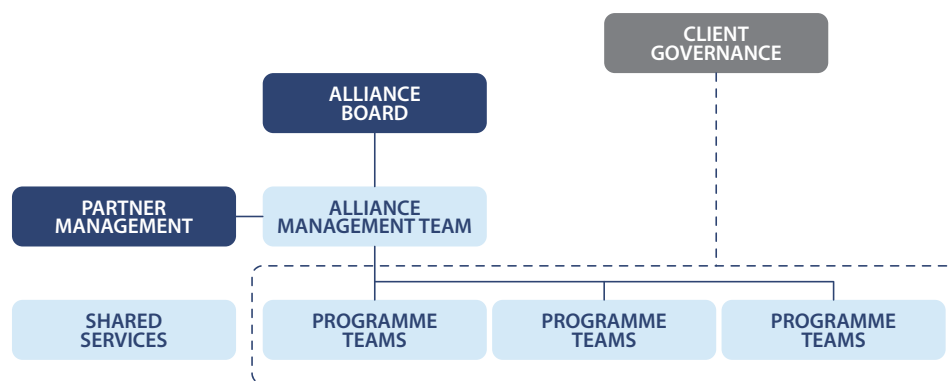
Successful alliances will have a visibly committed leadership team driving the changes necessary to deliver the required outcomes. Visible and collective leadership is fundamental in creating a collaborative approach and overcoming blockers and issues in the early stages of alliancing.

This may be in the form of a joint team of a formal board structure or an executive team – or a combination. The overriding requirement is for direction to be set and led by a senior collective group.

Whereas a board or joint leadership team will have cross alliance representation the management structure will be appointed on a best for the task basis. In maturing alliances not all partners will necessarily be represented in the senior management team.

Figure 7

A typical alliance management structure



Board composition

- Client executive as non voting Chairman, or an appointed independent Chairman.
- Senior representation from all alliance shareholders.
- Executive Board members from alliance management structure.

Alliance management team

- Functional management team for the alliance, appointed on a best person basis.

Partner management

- Client and Partner group established to oversee partner specific aspects, for example resource allocation, commercial resolution, HR



**NETWORK
RAIL, READING
STATION
CAPACITY
INCREASE,
GOVERNANCE
STRUCTURE**

The Reading Station Capacity Increase programme presented Network Rail with a complex and expensive problem. How to increase the through flow of passengers and goods at Reading station without disrupting existing services in a crowded, busy and potentially dangerous environment?

Their response was to form a series of close alliances with key suppliers and stakeholder groups.

When asked “What would they have done differently?” to make their delivery even more successful and effective their response was that they would look to have earlier establishment of their Weekly Executive Steering Group. This group gave a forum for the exchange of progress, resolution of issues and the planning of future events. It also provided a channel for collaborative solutions to a host of problems on the programme.

The fact that participation was at senior level in the organisations enabled immediate authorisation of any necessary changes and works, which reduced hold-ups to the programme delivery and contributed to completion being achieved many months ahead of schedule.

A visible drive for change and improvement from both the client and partner organisations

A clear commitment to change from the constituent organisations provides a remit for teams to work collaboratively and work differently. The commitment to change drives innovation.

All constituent organisations and in particular the leaders of those organisations articulate a set of common goals, an appetite to work collaboratively and a commitment to improve.

The sponsor of the alliance, most usually a senior executive in the client organisation with full budgetary responsibility, will be committed (visibly), to the new way of working.



SPONSOR ALIGNMENT

In “Industrial Megaprojects: Concepts Strategies and Practices for Success”, Edward Merrow has found through his work on large projects that a common cause of failure is for the sponsors to be inappropriately engaged or misaligned to the required behaviours.

A shared and open governance process to manage decision making and change control

Open decision making and governance processes are important enablers to an effective alliance environment. Open and visible governance will:

- help establish a common understanding of business requirements
- support the development of an aligned organisation.
- provide the formal system for an equitable approach to change control.

A collaborative arrangement does not reduce the need for effective and timely governance. In fact the self assurance processes likely to be used in an alliance model will only be effective if they are supported by timely and visible governance.



Leadership Actions

The following list of suggested actions will help in establishing strong leadership and ensuring the ultimate success of the alliance.

- Jointly establish the leadership behaviours required within a development programme to create the required leadership.
- Ensure a high degree of visibility for performance information based on outcome and output delivery and whole team performance, not the performance of individual partners.
- Ensure that existing client teams are covered by the change programme to emphasise the new way of working and the new behaviours required.
- Ensure that job specifications include details of the behaviours expected of the people in those positions.
- Establish a leadership selection process on a best for task basis, recognising the range of skills required for success with a special focus on change management.
- Engage key supplier leadership teams in delivering change through their demonstrable commitment and behaviours.
- Develop a change plan to create an enabling culture in which failure is not penalised, but seen as an opportunity for learning and an essential part of a strong continuous improvement culture.
- Set up governance processes for the alliance covering decision making and change control. Processes that are directly aligned with overall goals, and that provide equitable change control.
- Agree criteria for taking decisions on a best-for-project approach; to focus delivery teams on achieving outcomes not team or partner requirements.

Refer to Appendix A for the Leadership Actions Check List.

Section 2.4

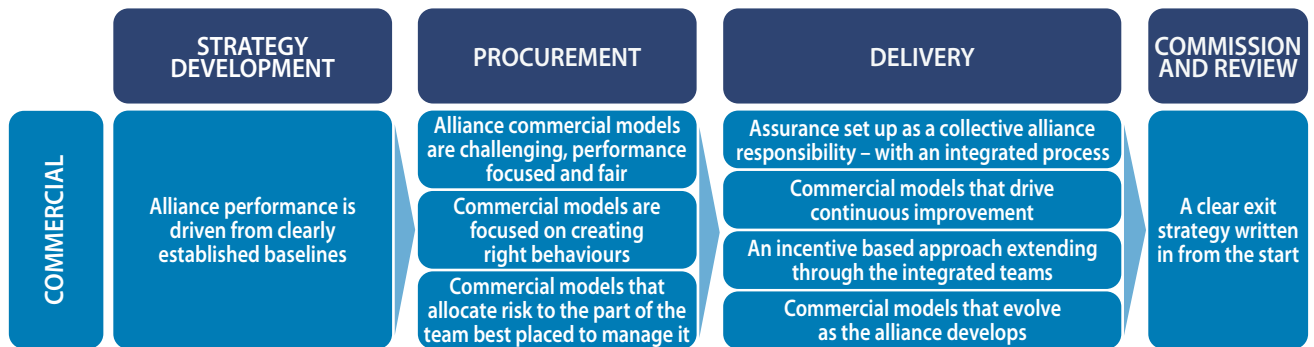
Commercial Characteristics

In an alliance the commercial model is central to creating and sustaining the right environment and behaviours – a well developed and thought through **commercial** model becomes more fundamental than the contract.



The fourth characteristic common amongst the reference visits was the clear need for the **commercial** model to encourage and set the right environment for the project. **Commercial** incentives were needed to drive the desired behavior as well as reward the required performance in all the alliances. In each case, the commercial terms encouraged joint delivery, bringing the collaborating organisations together in a 'one-for-all' approach.

Alliance Commercial Characteristics



Alliance performance is driven from clearly established baselines

Performance is driven from a clear baseline, rather than bottom up or negotiated targets. This will be accompanied by an open book approach to costs, for all organisations including the client.

All aspects of performance will start from clearly visible baselines, for cost this could be a current cost base or the project/programme affordability.

Baselines and incentives are not just focussed around costs. The same principle of incentivising performance against baseline performance can be applied to schedule safety, environmental, operability, sustainability and customer satisfaction.

Alliance commercial models are challenging, performance focused and fair

In achieving the right alignment with required outcomes, in driving performance from understood baselines and in being improvement focused, the commercial models are likely to be demanding and challenging.

There should be a joint recognition, at the outset, that alliancing is based on challenging commercial and performance structures and is not simply about 'being' collaborative.

Alliance commercial models should also recognise the fair and equitable return required by all the parties. A joint understanding of fair return should be established at the outset and reviewed as an on-going success measure for the alliance. If aligned performance targets are being met, a fair return will be generated.



NETWORK RAIL, READING STATION CAPACITY INCREASE, FAIR RETURN LESSON

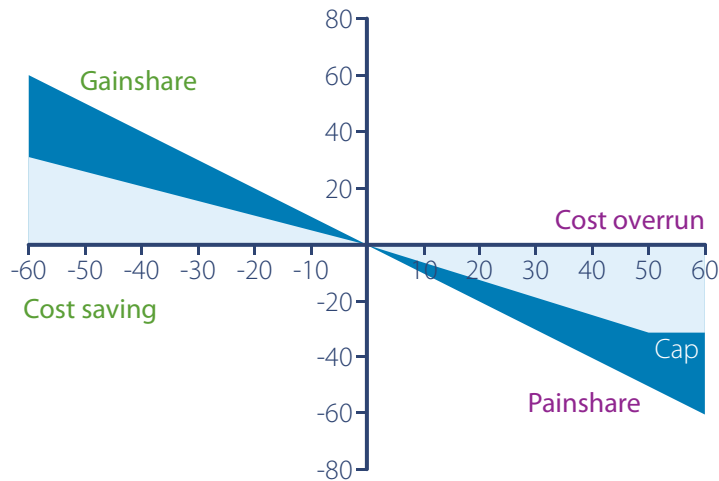
The Reading Station Capacity Increase programme brought together many parties; stakeholding, contracting and sub contracting in a series of delivery alliances.

A lesson incorporated in the commercial arrangements was that “All the words are fine until somebody is losing money or not getting fair value.” From this they were able to evolve their risk/reward model to ensure that fair returns were delivered for the work and risk undertaken.

The concept of fairness was internally managed and relied on peer to peer discussion to determine commercial targets.

Figure 8

Typical reward and risk sharing arrangement with partner risk cap



Commercial models are focussed on creating the right behaviours

Commercial models for an alliance will be built to create the behaviours that will deliver value and will be relational, not transactional. A clear understanding of the behaviours that will deliver value and improvement provide the focus for the commercial model.

A typical shared reward commercial model is shown in the figure below. Models such as these used a shared reward pool related to overall alliance performance to source collaborative behaviours.

Figure 9

Typical shared reward commercial model





Commercial models that allocate risk to the part of the overall team best placed to manage it

Business and project risk should be clearly and jointly identified at the outset as part of an on-going risk management process. Risk items should then be allocated to the part of the team best placed to manage that risk.

The commercial model should facilitate this sort of risk allocation.

For example, where the commercial model is based on a historic cost baseline then actual project risk will be part of that baseline and included in the commercial model.

Assurance set up as a collective alliance responsibility – with an integrated process

A critical aspect in establishing an integrated alliance is assurance, both for cost and quality. Mature alliances will combine aspects of both independent and self assurance. They will have made an important shift from traditional models where assurance is a client activity that reinforces traditional client and contractor roles.

In alliances clients get their assurance from highly visible processes that are the responsibility of the alliance to maintain.

Where assurance covers a critical activity an independent role might be used, this can be in the form of an organisation providing cost assurance or an independent role that might be part of the leadership team of the alliance. In either case it is important that the assurance is provided to the alliance collectively and is not a separate client activity.

The requirement for cost assurance illustrate this. All parts of the Alliance need assurance that costs are appropriate and fair. The assurance process confirms this commercial equality – and in doing so becomes an important enabler of on-going trust.

Commercial models that drive continuous improvement

Continuous improvement fits well within an alliance arrangement, with the visibility of performance and integrated teams acting as strong enablers to improvement. The commercial model is also an important part of this and will drive continuous improvement through ratchet mechanisms. For example through annual ratchets in target cost baselines.

An incentive based approach extending through integrated teams

A strong incentive based approach will be central to an alliance commercial model. It is a natural extension of this to establish incentive arrangements for teams.

This extends core principles around incentive based performance, alignment of objectives, collaboration and continuous improvement from the overall alliance through to the integrated delivery teams.

The commercial model will evolve as the alliance matures. The most obvious evolution will likely be the progressive extension of the commercial model to other parts of the supply chain.



ANGLIAN WATER EVOLVED THEIR COMMERCIAL ARRANGEMENTS FOR THE @ONE ALLIANCE TO DRIVE BEHAVIOUR

From the outset, the commercial model for Anglian Water's @one Alliance has been developed with a focus on behaviours. The commercial model was recognised as being the means by which the right behaviours would be generated - and was therefore a fundamental building block for the whole @one Alliance environment. The continuing focus on behaviours has resulted in an almost constant evolution in the commercial model.

One example being the gradual shift to a commercial model centred on collective out-performance. The first evolution of the model included partners generating a return from both fee recovery and then gain share from additional out-performance. The latest evolution is simply based on partners generating a return from collective out-performance. This has gradually increased the behavioural focus on further levels of out-performance - and removed any incentives around turnover, hours charged, fee recovery and perceived partner self-interest.

A particular change that demonstrates the focus on behaviour was that the initial model included an element of partner gain share from the projects delivered by the individual partner, together with a subsequent gain share from collective out performance. Within the first year of operation the @one Alliance collectively decided the individual gain share element was a potential blocker to collaboration - and so agreed to remove it completely and just have a common shared gain share arrangement.

Commercial models that evolve as the alliance develops

Commercial models will evolve in order to maintain the focus on required behaviours.

This could be the result of increased maturity and reflect an ongoing shift in the required behaviours. Conversely, where the commercial model generates unintended or perverse behaviours it will quickly, by agreement, be changed.

A clear exit strategy written in from the outset

Integration and the right behaviours are enabled by knowing the arrangement for the closedown of the alliance.

The commercial model needs to be very clear about the separation of the parties, the remaining liabilities and how staff will be affected. This gives both individuals and organisations clarity and so provides the confidence that allows them to commit to the greater integration required to establish the alliance.



Commercial Actions

The actions below will help in developing commercial arrangements that establish and communicate the collaborative principles necessary to deliver the best value from the alliance.

- Agree the baseline that the commercial model will drive performance from. Wherever possible, the baseline should provide top down setting of targets, not bottom up agreement.
- Establish clear boundaries that the commercial model uses in setting top down targets.
- Ensure client requirements are included in the alliance reward criteria and modernisation.
- Develop a joint understanding of fair return and ensure that this is built into the commercial model.
- Establish a review process for continuously aligning alliance business performance with partner return.
- Establish a clear and agreed understanding of the behaviours that will deliver success and design a commercial model to incentivise those behaviours.
- Jointly establish a risk management framework that clearly identifies where risk is task managed and hence where it will be allocated in the commercial model.
- Collectively and regularly test the proposed commercial model to ensure it drives the desired behaviours.
- Establish open book arrangements for all parts of the cost base, including the client.
- Establish clear and highly visible assurance processes as a collective alliance responsibility.
- Where appropriate combine independent and self assurance: independence can be through an appointed organisation or an independent senior role or roles.
- Develop ratchet mechanisms within the commercial model as part of the incentivisation. This could be in annual ratchets in the baselines.
- Establish back-to-back commercial arrangements for the appropriate parts of the supply chain. This will require clear categorisation of the supply chain and cascade of the commercial model.
- Establish a joint review process for the commercial model, to reflect on-going evolution or modification.
- Consider extending aligned incentive arrangements to integrated alliance teams.
- Clarify exit strategy at the outset making clear how liabilities and final reward sharing is allocated.
- Define the process by which the parties will disengage and make clear how any further relationships will be established in the future.

Refer to Appendix A for the Commercial Actions Check List.

Appendices

Appendix A	Actions Check Lists
Appendix B	References
Appendix C	List of Contributors



The following section is intended to be an aide memoir to the team setting up the alliance. The checklists suggest actions to be considered as part of the change programme and where they fit in the lifecycle of the alliance. It also provides a simple performance monitoring tool to monitor the implementation and effectiveness of the change programme.

Behaviour	Action	Relevant lifecycle stage	Status R A G	Update / comments
	Identify the corporate and individual behaviours that will deliver success and make them an explicit part of the overall delivery strategy.	Strategy Development	■ ■ ■	
	Embed behavioural assessment in the partner selection process at a weighting that makes it an important contributor to determining future partners.	Procurement	■ ■ ■	
	Embed behavioural assessment in the selection of individuals for key roles, including key client positions.	Procurement	■ ■ ■	
	Establish an initial commercial model that rewards the right behaviours and be prepared to review and adapt the model as necessary to continue to encourage these behaviours.	Procurement	■ ■ ■	
	Ensure joint and widespread communication of the commercial model – so creating the right behaviours across all parts of the organisation; including client, partners and supply chain.	Delivery	■ ■ ■	
	Ensure the alignment of partner, team and individual goals so that responses to challenge are collective and collaborative.	Delivery	■ ■ ■	
	Set up individual and team programmes that develop, support and encourage collaboration.	Delivery	■ ■ ■	
	Establish a culture in which innovation is encouraged and welcomed.	Delivery	■ ■ ■	
	Establish a learning process to ensure that lessons from innovation are embedded in the organisation.	Delivery	■ ■ ■	
	Create a programme to support integrated teams in self assessment and improvement.	Commission and Review	■ ■ ■	
Ensure performance information is highly visible to the integrated teams to allow them to drive continuous improvement.	Commission and Review	■ ■ ■		



Integration	Action	Relevant lifecycle stage	Status R A G	Update / comments
	Establish alliance objectives aligned to the client’s desired outcomes and ensure visible sign off by all partners and the client.	Strategy Development	■ ■ ■	
	Establish highly visible communication platforms and channels for performance information based on ‘single version’ data processes.	Strategy Development	■ ■ ■	
	Ensure performance information drives the teams together not apart by insisting performance is displayed based on outcome and output delivery and whole team performance, not the performance of individual partners.	Strategy Development	■ ■ ■	
	Exploit client team member’s advantages in establishing relationships with key stakeholders of the alliance.	Strategy Development	■ ■ ■	
	Ensure separation of contract management and assurance from contract delivery within the client function or through a client appointed third party.	Strategy Development	■ ■ ■	
	Develop team structures that include strategic subcontractors and suppliers in integrated delivery teams.	Procurement	■ ■ ■	
	Establish a delivery process with early, formal, intervention points for supplier and operator input to solution development.	Procurement	■ ■ ■	
	Develop an organisation that includes strategic subcontractors and suppliers as part of integrated delivery teams.	Delivery	■ ■ ■	
	Establish a look and feel for the alliance that reinforces the integrated team and supports collective ownership by all partners.	Delivery	■ ■ ■	
	Establish a process for selection of team members based on ‘best person for the task’ from across all alliance members including the client teams.	Delivery	■ ■ ■	
	Celebrate success as integrated teams, not as individual partners.	Delivery	■ ■ ■	
	Develop relationships and networks that link partner capability to the alliance, encourage individuals to bring learning from their home organisations into the alliance.	Delivery	■ ■ ■	
	Ensure individuals are connected with their home organisations and that processes ensure individuals are recognised and valued by their home partner.	Delivery	■ ■ ■	
	Establish a co-location strategy for core teams.	Delivery	■ ■ ■	
Establish joint communication routes for all parties that provides consistency among all partners.	Delivery	■ ■ ■		
Provide a working platform that enables collaboration and integrated working.	Delivery	■ ■ ■		
Ensure integration – and change programmes – include satellite and remote locations.	Delivery	■ ■ ■		



Leadership	Action	Relevant lifecycle stage	Status R A G	Update / comments
	Jointly establish the leadership behaviours required within a development programme to create the required leadership.	Strategy Development	■ ■ ■	
	Ensure a high degree of visibility for performance information based on outcome and output delivery and whole team performance, not the performance of individual partners.	Strategy Development	■ ■ ■	
	Ensure that existing client teams are covered by the change programme to emphasise the new way of working and the new behaviours required.	Strategy Development	■ ■ ■	
	Ensure that job specifications include details of the behaviours expected of the people in those positions.	Strategy Development	■ ■ ■	
	Establish a leadership selection process on a best for task basis, recognising the range of skills required for success with a special focus on change management.	Delivery	■ ■ ■	
	Engage key supplier leadership teams in delivering change through their demonstrable commitment and behaviours.	Delivery	■ ■ ■	
	Develop a change plan to create an enabling culture in which failure is not penalised, but seen as an opportunity for learning and an essential part of a strong continuous improvement culture.	Delivery	■ ■ ■	
	Set up governance processes for the alliance covering decision making and change control. Processes that are directly aligned with overall goals, and that provide equitable change control.	Delivery	■ ■ ■	
	Agree criteria for taking decisions on a best-for-project approach; to focus delivery teams on achieving outcomes not team or partner requirements.	Delivery	■ ■ ■	



	Action	Relevant lifecycle stage	Status R A G	Update / comments
Commercial	Agree the baseline performance that the commercial model will drive performance from. Wherever possible, the baseline should provide top down setting of targets, not bottom up agreement.	Strategy Development	■ ■ ■	
	Establish clear boundaries that the commercial model uses in setting top down targets.	Strategy Development	■ ■ ■	
	Ensure client requirements are included in the alliance reward criteria and modernisation.	Procurement	■ ■ ■	
	Develop a joint understanding of fair return and ensure that this is built into the commercial model.	Procurement	■ ■ ■	
	Establish a review process for continuously aligning alliance business performance with partner return.	Procurement	■ ■ ■	
	Establish a clear and agreed understanding of the behaviours that will deliver success and design a commercial model to incentivise those behaviours.	Procurement	■ ■ ■	
	Jointly establish a risk management framework that clearly identifies where risk is task managed and hence where it will be allocated in the commercial model.	Procurement	■ ■ ■	
	Collectively and regularly test the proposed commercial model to ensure it drives the desired behaviours.	Delivery	■ ■ ■	
	Establish open book arrangements for all parts of the cost base, including the client.	Delivery	■ ■ ■	
	Establish clear and highly visible assurance processes as a collective alliance responsibility.	Delivery	■ ■ ■	
	Where appropriate combine independent and self assurance: independence can be through an appointed organisation or an independent senior role or roles.	Delivery	■ ■ ■	
	Develop ratchet mechanisms within the commercial model as part of the incentivisation. This could be in annual ratchets in the baselines.	Delivery	■ ■ ■	
	Establish back-to-back commercial arrangements for the appropriate parts of the supply chain. This will require clear categorisation of the supply chain and cascade of the commercial model.	Delivery	■ ■ ■	
	Establish a joint review process for the commercial model, to reflect on-going evolution or modification.	Delivery	■ ■ ■	
	Consider extending aligned incentive arrangements to integrated alliance teams.	Delivery	■ ■ ■	
	Clarify exit strategy at the outset making clear how liabilities and final reward sharing is allocated.	Commission and Review	■ ■ ■	
Define the process by which the parties will disengage and make clear how any further relationships will be established in the future.	Commission and Review	■ ■ ■		



Challenges in Partnerships and Construction Projects

Naomi Brookes, Royal Academy of Engineering and European Construction Institute
<http://www.eci-online.org.uk>

National Alliance Contracting Policy and Guidelines

Australian Government, Department of Infrastructure and Regional Development
<http://www.infrastructure.gov.au/utilities/contact.aspx>

Industrial Megaprojects

Concepts Strategies and Practices for Success. Edward W. Merrow
ISBN: 978-0-470-93882-9

Project Alliancing

A Relational Contracting Mechanism for Dynamic Projects. Matthew Sakal
www.leanconstruction.org/media/docs/lcj/LCJ_05_005.pdf
Lean Construction Journal Vol 2 #1 April 2005. ISSN: 1555-1369

Collaborating Effectively, Expert advice on working productively with others

Harvard Business Review
www.hbr.org ISBN: 9781422162644

Program Alliancing in Large Australian Public Sector Infrastructure Projects

D.H. T. Walker and J. Harley, Melbourne RMIT University, Centre for Integrated Project Solutions
<http://www.rmit.edu.au/research/cips>
www.rmit.edu.au/pcpm

Improving Infrastructure Delivery: Project Initiation Routemap Handbook and Modules

Infrastructure UK
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/330374/0208_Routemap_Handbook.pdf

Reference visits:

Reading Station Capacity Increase

Andy Haynes, Finance and Commercial Director, Western and Wales, Network Rail

Highways Agency Delivery Hub, The Cube, Birmingham

Tony Turton, Capital Programme Manager, Major projects, Highways Agency

Anglian Water @one Alliance

Andy Gibb, Anglian Water, Peterborough

BG Group, Aberdeen

David Hughes, Project Portfolio Director, Capital Projects, BG Group Aberdeen and Alan Johnstone Managing Director Brownfield, Amec, Aberdeen



IUK would like to thank the following organisations that contributed time and expertise to the development of Alliancing Best Practice in Infrastructure Delivery.

Steering Group and Contributors

Anglian Water

Network Rail

Amec

PTP Associates

BG Group

Tesco

Carillion

Thames Water

Environment Agency

UK Power Networks

Highways Agency

University of Leeds

HM Treasury

@one Alliance

JCP

Contact details for members of the organisations above can be found at www.ice.org.uk/topics/industry-initiatives/about.

As stated earlier in the document the contributors are willing to discuss alliancing and share their experience and learning with you.

Infrastructure Client Group

Simon Kirby, HS2 Ltd (Chair)

Martin Buck, Crossrail

Adam Green, Carillion

Miles Ashley, Transport for London

Andrew Wolstenholme, Construction Leadership Council Association

Nirmal Kotecha, UK Power Networks

Andy Mitchell, Crossrail

Peter Adams, Highways Agency

Beth West, HS2 Ltd

Phil Wilbraham, Heathrow Airport Limited

Dale Evans, Anglian Water @one Alliance

Roger Bailey, Thames Tideway Tunnel

Prof. Denise Bower, University of Leeds/ Major Projects Association

Simon Murray, Consultant

Jim Barlow, Environment Agency

Cabinet Office

John Oliver, BG Group

Infrastructure UK (HM Treasury)

Mark Hagger, Environment Agency

Institution of Civil Engineers

Mark Worsfold, Ofwat

