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WATERWAYS ALLIANCE – A CASE STUDY OF WHAT CAN BE LEARNT FROM THE APPLICATION OF THE ALLIANCE MODEL TO A PROGRAM OF ENVIRONMENTAL WORKS

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ABSTRACT

The Alliance model is used to describe projects where a number of organisations form a commercial partnership to deliver the owner organisation's project or program of works. The model is used widely for infrastructure projects for government and private sector owners and application of this model to a program of environmental works has not been tried previously. The Waterways Alliance provides an example of the benefits of alliances to natural resource management programs.

The Waterways Alliance was formed in 2008 by Melbourne Water with three industry partners: Ecodynamics, Fulton Hogan and SMEC Australia. The purpose of the Alliance was the delivery of waterway and water quality projects for a five year period across Melbourne Water's operational area. The Alliance brings together the resources of a program manager and project initiator (Melbourne Water), with design and planning resources (SMEC Australia) and construction and maintenance resources (Ecodynamics and Fulton Hogan). This paper describes the experiences of the first two years of that program and the learnings to date.

The implementation of an alliance model required the formation of a new team and resulted in a significant amount of learning by all members of the team. This learning process was supported and facilitated by the Alliance Program Management Team, and the actions undertaken and the findings are documented in the paper. A key benefit of the program is the combination of all phases of project development and delivery within the one organisation, and the opportunity that that provides to take learnings from projects to projects. The process of review and knowledge sharing is promoted by a number of forums and processes, including a rigorous program of Post Implementation Reviews (PIRs). The data gathered from these PIRs have been used on subsequent projects to reduce costs by the adoption of learnings and innovations. The paper will describe the key learnings and methods for capturing them.

The change of delivery methodology has had a significant impact for Melbourne Water initiators. Through the Alliance, they are engaging with a new delivery model, which offers greater transparency around costs of project works and is delivered by a group that is actively encouraged to engage in constructive challenge. These two factors contributed to tension between the Alliance and initiators as project scopes and budgets were confirmed, and subsequently delivered. It is the authors' opinion that many of these issues would be likely to arise in other programs and could be avoided if a number of actions were implemented.

The Waterways Alliance model is an innovative solution to the problem of delivering a large-scale environmental program. The lessons learnt from this program will enable other natural resource management authorities to develop and implement large scale programs using the experience gained here.

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INTRODUCTION

Melbourne Water is responsible for the management of water quality and waterway assets for much of the greater Melbourne region. Its area of operations extends from Little River in the west to the Great Dividing Range to the north, and all of the Westernport catchment. Melbourne Water is responsible for delivering a program of works to improve and protect the health of Melbourne's rivers, creeks and bays, and enhance their environmental, economic and social values.

The long-term waterway objective is to ensure that Melbourne's rivers and creeks are healthy with increased numbers of native fish, platypus and plant life. The ten-year goal (set in 2005) is to have 50% of rivers and creeks in good or excellent condition by 2015 (as assessed by Melbourne Water's Index of Stream Condition). The long-term water quality objective is to protect and improve water quality to significantly counteract the effects of growth in greater Melbourne by achieving a net reduction in pollutant loads for waterways in the Port Phillip and Westernport region.

Each year a program of works is developed to achieve targets by undertaking capital works and maintenance and funding grants to landholders. In 2008/09 works were undertaken via over 300 capital projects and the value of stormwater quality and waterways works was approximately \$34,000,000. The scope and scale of these projects varies immensely and different delivery mechanisms have been developed to deliver parts of the program.

The Waterways Alliance was formed in 2008 by Melbourne Water with three industry partners: Ecodynamics, Fulton Hogan and SMEC Australia to deliver waterway and water quality projects for a five year period across Melbourne Water's operational area. The Waterways Alliance was formed to deliver predominantly high risk projects, that is, those that require design, ecological assessments or planning approvals. The Alliance brings together the resources of a program manager and project initiator (Melbourne Water), long-term operational maintenance (Melbourne Water), with design and planning resources (SMEC Australia) and construction and maintenance resources (Ecodynamics and Fulton Hogan).

1 HOW DOES THE PROGRAM ALLIANCE MODEL WORK?

1.1 Alliance Overview

The alliance model is used to describe contractual agreements where a number of organisations form a commercial partnership to deliver the owner organisation's project or program of works. The model is widely used for infrastructure projects for government and private sector clients. Characteristics of the alliance model include (DTF, 2006):

- collective sharing of risks
- a no fault, no blame and no dispute approach by alliance participants
- an open book financial model, where all costs are reimbursed, established profit margins for all works are negotiated and losses and profits are shared with all participants
- a best-for-project basis is adopted for all decisions
- the ability to incentivise non-financial objectives important to the client organisation
- the co-location of the Alliance Team
- the development of a new management structure for the team

Under a design or construct contractual agreement, specified risks associated with project delivery are allocated to each of the parties, and financial penalties apply should any party not deliver the requirements of the contract. Typically, the distribution of risk is a key point of negotiation, with the client passing on responsibility for many aspects of delivery, and therefore risk, to the contractor. Whilst under the traditional

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contract model the contractor must protect against the level of risk inherent in the contract, the alliancing model drives all partners to deliver works from a best-for-project perspective. This fundamentally translates to the potential to deliver works more efficiently and effectively.

The alliancing model is considered to work well where project scope and risks are not well defined and innovative solutions are required to achieve the client's outcomes. The model also encourages all participants to take ownership of the project and to engage actively in the delivery of the project to achieve the client's goals.

The alliance model has been applied to many projects and to relatively few programs of work. Projects relate to a single scope of work or key deliverable that is normally well defined and can be readily communicated to the project team and stakeholders. Programs are more difficult to define as they consist of numerous projects and run over a number of years. In many cases, not all of the projects within a program alliance will have been defined at the commencement of the alliance. As program alliances typically operate over a longer time period and have multiple project objectives, they need to be considered and reviewed differently to project alliances. As this paper details, program alliances can effectively deliver great outcomes, including significant opportunities for people development and improvements in the quality of projects delivered.

1.2 Alliance Financial Model

Under the alliance model, Target Outturn Costs (TOCs) are established to set a budget for the scope of works. The TOC is based on estimates of the actual cost of the works, to which a profit and corporate overhead margin are applied. The establishment of a project TOC is a major milestone for a project as it provides the budget against which delivery of the project will be measured. At the completion of the project the budget is reviewed and if it is delivered for less than the TOC, the savings are shared amongst all participants. Conversely, if the TOC runs over budget, the financial pain is also shared amongst participants.

TOCs contain project costs associated with directly delivering the works and costs associated with risks. These two items can be differentiated as follows:

- project cost always occurs, e.g. cost of constructing structures
- risks may or may not occur, e.g. delays as a result of wet weather

Identification and allocation of values to risks in projects is part of TOC development and an area that requires careful judgement by the project team to ensure a balance is struck between allowances for risks identified and the likelihood of them occurring. Opportunities are dealt with in a similar manner and decisions made about pursuing them are made in a team environment. The advantage of the alliance environment is that all risk and opportunity decisions are made in an open environment with the client and project team selecting the risk profile to be adopted.

A single TOC is developed for project alliances as the scope is defined at the outset. Program alliances develop and deliver multiple projects and therefore require the development of multiple TOCs. The gains and losses from individual projects are pooled and the net gain or loss distributed to alliance participants.

The development of multiple TOCs has a number of advantages, including:

- opportunities to learn from past projects and adjust new TOCs as they are developed; and
- the ability to review the apportioning of risk to ensure there is an even balance between the alliance and the client.

1.3 Waterways Alliance

The Waterways Alliance is a five year program of works, which is expected to deliver over \$70 million of projects. At the outset of the program, projects for the first two years of the Alliance had been developed and defined. The balance of the program was developed as the program proceeded, with the Alliance notified annually of the new projects to be delivered. At the start of each year, the Alliance is notified of the projects that are planned to be completed in that year. As at June 2010 (two years since inception), over 125 projects had been developed by the Alliance and 70 TOCs had been approved.

The range of projects to be delivered by the Waterways Alliance includes:

- weed control
- revegetation
- waterways bank stabilisation and fish passage structures
- stormwater quality treatment devices

The Alliance Team is responsible for all activities, from project approval to completion. The team requires a highly diverse set of skills to complete these tasks. Figure 1 outlines the diversity of skill sets engaged within the Alliance, with most of the groups retained on a full-time basis. With such a diverse team and some of the partners providing specialist teams to the Alliance, efforts had to be made to ensure all team members were engaged within the greater team. Actions to facilitate the building of the Alliance team included co-location of the entire team to a single office and regular social interaction in the early days of the Alliance.



Figure 1: Skill sets within the Waterways Alliance

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Management of a diverse team required a senior management team that was committed to the success of the Alliance via the development of a unified vision of goals and direction and an agreed program to achieve it. Success of the team required managers committed to humanistic outcomes in addition to project deliverables or technical outcomes.

2 ALLIANCE PROJECT LIFECYCLE

2.1 Overview

Projects are delivered by Melbourne Water Capital Approval and Delivery Processes. These processes have been established to manage projects from initiation, through delivery via the Alliance program, to handover. The model for major projects is detailed in Figure 2 and is typical for all Melbourne Water projects. The three major stages and responsibilities of a project's life are as follows:

- Initiation – projects are identified to meet resource condition targets and preliminary investigations are undertaken to identify constraints and demonstrate the project is feasible. Project initiation is undertaken by project initiators who have the responsibility for meeting asset condition targets within specified budgets.
- Delivery – the delivery mechanism in this case is the Waterways Alliance, which is responsible for development of designs, gaining approvals for the works, developing project TOCs and delivering the works.
- Operation – during this phase the asset is maintained by Melbourne Water's operational team and the asset condition is monitored by the project initiator.

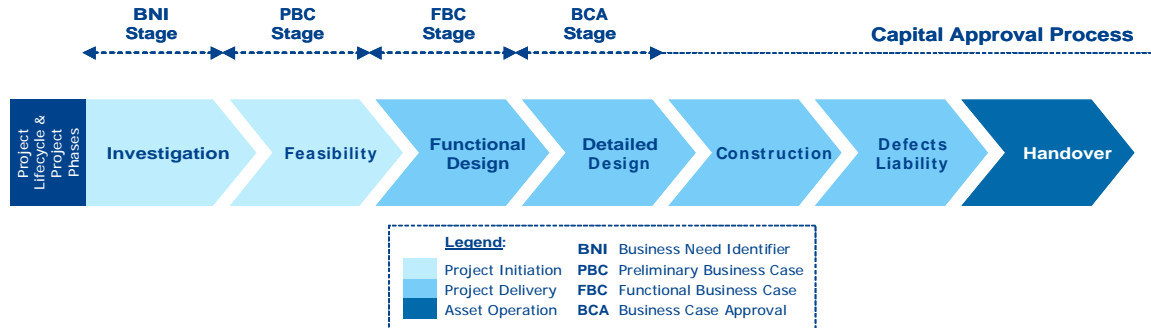


Figure 2: Major project capital delivery process

Transition between the various stages is recorded via a series of business cases that detail:

- project scope
- policy drivers and outcomes to be achieved
- internal and external stakeholders who will be impacted by the project
- options considered and the inherent assumptions
- opportunities and constraints (Risk Management)
- financial implications of constructing and operating the project
- implementation timing of the project

The Waterways Alliance receives projects at the completion of the Business Needs Identification stage and is then responsible for all subsequent business cases, including the Business Case Approval. The purpose of the business cases is to ensure the original intent of the project is being delivered and value for money is being provided to Melbourne Water. Business cases are jointly developed by the Project Manager and Project

Initiator, with support from the Alliance Team and other Melbourne Water stakeholders. Melbourne Water, as the client, then approves the business cases.

2.2 The Role of the Project Team

Project Managers are supported by a number of groups to provide specialist input, peer review and support for the project (refer to Figure 3). The project's support and knowledge team is drawn from:

- members of the Alliance Team
- project initiators
- other Melbourne Water project stakeholders
- external stakeholders, such as referral authorities or community groups

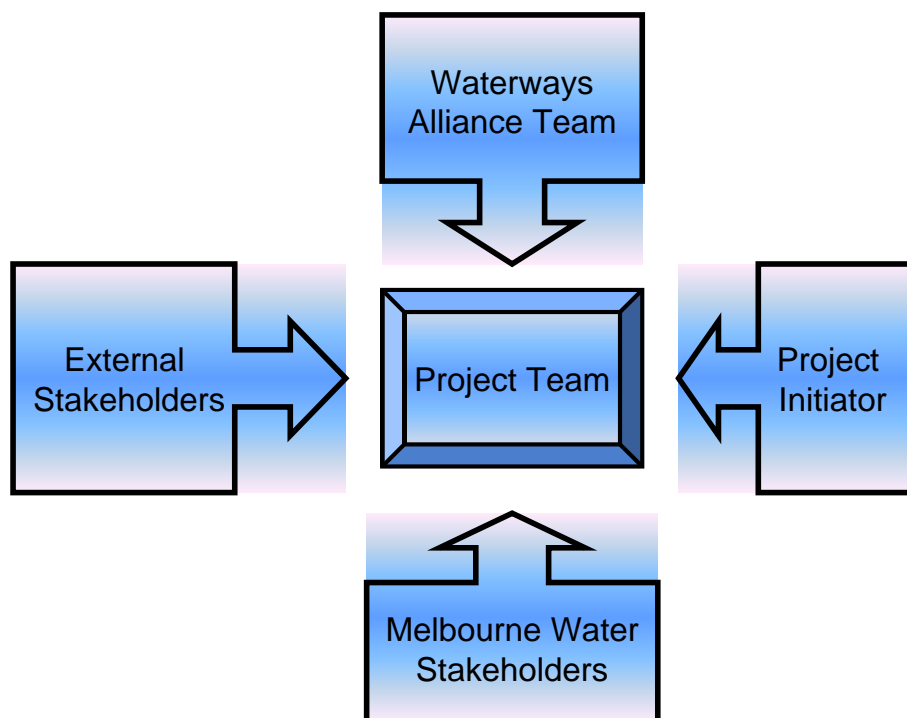


Figure 3: The Alliance Project Team

Each project team is selected on an as-needs basis for the particular project in response to the risks that a project poses. The size of the project team does not necessarily reflect the size or value of the project, with several small but complex projects requiring large project teams to address the project issues.

The project team meets regularly throughout the duration of the project to coordinate development and delivery of the project. At the commencement of the Alliance, a significant amount of time was invested by the Alliance Program Management Team (PMT) to get coordination meetings operating effectively. Measures undertaken to ensure that coordination meetings were constructive included:

- reviewing attendees ahead of the meeting to ensure all stakeholders were represented;
- developing and distributing standard agendas to aid in the development of the project conversation;
- confirming at the commencement of the meeting, roles and responsibilities of all attendees; and
- facilitating meetings to ensure a “conversation” about the project developed and that constructive challenge was encouraged.

Constructive Challenge requires all members of the project team to review critically all proposals put by the project team, recommend alternatives and reach consensus regarding the adopted outcome. Successful

Project Managers were able to generate constructive challenge within their project teams and move towards beneficial project outcomes. Not all project teams were able to engage in constructive challenge, as some individuals either were not comfortable questioning others or did not enjoy having their views or role challenged. In several cases, project teams required facilitation to ensure that constructive challenge occurred and that outcome-driven project discussions were held within the project team meetings.

Where constructive challenge was maintained in project team meetings, great outcomes were often achieved in terms of both delivery and the quality of the end product. By having the *right people* in the room, project issues could be addressed as a group and solutions arrived at by consensus. Over time this approach was found to generate significant time savings, as decisions did not have to be made outside the meeting. The project team was also responsible for the allocation of risk on all projects and this was an area of significant learning by all team members, with risks initially often not identified or undervalued in terms of impact.

2.3 Role of Project Manager

A Project Manager was assigned to each project to manage development of project business cases and the delivery of each project. In response to the number of projects and their scope, many Project Managers were assigned multiple projects. Fourteen Project Managers were required in the first year to deliver the program. Several had a single, large project to deliver and the remainder were managing up to eight projects.

Project Managers within the Alliance are responsible for projects from the completion of feasibility assessment (Figure 2), until handover of the project at the end of the defects liability period. This requires Project Managers to have a diverse range of skills to develop and implement projects.

To develop a project the following skills are required:

- identification and management of investigations of project constraints such as statutory planning, heritage management and environmental impacts;
- identification and engagement with a broad range of internal (Melbourne Water) and external agencies, and community stakeholders;
- management of design development, in particular providing constructability input;
- development of project budgets (TOCs), value engineering and Business Cases; and
- planning of delivery to manage a range of risks, including safety and environment and the milestone program.

The delivery phase (construction and defects liability) of the project requires:

- planning
- procurement
- safety and environmental management
- monitoring of productivity and cost
- proactive management of changing circumstances as they arise
- stakeholder engagement

The skill set required to deliver projects in an alliance environment is very broad. The Waterways Alliance's experience demonstrated that, in general, Project Managers from constructors needed to develop skills in project scoping and approvals, while Melbourne Water Project Managers needed to develop skills in the delivery aspects of their projects. Section 3.1.1 discusses in detail the steps taken to develop a robust set of skills amongst the Alliance's Project Managers.

2.4 Role of initiators

Initiators are responsible for the management of the asset condition of Melbourne Water's waterway and water quality assets. The Melbourne region is broken into a series of management units for which resource condition targets and implementation targets are set every five years. Initiators are responsible for working

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with land holders and public land managers to identify projects that will meet the management unit targets and for managing funding allocations for the works. Shortfalls or underestimates of project costs within the plan place pressure on initiators to meet targets. At times discussions around budgets and outcomes to allow the meeting of targets within budgets led to tension between the Alliance and initiators.

2.5 Stakeholders

Delivery of projects requires interaction regarding different issues with a range of stakeholders, including:

- Internal – approval and delivery of projects often required interaction with groups apart from the initiators to ensure the assets created could be maintained or that they did not affect other waterway impacts such as flooding.
- External Agencies – referrals and approvals were required from a number of local, state and federal agencies.
- Community groups – many waterways within Melbourne have friends or other groups that have an interest in projects and works that occur.
- Land owners – a large number of projects occur on private land and whilst initiators arranged for projects to proceed, negotiation was often required regarding the delivery of works and their impacts.

While the Project Manager oversaw and drove the project as a whole, a team was dedicated to negotiations with external stakeholders to ensure that needs of both the stakeholders and Melbourne Water were met. The Stakeholder Team worked throughout all parts of the project cycle to ensure that stakeholder needs were identified and met, particularly in relation to permits and referrals.

An important learning in the early days of the Alliance was the identification of which internal stakeholders had decision rights. In many cases conflicting advice regarding project outcomes would be received and it had to be determined which stakeholders were funding the project and what their preferred outcome was. This was an important learning for the whole organisation and was consistent across the four alliance programs within Melbourne Water.

2.6 Project Review and Continuous Learning

The Waterways Alliance's project cycle processes include regular reviews of progress and a discussion of the lessons that can be learnt from each project. Learnings are gathered in a number of ways, either from innovations that are documented as the project proceeds or from the findings of Post Implementation Reviews (PIRs). PIRs always occur at the completion of the construction phase of the project and in many cases at the completion of major milestones, such as design or TOC development. The purpose of the PIR process is to review robustly what has taken place on the project to date, and to identify what went well and which areas leave room for improvement.

PIRs and the implementation of lessons learnt through the delivery of projects is a unique opportunity that exists specifically within the alliance environment, because the same team will be delivering the next projects. PIRs review specific areas of the project, which include:

- project review process
- consultation details and outcomes
- approvals
- design
- budget performance and cost estimation
- safety and environmental management performance
- construction issues and technical aspects of the project
- milestones
- resourcing

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Whilst the review of project performance is not unique in itself, what is different about the alliance model is that information that is typically not shared across organisational boundaries is openly and transparently contributed to and available to all parties involved in the alliance. For example, under a traditional delivery model, discussion regarding cost optimisation and the passing on of savings is one that would not occur with the broader project team (sub-contractors, partners, etc.) and the client. The idea of competitive advantage is applied differently within the alliance model, where disclosure of financial results drives the team to gain further efficiencies and to innovate in order to share collectively in the benefits of improved performance.

The benefits of sharing learnings and doing so in an alliance environment also provides unique opportunities to waterways managers at Melbourne Water. This is due to the level of engagement that can be achieved with waterways managers and the delivery team throughout the entire project delivery cycle. The process of implementing learnings can be applied immediately to the next projects being proposed by the waterways managers. The learnings can also be applied across groups, thus further benefiting both the client and the partner organisations.

The alliancing model provides significant advantages over the traditional delivery model for waterways managers due to the proactive driver of continuous review and application of learning.

3 LEARNINGS TO DATE

3.1 *Developing the People*

3.1.1 Development of Project Managers

Project Managers were drawn from several of the Alliance's participants at the commencement of the program. In their previous roles, some of the Project Managers had acted as either client representatives or construct-only Project Managers. Client representatives had previously worked with project initiators to develop and implement projects using subcontracted design and construction resources. The construct-only Project Managers sourced from the constructor partners had experience in the pricing and delivery of designed and documented projects. Delivery of projects in an alliance environment is significantly less compartmentalised and requires a more diverse set of skills than either group had previously been exposed to.

At the commencement of the program, the Alliance's group of Project Managers was relatively new to the concept of alliancing. The varied experience levels of the Project Management group needed to be addressed proactively to prevent sub-teams forming, as this may have led to barriers to knowledge sharing. The four common phases of team development, i.e. Forming, Storming, Norming and Performing, were observed within the Alliance, particularly amongst the Project Managers who were exposed to the greatest degree of change of all of the Alliance participants.

To ensure the success of the Waterways Alliance, two key aspects needed to be addressed within the Project Management group: skill development and team culture development. Neither was seen to be more important than the other due to the symbiotic nature of shared learning and a healthy team culture.

Skills-based issues are relatively simple to define. This skills gap was identified by the Alliance Program Management Team and a number of training opportunities were identified for various members of the team. Of course, it is recognised that experience cannot be up-skilled via training courses, therefore a Project Managers' Forum was established within the Alliance to provide an informal and safe space for Project Managers to ask questions of each other, share experiences and build a sense of team. The PMS' Forum was facilitated by a member of the Management Team without a direct reporting relationship to the Project Managers. The role of the facilitator was to encourage collaboration between the groups of Project Managers that held specific skill sets. In the case of the Waterways Alliance, these groups were diverse; construction, landscaping, environmental/natural resource management and contract administration.

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Examples of tools used to grow the collective skills of the Project Management team were discussion sessions and presentations on specific skills held by individuals, dissection of issues that had been experienced on site and general feedback sessions on how the new alliance systems were aiding or impacting the group's performance in project delivery.

Key to the success of developing technical and project management skills was the level of support and encouragement that was provided by the Management Team to the Project Managers. It was recognised that Project Managers found themselves on a very steep learning curve.

The development of the team culture within the Alliance is an on-going journey. It can be said, however, that the key issues that were identified and dealt with during the storming and norming phase of the Alliance's Project Management team, did ultimately result in a highly performing team.

The majority of the risks and opportunities that a newly forming team will experience are related to the interaction of people with people, or team culture – quite a challenge for a management team that has not yet had the chance to go through the team development process itself. Key cultural issues were identified anecdotally by the Management Team.

The Waterways Alliance took the lead from Melbourne Water and adopted the Organisational Culture Inventory (OCI) model to measure the culture of the team. The OCI is a survey that outputs a snapshot result of the culture of an organisation (and teams within it) based on three types of behaviours. These are Constructive (blue), Passive Defensive (green) and Aggressive Defensive (red). Such a survey was conducted six months after the Waterways Alliance was formed. The results demonstrated a Project Management team in which the dominant behaviours by far consisted of the passive and aggressive defensive styles. The survey confirmed what the Management Team had identified, but more importantly, allowed the Management Team to have a means of communicating and resolving the issues based on real data.

Following review of the first set of OCI data, a program was run with the Project Managers to understand the details of their concerns regarding the Alliance. The review was conducted by an independent consultant and included one-on-one interviews and several follow up group sessions. A key finding of the discussions was the establishment of unanimity of intent amongst all of the Project Managers that they were all with the Alliance program to improve the environment and learn and develop themselves. At this point, the Project Managers started to consider themselves a team and helped each other to achieve the objectives of the Alliance, irrespective of the individual's home organisation or level of experience.

A second OCI survey was conducted 12 months after the first. The OCI survey results (Figure 4) provided the Alliance Program Management Team an opportunity to see how the level of support, additional training, knowledge sharing and team development had impacted the Project Management team. Anecdotally, the Management Team knew that the climate had changed significantly within the Alliance. Evidence of this was seen in the PMS' Forum and generally throughout the project delivery cycle. The survey demonstrated two key successes for the Project Management group: significant and notable increases in constructive behaviours and matching decreases in defensive behaviours.

The impact of having to form new working relationships for the Project Management team had shifted significantly in the first 12 months of the Alliance. It is impossible to ascertain how much of the improvement demonstrated by the OCI survey can be attributed to the proactive (and sometimes reactive) actions of the Alliance's Management Team, and how much can be attributable to the passage of time. What is clear is that a group of people who are critical to an organisation's success, and who have been essentially thrown in the deep end by new leadership, new systems, new faces, new projects and a new team setting without established interpersonal relationships, will experience the storming phase of team development with utmost intensity.

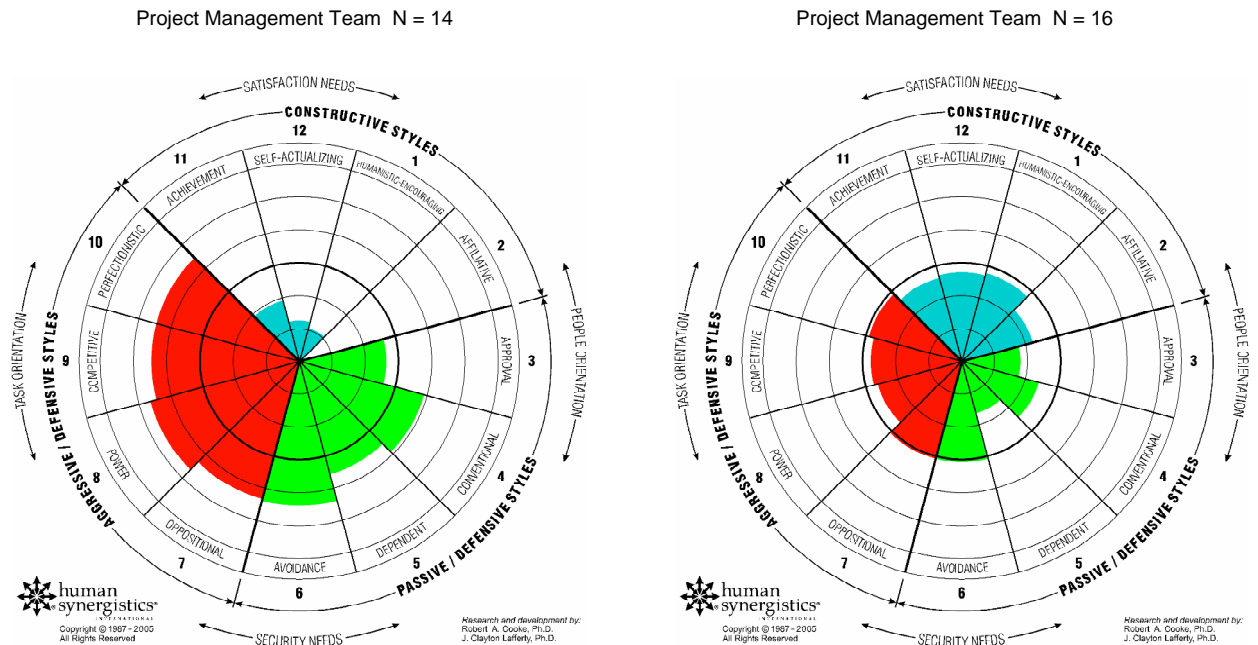


Figure 4: Organisational Culture Inventory Results: PM Group

A key learning for the Alliance Program Management Team related to the fact that awareness of the team dynamics, proactive and supportive actions and a means by which to check on progress was critical to moving the Project Management Team from storming to one that is currently highly performing. The next challenge for the Management Team will be to maintain the team’s performance level through the inevitable changes that the next two years of the Alliance will bring.

3.2 Building a Better Program of Works

Two years since the inception of the Waterways Alliance, it is now possible to retrospectively review the success of the alliancing model. The Alliance will leave a positive legacy to all partner organisations and the client in a number of key areas. The implementation of an alliance model allowed Melbourne Water to deliver a better program of environmental works as it:

- challenged initiators and Project Managers to develop the best projects possible;
- provided Melbourne Water with a transparent commercial model;
- streamlined procurement;
- provided ready access to resources to accelerate the delivery of projects; and
- developed and implemented a process by which project learnings were defined for all projects and implemented efficiently on future projects.

The implementation of an alliance model made project costs highly transparent to initiators as they were involved in the development and approval of project TOCs. For many, this was a new experience as previously the delivery of projects was somewhat isolated from initiators, with the final scope and cost reported to initiators at the conclusion of the project. The closer working relationship of initiators and deliverers allowed for a much more effective transfer of knowledge, setting of expectations and higher level of ownership over the project and its outcomes.

The establishment of an alliance program allowed the development of a centralised procurement strategy for over \$70 million of works. The centralisation gave Melbourne Water significant buying power compared to

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previous arrangements when purchasing was spread across more than twenty subcontractors. As an example of buying power, the Alliance was able to use the in-house nurseries of one of the partners, Ecodynamics, to grow plants for the program. The savings of using an in-house nursery were in the order of 25% or more, as compared with procuring the plants from the market place.

The Alliance financial model also ensured that all commercial arrangements were transparent to the initiators and the wider Melbourne Water community. Savings that were achieved via innovative approaches to project delivery were able to be passed on back to initiators to allow for more on-ground work to occur. To date, the Alliance program is running under TOC, with much of these savings passed back to initiators to reinvest in project outcomes.

The Alliance's partner participants also benefited from the volume of work, as they were able to resource their delivery teams with the confidence that ongoing work would be provided to them. Each of the partner organisations involved invested in staff and equipment at the commencement of the Alliance. This has been rewarded by a low turn-over of staff during the first 18 months of the program. By having continuity of employment, organisational knowledge of natural assets and alliance systems was enhanced by having consistent crews working in regions on similar projects. The delivery teams participated in project reviews and were able to make measureable improvements in the way safety was managed and works were conducted. For example, a number of woody weed control techniques were reviewed and trialled, resulting in a more effective and uniform method being adopted across the program.

The benefit of constructive challenge and open communication is tracked and documented through the PIR process. Key improvements have resulted from this process in the areas of planning and scoping, design, delivery and handover and maintenance objectives.

From the client's perspective, the volume of work that has been delivered over the first two years of the Waterways Alliance is significant, however this is not the key success factor. Numerous intangible benefits have evolved through the alliancing process, such as improved relationships with stakeholders, more efficient transfer of knowledge, development of personnel and improved reporting of safety performance. Each of these factors has contributed to building a better program of works.

4 CONCLUSIONS

The implementation of an alliance model has required the formation of a new team and resulted in a significant amount of learning by all members of the team. This learning process was supported and facilitated by the Alliance Program Management Team and the actions undertaken and the findings are documented in the paper. A key benefit of the program is the combination of all phases of a project's development and delivery within the one organisation, and the opportunity that that provides to take learnings from projects and immediately apply these to new projects. The process of review and knowledge sharing is promoted by a number of forums and processes, including a rigorous program of Post Implementation Reviews (PIRs). The data gathered from these PIRs has been used on subsequent projects to reduce costs by the adoption of learnings and innovations.

The opportunities that alliances present to develop staff should not be underestimated. At the conclusion of the first two years of the program, the Waterways Alliance now retains a highly skilled team of Project Managers who are able to develop and deliver complicated natural resources management projects. The Project Managers have developed far deeper understanding of what it takes to deliver a project compared to a client representative or a construction manager.

The alliance model will also build a better program of works as it brings constructive challenge into an organisation. The experience of the Waterways Alliance program is that all preconceptions, from why a project

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is developed to how it is delivered, will be challenged. This process of challenge improves the way projects are developed and scoped, resulting in better and more efficient delivery of programs on the ground.

5 REFERENCES

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